

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE: :
 :
A PETITION OF CELLCO PARTNERSHIP : PETITION NO. ____
D/B/A VERIZON WIRELESS FOR A :
DECLARATORY RULING ON THE NEED :
TO OBTAIN A SITING COUNCIL :
CERTIFICATE FOR THE INSTALLATION :
OF A WIRELESS TELECOMMUNICATIONS :
FACILITY AT 330 ROBERTS STREET, EAST :
HARTFORD, CONNECTICUT : APRIL 17, 2024

PETITION FOR A DECLARATORY RULING:
INSTALLATION HAVING NO
SUBSTANTIAL ADVERSE ENVIRONMENTAL EFFECT

I. Introduction

Pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies (“R.C.S.A.”), Cellco Partnership d/b/a Verizon Wireless (“Cellco”) hereby petitions the Connecticut Siting Council (the “Council”) for a declaratory ruling (“Petition”) that no Certificate of Environmental Compatibility and Public Need (“Certificate”) is required under Section 16-50k(a) of the Connecticut General Statutes (“C.G.S.”) for the installation of a wireless telecommunications facility on a 1.44 acre parcel at 330 Roberts Street in East Hartford, Connecticut (the “Property”). The Property is owned by SMK Roberts Street LLC. The proposed facility would be located entirely on the roof of the existing four-story office building on the Property. See Attachment 1 –Site Schematic Map (Aerial Photograph).

The Property is in East Hartford’s B-1 Business zone district and is surrounded retail and commercial uses. Cellco refers to its proposed facility as its “East Hartford 8 CT Relo Facility” and will replace Cellco’s existing wireless facility on the roof of the former Ramada Inn Hotel building, at 363 Roberts Street, directly south of the Property.

II. Proposed Construction Activity

The proposed East Hartford 8 CT Relo Facility will consist of the installation of nine (9) panel type antennas attached to pipe masts that will be secured to the existing roof-top mechanical equipment screen wall. Cellco's antennas will extend approximately seven (7) feet above the screen wall, to a height of 68 feet above ground level ("AGL"). Cellco will also install nine (9) remote radio heads ("RRHs") behind the screen wall below its antennas. Equipment associated with the antennas will be located on a steel platform to the north of the mechanical equipment enclosure¹. (See Cellco's Project Plans included in Attachment 2).

Cellco will provide wireless telecommunications services in its 700 MHz, 850 MHz, 1900 MHz, 2100 MHz and C-Band (3730 MHz and 3625 MHz) frequency ranges from the proposed East Hartford 8 CT Relo. Specifications for Cellco's antennas and remote radio heads are included in Attachment 3. The East Hartford 8 CT Relo Facility will be capable of providing 5G wireless services.

Cellco's project engineer, Chappell Engineering, prepared a Structural Analysis ("SA") and Antenna Mount Structural Analysis ("MSA") that confirms the antenna mast support structure, screen wall, associated steel equipment frame, and roof support beams are all structurally capable of supporting Cellco's East Hartford 8 CT Relo Facility improvements. A copy of the SA and MSA are included in Attachment 4.

III. Discussion

A. The Proposed Facility Will Not Have A Substantial Adverse Environmental Effect

The Public Utility Environmental Standards Act (the "Act"), C.G.S. § 16-50g et seq., provides for the orderly and environmentally compatible development of telecommunications

¹ T-Mobile currently maintains antennas attached to the façade of the mechanical equipment screen wall.

facilities in the state to avoid “a significant impact on the environment and ecology of the State of Connecticut.” C.G.S. § 16-50g. To achieve these goals, the Act established the Council, and requires a Certificate of Environmental Compatibility and Public Need for the construction of cellular telecommunication towers “that may, as determined by the council, have a substantial adverse environmental effect”. C.G.S. § 16-50k(a).

1. Physical Environmental Effects

Cellco respectfully submits that the proposed East Hartford 8 CT Relo Facility will not involve a significant impact on the physical and environmental characteristics of the Property or the surrounding community. All of Cellco’s proposed improvements will be located on the roof of a commercial office building with no improvement of the ground.

2. Visual Effects

As described above, the antennas and RRHs will be attached to pipe masts mounted on the existing mechanical equipment screen enclosure on the roof of the building. The top of the antennas will extend approximately seven (7) feet above the screen wall. Equipment associated with Cellco’s antennas will be located on a steel platform, also on the roof, to the north of the mechanical equipment screen enclosure. Year-round views of the roof-top antennas would be limited primarily to the areas around the Property where the existing roof-top and mechanical equipment and T-Mobile’s telecommunications facility is currently visible. Due to the commercial setting of the Property, Cellco respectfully submits that the proposed Facility will not alter the character of the area or constitute an adverse Visual Impact of the surrounding area. A Visibility Analysis for the proposed East Hartford 8 Relo CT Facility improvements is included in Attachment 5.

3. FCC Compliance

Radio frequency (“RF”) emissions from the East Hartford 8 CT Relo will not exceed the maximum permissible exposure limits established by the Federal Communications Commission (“FCC”). Included in Attachment 6 is a Cumulative Calculated Radio Frequency Emissions Report confirming that the proposed East Hartford 8 CT Relo Facility will operate well within the FCC safety standards.

4. FAA Notification Not Required

Cellco’s proposed facility antennas will extend approximately seven (7) feet above the height of the mechanical screen wall, the tallest structure on the roof. Included in Attachment 7 is a Federal Airways and Airspace Report verifying that Cellco’s proposed antennas would not constitute an obstruction or hazard to air navigation and, therefore, notification to the FAA of the Facility improvements is not required.

B. Notice to the Town, Property Owner and Abutting Landowners

On April 17, 2024, a notice letter and a copy of this Petition was sent to East Hartford’s Mayor, Connor Martin; Eileen Buckheit, East Hartford’s Development Director; and SKM Roberts Street LLC, the owner of the Property. Copies of the letters sent to municipal officials and the Property owner are included in Attachment 8.

A notice letter and a copy of this Petition was also sent to the owners of land considered to abut the Property. A sample abutter’s notice letter and the list of those abutting landowners to whom notice was sent is included in Attachment 9.


IV. Conclusion

Based on the information provided above, Cellco respectfully requests that the Council issue a determination, in the form of a declaratory ruling, that the installation of the proposed rooftop facility, described above, will not have a substantial adverse environmental effect and

does not require the issuance of a Certificate of Environmental Compatibility and Public Need pursuant to § 16-50k of the General Statutes.

Respectfully submitted,

CELLCO PARTNERSHIP d/b/a VERIZON
WIRELESS

By 

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597
(860) 275-8200
Its Attorneys

ATTACHMENT 1



Proposed Verizon Wireless Equipment Cabinets Mounted on 14' x 24' Steel Framed Platform within Proposed Verizon Wireless 15' x 30' Lease Area

Proposed Verizon Wireless Alpha Sector Antennas Mounted to Existing Screening Wall (By Others)

Proposed Verizon Wireless Grounding Conduit (If Required) from Proposed Utility Riser Location to Existing Water Main in Basement (By Others)

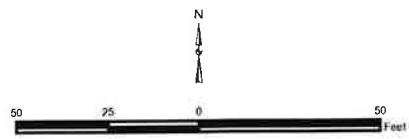
Proposed Verizon Wireless Gamma Sector Antennas Mounted to Existing Screening Wall (By Others)

Proposed Verizon Wireless Beta Sector Antennas Mounted to Existing Screening Wall (By Others)

Proposed Verizon Wireless Telco Conduit from Proposed Utility Riser Location to Proposed Telco Backboard in Basement

- Legend**
- Proposed Verizon Wireless Equipment
 - Proposed Verizon Wireless Lease Area
 - Existing Screening Wall (By Others)
 - Existing Electrical Closets Below (By Others)
 - Proposed Verizon Wireless Conduit
 - Approximate Water Main (By Others)
 - Subject Property
 - Approximate Parcel Boundary

Map Notes:
 Base Map Source: 2019 CTECO Aerial Imagery
 Map Scale: 1 inch = 50 feet
 Map Date: February 2024



Site Schematic
 Proposed Wireless Telecommunications Facility
 East Hartford 8 CT RELO
 330 Roberts Street
 East Hartford, Connecticut



ATTACHMENT 2

SUPPORTING DOCUMENTS

INACO FREQUENCY (FIR) DESIGN DATE: 2/18/24
 ANTENNA MODEL STRUCTURAL ANALYSIS DATE: 3/22/24
 SUPPORT STRUCTURE (STEEL) IN STEEL STEEL FRAMED OFFICE BUILDING
 STRUCTURAL ANALYSIS DATE: 3/22/24



20 ALEXANDER DRIVE, 2nd Floor, WALLINGFORD, CT 06492
EAST HARTFORD 8 CT RELO

330 ROBERTS STREET
 EAST HARTFORD, CT 06108

**PROJECT TYPE: WIRELESS TELECOMMUNICATIONS INSTALLATION ON
 ROOFTOP OF EXISTING (4)-STORY STEEL FRAMED OFFICE BUILDING**

SITE INFORMATION:

PROPERTY OWNER:
 330 ROBERTS STREET, SUITE 404
 EAST HARTFORD, CT 06108

APPLICANT:
 CELCO PARTNERSHIP
 VERIZON WIRELESS
 20 ALEXANDER DRIVE, 2nd FLOOR
 WALLINGFORD, CT 06492

SITE ADDRESS:
 330 ROBERTS STREET
 EAST HARTFORD, CT 06108

COUNTY:
 HARTFORD COUNTY, CONNECTICUT

SITE CONTROL POINT:
 SOUTH CORNER OF EXISTING BUILDING
 N 41° 48' 08.00" (41.796000) (NAD 83)
 W 72° 37' 14.67" (72.620767) (NAD 83)

ARCHITECT / ENGINEER:
 CHAPPELL ENGINEERING ASSOCIATES, LLC
 201 BOSTON POST ROAD WEST, SUITE 101
 WASHINGTON, MA 01757

POWER COMPANY:
 247 STATION DRIVE, SE 210
 WESTWOOD, MA 02090
 (978) 441-3890

TELEPHONE COMPANY:
 VERIZON
 185 FRANKLIN STREET
 WASHINGTON, MA 01707
 (800) 941-2800

GENERAL NOTES

- CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING CONDITIONS, AND CONDITIONS CALL FOR SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACES THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
- NEW CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES:
 - INTERNATIONAL BUILDING CODE
 - ELECTRICAL CODE: 2020 NATIONAL ELECTRICAL CODE
 - STRUCTURAL CODE: TIA/EIA-222-H STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.



AT LEAST 72 HOURS PRIOR TO
 ON-SITE CONSTRUCTION,
 CONTRACTOR SHALL BE
 REQUIRED TO CALL DIS SAFE AT 811

VICINITY MAP

SCALE: 1"=1000'



DRIVING DIRECTIONS

FROM WALLINGFORD, TAKE I-91 NORTH TO TAKE EXIT 28 FOR U.S. 5 IN CONNECTICUT. TURN RIGHT ON EAST TOWARD EAST WALLINGFORD. TAKE RIGHT ON I-91 TO TAKE EXIT 01 FOR SILVER LANE. TURN RIGHT ON TO SILVER LANE. TURN LEFT ON TO ROBERTS STREET. KEEP LEFT TO STAY ON ROBERTS STREET. THE SITE IS LOCATED ON THE LEFT HAND SIDE.

SHEET INDEX

DWG.	DESCRIPTION	REV.
T01	TITLE SHEET	1
0M01	GENERAL NOTES AND SPECIFICATIONS	1
0M1	PROPERTY PLAN	1
0M2	ROOF PLAN	1
0M3	SITE DETAILS	1
0M4	FOUNDATION (FRONT) BUILDING ELEVATION (ALONG ROBERTS STREET)	1
0M5	EQUIPMENT PLATFORM FRAMING PLAN AND DETAILS	1
0M6	EQUIPMENT SUPPORT FRAMING DETAILS	1
0M7	ANTENNA MOUNTING DETAILS	1
0M8	ANTENNA DETAILS AND MOUNTING EQUIPMENT SPECIFICATIONS	1
0M9	IF BILL OF MATERIALS AND IF CABLE FRAMING DIAGRAM	1
0M10	IF COLOUR CODE SPECIFICATIONS	1
0M11	UTILITY CONDUIT/PIPE ROUTING DETAILS	1
0M12	ELECTRICAL SPECIFICATIONS AND NOTES	1
0M13	ELECTRICAL PLAN ROOF AND FIRST FLOOR AND ELECTRICAL DETAILS	1
0M14	ELECTRICAL PLAN (FIRST FLOOR) AND ELECTRICAL DETAILS	1
0M15	ELECTRICAL PLAN (BASEMENT)	1
0M16	ELECTRICAL AND TELECOMBIBER ONE LINE DIAGRAM	1
0M17	GROUNDING DIAGRAM, NOTED AND DETAILS	1
0M18	GROUNDING DETAILS	1

DO NOT SCALE DRAWINGS

ALL PLANS, EXISTING DIMENSIONS AND CONDITIONS AT THE PROPOSED PROJECT SITE SHALL BE VERIFIED IN THE FIELD DURING THE CONSTRUCTION PHASE. THE PROJECT OWNERS SHALL BE RESPONSIBLE FOR VERIFYING THE EXISTING CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH THE PROPOSED WORK. ANY DISCREPANCIES IN THE EVENT OF LACK OF NOTIFICATION, SUCH DISCREPANCIES SHALL BECOME THE RESPONSIBILITY OF THE PREVAILING CONTRACTOR. RESPONSIBILITY FOR CONSTRUCTION.

PROJECT DESCRIPTION

- THIS IS AN UNMANNED AND RESTRICTED ACCESS EQUIPMENT INSTALLATION AND WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC WIRELESS TELECOMMUNICATIONS SERVICE.
- NO POTABLE WATER SUPPLY IS TO BE PROVIDED AT THIS LOCATION.
- NO WASTE WATER WILL BE GENERATED AT THIS LOCATION.
- NO SOLID WASTE WILL BE GENERATED AT THIS LOCATION.

CARRIER:



ARCHITECT/ENGINEER:



R.L. CHAPPELL
 CHAPPELL
 ENGINEERING
 ASSOCIATES, LLC
 201 BOSTON POST ROAD WEST
 WASHINGTON, MA 01752
 (508) 481-7400
 www.chappell-engineering.com

SEAL:



ENGINEER/AND SURVEYOR

DATE

2/29/24

3/22/24

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR PERMITS	2/29/24
1	REVISION FOR CONSTRUCTION (FINAL)	3/22/24

PROJECT NAME:

EAST HARTFORD 8 CT
 RELO

PROJECT ADDRESS:

330 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:

TITLE SHEET

DRAWING NO.:

T01

DATE	BY	FOR	DESCRIPTION
3/22/24	R.L. CHAPPELL	FOR PERMITS	TITLE SHEET

verizon

ARCHITECT/ENGINEER
CHAPPELL ENGINEERING ASSOCIATES, LLC
 REGISTERED PROFESSIONAL ENGINEER
 R.K. EXECUTIVE CENTER
 SUITE 101 AND WEST
 WASHINGTON, MA 01782
 (508) 481-7400
 www.chappell-engineering.com



ENGINEER/LAND SURVEYOR	DATE

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR PERMITS	2/7/24
1	ISSUED FOR CONSTRUCTION (PMA)	2/27/24

PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
 380 ROBERTS STREET
 EAST HARTFORD, CT 06108

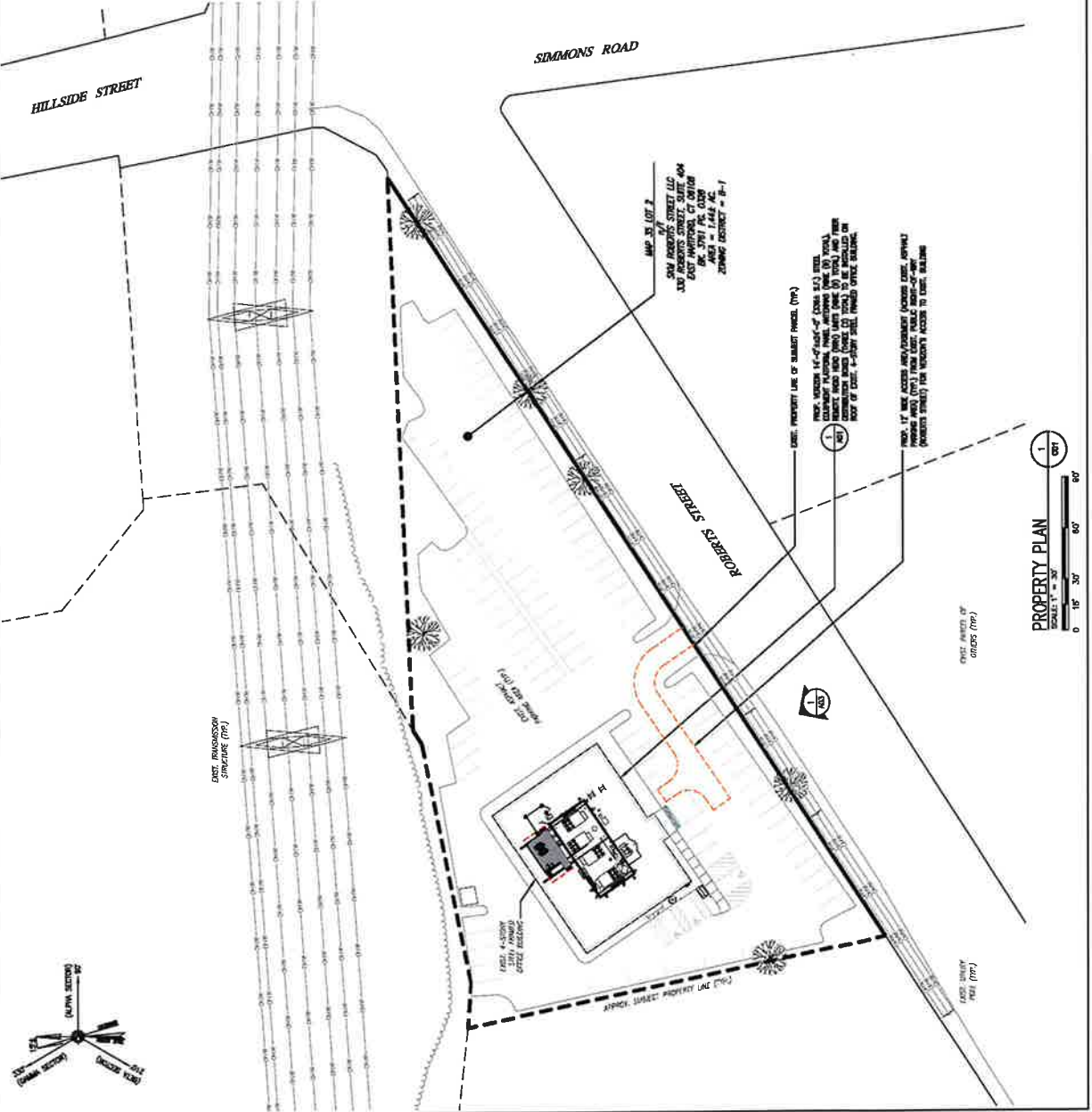
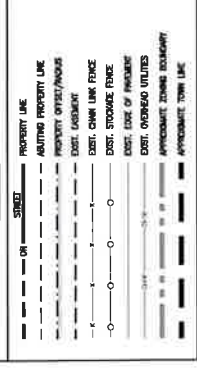
ARCHITECT TITLE:
 PROPERTY PLAN

JOB NUMBER:
C01

DATE	BY	FOR APPROVAL BY	DATE
2/7/24			

GENERAL NOTES:

1. ALL DIMENSIONS UNLESS OTHERWISE NOTED TO BE TO FACE.
2. VERTICAL CURVE DATA: 1/1/24
3. HORIZONTAL CURVE DATA: 1/1/24
4. SITE CONTROL POINT: 380 ROBERTS STREET, EAST HARTFORD, CT 06108
5. LAND OWNERS: 380 ROBERTS STREET LLC, 380 ROBERTS STREET, EAST HARTFORD, CT 06108
6. SITE ADDRESS: 380 ROBERTS STREET, EAST HARTFORD, CT 06108
7. APPLICANT: CHAPPELL ENGINEERING ASSOCIATES, LLC
8. ALL DIMENSIONS UNLESS OTHERWISE NOTED TO BE TO FACE. ALL DIMENSIONS UNLESS OTHERWISE NOTED TO BE TO FACE. ALL DIMENSIONS UNLESS OTHERWISE NOTED TO BE TO FACE.
9. THE PROPERTY AND LOT AREA ARE CORRECTED USING RECORDED DEEDS, PLANS OF REFERENCE AND LATEST SURVEYS OF THE PROPERTY PREPARED BY CHAPPELL ENGINEERING ASSOCIATES ON 1/11/24, 9/19/23 AND 2/10/24.
10. THE SITE IS LOCATED IN FLOOD HAZARD ZONE X (AREA OF MINIMAL FLOOD HAZARD) AS SHOWN ON THE FLOOD HAZARD MAP OF EAST HARTFORD, CT (DATE NUMBER UNDETERMINED) DATED 8/24/2008.





ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
 201 BOSTON ROAD WEST
 SUITE 10
 WILBOROUGH, MA 01792
 (508) 481-7400
 www.chappell-engineering.com



ENGINEER/LAND SURVEYOR _____ **DATE** _____
DRAWING SCALE: 1/8" = 1'-0"
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NO.	DESCRIPTION	DATE
0	ISSUED FOR PERMITS	2/29/24
1	ISSUED FOR CONSTRUCTION (P&I)	2/29/24

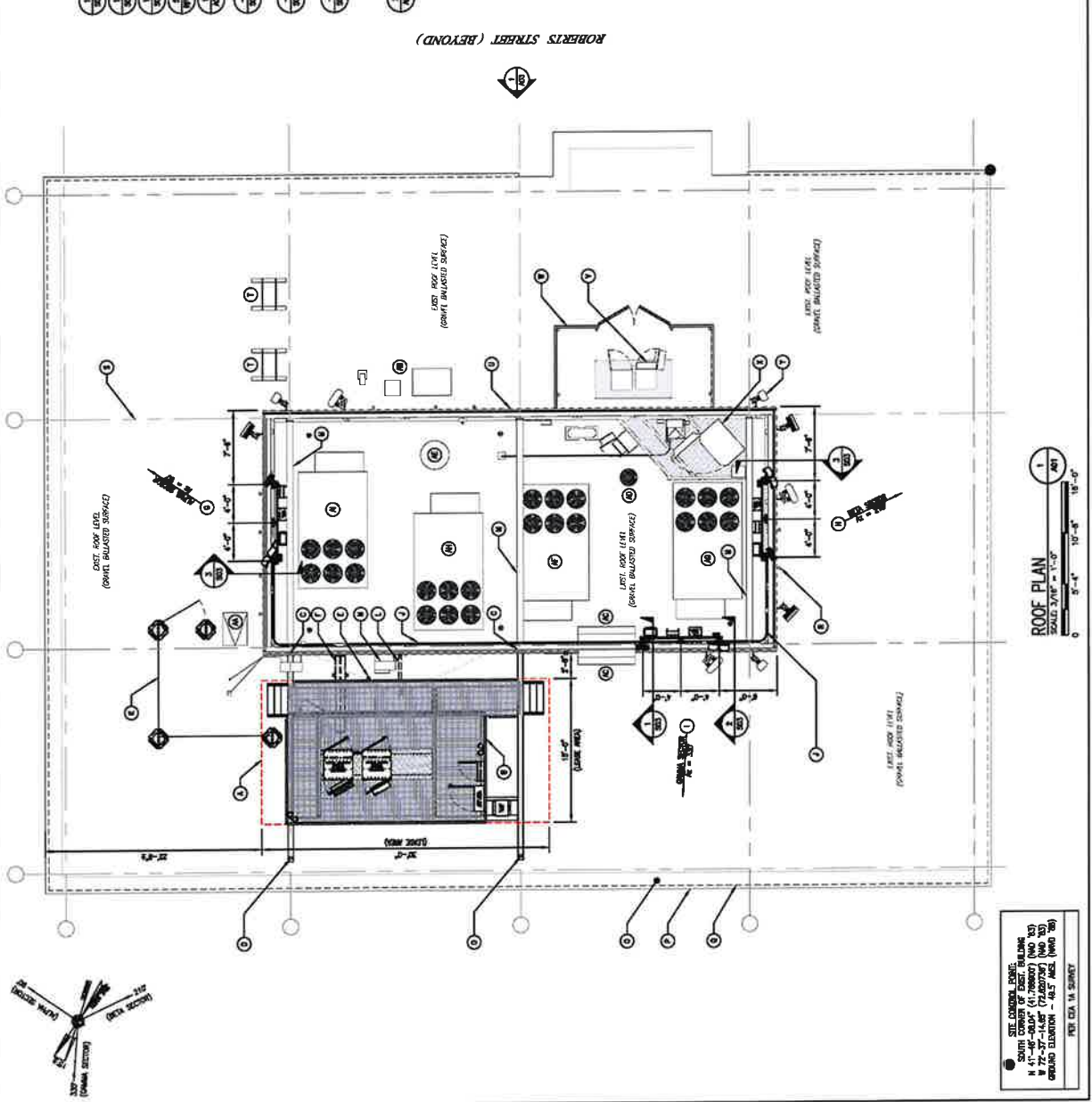
PROJECT NAME:
EAST HARTFORD 8 CT
RELO

PROJECT ADDRESS:
 380 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
 ROOF PLAN

DATE: 2/29/24
SCALE: 3/8" = 1'-0"
PROJECT NO.: 24-001
DATE PLOTTED: 2/29/24

ITEM	LEGEND	DESCRIPTION
1	(Symbol)	PERMITS: VERIFIED 15'-0" x 15'-0" (FOR 8 CT)
2	(Symbol)	PERMITS: VERIFIED 14'-0" x 14'-0" (FOR 8 CT) WITH PERMITS EXHIBIT FOR EXISTING ROOF. PERMITS: VERIFIED 15'-0" x 15'-0" (FOR 8 CT) WITH PERMITS EXHIBIT FOR EXISTING ROOF.
3	(Symbol)	PERMITS: VERIFIED STEEL CONNECTION TO REMAIN OF EXIST.
4	(Symbol)	PERMITS: VERIFIED STEEL CONNECTION TO REMAIN OF EXIST.
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PROJECT NAME:
 EAST HARTFORD 8 CT
RELO

PROJECT ADDRESS:
 380 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
 ROOF PLAN

DATE: 2/29/24
SCALE: 3/8" = 1'-0"
PROJECT NO.: 24-001
DATE PLOTTED: 2/29/24

CUSTOMER:



ARCHITECT/ENGINEER:

CHAPPELL ENGINEERING ASSOCIATES, LLC
 ARCHITECTS & ENGINEERS
 P.L.C. EXECUTIVE CENTRE
 201 ROBERTS STREET
 SUITE 10
 WILBOROUGH, MA 01792
 (508) 461-7400
 www.chappell-engineering.com

SCALE:



ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE DETAIL

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REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR BIDDING	2/28/14
1	ISSUED FOR CONSTRUCTION (FINAL)	4/27/14

PROJECT NAME
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS
 330 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE

SITE DETAILS

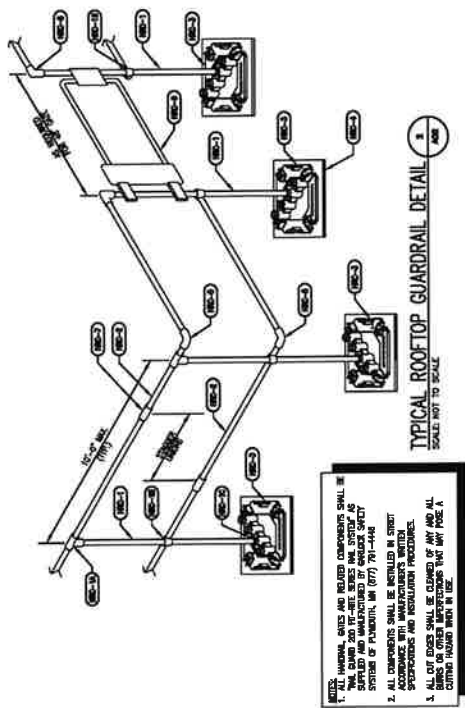
DRAWING NO.

A02

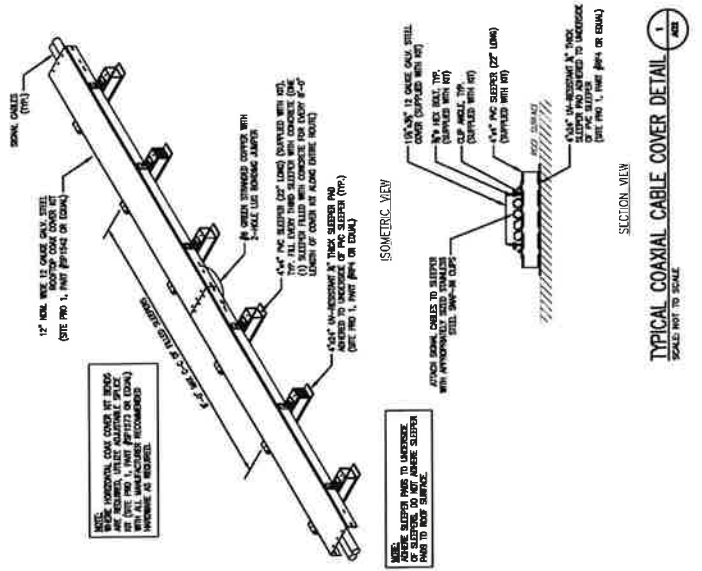
DATE	BY	FOR	DESCRIPTION
2/28/14	CHAPPELL	VERIZON	ISSUED FOR BIDDING
4/27/14	CHAPPELL	VERIZON	ISSUED FOR CONSTRUCTION (FINAL)

GARLOCK RAILGUARD 200 FIT-RITE SERIES RAIL SYSTEM LEGEND

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
001	STEEL STRUT BRACKET SET IN STANDARD GALVANIZED FINISH	42139	EA	002-3
002	QUANDED STEEL	10009	EA	(SUPPLIED WITH STRUTTING KIT)
003	QUANDED STEEL	18078	EA	(SUPPLIED WITH STRUTTING KIT)
004	QUANDED STEEL	18078	EA	(SUPPLIED WITH STRUTTING KIT)
005	1/2" SOCKET W/ 1/2" BUSHING AS SHOWN IN SECTION A02 (OR SUPPLIED BY ALTERNATE VENDOR)	18078	EA	005-7
006	1/2" SOCKET W/ 1/2" BUSHING AS SHOWN IN SECTION A02 (OR SUPPLIED BY ALTERNATE VENDOR)	18078	EA	006-7



- NOTES:**
1. ALL COMPONETS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND SPECIFICATIONS. THE USER SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY PERMITS AND APPROVALS FROM THE LOCAL AUTHORITY HAVING JURISDICTION OVER THE PROJECT.
 2. ALL COMPONETS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND SPECIFICATIONS. THE USER SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY PERMITS AND APPROVALS FROM THE LOCAL AUTHORITY HAVING JURISDICTION OVER THE PROJECT.
 3. ALL CUT EDGES SHALL BE CLEANED OF ANY AND ALL BURRS OR OTHER IMPURITIES THAT MAY POSE A SAFETY HAZARD WHEN IN USE.



NOTE: HORIZONTAL CABLE COVER AT ENDS OF ROOFING SHALL BE INSTALLED WITH MANUFACTURER'S RECOMMENDED HARDWARE AS REQUIRED.

NOTE: ABOVE SLEEVES SHALL BE INSTALLED WITH APPROVED HARDWARE TO ROOF SURFACE.

NOTE: 1/2" X 1/2" X 1/2" GALV. STEEL ROOFING CABLE COVER AT ENDS OF ROOFING SHALL BE INSTALLED WITH MANUFACTURER'S RECOMMENDED HARDWARE AS REQUIRED.

SECTION VIEW

TYPICAL COAXIAL CABLE COVER DETAIL
 SCALE NOT TO SCALE

CUBIC



ARCHITECT/ENGINEER

CHAPPELL ENGINEERING ASSOCIATES, LLC
 P.O. EXECUTIVE CENTRE
 201 BUSINESS ROAD WEST
 MANASSAS, VA 20108
 (509) 481-7400
 www.chappell-engineering.com

SCALE



ENGINEER/AND SUPERVISOR

DATE

DRAWING SCALE NOTE

THIS DRAWING IS TO BE USED FOR THE CONSTRUCTION OF THE PROJECT AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF CHAPPELL ENGINEERING ASSOCIATES, LLC. THE USER OF THIS DRAWING SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES AND AUTHORITIES. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES AND AUTHORITIES. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES AND AUTHORITIES.

NO.	REVISIONS	DATE
0	ISSUED FOR PERMITS	2/28/24
1	ISSUED FOR CONSTRUCTION (P&A)	2/28/24

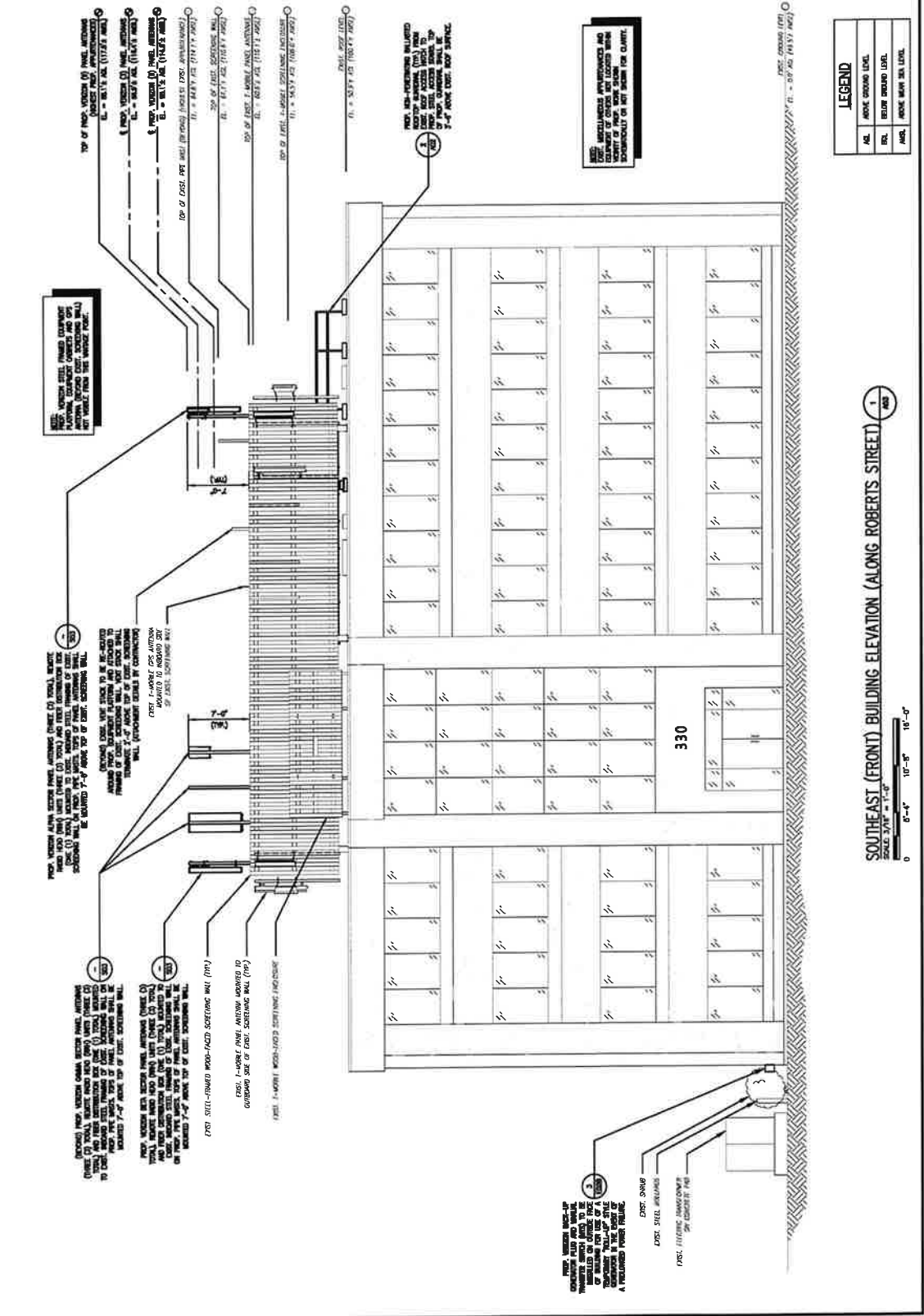
PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
 330 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
 SOUTH-EAST (FRONT)
 BUILDING ELEVATION
 (ALONG ROBERTS STREET)

DRAWING NO.:
A03

NO.	DATE	BY	CHKD	APP'D	REVISED
1	2/28/24				



LEGEND

NO.	DESCRIPTION
1	FINISH INTERIOR FLOOR FINISH (FIN)
2	FINISH INTERIOR WALL FINISH (FIN)
3	FINISH INTERIOR CEILING FINISH (FIN)
4	FINISH EXTERIOR WALL FINISH (FIN)
5	FINISH EXTERIOR ROOF FINISH (FIN)

SOUTH-EAST (FRONT) BUILDING ELEVATION (ALONG ROBERTS STREET)

SCALE: 3/8" = 1'-0"

0 5'-0" 10'-0" 15'-0"



ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
 P.O. BOX 1000
 201 EAST MAIN STREET
 SUITE 100
 WASHINGTON, MA 01890
 (508) 461-7400
 www.chappell-engineering.com



ENGINEER/LAND SURVEYOR DATE
 DRAWING SCALE: 1/8" = 1'-0"
 ALL DIMENSIONS UNLESS OTHERWISE NOTED.
 ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE INTERNATIONAL BUILDING CODE (IBC) AND THE LATEST EDITIONS OF THE NATIONAL ELECTRICAL CODE (NEC).
 UNLESS NOTED OTHERWISE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE AND FEDERAL AUTHORITIES.
 TO AVOID THE CONTRACTOR'S LIABILITY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF ALL FIELD CONDITIONS.

NO.	REVISIONS	DATE
0	ISSUED FOR BIDDING	5/29/24
1	REVISED FOR CONSTRUCTION (R.F.I.)	3/25/24

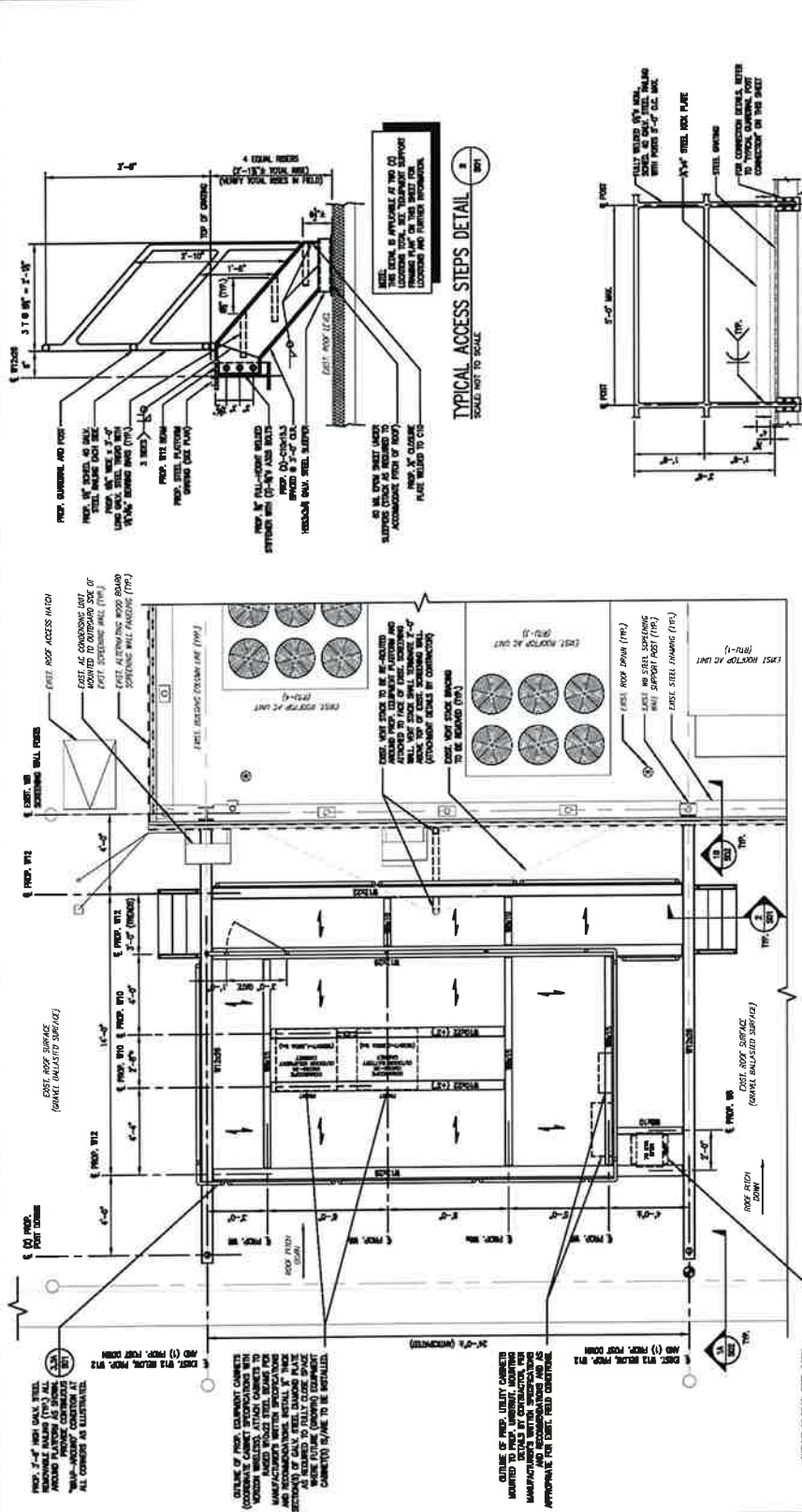
PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
 380 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
EQUIPMENT PLATFORM FRAMING PLAN AND DETAILS

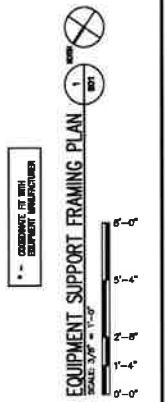
DRAWING NO.:
S01

DATE	BY	CHK	APP
5/29/24	JLD		
3/25/24	JLD		



EQUIPMENT SUPPORT FRAMING PLAN NOTES:

- 1) THE TOP OF ALL STEEL MEMBERS SHALL BE 2'-0" ABOVE FINISH FLOOR LEVEL UNLESS OTHERWISE NOTED.
- 2) ALL STEEL MEMBERS SHALL BE 1'-0" ABOVE FINISH FLOOR LEVEL UNLESS OTHERWISE NOTED.
- 3) ALL STEEL MEMBERS SHALL BE 1'-0" ABOVE FINISH FLOOR LEVEL UNLESS OTHERWISE NOTED.
- 4) ALL STEEL MEMBERS SHALL BE 1'-0" ABOVE FINISH FLOOR LEVEL UNLESS OTHERWISE NOTED.
- 5) ALL STEEL MEMBERS SHALL BE 1'-0" ABOVE FINISH FLOOR LEVEL UNLESS OTHERWISE NOTED.
- 6) ALL STEEL MEMBERS SHALL BE 1'-0" ABOVE FINISH FLOOR LEVEL UNLESS OTHERWISE NOTED.
- 7) ALL STEEL MEMBERS SHALL BE 1'-0" ABOVE FINISH FLOOR LEVEL UNLESS OTHERWISE NOTED.
- 8) ALL STEEL MEMBERS SHALL BE 1'-0" ABOVE FINISH FLOOR LEVEL UNLESS OTHERWISE NOTED.
- 9) ALL STEEL MEMBERS SHALL BE 1'-0" ABOVE FINISH FLOOR LEVEL UNLESS OTHERWISE NOTED.
- 10) ALL STEEL MEMBERS SHALL BE 1'-0" ABOVE FINISH FLOOR LEVEL UNLESS OTHERWISE NOTED.



EQUIPMENT SUPPORT FRAMING PLAN
 SCALE: 3/8" = 1'-0"

EQUIPMENT SUPPORT FRAMING PLAN
 SCALE: 3/8" = 1'-0"

CUBIC



ARCHITECT/ENGINEER:



R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
MIDDLEBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

SCALE:



ENGINEER/LAND SURVEYOR

DATE

DRAWING SCALE NOTE:

ALL DIMENSIONS UNLESS OTHERWISE NOTED ARE IN FEET AND INCHES. DIMENSIONS IN PARENTHESIS ARE ALTERNATE DIMENSIONS. DIMENSIONS IN FEET AND INCHES SHALL BE ROUNDED UP TO THE NEXT HIGHER DIMENSION. DIMENSIONS IN METERS SHALL BE ROUNDED UP TO THE NEXT HIGHER DIMENSION. DIMENSIONS IN MILLIMETERS SHALL BE ROUNDED UP TO THE NEXT HIGHER DIMENSION. DIMENSIONS IN MILLIMETERS SHALL BE ROUNDED UP TO THE NEXT HIGHER DIMENSION. DIMENSIONS IN MILLIMETERS SHALL BE ROUNDED UP TO THE NEXT HIGHER DIMENSION.

NO.	DESCRIPTION	DATE
0	ISSUED FOR BIDDING	2/28/24
1	ISSUED FOR CONSTRUCTION (FINAL)	3/29/24

PROJECT NAME:
**EAST HARTFORD 8 CT
RELO**

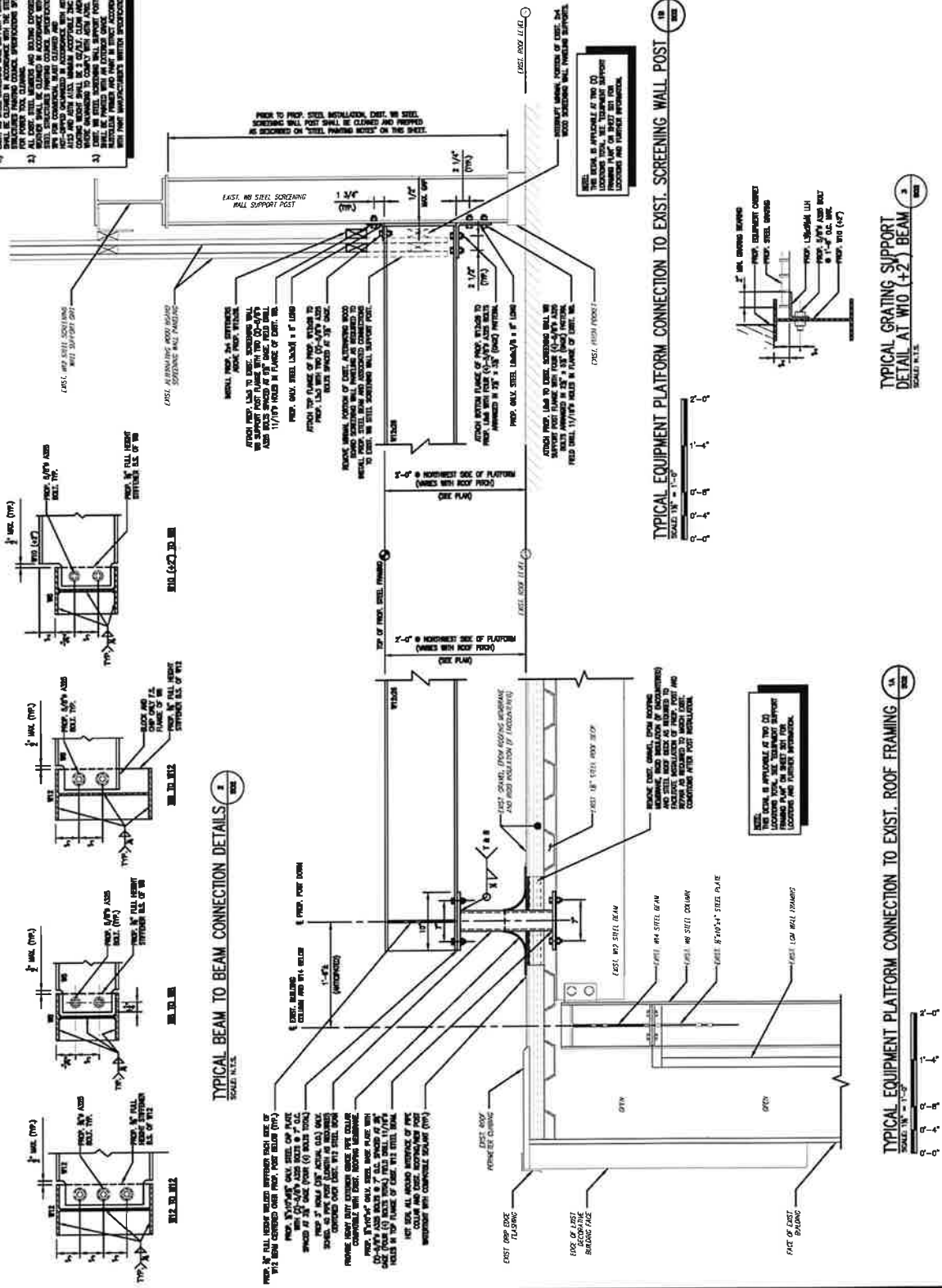
PROJECT ADDRESS:
380 ROBERTS STREET
EAST HARTFORD, CT 06108

DRAWING TITLE:
**EQUIPMENT SUPPORT
FRAMING DETAILS**

DRAWING NO.:
S02

NO.	DATE	BY	CHKD.	APP.
1	2/28/24	JK	JK	JK

- STEEL FABRICATING NOTES:**
- 1) CHECK FOR STEEL EXTENDING WALL SUPPORT POSTS. WALLS SHALL BE EXTENDED TO THE TOP OF THE WALL. WALLS SHALL BE EXTENDED TO THE TOP OF THE WALL. WALLS SHALL BE EXTENDED TO THE TOP OF THE WALL.
 - 2) CHECK FOR STEEL EXTENDING WALL SUPPORT POSTS. WALLS SHALL BE EXTENDED TO THE TOP OF THE WALL. WALLS SHALL BE EXTENDED TO THE TOP OF THE WALL. WALLS SHALL BE EXTENDED TO THE TOP OF THE WALL.
 - 3) CHECK FOR STEEL EXTENDING WALL SUPPORT POSTS. WALLS SHALL BE EXTENDED TO THE TOP OF THE WALL. WALLS SHALL BE EXTENDED TO THE TOP OF THE WALL. WALLS SHALL BE EXTENDED TO THE TOP OF THE WALL.



SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"

CLIENT:



ARCHITECT/ENGINEER:

CHAPPELL ENGINEERING ASSOCIATES, LLC
110 EXECUTIVE CENTRE
201 BRIDGE STREET, SUITE 100
MARLBOROUGH, MA 01782
(508) 481-7400
www.chappelleng.com

SEAL:



ENGINEER/LAND SURVEYOR DATE

WORKING SCALE: 1/8"=1'-0"
THIS DRAWING IS A PART OF A SET OF DRAWINGS FOR THE PROJECT DESCRIBED IN THE TITLE BLOCK. IT IS TO BE USED IN CONJUNCTION WITH THE OTHER DRAWINGS IN THE SET. IT IS THE RESPONSIBILITY OF THE USER TO OBTAIN THE COMPLETE SET OF DRAWINGS AND TO VERIFY THE ACCURACY OF THE INFORMATION CONTAINED HEREIN. THE ENGINEER/ARCHITECT ASSUMES NO LIABILITY FOR THE CONSTRUCTION OF THE PROJECT OR FOR THE PERFORMANCE OF THE PROJECT.

REVISIONS

NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMITS	2/29/24
2	ISSUED FOR CONSTRUCTION (FINAL)	2/29/24

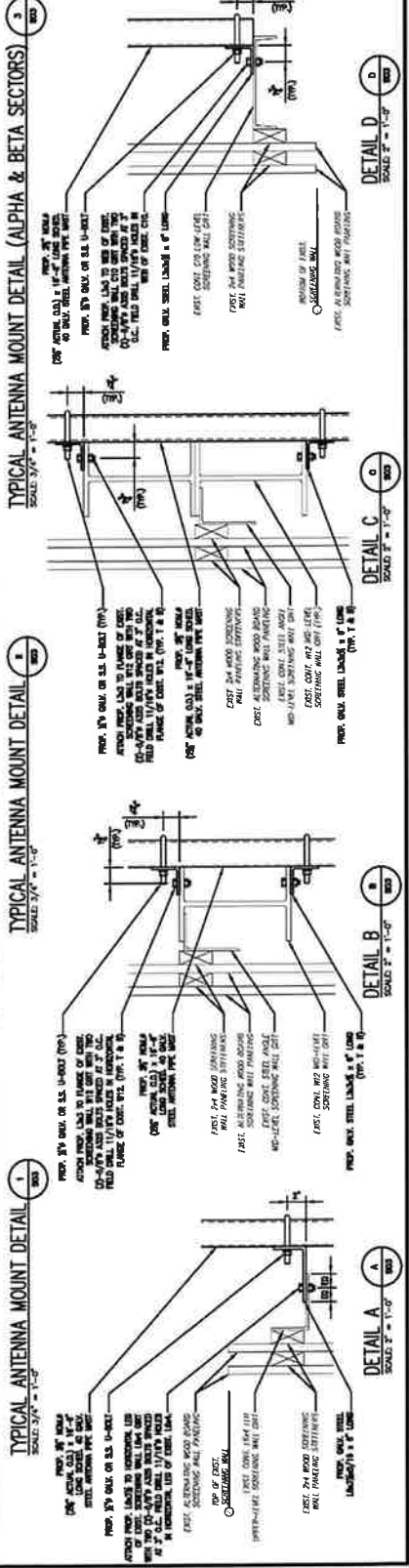
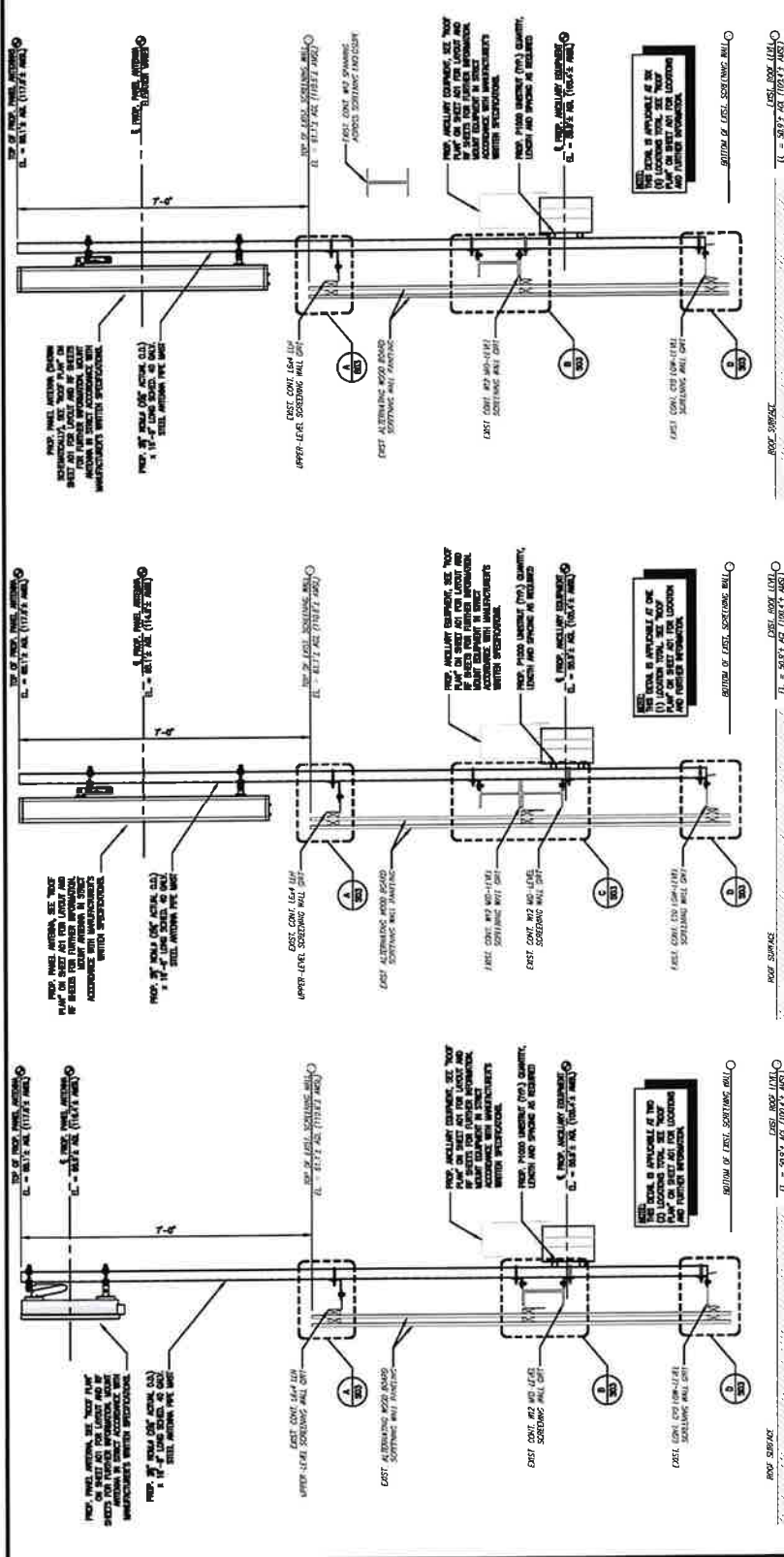
PROJECT NAME: EAST HARTFORD 8 CT

PROJECT ADDRESS: 830 ROBERTS STREET EAST HARTFORD, CT 06108

DRAWING TITLE: ANTENNA MOUNTING DETAILS

DRAWING NO.: S03

DATE	BY	CHKD BY	APP'D BY	PROJECT
2/29/24	RJC	RJC	RJC	830 ROBERTS STREET EAST HARTFORD, CT 06108



verizon

ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
 100 ...
 P.O. BOX ...
 MADEIRA HILLS, MA 01752
 (508) 481-7400
 www.chappelleng.com

SCALE:

ENGINEER/AND SURVEYOR _____ **DATE** _____

DRIVING TITLE _____

REVISIONS

NO.	DESCRIPTION	DATE
1	ISSUED FOR PER REVIEW	2/28/24
2	ISSUED FOR CONSTRUCTION (FINAL)	3/22/24

PROJECT NAME:
EAST HARTFORD 8 CT
HELO

PROJECT ADDRESS:
380 ROBERTS STREET
EAST HARTFORD, CT 06108

DRIVING TITLE:
ANTENNA DETAILS AND
ANCILLARY EQUIPMENT
SPECIFICATIONS

DRAWING NO.:
RF01



ITEM 11

SAMSUNG RE-4401-1A

(BAND 48 (3.5 GHz)) NR AJ RPH

DIMENSIONS: 15.47" x 15.47" x 12.67"

QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED



ITEM 10

SAMSUNG RE-1-BB04

PCS-AWS (1900/2100 MHz) REMOTE
RADIO HEAD UNIT

DIMENSIONS: 15.47" x 15.47" x 12.67"

QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED



ITEM 9

SAMSUNG RE-4401-1A

LTE-MR (700/850 MHz)
REMOTE RADIO HEAD UNIT

DIMENSIONS: 15.47" x 15.47" x 12.67"

QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED

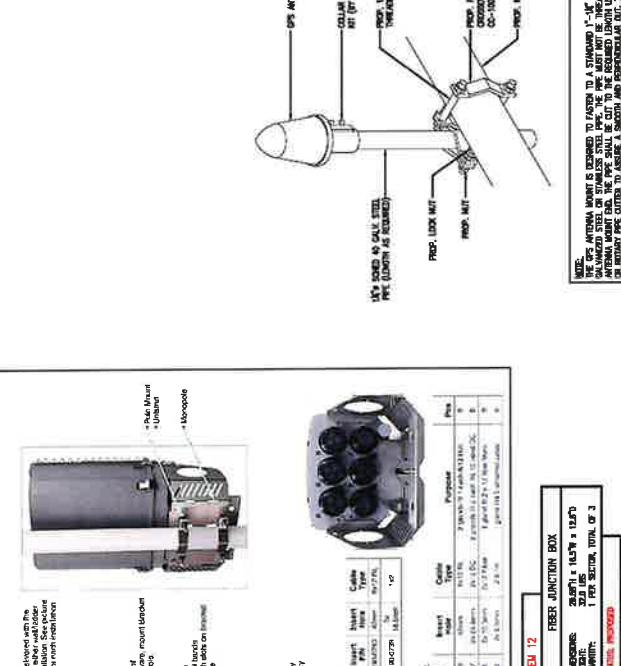
TYPICAL REMOTE RADIO HEAD (RRH) UNIT DIMENSIONS

SCALE: N.T.S.

ITEM 8

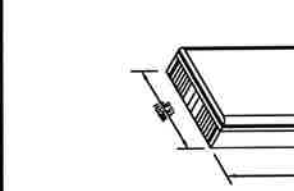
ITEM 7

ITEM 6



ITEM 5

ITEM 4



ITEM 3

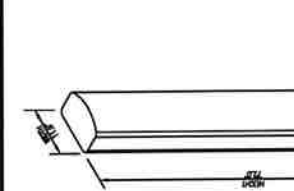
SAMSUNG MT6413-77A

MT6413-77A ANTENNA

DIMENSIONS: 28.47" x 15.47" x 12.67"

QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED



ITEM 2

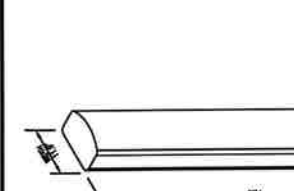
COMSCOPE MH-882-020A

LTE (700/850/900 MHz)
PANEL ANTENNA

DIMENSIONS: 72.47" x 11.97" x 7.17"

QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED



ITEM 1

COMSCOPE MH-882-020A

LTE (700/850/900 MHz)
PANEL ANTENNA

DIMENSIONS: 72.47" x 11.97" x 7.17"

QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED

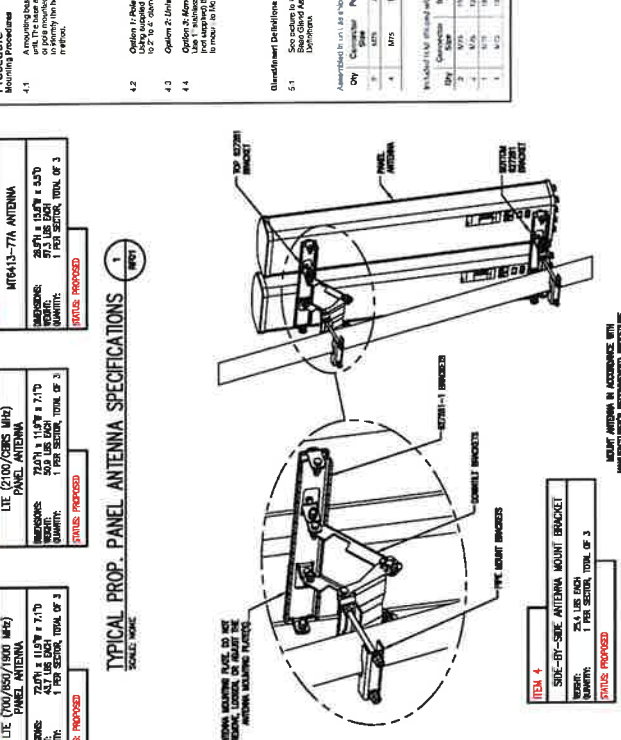
TYPICAL PROP. PANEL ANTENNA SPECIFICATIONS

SCALE: N.T.S.

ITEM 3

ITEM 2

ITEM 1



ITEM 5

ITEM 6

ITEM 7



ITEM 11

ITEM 10

ITEM 9



ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
 201 EXECUTIVE CENTER
 201 BOSWORTH ROAD WEST
 SUITE 10
 WASHINGTON, MA 01792
 (508) 481-7400
 www.chappell-engineering.com



ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR BIDDING	2/27/14
1	ISSUED FOR CONSTRUCTION (FINAL)	2/27/14

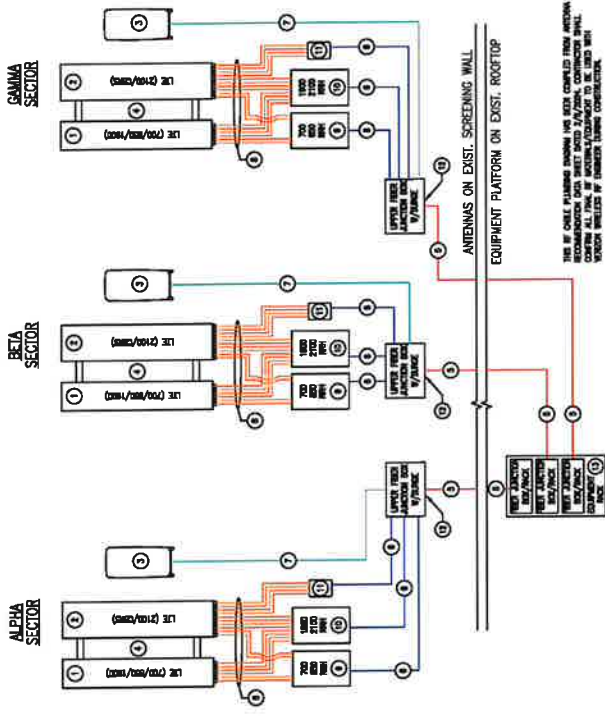
PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
 380 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
 RF BILL OF MATERIALS
 AND RF CABLE
 PLUMBING DIAGRAM

DRAWING NO.:
RF02

NOTES:
 1. APPROXIMATE OF ANTENNA HEIGHT, WIND LOAD (WIND), WIND DIRECTION, AND ALL INFORMATION REQUIRED FOR THE PLUMBING, SEE PROJECT ARCHITECT (ARCHITECT'S PLANS) AND CROSS REFERENCE WITH THE BILL OF MATERIALS FOR PROPOSED ANTENNA/EQUIPMENT PLACEMENT DETAIL.



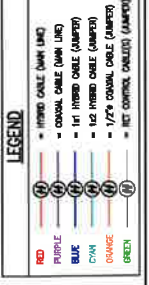
RF CABLE PLUMBING DIAGRAM (FINAL CONFIGURATION)

RF BILL OF MATERIALS (PROP. (FINAL CONFIGURATION))
 A = ALPHA SECTOR B = BETA SECTOR G = GAMMA SECTOR
 SITE NAME: EAST HARTFORD 8 CT RELO

ITEM (SEE PLAN)	DESCRIPTION	BAND	QTY	STATUS	CABLE LENGTH/UNIT SIZE	COMMENTS
1	HYBRID ANTENNA	700/800/900	2 TOTAL (A/B/G)	PROP.	72.0' x 11.0' x 11.0' (4.2' dia. each)	HEIGHT TO PROSP. 100 FT. (SEE 100' SIDE VIEW)
2	HYBRID ANTENNA	2100/2300	3 TOTAL (A/B/G)	PROP.	72.0' x 11.0' x 11.0' (4.2' dia. each)	HEIGHT TO PROSP. 100 FT. (SEE 100' SIDE VIEW)
3	HYBRID ANTENNA	3700-3900	3 TOTAL (A/B/G)	PROP.	72.0' x 11.0' x 11.0' (4.2' dia. each)	HEIGHT TO PROSP. 100 FT. (SEE 100' SIDE VIEW)
4	SEC. 48-SEC. ANTENNA MOUNT BR	-	3 TOTAL (A/B/G)	PROP.	36.0' dia. each	HEIGHT TO PROSP. 100 FT. (SEE 100' SIDE VIEW)
5	1/2" HYBRID BROAD COAXIAL CABLE (MM LMG)	-	3 TOTAL (A/B/G)	PROP.	48 FT. (A), 48 FT. (B), 48 FT. (G)	HEIGHT TO PROSP. 100 FT. (SEE 100' SIDE VIEW)
6	1/2" HYBRID BROAD COAXIAL CABLE (MM LMG)	-	8 TOTAL (A/B/G)	PROP.	20 FT. (A), 20 FT. (B), 20 FT. (G)	HEIGHT TO PROSP. 100 FT. (SEE 100' SIDE VIEW)
7	1/2" HYBRID BROAD COAXIAL CABLE (MM LMG)	-	8 TOTAL (A/B/G)	PROP.	20 FT. (A), 20 FT. (B), 20 FT. (G)	HEIGHT TO PROSP. 100 FT. (SEE 100' SIDE VIEW)
8	1/2" HYBRID BROAD COAXIAL CABLE (MM LMG)	-	8 TOTAL (A/B/G)	PROP.	20 FT. (A), 20 FT. (B), 20 FT. (G)	HEIGHT TO PROSP. 100 FT. (SEE 100' SIDE VIEW)
9	HYBRID BROAD BAND (MM LMG)	700/800	3 TOTAL (A/B/G)	PROP.	14.0' x 14.0' x 14.0' (1.4' dia. each)	HEIGHT TO PROSP. 100 FT. (SEE 100' SIDE VIEW)
10	HYBRID BROAD BAND (MM LMG)	1900/2100	3 TOTAL (A/B/G)	PROP.	14.0' x 14.0' x 14.0' (1.4' dia. each)	HEIGHT TO PROSP. 100 FT. (SEE 100' SIDE VIEW)
11	HYBRID BROAD BAND (MM LMG)	BAND @	3 TOTAL (A/B/G)	PROP.	14.0' x 14.0' x 14.0' (1.4' dia. each)	HEIGHT TO PROSP. 100 FT. (SEE 100' SIDE VIEW)
12	UPPER FIBER JUNCTION BOX WITH SLANG	-	3 TOTAL (A/B/G)	PROP.	14.0' x 14.0' x 14.0' (1.4' dia. each)	HEIGHT TO PROSP. 100 FT. (SEE 100' SIDE VIEW)
13	LOWER FIBER JUNCTION BOX/POCK	-	1 TOTAL (A/B/G)	PROP.	14.0' x 14.0' x 14.0' (1.4' dia. each)	EQUIPMENT CABINET/POCK INTERFACE

RF BILL OF MATERIALS (FINAL CONFIGURATION)

NOTES:
 1. ALL WIND LOADS AND WIND DIRECTION INFORMATION CONTAINED ON THIS SHEET IS FROM THE ARCHITECT'S PLANS.
 2. THE ORIGINAL CONTRACT SHALL GOVERN IN ALL DISPUTES.
 3. THIS BILL OF MATERIALS IS APPROXIMATE AND SUBJECT TO CHANGE WITHOUT NOTICE.
 4. APPROXIMATE ANTENNA HEIGHTS AND WIND LOADS ARE BASED ON THE ARCHITECT'S PLANS.
 5. THE CONTRACTOR SHALL VERIFY ALL INFORMATION AND MAKE NECESSARY ADJUSTMENTS TO THE BILL OF MATERIALS AS REQUIRED.





ARCHITECT/ENGINEER
CHAPPELL ENGINEERING ASSOCIATES, LLC
 201 BUSINESS CENTER ROAD WEST
 WALKERBOROUGH, MA 01732
 (508) 481-7400
 www.chappellengineering.com



ENGINEER/LAND SURVEYOR DATE
 DRAWING SCALE: NOTED
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NO.	DESCRIPTION	DATE
0	ISSUED FOR PERMITS	3/29/24
1	ISSUED FOR CONSTRUCTION (FINAL)	3/29/24

PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
**300 ROBERTS STREET
 EAST HARTFORD, CT 06108**

DRAWING TITLE:
RF COLOR CODE SPECIFICATIONS

DRAWING NO.:
RF03

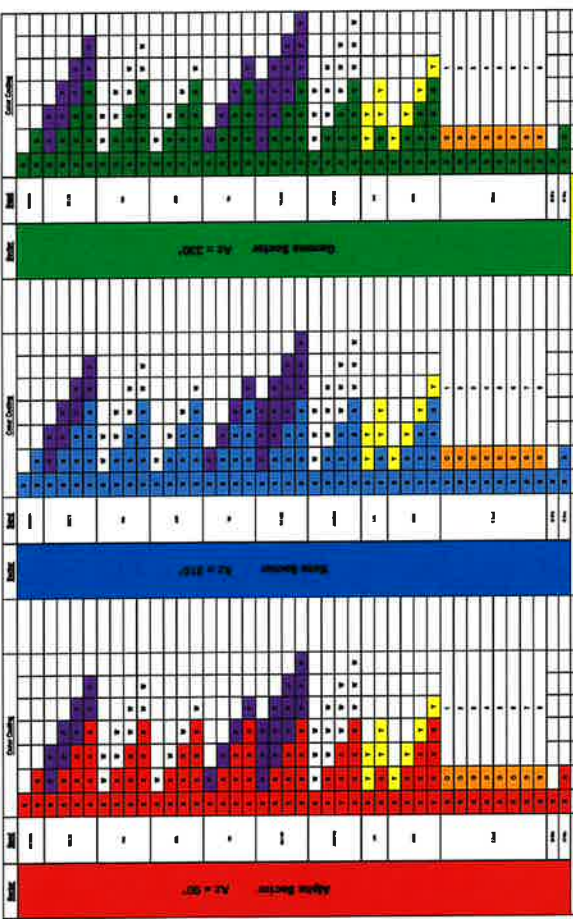
SCALE	DATE	BY	CHECKED	DATE
AS SHOWN	3/29/24	RF	RF	3/29/24

Hybrid Cable on Rooftops and Water tanks

Sector	Identification Color	-48V	RTN
700 Alpha	Blue	Blue	Blue
AWS Alpha	Purple	Purple	Purple
PCS Alpha	Green	Green	Green
850 Alpha	Brown	Brown	Brown
Spare	Yellow	Yellow	Yellow
Spare	White	White	White

Sector	Identification Color	-48V	RTN
700 Beta	Blue	Blue	Blue
AWS Beta	Purple	Purple	Purple
PCS Beta	Green	Green	Green
850 Beta	Brown	Brown	Brown
Spare	Yellow	Yellow	Yellow
Spare	White	White	White

Sector	Identification Color	-48V	RTN
700 Gamma	Blue	Blue	Blue
AWS Gamma	Purple	Purple	Purple
PCS Gamma	Green	Green	Green
850 Gamma	Brown	Brown	Brown
Spare	Yellow	Yellow	Yellow
Spare	White	White	White



Alpha Sector (N2 = 90')
 CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN FEET. PROVIDE ADEQUATE LENGTH, ANY FIELD ENCOURAGED IN AN EFFORT TO REDUCE SLACK AND TO COMPENSATE FOR CABLE FIELD LOSS DURING THE INSTALLATION OF THE SIGNAL CONTROLLER.

PROPOSED
 45 ±
 (ONE (1) PROP. 6x12 HYBRID SIGNAL CABLE)

Beta Sector (N2 = 230')
 CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN FEET. PROVIDE ADEQUATE LENGTH, ANY FIELD ENCOURAGED IN AN EFFORT TO REDUCE SLACK AND TO COMPENSATE FOR CABLE FIELD LOSS DURING THE INSTALLATION OF THE SIGNAL CONTROLLER.

PROPOSED
 85 ±
 (ONE (1) PROP. 6x12 HYBRID SIGNAL CABLE)

Gamma Sector (N2 = 230')
 CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN FEET. PROVIDE ADEQUATE LENGTH, ANY FIELD ENCOURAGED IN AN EFFORT TO REDUCE SLACK AND TO COMPENSATE FOR CABLE FIELD LOSS DURING THE INSTALLATION OF THE SIGNAL CONTROLLER.

PROPOSED
 60 ±
 (ONE (1) PROP. 6x12 HYBRID SIGNAL CABLE)

CLIENT:



ARCHITECT/ENGINEER:

CHAPPELL ENGINEERING ASSOCIATES, LLC
Collaborative Engineering Solutions

R.K. EXECUTIVE CENTRE
 201 BOGERT ROAD WEST
 SUITE 10
 WARE, RHODE ISLAND, 01792
 (508) 491-7400
 www.chappell-engineering.com

SCALE:



ENGINEER/LAND SURVEYOR

DATE

DRAWING SCALE: NONE

IF ANY PART OF THIS DRAWING IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT THE WRITTEN PERMISSION OF CHAPPELL ENGINEERING ASSOCIATES, LLC, IT IS HEREBY PROHIBITED. THIS DRAWING IS THE PROPERTY OF CHAPPELL ENGINEERING ASSOCIATES, LLC AND IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREON. ANY REUSE OR MODIFICATION OF THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF CHAPPELL ENGINEERING ASSOCIATES, LLC IS STRICTLY PROHIBITED. CHAPPELL ENGINEERING ASSOCIATES, LLC ACCEPTS NO LIABILITY FOR ANY DAMAGE, INCLUDING CONSEQUENTIAL DAMAGES, ARISING FROM THE USE OF THIS DRAWING. UNLESS THE AEC ACTS UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO EXCEED THE INTENTION.

REVISIONS		DATE
NO.	DESCRIPTION	
0	ISSUED FOR PER REVIEW	2/29/24
1	ISSUED FOR CONSTRUCTION (FINAL)	2/29/24

PROJECT NAME:
EAST HARTFORD 8 CT RELO

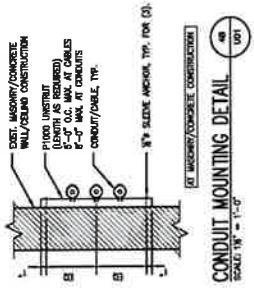
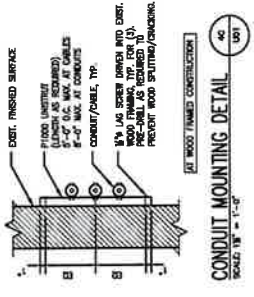
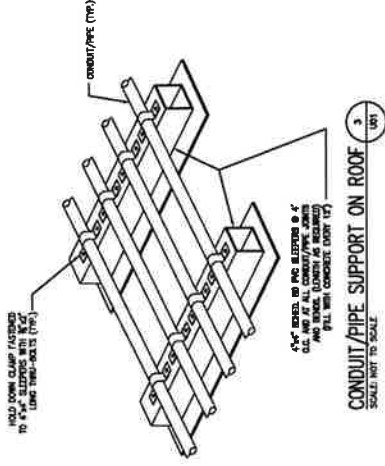
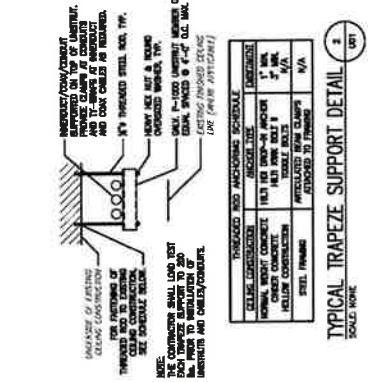
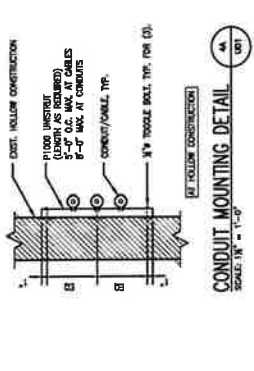
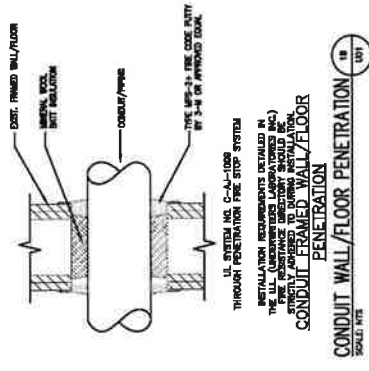
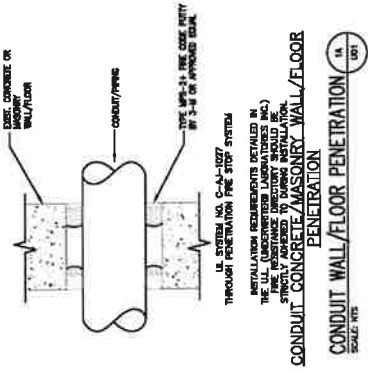
PROJECT ADDRESS:
 330 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
UTILITY CONDUIT/PIPE ROUTING DETAILS

DRAWING NO.:
U01

NO.	DATE	BY	CHKD BY	APP'D BY
0810-0411	2/29/24			

PROJECTS



CLIENT: verizon	ARCHITECT/ENGINEER: CHAPPELL ENGINEERING ASSOCIATES, LLC 201 BOSTON POST ROAD WEST WAMLBOROUGH, MA 01732 (508) 461-7400 www.chappellengineering.com	SCALE: 	ENGINEER/LAND SURVEYOR: _____ DATE: _____ TRAINING SCALE INDEX: THIS DRAWING IS THE PROPERTY OF CHAPPELL ENGINEERING ASSOCIATES, LLC. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREON. ANY REUSE OF THIS DRAWING FOR ANY OTHER PROJECT WITHOUT THE WRITTEN PERMISSION OF CHAPPELL ENGINEERING ASSOCIATES, LLC IS STRICTLY PROHIBITED. UNDER THE ACT AND UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO SIGN THIS DOCUMENT.
REVISIONS			
NO.	DESCRIPTION	DATE	
0	ISSUED FOR BIDDING	2/28/24	
1	ISSUED FOR CONSTRUCTION (FINAL)	2/28/24	

PROJECT NAME: EAST HARTFORD 8 CT RELO	PROJECT ADDRESS: 580 ROBERTS STREET EAST HARTFORD, CT 06108	DRAWING TITLE: ELECTRICAL SPECIFICATIONS AND NOTES	DRAWING NO.: E01
ABBREVIATIONS			
AWG	AMERICAN WIRE GAUGE	CON	CONDUIT
AWG	AWG COPPER WIRE	CS	CABLE TRAY
CS	GLOBAL POSITIONING SYSTEM	CS	CONCRETE
PCS	POSITIONING COMMUNICATION SYSTEM	CS	CONCRETE
INT	INTERCOM	CS	CONCRETE
TR	TYPICAL	CS	CONCRETE
RS	ROCK DIMENSIONED STEEL	CS	CONCRETE
DET	ELECTRICAL METALLIC TUBING	CS	CONCRETE
DWG	DRAWING	CS	CONCRETE
DET	INTERIOR DRAINAGE PIANO (I.D.P.)	CS	CONCRETE
CON	CONDUIT	CS	CONCRETE
OR	OR	CS	CONCRETE
CODE	CODE GROUP FOR LISTING	CS	CONCRETE
CODE	CODE GROUPED BEHIND THE EXTERNAL	CS	CONCRETE
WDR	WATER DRAINAGE MAT	CS	CONCRETE
PVC	PIPE (SCHED 40) POLYVINYL CHLORIDE CONDUIT	CS	CONCRETE
EDH	EXTERIOR DRINK MAT	CS	CONCRETE

LEGEND

ELECTRICAL SYMBOLS

NOTES:

1. ALL EXTERIOR CONDUITS SHALL BE 1/2" AWG, 1/2" WIRE, TYPED COPPER, UNLESS OTHERWISE NOTED. MINIMUM BEND RADIUS SHALL BE 8X (R) BEND.

2. ALL CONDUITS TO INCLUDE DRINKING AND ALL LABEL TRAY JUNCTIONS SHALL BE 1/2" AWG, POLYMER DRINKING COPPER WIRE.

3. ALL WIRE-DRAWN CONDUITS SHALL BE TYPED-COPPER, 1/2" CONDUIT (TYPED 1/2" AWG). CONDUITS SHALL BE 1/2" AWG, TYPED COPPER. ALL OTHER CONDUITS TO BE TYPED, UNLESS OTHERWISE NOTED.

4. MECHANICALLY JOINED INTERIOR CONDUITS WITH 1/2" AWG, WIRE, TYPED COPPER.

5. CONDUIT SHALL BE TYPED COPPER, UNLESS OTHERWISE NOTED. CONDUITS TO BE TYPED, UNLESS OTHERWISE NOTED.

6. CONDUIT SHALL BE TYPED COPPER, UNLESS OTHERWISE NOTED. CONDUITS TO BE TYPED, UNLESS OTHERWISE NOTED.

7. CONDUIT TO INCLUDE DRINKING BEHIND THE EXTERNAL.

8. CONDUIT TO INCLUDE DRINKING BEHIND THE EXTERNAL.

GROUNDING - GENERAL NOTES

1. ALL EXTERIOR CONDUITS SHALL BE 1/2" AWG, 1/2" WIRE, TYPED COPPER, UNLESS OTHERWISE NOTED. MINIMUM BEND RADIUS SHALL BE 8X (R) BEND.

2. ALL CONDUITS TO INCLUDE DRINKING AND ALL LABEL TRAY JUNCTIONS SHALL BE 1/2" AWG, POLYMER DRINKING COPPER WIRE.

3. ALL WIRE-DRAWN CONDUITS SHALL BE TYPED-COPPER, 1/2" CONDUIT (TYPED 1/2" AWG). CONDUITS SHALL BE 1/2" AWG, TYPED COPPER. ALL OTHER CONDUITS TO BE TYPED, UNLESS OTHERWISE NOTED.

4. MECHANICALLY JOINED INTERIOR CONDUITS WITH 1/2" AWG, WIRE, TYPED COPPER.

5. CONDUIT SHALL BE TYPED COPPER, UNLESS OTHERWISE NOTED. CONDUITS TO BE TYPED, UNLESS OTHERWISE NOTED.

6. CONDUIT SHALL BE TYPED COPPER, UNLESS OTHERWISE NOTED. CONDUITS TO BE TYPED, UNLESS OTHERWISE NOTED.

7. CONDUIT TO INCLUDE DRINKING BEHIND THE EXTERNAL.

8. CONDUIT TO INCLUDE DRINKING BEHIND THE EXTERNAL.

ELECTRICAL SPECIFICATIONS

1. PERFORM ALL WORK, MATERIALS, EQUIPMENT, TOOLS AND INSTRUMENTS REQUIRED TO MAKE READY FOR USE, THE COMPLETE ELECTRICAL, INCLUDING BIDDING OF THE CONTRACTOR, WIRE, ALL NECESSARY CONNECTIONS AT "INSTANT" EQUIPMENT.

2. ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF ALL NATIONAL, STATE AND LOCAL ELECTRICAL CODES (NEC, NFPA 70, IBC, etc.) AND ALL APPLICABLE REGULATIONS AND ORDINANCES. ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

3. THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20) SHALL BE THE GOVERNING ELECTRICAL CODE.

4. THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20) SHALL BE THE GOVERNING ELECTRICAL CODE.

5. THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20) SHALL BE THE GOVERNING ELECTRICAL CODE.

6. THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20) SHALL BE THE GOVERNING ELECTRICAL CODE.

7. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

8. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

9. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

10. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

11. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

12. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

13. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

14. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

15. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

16. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

17. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

18. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

19. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

20. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

21. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

22. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

23. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

24. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

25. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

26. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

27. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

28. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

29. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

30. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

31. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

32. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

33. UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL SAFETY CODE (NESC) (49 CFR 199.5 - 199.20).

AS SHOWN ON THESE DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL APPLICABLE AGENCIES AND AUTHORITIES HAVING JURISDICTION OVER THE PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL APPLICABLE AGENCIES AND AUTHORITIES HAVING JURISDICTION OVER THE PROJECT.



ENGINEER/AND SURVEYOR	DATE
MICHAEL J. CHAPPELL	3/28/24

NO.	REVISIONS	DATE
0	ISSUED FOR PER REVIEW	3/28/24
1	ISSUED FOR CONSTRUCTION (TYPICAL)	3/28/24

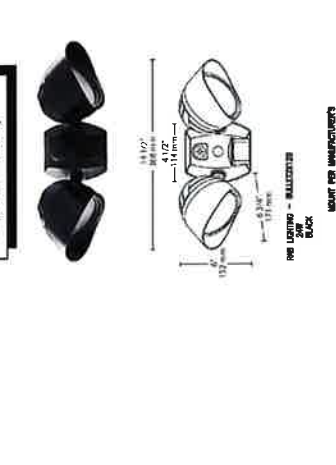
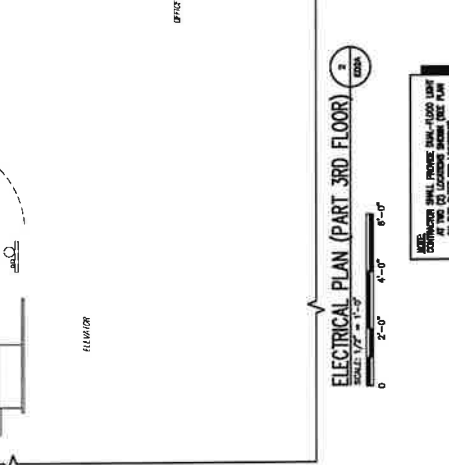
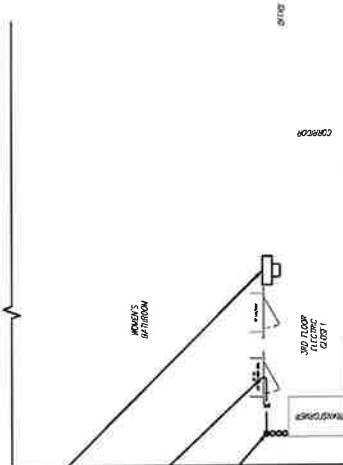
PROJECT NAME:
EAST HARTFORD 8 CT

PROJECT ADDRESS:
 830 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
**ELECTRICAL PLAN
 (ROOF AND PART 3RD
 FLOOR PLAN) AND
 ELECTRICAL DETAILS**

DRAWING NO.:
E02A

DATE	BY	FOR	DESCRIPTION
3/29/24	JM	JM	FOR REVIEW
3/29/24	JM	JM	FOR REVIEW



NOTES:

1. SEE THE USE DRAWING ON SHEET E01 FOR NUMBER CONSOLE SYMBOLS.
2. THE TOTAL WEIGHT OF THE EQUIPMENT SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR VERIFICATION.
3. ALL EQUIPMENT SHALL BE MOUNTED ON THE ROOF TO PREVENT WATER PENETRATION.

NOTES:

1. THE ROOF SHALL BE REINFORCED TO SUPPORT THE WEIGHT OF THE EQUIPMENT.
2. ALL EQUIPMENT SHALL BE PROTECTED FROM THE ELEMENTS OF WEATHER.
3. THE ROOF SHALL BE MAINTAINED CLEAR OF ALL DEBRIS.

NOTES:

1. THE LIGHT FIXTURES SHALL BE INSTALLED AT THE LOCATIONS SHOWN.
2. THE LIGHT FIXTURES SHALL BE PROTECTED FROM THE ELEMENTS OF WEATHER.
3. THE LIGHT FIXTURES SHALL BE MAINTAINED CLEAR OF ALL DEBRIS.

SCALE:

- 1" = 8'-0"
- 1" = 16'-0"
- 1" = 24'-0"



ARCHITECT/DRAWER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
 P.L.C. EXECUTIVE CENTER
 201 BOYLSTON STREET, SUITE 101
 WASHINGTON, MA 01782
 (508) 481-7400
 www.chappelleng.com



ENGINEER/LAND SURVEYOR _____ **DATE** _____
 DRAWING SCALE: NONE
 THIS DRAWING IS THE PROPERTY OF CHAPPELL ENGINEERING ASSOCIATES, LLC. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREIN. IT IS A VIOLATION OF LAW FOR ANY PERSON, OTHER THAN THE ENGINEER OR SURVEYOR, TO REPRODUCE OR TRANSMIT THIS DOCUMENT IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF CHAPPELL ENGINEERING ASSOCIATES, LLC.

REVISIONS

NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMITS	2/29/24
2	ISSUED FOR CONSTRUCTION (P&I)	2/29/24

PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
 380 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
 ELECTRICAL PLAN
 (1ST FLOOR)
 AND ELECTRICAL DETAILS

DRAWING NO.:
E02B

DATE: 2/29/24
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 APPROVED BY: [Name]

ELECTRICAL PANEL SCHEDULE
 SCALE: N/A

NO.	DESCRIPTION	AMP	TYPE
1	RECEPT #1	20	F
2	RECEPT #2	20	F
3	RECEPT #3	20	F
4	RECEPT #4	20	F
5	RECEPT #5	20	F
6	RECEPT #6	20	F
7	RECEPT #7	20	F
8	RECEPT #8	20	F
9	RECEPT #9	20	F
10	RECEPT #10	20	F
11	RECEPT #11	20	F
12	RECEPT #12	20	F
13	RECEPT #13	20	F
14	RECEPT #14	20	F
15	RECEPT #15	20	F
16	RECEPT #16	20	F
17	RECEPT #17	20	F
18	RECEPT #18	20	F
19	RECEPT #19	20	F
20	RECEPT #20	20	F
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23	RECEPT #23	20	F
24	RECEPT #24	20	F
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28	RECEPT #28	20	F
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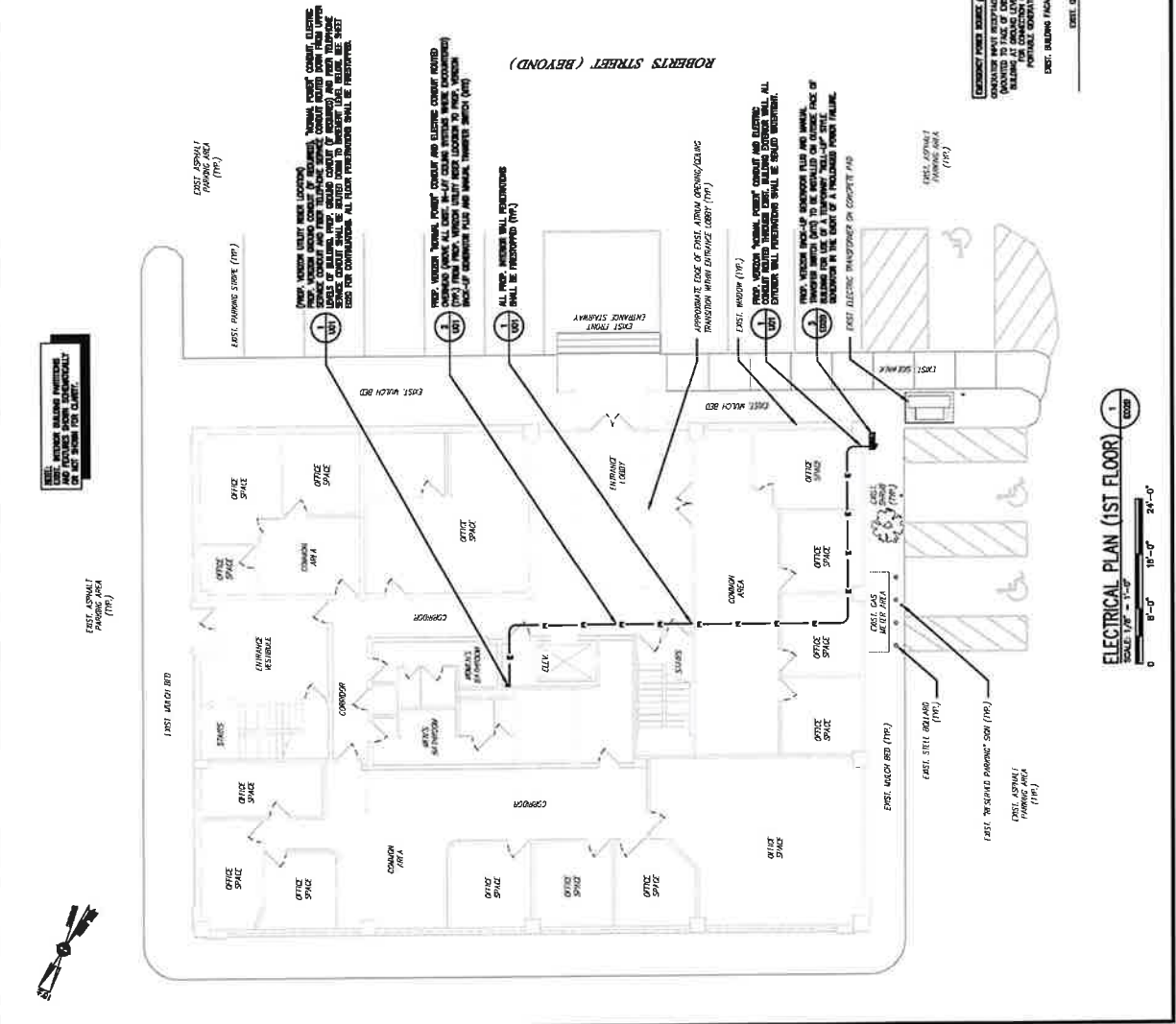
ELECTRICAL PANEL SCHEDULE
 SCALE: N/A

UTILITY CONTRACTS

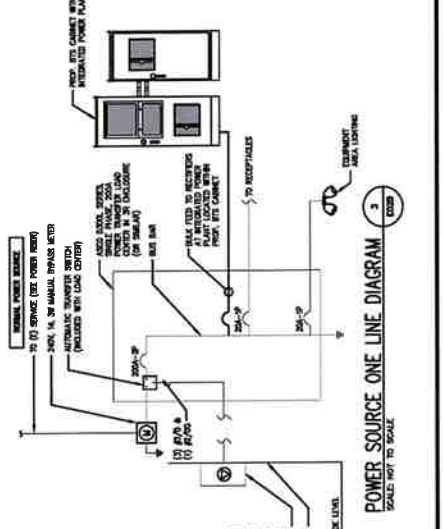
ELECTRICAL:
 CHAPPELL ENGINEERING ASSOCIATES, LLC
 201 BOYLSTON STREET, SUITE 101
 WASHINGTON, MA 01782
 (508) 481-7400

TELEPHONE:
 VERIZON
 100 FRENCH STREET
 WASHINGTON, MA 01782
 (508) 941-4800

NOTES:
 1) USE ONE LINE DRAWING ON BEST BID FOR FUTURE CONDUIT INSTALL.



ELECTRICAL PLAN (1ST FLOOR)
 SCALE: 1/8" = 1'-0"
 0 8'-0" 16'-0" 24'-0"



verizon

ARCHITECT/DRAWN BY:
CHAPPELL ENGINEERING ASSOCIATES, LLC
 P.O. EXECUTIVE CENTRE
 201 WASHINGTON STREET, SUITE 101
 WARRINGTON, MA 01732
 (508) 481-7400
 www.chapellengineering.com

SEAL:



ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE NOTE:
 THIS DRAWING SHALL BE ON A REDUCED SCALE TO THAT THE SCALE INDICATED AT THE BOTTOM OF THE SHEET. ANY SCALE OTHER THAN THAT INDICATED SHALL BE USED TO ENLARGE THIS DRAWING. THE ENGINEER'S RESPONSIBILITY IS LIMITED TO THE DESIGN OF THE ELECTRICAL SYSTEMS SHOWN ON THIS DRAWING AND DOES NOT INCLUDE THE DESIGN OF THE STRUCTURE OR MECHANICAL SYSTEMS TO BE CONSTRUCTED. THE ENGINEER'S DESIGN SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS. THE ENGINEER'S DESIGN SHALL BE SUBJECT TO THE APPROVAL OF A LICENSED PROFESSIONAL ENGINEER TO SIGN THIS DOCUMENT.

REVISIONS	
NO.	DATE
0	ISSUED FOR JOB REVIEW 3/26/14
1	ISSUED FOR CONSTRUCTION (FINAL) 3/26/14

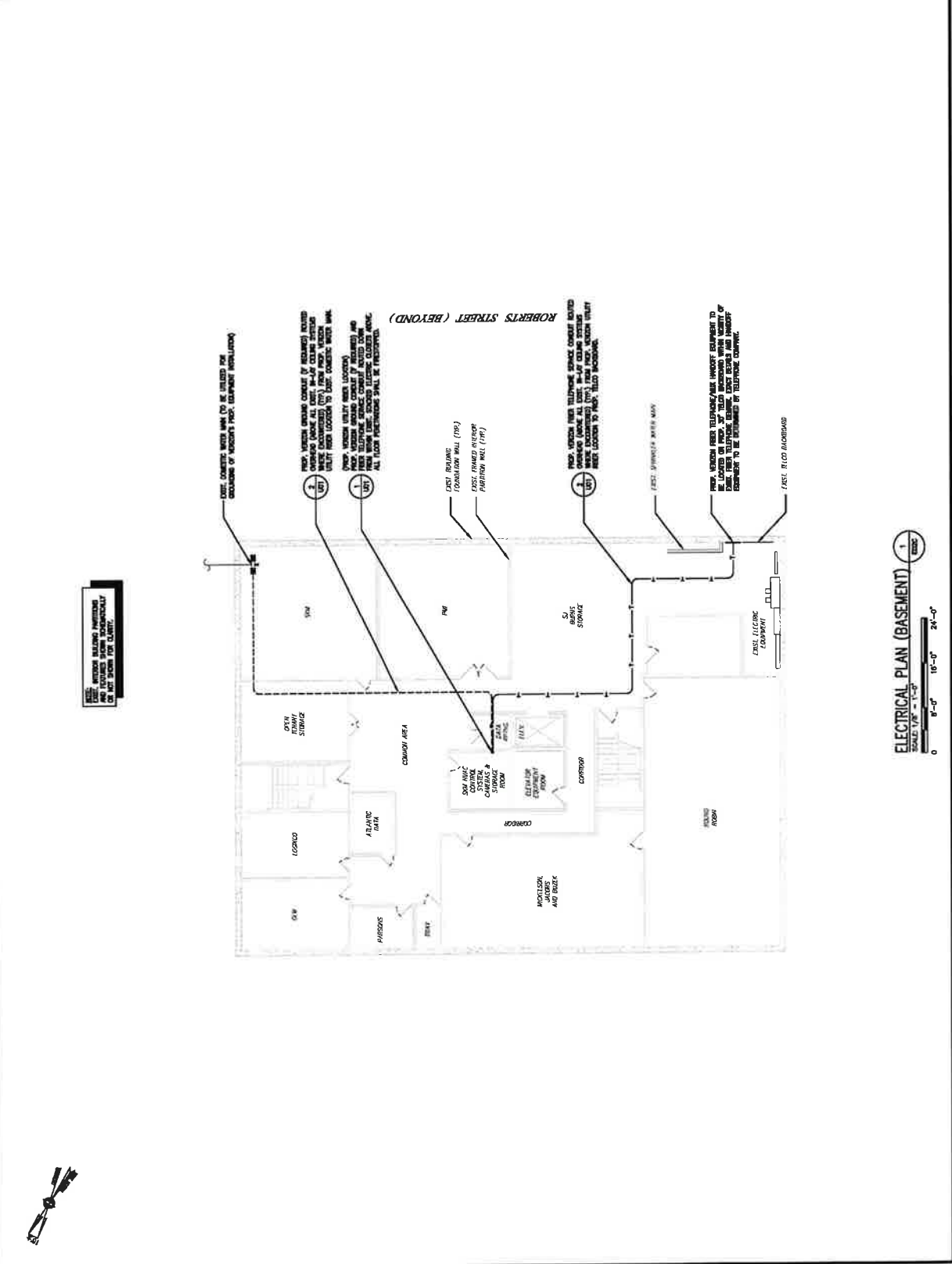
PROJECT NAME:
**EAST HARTFORD 8 CT
 RELO**

PROJECT ADDRESS:
 380 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
**ELECTRICAL PLAN
 (BASEMENT)**

DRAWING NO.
E02C

REVISIONS	
NO.	DATE
1	ISSUED FOR CONSTRUCTION (FINAL) 3/26/14



1. THESE CONDUIT NOTES SHALL BE USED FOR THE CONDUIT OF ALL CONDUIT INSTALLATION.

2. NEW VERTICAL CONDUIT (IF REQUIRED) SHALL BE INSTALLED IN ALL CASES TO THE TOP OF THE CONDUIT RACK. ALL CONDUIT SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AND THE MASSACHUSETTS REGULATORY COMMISSION (MERC).

3. NEW VERTICAL CONDUIT (IF REQUIRED) SHALL BE INSTALLED IN ALL CASES TO THE TOP OF THE CONDUIT RACK. ALL CONDUIT SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AND THE MASSACHUSETTS REGULATORY COMMISSION (MERC).

4. ALL CONDUIT SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AND THE MASSACHUSETTS REGULATORY COMMISSION (MERC).

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ALL DIMENSIONS UNLESS OTHERWISE NOTED ARE IN FEET AND INCHES. DIMENSIONS SHALL BE TO THE FACE UNLESS NOTED OTHERWISE.

ELECTRICAL PLAN (BASEMENT)

SCALE: 1/8" = 1'-0"

0 8'-0" 16'-0" 24'-0"

CLIENT:



ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
 201 BRIDGE STREET, SUITE 100
 HARTFORD, CONNECTICUT 06103
 (860) 481-7400
 www.chappell-engineering.com



ENGINEER/AND SURVEYOR DATE

ISSUING SCALE NOTE:
 THIS SCALE SHALL BE USED FOR ALL DIMENSIONS UNLESS OTHERWISE NOTED. THE SCALE SHALL BE USED FOR ALL DIMENSIONS UNLESS OTHERWISE NOTED. THE SCALE SHALL BE USED FOR ALL DIMENSIONS UNLESS OTHERWISE NOTED. THE SCALE SHALL BE USED FOR ALL DIMENSIONS UNLESS OTHERWISE NOTED.

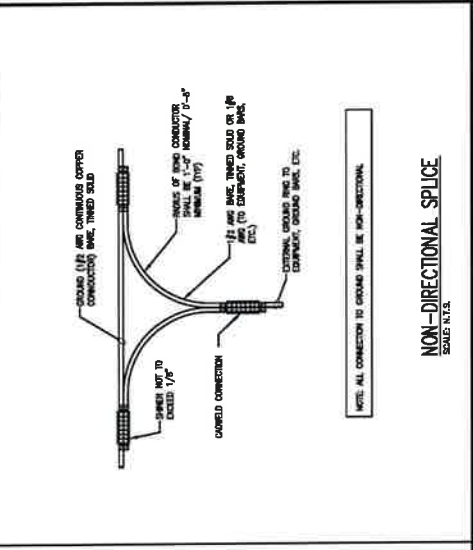
NO.	DESCRIPTION	DATE
0	ISSUED FOR PER REVIEW	2/29/24
1	ISSUED FOR CONSTRUCTION (FINAL)	2/29/24

PROJECT NAME:
EAST HARTFORD 8 CT
RELO
PROJECT ADDRESS:
 830 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
GROUNDING DETAILS

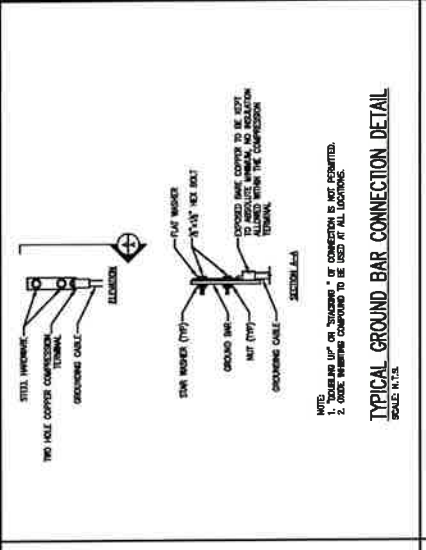
REVISIONS:
E05

NO.	DATE	BY	CHKD.	APPR.
1	2/29/24	JR	RS	RS



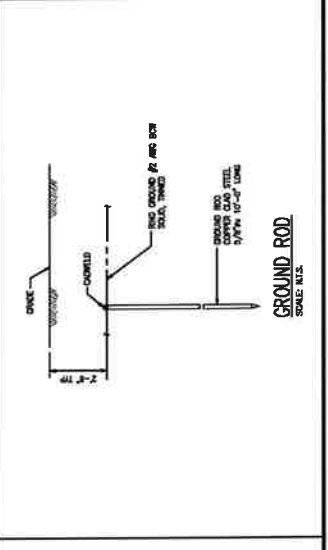
NON-DIRECTIONAL SPLICE
 SCALE: N.T.S.

NOTE: ALL CONNECTION TO GROUND SHALL BE NON-DIRECTIONAL.

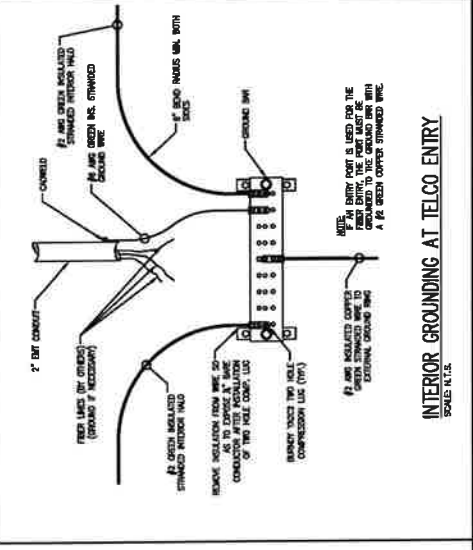


TYPICAL GROUND BAR CONNECTION DETAIL
 SCALE: N.T.S.

NOTE: 1. GROUNDING LUG OR 'WEDGES' TO BE CONNECTED IS NOT PERMITTED.
 2. WEDGE SHIFTERS COMPARED TO BE USED AT ALL LOCATIONS.

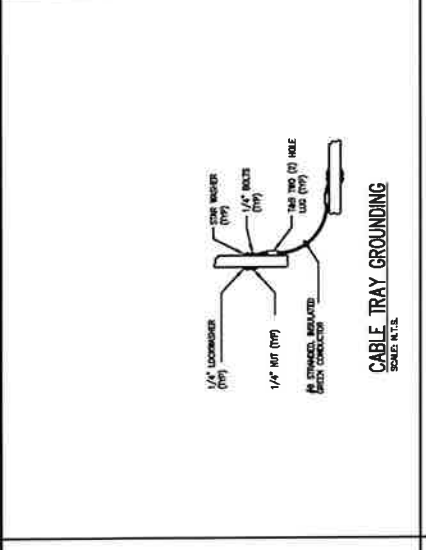


TYPICAL GROUND CONNECTION SPLICE DETAIL
 SCALE: N.T.S.

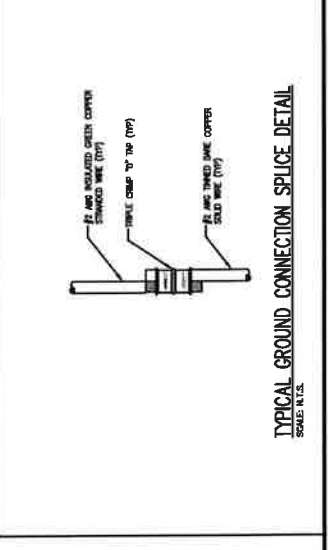


INTERIOR GROUNDING AT TELCO ENTRY
 SCALE: N.T.S.

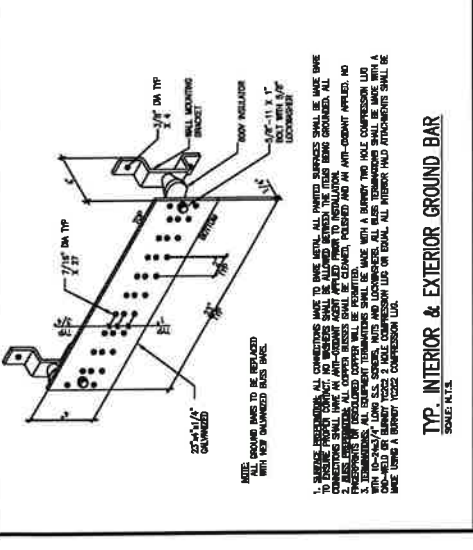
NOTE: IF AN ENTRY POINT IS USED FOR THE GROUNDING, THE ENTRY POINT SHALL BE USED TO THE GROUND BAR WITH A 1/2\"/>



CABLE TRAY GROUNDING
 SCALE: N.T.S.

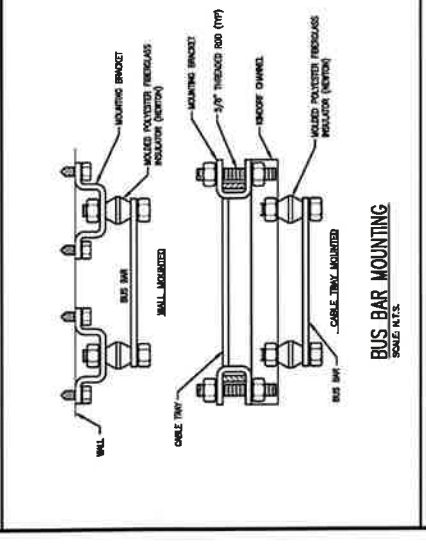


TYPICAL GROUND CONNECTION SPLICE DETAIL
 SCALE: N.T.S.

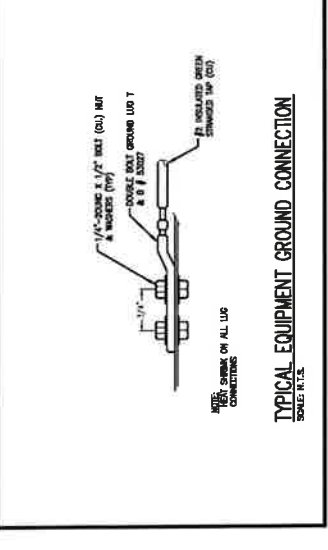


TYP. INTERIOR & EXTERIOR GROUND BAR
 SCALE: N.T.S.

1. ALL METAL COMPONENTS MADE TO HAVE METAL ALL PARTS SURFACES SHALL BE MADE WITH AN ANTI-OXIDANT ADHESIVE TO PREVENT CORROSION. ALL CONNECTIONS SHALL HAVE AN ANTI-OXIDANT ADHESIVE APPLIED TO ALL CONTACT SURFACES.
2. ALL SURFACES SHALL BE CLEANED, POLISHED AND AN ANTI-OXIDANT APPLIED. NO PAINT SHALL BE USED ON ANY SURFACE.
3. TERMINALS SHALL BE CLEANED AND POLISHED. ALL CONTACT SURFACES SHALL BE MADE WITH A BATTERY TWO HOLE COMPRESSION LUG OR A BATTERY TWO HOLE COMPRESSION LUG OR BATTERY TWO HOLE COMPRESSION LUG OR BATTERY TWO HOLE COMPRESSION LUG OR BATTERY TWO HOLE COMPRESSION LUG.



BUS BAR MOUNTING
 SCALE: N.T.S.



TYPICAL EQUIPMENT GROUND CONNECTION
 SCALE: N.T.S.

NOTE: ALL SINK ON ALL LUG CONNECTIONS

ATTACHMENT 3

NHH-65B-R2B



6-port sector antenna, 2x 698–896 and 4x 1695–2360 MHz, 65° HPBW, 2x RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package
- Internal SBT on low and high band allow remote RET control from the radio over the RF jumper cable
- Separate RS-485 RET input/output for low and high band
- One RET for low band and one RET for both high bands to ensure same tilt level for 4x Rx or 4x MIMO

General Specifications

Antenna Type	Sector
Band	Multiband
Color	Light gray
Grounding Type	RF connector body grounded to reflector and mounting bracket
Performance Note	Outdoor usage Wind loading figures are validated by wind tunnel measurements described in white paper WP-112534-EN
Radome Material	Fiberglass, UV resistant
Radiator Material	Low loss circuit board
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, low band	2
RF Connector Quantity, total	6

Remote Electrical Tilt (RET) Information

RET Interface	8-pin DIN Female 8-pin DIN Male
RET Interface, quantity	2 female 2 male
Input Voltage	10–30 Vdc
Internal Bias Tee	Port 1 Port 3
Internal RET	High band (1) Low band (1)
Power Consumption, idle state, maximum	2 W
Power Consumption, normal conditions, maximum	13 W

NHH-65B-R2B

Protocol 3GPP/AISG 2.0 (Single RET)

Dimensions

Width 301 mm | 11.85 in

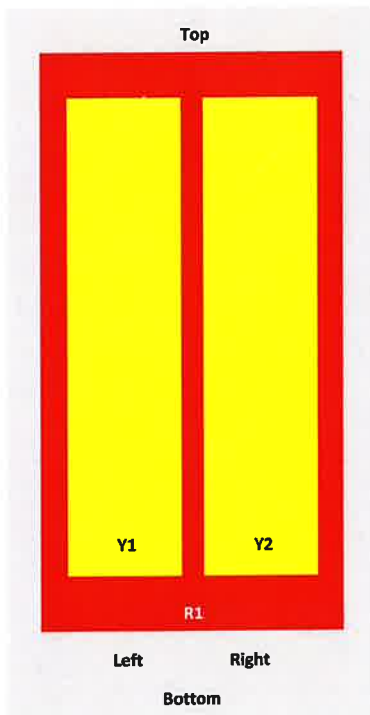
Depth 180 mm | 7.087 in

Length 1828 mm | 71.969 in

Net Weight, without mounting kit 19.8 kg | 43.651 lb

Array Layout

NHH



Array	Freq (MHz)	Combs	RET (SRFT)	AISG RET UID
R1	698-896	1-2	1	A#####1
Y1	1695-2360	3-4	2	A#####2
Y2	1695-2360	5-6		

View from the front of the antenna
(Sizes of colored boxes are not true depictions of array sizes)

Electrical Specifications

Impedance 50 ohm

Operating Frequency Band 1695 – 2360 MHz | 698 – 896 MHz

NHH-65B-R2B

Polarization	±45°
Total Input Power, maximum	900 W @ 50 °C

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.9	15	17.7	17.9	18.4	18.7
Beamwidth, Horizontal, degrees	65	60	71	69	64	57
Beamwidth, Vertical, degrees	12.4	11.2	5.7	5.2	4.9	4.6
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	0–7
USLS (First Lobe), dB	13	14	18	18	19	18
Front-to-Back Ratio at 180°, dB	30	29	31	30	29	31
Isolation, Cross Polarization, dB	25	25	25	25	25	25
Isolation, Inter-band, dB	30	30	30	30	30	30
VSWR Return loss, dB	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port at 50°C, maximum, watts	300	300	300	300	300	300

Electrical Specifications, BASTA

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.5	17.3	17.7	18.1	18.5
Gain by all Beam Tilts Tolerance, dB	±0.6	±1.1	±0.4	±0.4	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0° 14.4 7° 14.6 14° 14.3	0° 14.7 7° 14.7 14° 14.1	0° 17.2 4° 17.3 7° 17.3	0° 17.6 4° 17.7 7° 17.7	0° 18.0 4° 18.2 7° 18.1	0° 18.3 4° 18.5 7° 18.6
Beamwidth, Horizontal Tolerance, degrees	±2	±2.1	±3	±4.1	±6.5	±2.9
Beamwidth, Vertical Tolerance, degrees	±0.7	±0.7	±0.3	±0.2	±0.3	±0.2
USLS, beampeak to 20° above beampeak, dB	13	14	16	16	17	15
Front-to-Back Total Power at 180° ± 30°, dB	23	22	27	27	25	25
CPR at Boresight, dB	22	21	23	23	22	19

NHH-65B-R2B

CPR at Sector, dB 10 7 16 13 11 4

Mechanical Specifications

Effective Projective Area (EPA), frontal	0.26 m ² 2.799 ft ²
Effective Projective Area (EPA), lateral	0.22 m ² 2.368 ft ²
Wind Loading @ Velocity, frontal	278.0 N @ 150 km/h (62.5 lbf @ 150 km/h)
Wind Loading @ Velocity, lateral	230.0 N @ 150 km/h (51.7 lbf @ 150 km/h)
Wind Loading @ Velocity, maximum	537.0 N @ 150 km/h (120.7 lbf @ 150 km/h)
Wind Loading @ Velocity, rear	282.0 N @ 150 km/h (63.4 lbf @ 150 km/h)
Wind Speed, maximum	241 km/h 149.75 mph

Packaging and Weights

Width, packed	409 mm 16.102 in
Depth, packed	299 mm 11.772 in
Length, packed	1952 mm 76.85 in
Weight, gross	32.3 kg 71.209 lb

Regulatory Compliance/Certifications

Agency	Classification
CHINA-ROHS	Below maximum concentration value
ISO 9001:2015	Designed, manufactured and/or distributed under this quality management system
ROHS	Compliant



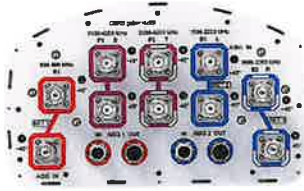
Included Products

- BSAMNT-3 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note Severe environmental conditions may degrade optimum performance

NHHSS-65B-R2BT4



10-port sector antenna, 2x 698–896, 4x 1695–2200 and 4x 3100–4200 MHz, 65° HPBW, 2x RETs and 2x SBTs. Both high bands share the same electrical tilt.

- Perfect antenna to add 3.5GHz CBRS to macro sites
- Low band and mid band performance mirrors the performance of existing NHH hex port antennas
- Interleaved dipole technology providing for attractive, low wind load mechanical package
- Internal SBT on low and high band allow remote RET control from the radio over the RF jumper cable
- One LB RET and one HB RET. Both high bands are controlled by one RET to ensure same tilt level for 4x MIMO

General Specifications

Antenna Type	Sector
Band	Multiband
Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Performance Note	Outdoor usage
Radome Material	Fiberglass, UV resistant
Radiator Material	Low loss circuit board
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, mid band	4
RF Connector Quantity, low band	2
RF Connector Quantity, total	10

Remote Electrical Tilt (RET) Information

RET Hardware	CommRET v2
RET Interface	4x 8 pin connector as per IEC 60130-9 Daisy chain in: Male / Daisy chain out: Female Pin3: RS485A(AISG_B), Pin5: RS485B(AISG_A), Pin6: DC 10~30V, Pin7: DC_Return

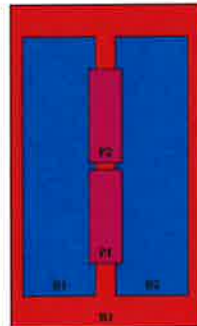
NHHSS-65B-R2BT4

RET Interface, quantity	2 female 2 male
Input Voltage	10–30 Vdc
Internal RET	High band (1) Low band (1)
Power Consumption, active state, maximum	10 W
Power Consumption, idle state, maximum	2 W
Protocol	3GPP/AISG 2.0 (Single RET)

Dimensions

Width	301 mm 11.85 in
Depth	181 mm 7.126 in
Length	1828 mm 71.969 in
Net Weight, without mounting kit	23.1 kg 50.927 lb

Array Layout

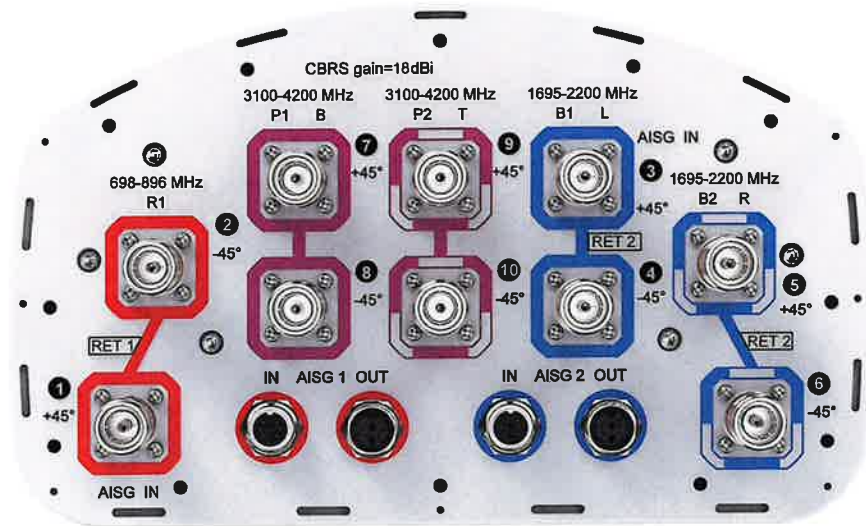


Array ID	Frequency (MHz)	RF Connector	RET (S&BT)	AISG No.	AISG RET UID
R1	698-896	1 - 2	1	AISG1	CPxxxxxxxxxxxxxxxxR1
B1	1695-2200	3 - 4	2	AISG2	CPxxxxxxxxxxxxxxxxB1
R2	1695-2200	5 - 6			
B2	3100-4200	7 - 8	N/A	NA	N/A
R3	3100-4200	9 - 10			

(Sizes of colored boxes are not true depictions of array sizes)

Port Configuration

NHHSS-65B-R2BT4



Electrical Specifications

Impedance	50 ohm
Operating Frequency Band	1695 – 2200 MHz 3100 – 4200 MHz 698 – 896 MHz
Polarization	±45°
Total Input Power, maximum	1,000 W @ 50 °C

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	3100–3550	3550–3700	3700–4200
Gain, dBi	14.8	15.2	17.4	17.8	18	17.7	17.3	17.9
Beamwidth, Horizontal, degrees	65	62	66	61	64	54	64	60
Beamwidth, Vertical, degrees	13	11.6	5.5	5.2	4.9	5.7	5.3	4.9
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	4	4	4
USLS (First Lobe), dB	15	15	16	18	18	16	17	18
Front-to-Back Ratio at 180°, dB	26	29	31	28	27	30	33	29
Isolation, Cross Polarization, dB	25	25	25	25	25	25	25	25
Isolation, Inter-band, dB	25	25	25	25	25	28	28	28
VSWR Return loss, dB	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-140	-140	-140

NHHSS-65B-R2BT4

Input Power per Port at 50°C, maximum, watts	300	300	300	300	300	100	100	100
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Electrical Specifications, BASTA

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	3100–3550	3550–3700	3700–4200
Gain by all Beam Tilts, average, dBi	14.6	14.8	17	17.5	17.7	17.3	17	17.2
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.4	±0.6	±0.3	±0.4	±0.6	±0.7	±0.8
Gain by Beam Tilt, average, dBi	0° 14.6 7° 14.6 14° 14.4	0° 15.0 7° 14.9 14° 14.5	0° 16.9 3° 17.0 7° 16.8	0° 17.4 3° 17.5 7° 17.4	0° 17.5 3° 17.8 7° 17.6			
Beamwidth, Horizontal Tolerance, degrees	±1.7	±1.3	±7.2	±3.1	±6.2	±10	±6.7	±10.5
Beamwidth, Vertical Tolerance, degrees	±0.8	±0.8	±0.2	±0.2	±0.4	±0.4	±0.3	±0.4
USLS, beampeak to 20° above beampeak, dB	18	16	14	15	17	14		
Front-to-Back Total Power at 180° ± 30°, dB	22	25	25	25	24	26	25	24
CPR at Boresight, dB	24	17	16	21	19	15	17	14
CPR at Sector, dB	12	6	11	10	8	8	9	7

Mechanical Specifications

Wind Loading @ Velocity, frontal	278.0 N @ 150 km/h (62.5 lbf @ 150 km/h)
Wind Loading @ Velocity, lateral	230.0 N @ 150 km/h (51.7 lbf @ 150 km/h)
Wind Loading @ Velocity, maximum	537.0 N @ 150 km/h (120.7 lbf @ 150 km/h)
Wind Loading @ Velocity, rear	287.0 N @ 150 km/h (64.5 lbf @ 150 km/h)
Wind Speed, maximum	241 km/h 149.75 mph

Packaging and Weights

Width, packed	1973 mm 77.677 in
Depth, packed	441 mm 17.362 in
Length, packed	337 mm 13.268 in
Weight, gross	35.1 kg 77.382 lb

Regulatory Compliance/Certifications

Agency	Classification
CHINA-ROHS	Above maximum concentration value

NHHSS-65B-R2BT4

ROHS

Compliant/Exempted



Included Products

BSAMNT-3

- Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note

Severe environmental conditions may degrade optimum performance

C-band 64T64R

Gen 2

SAMSUNG

Gen 2 : Higher conducted power ratio with reduced size/volume/weight vs Gen 1 and also SOC embedded for flexibility to support new features



* Preliminary Design: External appearance and mechanical design can be subject to change

Gen 2. 64T64R C-band MIMO Dimensions	
Size (WxHxD)	400 x 734 x 140 mm (15.75 x 28.90 x 5.51 inch)
Weight	26kg (57.3 lb)

Item	Gen 2 64T64R (MT6413-77A)
Air Technology	NR-n77/TDD
Frequency	3700 – 3980 MHz
IBW	200 MHz
OBW	200 MHz
Carrier Bandwidth	70MHz (ready)/40/60/80/100 MHz
# of Carriers	2 carriers
Layer	DL : 16L, UL : 16RX (8L)
RF Chain	64T64R
Antenna Configuration	4V16H with 192 AE
ERP	80.5 dBm @320W (55 dBm + 25.5 dB)
Conductive Power	320W
Spectrum Analyzer	TX/RX support
RX Sensitivity	Typical -97.8dBm @1TRx, -18.36MHz with 30kHz, 51RBG)
Modulation	DL 256QAM support, (DL 1024QAM with 1~2dB power back-off)
Function Split	DL/UL option 7-2x
Input Power	-48 VDC (-38 VDC to -57 VDC)
Power Consumption	1.287W (100% load, room temp.)
Size (WHD)	400 x 734 x 140 mm (15.75 x 28.90 x 5.51 inch)
Volume	41.1L
Weight	26kg (57.3 lb)
Operating Temperature	-40°C - 55°C (w/o solar load)
Cooling	Natural convection 3GPP 38.104
Unwanted Emission	FCC 47 CFR 27.53 : < -13dBm/MHz < -40 dBm/MHz @ above 4 GHz < -50 dBm /MHz @ 4,040 ~ 4,050 MHz < -60 dBm /MHz @ above 4,050 MHz
Optic Interface	15km, 4 ports (25Gbps x 4), SFP28, single mode, Bi-di (Option: Duplex)
Mounting Options	Pole, wall
NB-IoT	Not support
External Alarm	4RX
Fronthaul Interface	eCPRI

SAMSUNG

Dual-Band Radio Unit AWS/PCS (B66/B2) RFV01U-D1A

Samsung's RFV01U-D1A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.



The RFV01U-D1A RU targets dual-band support across Band 66 (AWS) and Band 2 (PCS), making it an ideal product for broad coverage footprints across multiple common mid-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation
- Built-in Broadcast Auxiliary Services (BAS) filter ensures compliant AWS operation without impacting footprint

Key Technical Specifications

Duplex Type: FDD
Operating Frequencies:
B66: DL(2,110-2,180MHz)/UL(1,710-1,780MHz)
B2: DL(1,930-1,990MHz)/UL(1,850-1,910MHz)
Instantaneous Bandwidth:
70MHz(B66) + 60MHz(B2)
RF Chain: 4T4R/2T4R/2T2R
Output Power: Total 320W
DU-RU Interface: CPRI (10Gbps)
Dimensions: 380 x 380 x 255mm (36.8L)
Weight: 38.3kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

700/850 4T4R Macro 320W ORU - New Filter (RF4461d-13A)

SAMSUNG

Specifications



Item	Specification
Air Interface Band	LTE, NR(HW resource ready) Band5 (850MHz) DL: 869~894MHz UL: 824~849MHz 25MHz 25MHz
Frequency	Band13 (700MHz) DL: 746~756MHz UL: 777~787MHz
IBW	10MHz
OBW	10MHz
Carrier Bandwidth	LTE/NR 5*/10MHz
# of carriers	2C*
Total # of carriers	4C + B13 (SDL) 1C 4T4R/2T4R/2T2R/1T2R 2T2R~2T2R bi-sector Total : 320W
RF Chain	4 x 40W or 2 x 60W
RF Output Power	4 x 40W or 2 x 60W
Spectrum Analyzer	TX/RX Support
RX Sensitivity	Typ. -104.5dBm @1Rx (25RBs 5MHz)
Modulation	256QAM support, 1024QAM with 1~2dB power back-off
Input Power	-48VDC (-38VDC to -57VDC)
Power Consumption	1,185 Watt @ 100% RF load, room temperature
Size (WHD)	380 x 380 x 260 mm (14.96 x 14.96 x 10.23 inch)
Volume	37.5 L
Weight (W/o Solar Shield & finger guard)	35.9 kg (79.1 lb)
Operating Temperature	-40°C (-40°F) ~ 55°C (131°F) (Without solar load)
Cooling	Natural convection
Unwanted Emission	3GPP 36.104 FCC 47 CFR 27.53 c), f)
CPRI Cascade	Not supported
Optic Interface	20km, 2 ports (9.8Gbps x 2), SFP+, single mode, Duplex (Option: Bi-d)
RET & TMA Interface	AISG 3.0
Bias-T	4 ports (2 ports per band)
Mounting Options	Pole, wall
NB-IoT	25A+2G8 or 2GB+2IB or 4GB
PIM Cancellation	Support
# of antenna port	4
External Alarm	4
Fronthaul Interface	Opt. 8 CPRI / Opt. 7~2x selectable (not simultaneous support)
CPRI compression	Not Support

* 5MHz supporting in B13(700MHz) depends on 3Gpp std. and UE capability.
External filters in interferer and victim sides for Mexican boarder to support 5MHz service need to be considered
** Finger guard is not needed

SAMSUNG

Samsung Micro Radio

CBRS(N48) 4T4R Micro Radio

Samsung's CBRS 4T4R Micro Radio provides mobile operators with a cost-effective solution to fill coverage gaps encountered when Macro Radios are in use.

Model Code RT4423-48A(DC)
RT4423-48B(AC)



Homepage
[samsungnetworks.com](https://www.samsungnetworks.com)

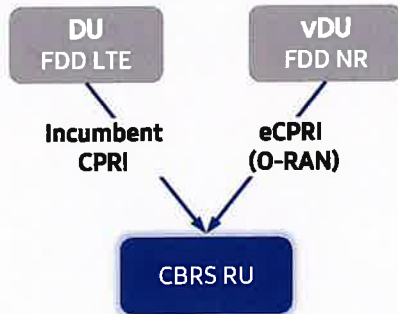


Youtube
www.youtube.com/samsung5g

Points of Differentiation

Dual Personality

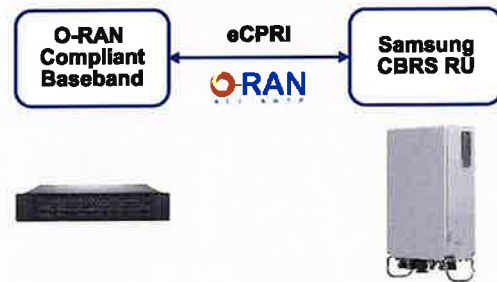
The new CBRS Radio supports existing CPRI and advanced eCPRI interfaces providing installation options for both legacy LTE and NR network equipment.



O-RAN Compliant

A standardized O-RAN radio supports implementing cost-effective networks capable of enhanced data throughput without compromising existing or new network investments.

Samsung O-RAN products ensure state-of-the-art O-RAN technology will accelerate efforts for creating solid O-RAN ecosystems.



High Capacity

The number of carriers required varies according to site(region). Supporting multiple carriers is essential to customers as they seek to utilize all frequencies available to them.

The new CBRS radio can support up to 5 carriers which is an increase of 3 carriers over the capacity of the previous CBRS product.

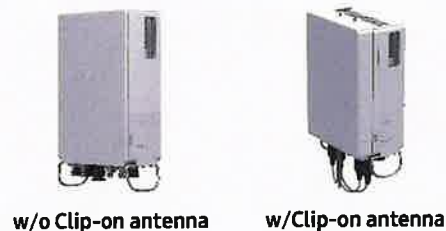


Compact and Easy Installation

New CBRS RU is compact in its design with a volume of 6L and weighing only about 7kg.

This compact design allows for various installation options including, tower, rooftop, pole, wall and shroud.

A clip on antenna is available providing flexibility to installation requirements.



Technical Specifications

Item	Specification
Tech	LTE / NR
Band	B48, n48 / TDD
Frequency Band	3,550 – 3,700 MHz
RF Power	20 W (5 W x 4 Ports)
IBW/OBW	150MHz / 100MHz
Installation	Pole, Wall, Side by side (max 3 radio)
Size/ Weight	<p>[Radio] w/o Clip-on antenna : 8.7 x 11.8 x 3.6 inch, 5.97L, 7kg w/ Clip-on antenna : 8.7 x 11.8 x 5.0 inch, 8.42L, 8.5kg *AC and DC type have same size and weight</p> <p>[Bracket Weight] Tilting & Swivel (EP97-02038A) : 2.51kg Fixed (EP97-02037A) : 1.31kg Side by side (EP97-02089A) : 8.0kg</p>

ATTACHMENT 4

verizon^v

20 Alexander Drive, 2nd Floor
Wallingford, CT 06492

STRUCTURAL ANALYSIS
EAST HARTFORD 8 CT RELO



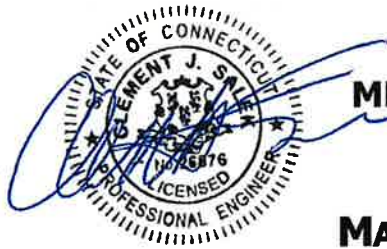
Address:

330 ROBERTS STREET
EAST HARTFORD, CT 06108

MDG LOCATION ID: 5000924924

Date:

MARCH 25, 2024 (REVISION 1)



March 25, 2024

verizon[✓]
20 Alexander Drive, 2nd Floor
Wallingford, CT 06492

RE:

Support Structure Structural Analysis

Verizon Site Name: East Hartford 8 CT RELO (MDG Location ID: 5000924924)

Site Address: 330 Roberts Street, East Hartford, CT 06108

CEA Job Number: 96210.431

To whom it may concern:



Chappell Engineering Associates, LLC has performed a structural analysis of the proposed elevated steel rooftop frame at the above-referenced location. Our analysis has been performed in accordance with the 2022 Connecticut State Building Code (2021 International Building Code) with Connecticut Amendments. Verizon proposes to install a 14ft+/- x 24ft+/- (336+/- S.F.) elevated steel frame to support one (1) BTS radio cabinet, one (1) BBU battery back-up cabinet and associated utility equipment. The proposed steel equipment frame will be secured to the existing main structural roof framing beams spaced at 24ft o.c.

The existing roof framing consists of roof beams spaced at approximately 24ft on-center, with open web joists spaced at 4ft o.c. framing back to the main roof structural steel. Roof decking is laid over the main roof beams. A rubber membrane roof is laid over the rigid roof insulation and the steel roof deck support. We have modeled the existing roof framing in the vicinity of the proposed Verizon equipment frame to determine the suitability of the existing roof framing to support the proposed equipment.

Based upon our site walks on 6-1-2023 and 6-15-2023, our investigation of the existing roof support beams, our review of the proposed loads, and our evaluation of the existing roof framing, Chappell Engineering Associates, LLC has determined that the existing roof framing steel **has adequate capacity** to support the proposed Verizon antenna and associated ancillary equipment loads as shown on the attached drawings. As currently configured, the existing roof framing is rated at 56%, and the Verizon framing is rated at 43% capacity.

If you have any questions regarding this matter, please do not hesitate to call.

Very truly yours,



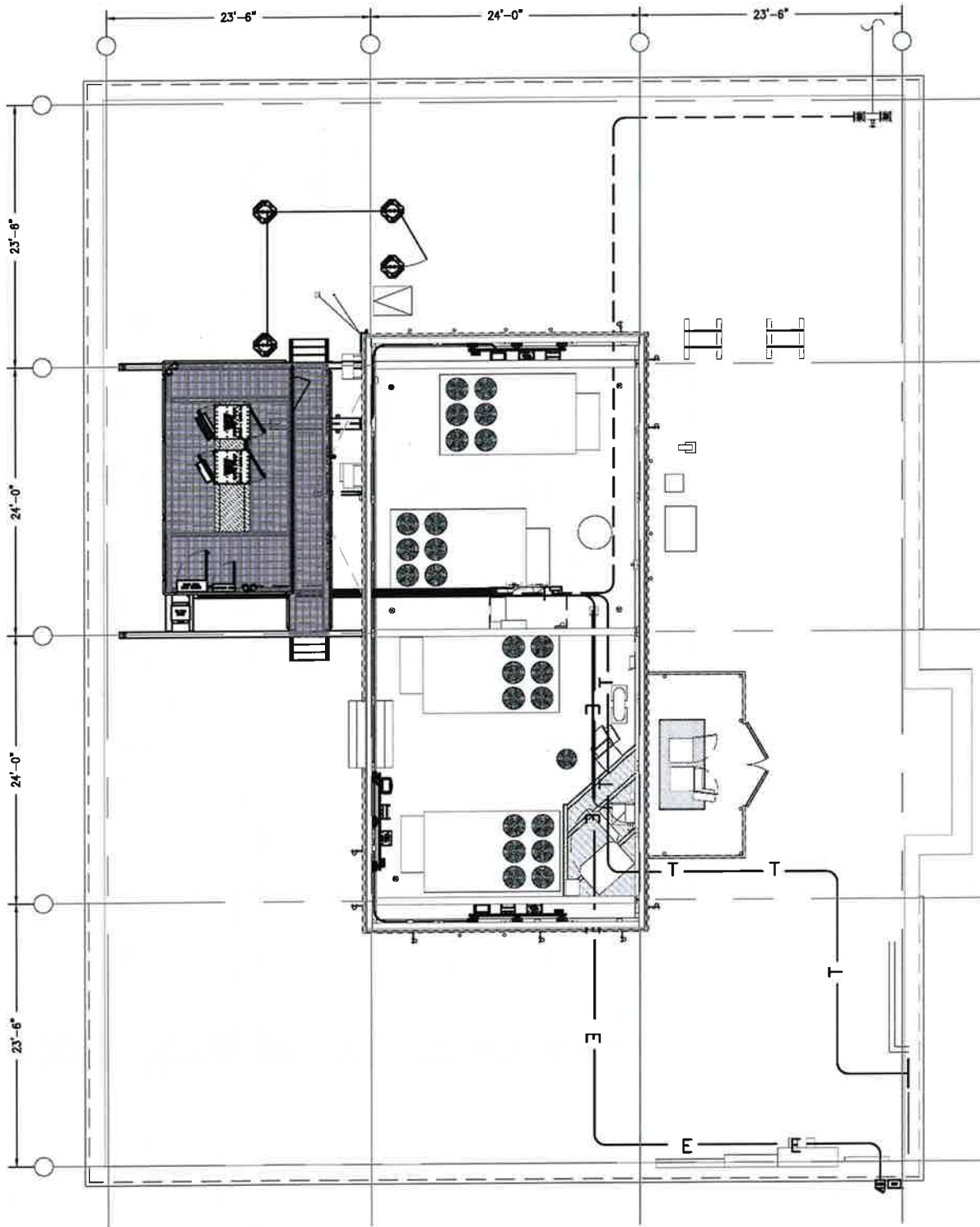
Clement J. Salek, P.E.
Chappell Engineering Associates, LLC
CJS/cjs







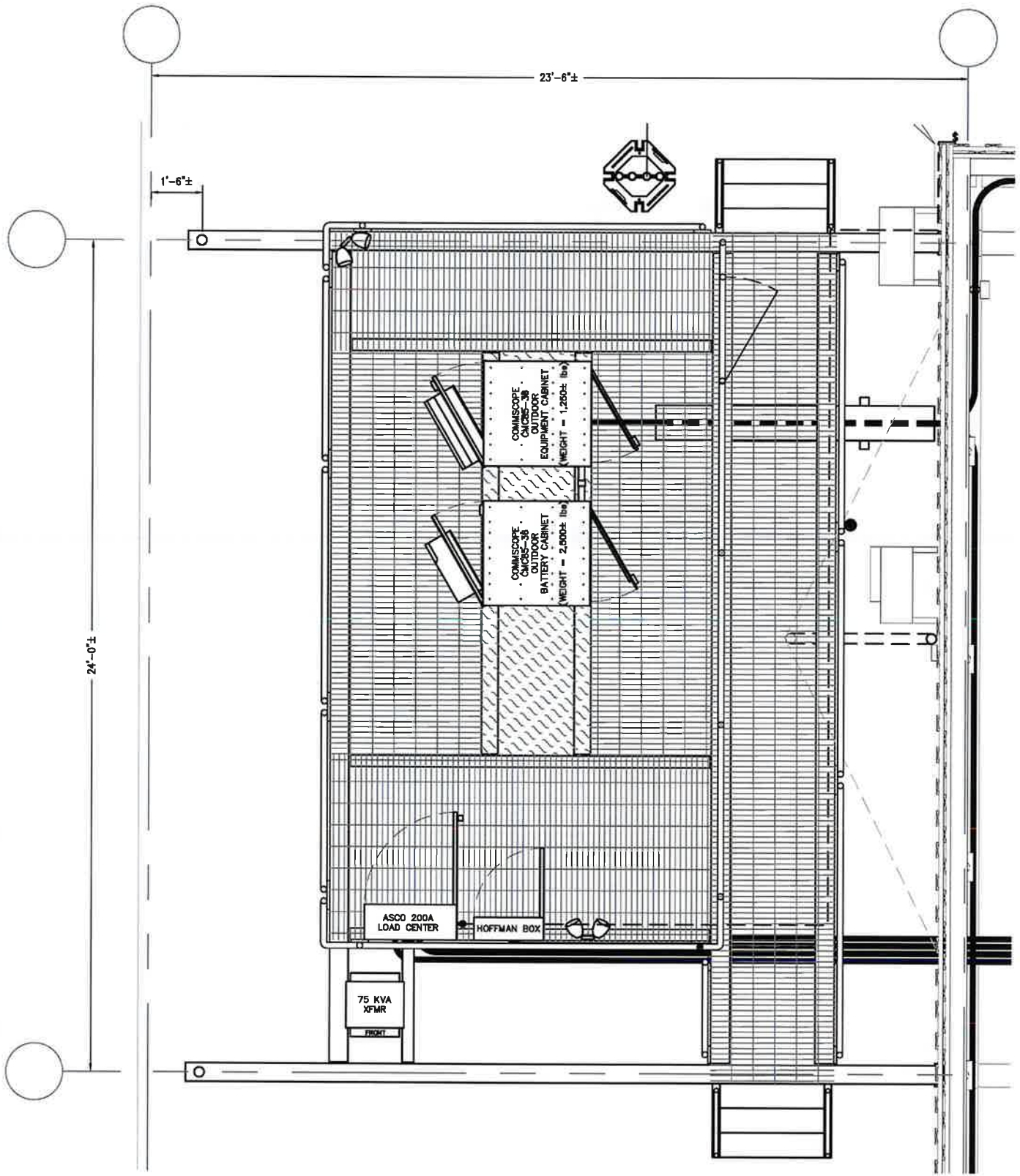




ROOF PLAN

SCALE: N.T.S.

1
SDC

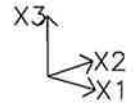


PARTIAL ROOF PLAN

SCALE: 1/8" = 1'-0"

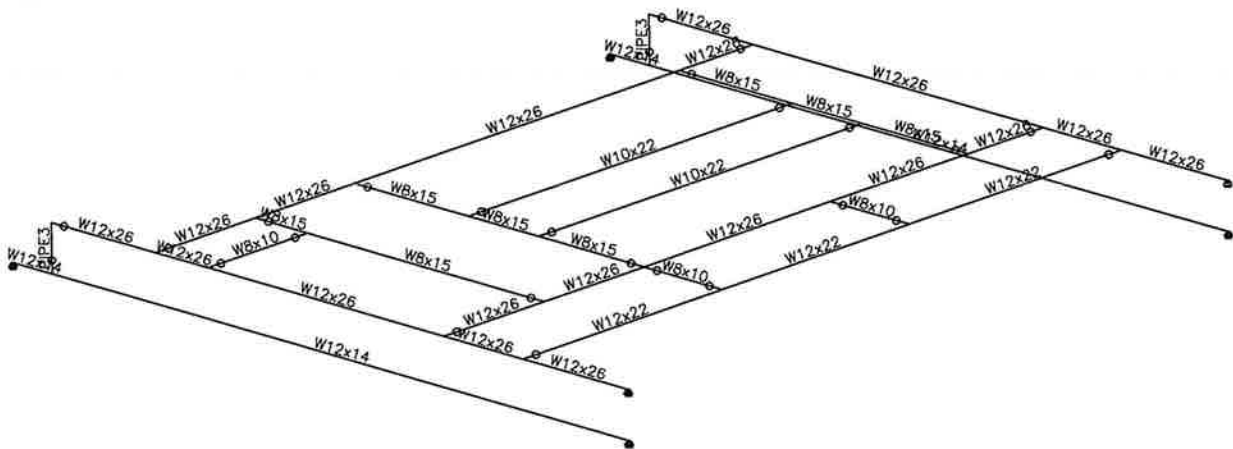
2
 SDC

Appendix A – Structural Analysis



SCALE = 1:60

DATE: 3/12/24



Verizon East Hartford 8 96210.431

Prepared by:**Page:** 1
Date: 3/12/24
14:07**Load no. 1: Roof Dead Load (units - kips ft.)**

* GROUP NONE
/ BEAM LOADS
DIST GL FX3 -0.04 B 14 32 15 33
/ END

FORCE SUMMATION

FX1=0 kip
FX2=0 kip
FX3=-1.88 kip

Load no. 2: Roof Snow Load (units - kips ft.)

* GROUP NONE
/ BEAM LOADS
DIST GL FX3 -0.12 B 14 32 15 33
/ BEAM LOADS
DIST GL FX3 0. -0.2 XP 8.8 13.2 B 32 33
/ END

FORCE SUMMATION

FX1=0 kip
FX2=0 kip
FX3=-8.28 kip

Load no. 3: Existing Selfweight (units - kips ft.)

* GROUP NONE
/ BEAM LOADS
SELF X3 -1. B 1 TO 38
/ BEAM LOADS
SELF X3 -1. B 39 40
/ END

FORCE SUMMATION

FX1=0 kip
FX2=0 kip
FX3=-4.7868 kip

Verizon East Hartford 8 96210.431

Prepared by:

Page: 2
Date: 3/12/24
14:07

Load no. 4: Grating Load (units - kips ft.)

* GROUP NONE
/ GLOBAL LOADS
/ GLOBAL LOADS
/ GLOBAL LOADS
DIST FX3 -0.01 PLANE 4 4 0 4 24 0 18 24 0 PT -4 14 -4 11 0 11.003

BEAMS
/ END

FORCE SUMMATION

FX1=0 kip
FX2=0 kip
FX3=-2.9197 kip

Load no. 5: Railing Load (units - kips ft.)

* GROUP NONE
/ BEAM LOADS
DIST GL FX3 -0.01 B 2 4 8 9 17 18 20 21 23 30 34 TO 38
/ END

FORCE SUMMATION

FX1=0 kip
FX2=0 kip
FX3=-0.9402 kip

Load no. 6: Equipment Cabinets (units - kips ft.)

* GROUP NONE
/ GLOBAL LOADS
DIST FX3 -0.14 PLANE 8.1 17 0 8.1 20 0 11.1 20 0 PT 0 3 BEAMS
DIST FX3 -0.28 PLANE 8.1 13.1 0 8.1 16.1 0 11.1 16.1 0 PT 0 3 BEAMS
DIST FX3 -0.07 PLANE 3.5 0.5 0 3.5 3.5 0 6.5 3.5 0 PT 0 3 BEAMS

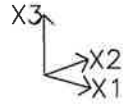
DIST FX3 -0.06 PLANE 4.9 4 0 4.9 5 0 8.9 5 0 PT 0 4 BEAMS
/ END STATIC

FORCE SUMMATION

FX1=0 kip
FX2=0 kip
FX3=-4.65 kip

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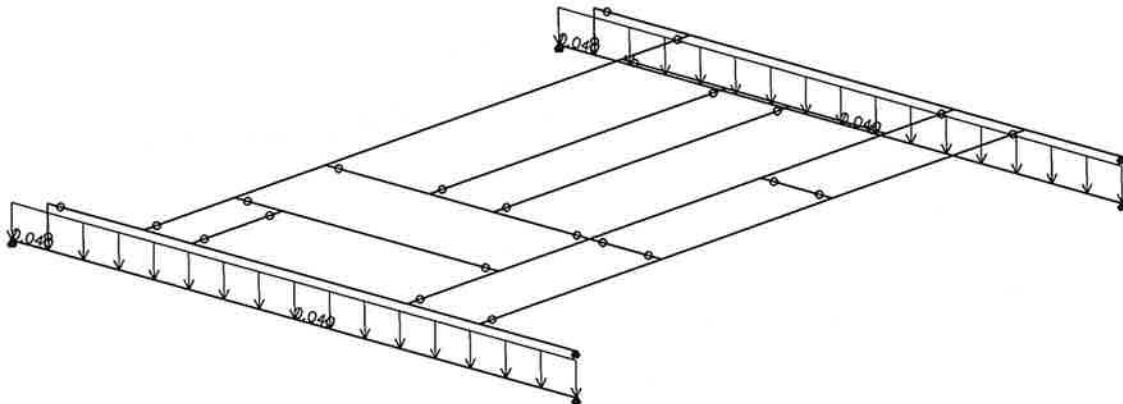
Load 1: Roof Dead Load



SCALE = 1:66

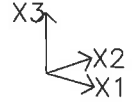
UNITS: kip ft

DATE: 3/12/24



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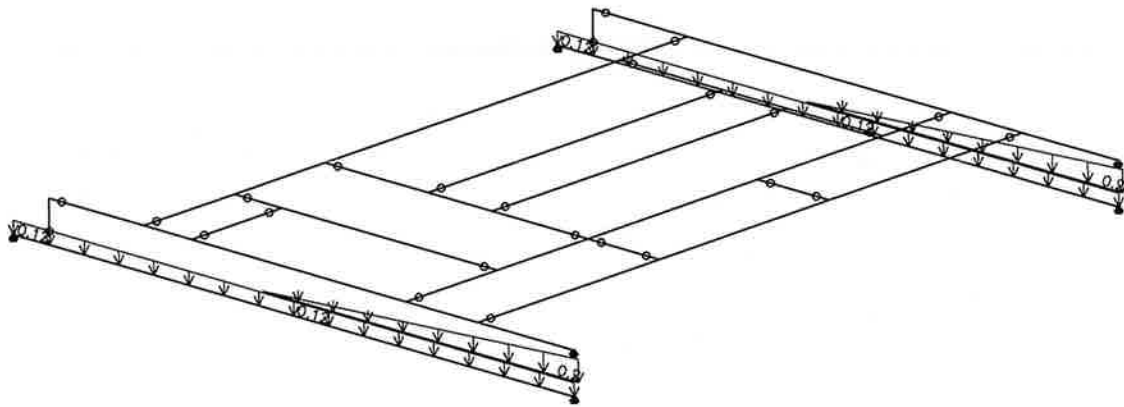
Load 2: Roof Snow Load



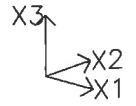
SCALE = 1:66

UNITS: kip ft

DATE: 3/12/24



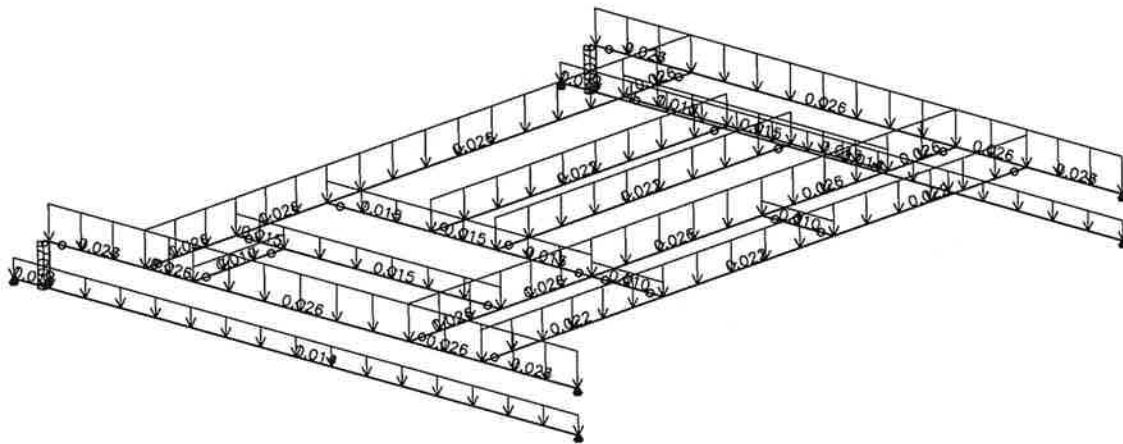
Load 3: Existing Selfweight



SCALE = 1:66

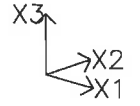
UNITS: kip ft

DATE: 3/12/24



Verizon East Hartford 8 96210.431

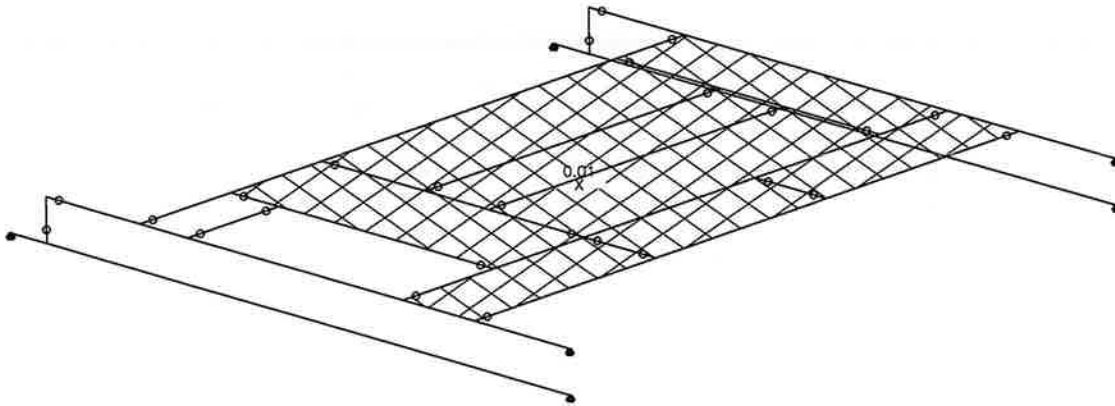
Load 4: Grating Load



SCALE = 1:66

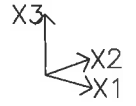
UNITS: kip ft

DATE: 3/12/24



Verizon East Hartford 8 96210.431

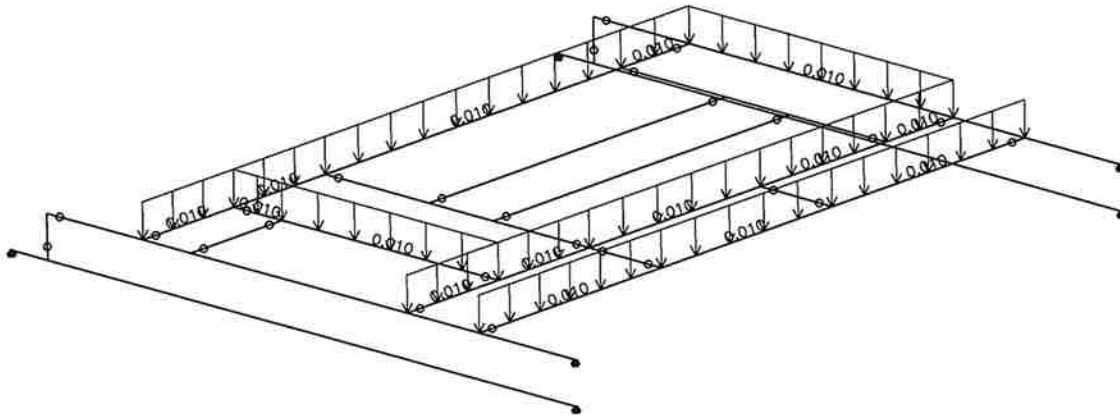
Load 5: Railing Load



SCALE = 1:66

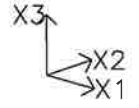
UNITS: kip ft

DATE: 3/12/24



Verizon East Hartford 8 96210.431

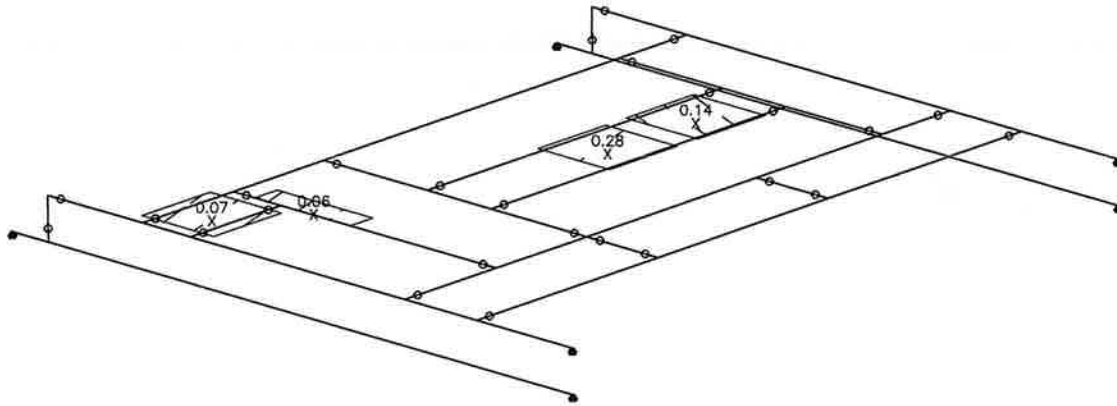
Load 6: Equipment Cabinets

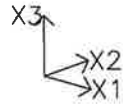


SCALE = 1:66

UNITS: kip ft

DATE: 3/12/24

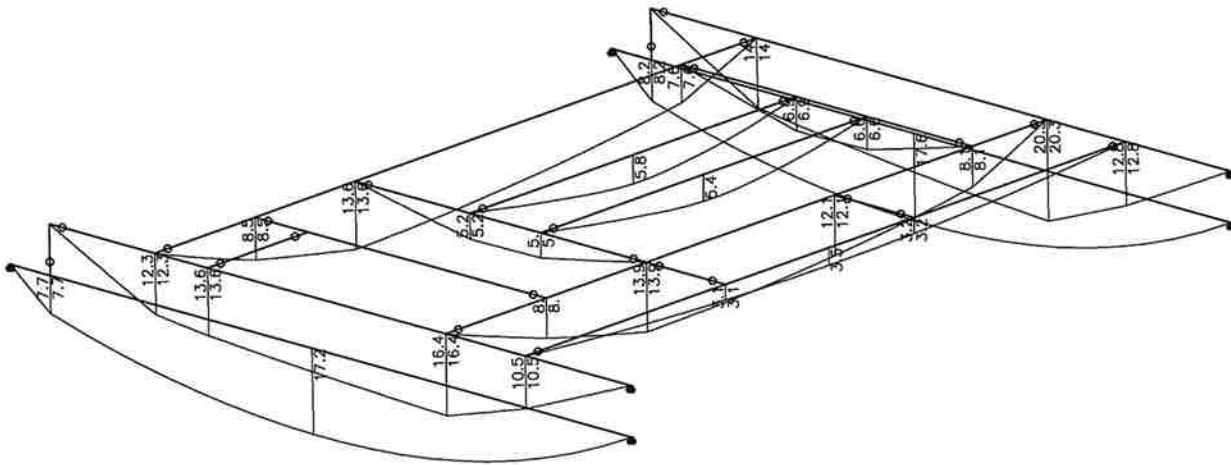




SCALE = 1:60

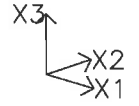
UNITS: kip*ft

DATE: 3/12/24



M2 MOMENT

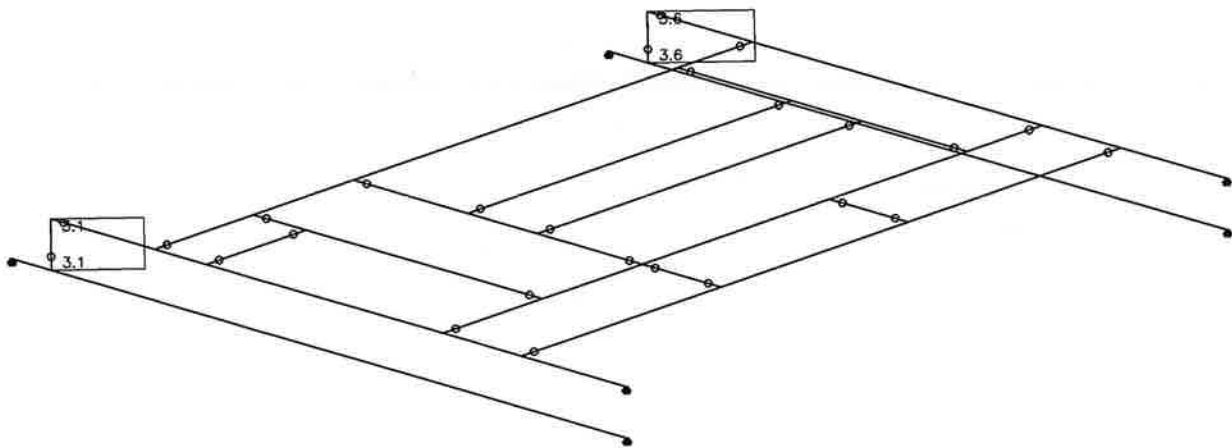
COMB. NO. 1 Total Loads



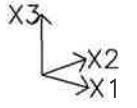
SCALE = 1:60

UNITS: kip

DATE: 3/12/24

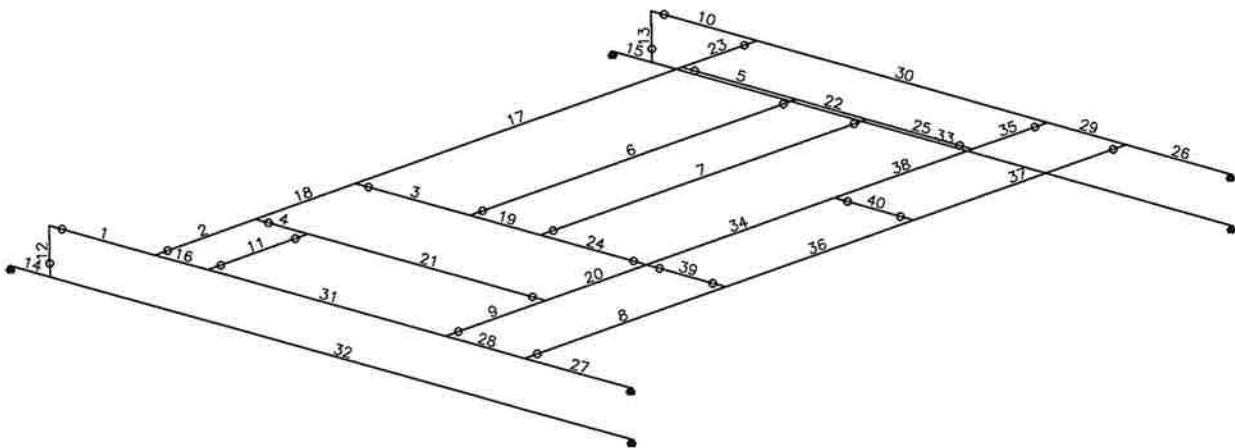


(+) Compression (-) Tension
AXIAL FORCE COMB. NO. 1 Total Loads



SCALE = 1:60

DATE: 3/12/24



Verizon East Hartford 8 96210.431

Code: AISC-ASD

Prepared by:

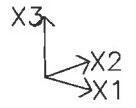
Page: 1

Date: 3/12/24

14:09

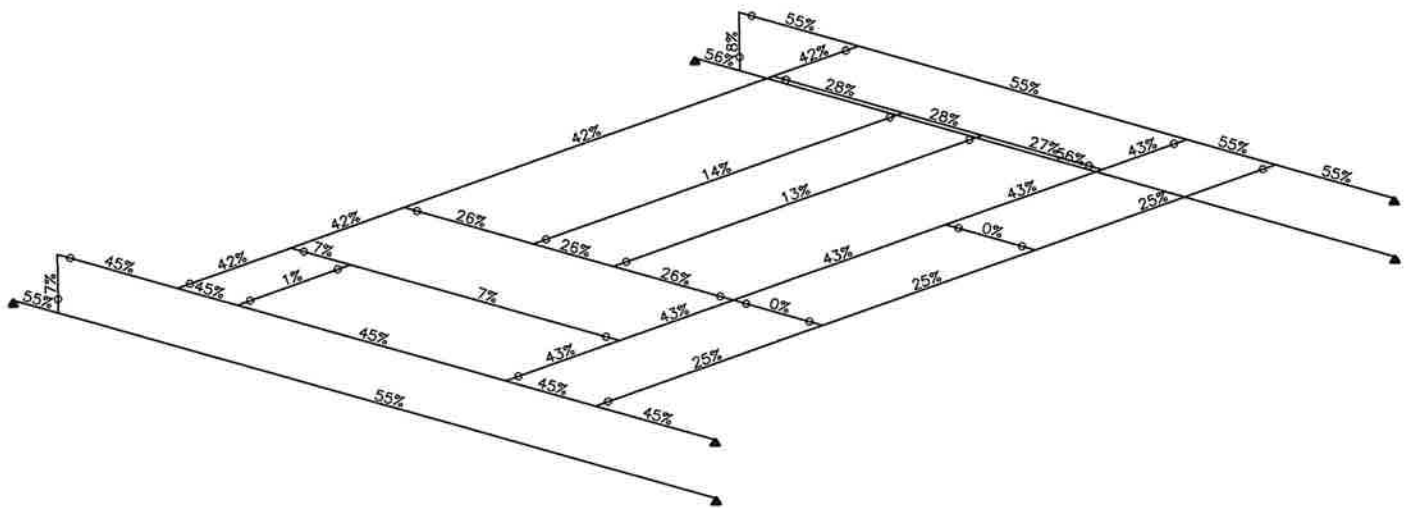
Results Summary Table

Beam	Section	Com	Def/L	Slen	CAPACITY					Combined Axial+Mom	
					Axial	Dir	Shear	Mom	LTB		
1	W 12x26	1	1055	176	0.00	MJ	0.08	0.24	0.45	0.45	
2	W 12x26	1	1191	192	0.00	MJ	0.06	0.20	0.42	0.42	
3	W 8x15	1	1622	151	0.00	MJ	0.05	0.21	0.26	0.26	
4	W 8x15	1	6728	151	0.00	MJ	0.02	0.05	0.07	0.07	
5	W 8x15	1	4965	59	0.00	MJ	0.06	0.28	0.28	0.28	
6	W 10x22	1	3231	118	0.00	MJ	0.04	0.12	0.14	0.14	
7	W 10x22	1	3482	118	0.00	MJ	0.04	0.11	0.13	0.13	
8	W 12x22	1	3531	340	0.00	MJ	0.01	0.07	0.25	0.25	***
9	W 12x26	1	1138	192	0.00	MJ	0.07	0.21	0.43	0.43	
10	W 12x26	1	877	176	0.00	MJ	0.09	0.30	0.55	0.55	
11	W 8x10	1	9999	57	0.00	MJ	0.01	0.01	0.01	0.01	
12	PIPE 3	1	9999	15	-0.07	MI	0.00	0.00	0.00	0.07	
13	PIPE 3	1	9999	15	-0.08	MI	0.00	0.00	0.00	0.08	
14	W 12x14	1	409	0	0.00	MJ	0.15	0.55	0.55	0.55	
15	W 12x14	1	401	0	0.00	MJ	0.16	0.56	0.56	0.56	
22	W 8x15	1	4276	36	0.00	MJ	0.01	0.28	0.28	0.28	
25	W 8x15	1	5565	55	0.00	MJ	0.06	0.27	0.27	0.27	
39	W 8x10	1	9999	43	0.00	MI	0.00	0.00	0.00	0.00	
40	W 8x10	1	9999	43	0.00	MI	0.00	0.00	0.00	0.00	



SCALE = 1:53

DATE: 3/12/24

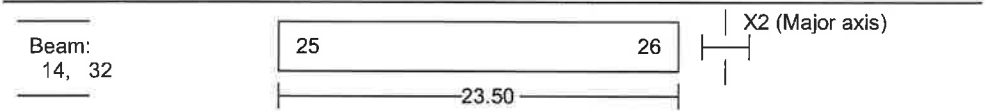


Actual/allowable Moment+Axial

Verizon East Hartford 8 96210.431 Prepared by:	Code: AISC-ASD Page: 1 Date: 3/12/24 14:10
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Detailed Results Table for Beam 14 - 32

*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*



CONSTRAINTS

- Sections : Check
- Steel Grade: A36

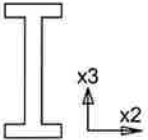
DESIGN DATA

- Kx = 1.00 - Ky = 1.00
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

INTERMEDIATE SUPPORTS

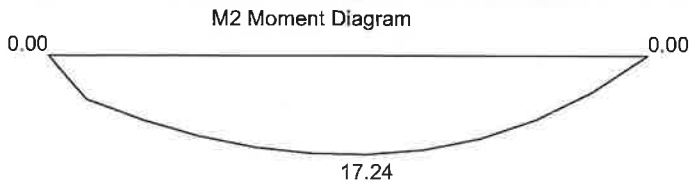
Lat.-Tors.	Continuous
Compress.	Continuous

Section: W 12x14



h	= 11.91in	bf	= 3.97in		
tw	= 0.2in	tf	= 0.2in		
Area	= 4.15in ²	I2	= 88.60in ⁴	I3	= 2.36in ⁴
J	= 0.1in ⁴	Z2	= 17.40in ³	Z3	= 1.9in ³
Cw	= 78.20in ⁶	e3	= 5.95in	e2	= 2.0in

DESIGN COMBINATION = 1



Max. AXIAL Force = 0.00 (tens.) Max. SHEAR Force = 5.23

SECTION CLASSIFICATION: * COMPACT / SLENDER *****

Limiting Ratios:	Compact	Non-Compact	Slender -axial	
d/t= 54.08	< 106.7	161.8	42.3	(Fy= 36.0 R = 0.000)
b/t= 8.84	< 10.8	28.4	15.9	

DESIGN	EQUATION	FACTORS	VALUES	RESULT
V3 Shear G2.1.a	$V_u/V_n < 1.5$ $V_n = 0.6 * F_y * A_w$	$A_w = 2.39$	$V_u = 5.23$ $V_n = 51.65$	0.15
M2 Moment (F2-1) without LTB	$M / (0.6 M_n) < 1.00$	$Z = 17.40$	$M = 17.24$ $M_n = 52.19$	0.55
Deflection	$defl. / (L / 240) < 1.00$		$defl = 0.68959$	0.59

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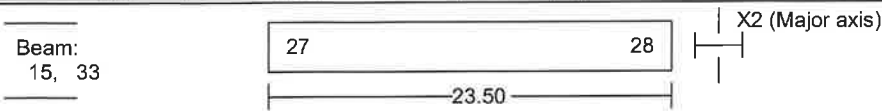
Date: 3/12/24

Prepared by:

14:10

Detailed Results Table for Beam 15 - 33

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch



CONSTRAINTS

- Sections : Check
- Steel Grade: A36

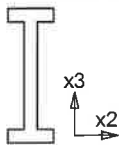
DESIGN DATA

- Kx = 1.00 - Ky = 1.00
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

INTERMEDIATE SUPPORTS

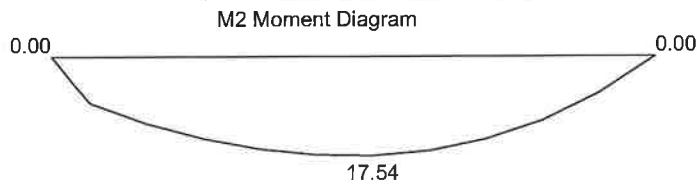
Lat.-Tors.	Continuous
Compress.	Continuous

Section: W 12x14



h	=	11.91in	bf	=	3.97in			
tw	=	0.2in	tf	=	0.2in			
Area	=	4.15in ²	I2	=	88.60in ⁴	I3	=	2.36in ⁴
J	=	0.1in ⁴	Z2	=	17.40in ³	Z3	=	1.9in ³
Cw	=	78.20in ⁶	e3	=	5.95in	e2	=	2.0in

DESIGN COMBINATION = 1



Max. AXIAL Force = 0.00 (tens.) Max. SHEAR Force = 5.63

SECTION CLASSIFICATION: *** COMPACT / SLENDER ***

Limiting Ratios:	Compact	Non-Compact	Slender -axial	
d/t= 54.08	< 106.7	161.8	42.3	(Fy= 36.0 R= 0.000)
b/t= 8.84	< 10.8	28.4	15.9	

DESIGN	EQUATION	FACTORS	VALUES	RESULT
V3 Shear G2.1.a	$V_u/V_n/1.5 < 1.00$ $V_n = 0.6 * F_y * A_w$	$A_w = 2.39$	$V_u = 5.63$ $V_n = 51.65$	0.16
M2 Moment (F2-1) without LTB	$M / 0.6M_n < 1.00$	$Z = 17.40$	$M = 17.54$ $M_n = 52.19$	0.56
Deflection	$defl. / L / 240 < 1.00$		$defl = 0.70405$	0.60

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Prepared by:

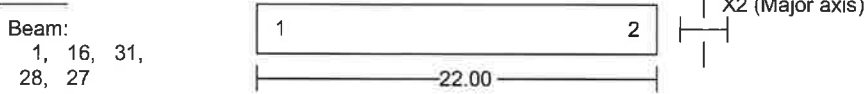
Page: 3

Date: 3/12/24

14:10

Detailed Results Table for Beam 1 - 27

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch



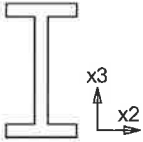
CONSTRAINTS

- Sections : Check
- Steel Grade: A36

DESIGN DATA

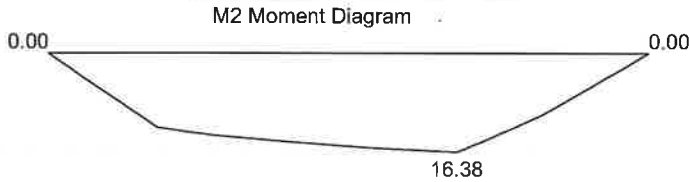
- Kx = 1.00 - Ky = 1.00
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

Section: W 12x26



h	=	12.22in	bf	=	6.49in			
tw	=	0.2in	tf	=	0.4in			
Area	=	7.66in ²	I2	=	204.0in ⁴	I3	=	17.30in ⁴
J	=	0.3in ⁴	Z2	=	37.20in ³	Z3	=	8.17in ³
Cw	=	607.0in ⁶	e3	=	6.11in	e2	=	3.24in

DESIGN COMBINATION = 1



Max. AXIAL Force = 0.00 (tens.) Max. SHEAR Force = 3.13

SECTION CLASSIFICATION: *** COMPACT / SLENDER ***

Limiting Ratios:	Compact Non-Compact	Slender -axial	
d/t= 47.53	< 106.7	161.8	42.3 (Fy= 36.0 R= 0.000)
b/t= 8.49	< 10.8	28.4	15.9

DESIGN	EQUATION	FACTORS	VALUES	RESULT
V3 Shear G2.1.a	$V_u/V_n < 1.00$ $V_n = 0.6 \cdot F_y \cdot A_w$	$A_w = 2.79$	$V_u = 3.13$ $V_n = 60.27$	0.08
M2 Moment (F2-1) without LTB	$\frac{M}{0.6M_n} < 1.00$	$Z = 37.20$	$M = 16.38$ $M_n = 111.60$	0.24
Deflection	$\frac{\text{defl.}}{L / 240} < 1.00$		$\text{defl} = 0.25026$	0.23
Lateral Torsional Buckling (F2-3)	$\frac{M}{0.6M_n} < 1.00$	$L_b = 22.00$ $L_p = 6.26$ $L_r = 18.37$ $C_b = 1.12$	$M = 16.38$ $M_n = 60.14$ $M_r = 70.11$ $F_{cr} = 21.61$	0.45
Critical Segment from 0.00 to 22.00 on +z flange Segment End Moments: 0.00 and 0.00				

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Code: AISC-ASD

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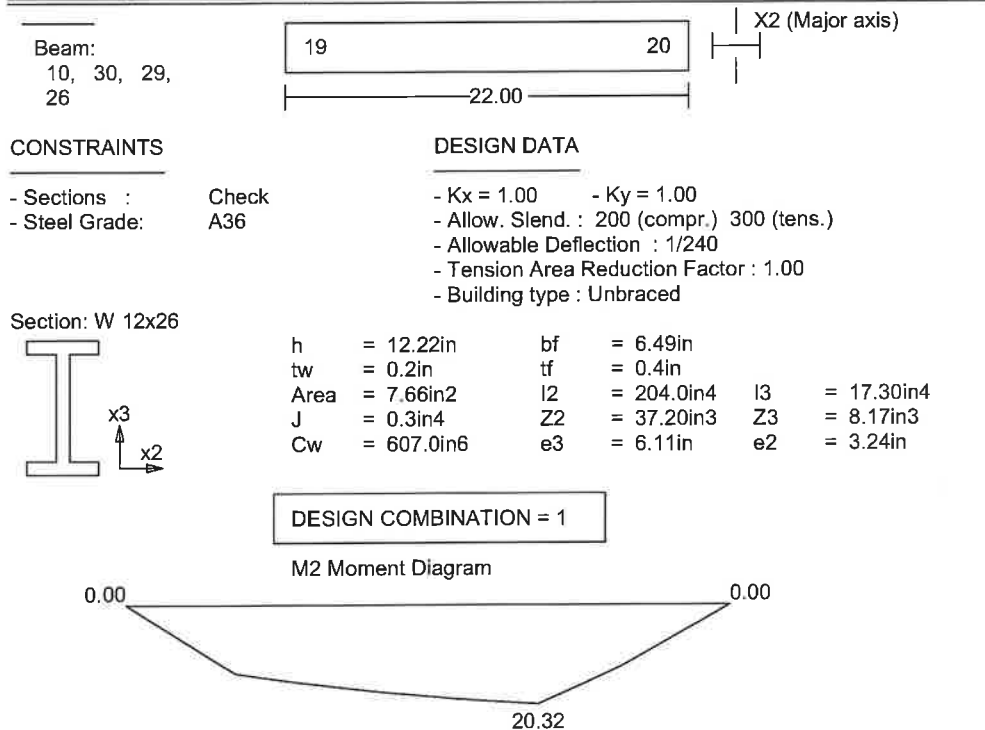
Date: 3/12/24

Prepared by:

14:10

Detailed Results Table for Beam 1 - 27*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

DESIGN	EQUATION	FACTORS	VALUES	RESULT
Combined Forces (compress.) (H1-1b)	$\frac{Pr}{2\phi Pn} + \frac{Mrx}{\phi Mn_x} + \frac{Mry}{\phi Mn_y} < 1.00$	Cmx = 1.00 Cmy = 1.00 Pex = 837.76 Pey = 71.05	Mrx = 16.38 Mry = 0.01 B1x = 1.00 B1y = 1.00	0.45

Detailed Results Table for Beam 10 - 26*Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch*

Max. AXIAL Force = 0.00 (compr.) Max. SHEAR Force = 3.55

SECTION CLASSIFICATION: *** COMPACT / SLENDER ***

Limiting Ratios:	Compact	Non-Compact	Slender -axial	
d/t= 47.53	< 106.7	161.8	42.3	(Fy= 36.0 R= 0.000)
b/t= 8.49	< 10.8	28.4	15.9	

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Code: AISC-ASD

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Date: 3/12/24

14:10

Prepared by:

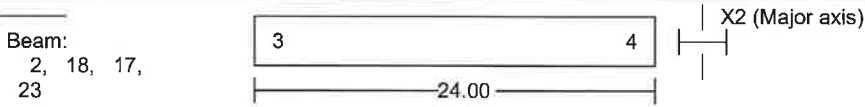
Detailed Results Table for Beam 10 - 26

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch

DESIGN	EQUATION	FACTORS	VALUES	RESULT
V3 Shear G2,1.a	$V_u/V_n < 1.00$ $V_n = 0.6 * F_y * A_w$	$A_w = 2.79$	$V_u = 3.55$ $V_n = 60.27$	0.09
M2 Moment (F2-1) without LTB	$\frac{M}{0.6M_n} < 1.00$	$Z = 37.20$	$M = 20.32$ $M_n = 111.60$	0.30
Deflection	$\frac{\text{defl.}}{L / 240} < 1.00$		$\text{defl} = 0.30115$	0.27
Lateral Torsional Buckling (F2-3)	$\frac{M}{0.6M_n} < 1.00$ Critical Segment from 0.00 to 22.00 on +z flange Segment End Moments: 0.00 and 0.00	$L_b = 22.00$ $L_p = 6.26$ $L_r = 18.37$ $C_b = 1.15$	$M = 20.32$ $M_n = 61.64$ $M_r = 70.11$ $F_{cr} = 22.16$	0.55
Combined Forces (compress.) (H1-1b)	$\frac{P_r}{2\phi P_n} + \frac{M_{rx}}{\phi M_{nx}} + \frac{M_{ry}}{\phi M_{ny}} < 1.00$	$C_{mx} = 1.00$ $C_{my} = 1.00$ $P_{ex} = 837.76$ $P_{ey} = 71.05$	$M_{rx} = 20.32$ $M_{ry} = 0.01$ $B_{1x} = 1.00$ $B_{1y} = 1.00$	0.55

Detailed Results Table for Beam 2 - 23

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch



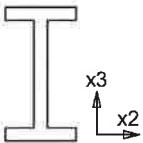
CONSTRAINTS

- Sections : Check
- Steel Grade: A36

DESIGN DATA

- $K_x = 1.00$ - $K_y = 1.00$
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

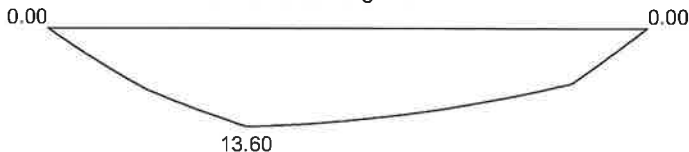
Section: W 12x26



$h = 12.22\text{in}$	$bf = 6.49\text{in}$		
$tw = 0.2\text{in}$	$tf = 0.4\text{in}$		
$\text{Area} = 7.66\text{in}^2$	$I_2 = 204.0\text{in}^4$	$I_3 = 17.30\text{in}^4$	
$J = 0.3\text{in}^4$	$Z_2 = 37.20\text{in}^3$	$Z_3 = 8.17\text{in}^3$	
$C_w = 607.0\text{in}^6$	$e_3 = 6.11\text{in}$	$e_2 = 3.24\text{in}$	

DESIGN COMBINATION = 1

M2 Moment Diagram



Verizon East Hartford 8 96210.431

Code: AISC-ASD

Page: 6

Date: 3/12/24

Prepared by:

14:10

Detailed Results Table for Beam 2 - 23

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch

Max. AXIAL Force = 0.00 (tens.) Max. SHEAR Force = 2.61

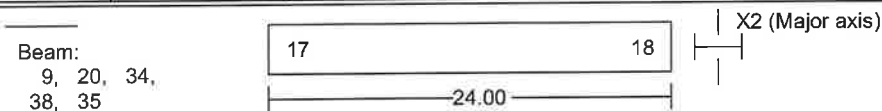
SECTION CLASSIFICATION: *** COMPACT / SLENDER ***

Limiting Ratios: Compact Non-Compact Slender -axial
 d/t= 47.53 < 106.7 161.8 42.3 (Fy= 36.0 R= 0.000)
 b/t= 8.49 < 10.8 28.4 15.9

DESIGN	EQUATION	FACTORS	VALUES	RESULT
V3 Shear G2.1.a	$V_u/V_n/1.5 < 1.00$ $V_n = 0.6 * F_y * A_w$	$A_w = 2.79$	$V_u = 2.61$ $V_n = 60.27$	0.06
M2 Moment (F2-1) without LTB	$M / 0.6M_n < 1.00$	$Z = 37.20$	$M = 13.60$ $M_n = 111.60$	0.20
Deflection	$defl. / L / 240 < 1.00$		$defl = 0.24186$	0.20
Lateral Torsional Buckling (F2-3)	$M / 0.6M_n < 1.00$ Critical Segment from 0.00 to 24.00 on +z flange Segment End Moments: 0.00 and 0.00	$L_b = 24.00$ $L_p = 6.26$ $L_r = 18.37$ $C_b = 1.15$	$M = 13.60$ $M_n = 54.50$ $M_r = 70.11$ $F_{cr} = 19.59$	0.42

Detailed Results Table for Beam 9 - 35

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch



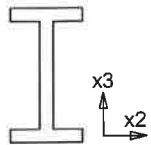
CONSTRAINTS

- Sections : Check
 - Steel Grade: A36

DESIGN DATA

- $K_x = 1.00$ - $K_y = 1.00$
 - Allow. Slend. : 200 (compr.) 300 (tens.)
 - Allowable Deflection : 1/240
 - Tension Area Reduction Factor : 1.00
 - Building type : Unbraced

Section: W 12x26



$h = 12.22in$ $bf = 6.49in$
 $tw = 0.2in$ $tf = 0.4in$
 $Area = 7.66in^2$ $I_2 = 204.0in^4$ $I_3 = 17.30in^4$
 $J = 0.3in^4$ $Z_2 = 37.20in^3$ $Z_3 = 8.17in^3$
 $C_w = 607.0in^6$ $e_3 = 6.11in$ $e_2 = 3.24in$

DESIGN COMBINATION = 1

Verizon East Hartford 8 96210.431

Code: AISC-ASD

Prepared by:

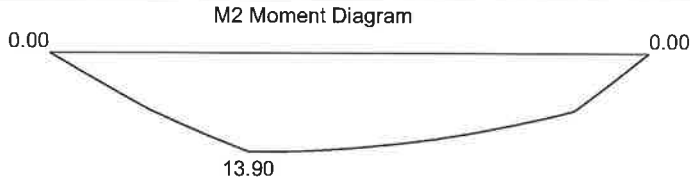
Page: 7

Date: 3/12/24

14:10

Detailed Results Table for Beam 9 - 35

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch



Max. AXIAL Force = 0.00 (compr.) Max. SHEAR Force = 2.78

SECTION CLASSIFICATION: *** COMPACT / SLENDER ***

Limiting Ratios: Compact Non-Compact Slender -axial
 d/t= 47.53 < 106.7 161.8 42.3 (Fy= 36.0 R = 0.000)
 b/t= 8.49 < 10.8 28.4 15.9

DESIGN	EQUATION	FACTORS	VALUES	RESULT
V3 Shear G2.1.a	$\frac{Vu}{Vn} < 1.00$ $Vn = 0.6 * Fy * Aw$	$Aw = 2.79$	$Vu = 2.78$ $Vn = 60.27$	0.07
M2 Moment (F2-1) without LTB	$\frac{M}{0.6Mn} < 1.00$	$Z = 37.20$	$M = 13.90$ $Mn = 111.60$	0.21
Deflection	$\frac{defl.}{L / 240} < 1.00$		$defl = 0.25310$	0.21
Axial Force (E3-1)	$\frac{Pu}{0.6AgFcr} < 1.00$	$(kL/r)x = 56$ $(kL/r)y = 192$	$Pu = 0.00$ $Ag = 7.66$ $Fcr = 6.84$	0.00
Lateral Torsional Buckling (F2-3)	$\frac{M}{0.6Mn} < 1.00$ Critical Segment from 0.00 to 24.00 on +z flange Segment End Moments: 0.00 and 0.00	$Lb = 24.00$ $Lp = 6.26$ $Lr = 18.37$ $Cb = 1.13$	$M = 13.90$ $Mn = 53.87$ $Mr = 70.11$ $Fcr = 19.36$	0.43
Combined Forces (compress.) (H1-1b)	$\frac{Pr}{2\phi Pn} + \frac{Mrx}{\phi Mn x} + \frac{Mry}{\phi Mn y} < 1.00$	$Cmx = 1.00$ $Cmy = 1.00$ $Pex = 703.95$ $Pey = 59.70$	$Mrx = 13.90$ $Mry = 0.00$ $B1x = 1.00$ $B1y = 1.00$	0.43

Appendix B – Construction Drawings

SUPPORTING DOCUMENTS

INDO FREQUENCY (RF) DESIGN DATE: 2/2/24
 ANTENNA MOUNT STRUCTURAL ANALYSIS DATE: 3/2/24
 SUPPORT STRUCTURE FROM (N) 5-STORY STEEL FRAMED OFFICE BUILDING
 SHING SHIN ARCHITECTS DATE: 3/2/24



20 ALEXANDER DRIVE, 2nd Floor, WALLINGFORD, CT 06492
EAST HARTFORD 8 CT RELO
 330 ROBERTS STREET
 EAST HARTFORD, CT 06108

PROJECT TYPE: WIRELESS TELECOMMUNICATIONS INSTALLATION ON ROOFTOP OF EXISTING (4)-STORY STEEL FRAMED OFFICE BUILDING

SITE INFORMATION:

PROPERTY OWNER:
 330 ROBERTS STREET, SUITE 404
 EAST HARTFORD, CT 06108

APPLICANT:
 CELCO PARTNERSHIP
 20 ALEXANDER DRIVE, 2ND FLOOR
 WALLINGFORD, CT 06492

SITE ADDRESS:
 330 ROBERTS STREET
 EAST HARTFORD, CT 06108

COUNTY:
 HARTFORD COUNTY, CONNECTICUT

SITE COORDINATE POINT:
 SOUTH CORNER OF EXISTING BUILDING
 N 41° 49' 09.84" W 17° 02' 09.97" (NAD 83)
 W 17° 01' 14.65" (19 83) (NAD 83)

ARCHITECT / ENGINEER:
 CHAPPELL ENGINEERING ASSOCIATES, LLC
 201 STATE STREET, SUITE 101
 MARLBOROUGH, MA 01752

POWER COMPANY:
 HARTFORD ENERGY
 247 STATION DRIVE, SE 210
 WESTWOOD, MA 02090
 (978) 441 5310

TELEPHONE COMPANY:
 VERIZON
 330 ROBERTS STREET
 BOSTON, MA 02107
 (800) 841 5900

GENERAL NOTES

- CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS AND CONDITIONS ON JOB SITE PRIOR TO CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK. CALLING TO THE WORK SHALL BE THE CONTRACTOR'S RESPONSIBILITY. CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
- NEW CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES:
 - BUILDING CODE: 2022 CONNECTICUT STATE BUILDING CODE
 - ELECTRICAL CODE: 2022 CONNECTICUT STATE ELECTRICAL CODE
 - STRUCTURAL CODE: IBC 2021 STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS



AT LEAST 24 HOURS PRIOR TO CONSTRUCTION, CONTRACTOR IS REQUIRED TO CALL 800 SAFE AT 811.

VICINITY MAP

SCALE: 1"=1000'



DRIVING DIRECTIONS

FROM WALLINGFORD, TAKE RT 26 NORTH TO ROUTE 5. IN CONNECTICUT IS IN (4) EAST TOWARD EAST HARTFORD. USE THE RIGHT LANE TO MERGE ONTO US 5 NORTH. CONTINUE ONTO CT-15 NORTH. USE THE RIGHT LANE TO MERGE ONTO ROBERTS STREET. THE SITE IS LOCATED ON THE LEFT HAND SIDE ROBERTS STREET. KEEP LEFT TO STAY ON ROBERTS STREET.

SHEET INDEX

DWG.	DESCRIPTION	REV.
T01	TITLE SHEET	1
GB01	GENERAL NOTES AND SPECIFICATIONS	
CO1	PROPERTY PLAN	
A01	ROOF PLAN	
A02	SITE DETAILS	
A03	SOUTH/EAST FINISH BUILDING ELEVATION (ALONG ROBERTS STREET)	
B01	EQUIPMENT PLATFORM FRAMING PLAN AND DETAILS	
B02	EQUIPMENT SUPPORT FRAMING DETAILS	
B03	ANTENNA MOUNTING DETAILS	
B04	ANTENNA DETAILS AND INCLINATION EQUIPMENT SPECIFICATIONS	
RF01	RF CELL OF MATERIALS AND RF CABLE PLUMBING DIAGRAM	
RF02	RF COLOR CODE SPECIFICATIONS	
U01	UTILITY CONDUIT/TYPICAL ROUTING DETAILS	
U02	ELECTRICAL SPECIFICATIONS AND NOTES	
EB01	ELECTRICAL PLAN (ROOF AND 7TH FLOOR AND ELECTRICAL DETAILS)	
EB02	ELECTRICAL PLAN (4TH FLOOR AND ELECTRICAL DETAILS)	
EB03	ELECTRICAL PLAN (BASEMENT)	
EN01	ELECTRICAL AND TELECOMMUNICATIONS ONE LINE DIAGRAM	
EN02	GROUNDING DIAGRAM, NOTES AND DETAILS	
ED01	GROUNDING DETAILS	

DO NOT SCALE DRAWINGS

ALL PLANS, EXISTING DIMENSIONS AND CONDITIONS AT THE PROPOSED PROJECT SITE SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK. CALLING TO THE WORK SHALL BE THE CONTRACTOR'S RESPONSIBILITY. CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.

PROJECT DESCRIPTION

- THIS IS AN UNMOUNTED AND RESTRICTED ACCESS EQUIPMENT INSTALLATION AND WILL BE CONSIDERED AS A WIRELESS TELECOMMUNICATIONS SERVICE.
- THIS FACILITY WILL CONSUME NO UNIFORM POWER ENERGY.
- NO WASTE WATER WILL BE GENERATED AT THIS LOCATION.
- NO SOLID WASTE WILL BE GENERATED AT THIS LOCATION.

<p>CLIENT: verizon</p>	<p>ARCHITECT/ENGINEER: CHAPPELL ENGINEERING ASSOCIATES, LLC 201 ALEXANDER DRIVE, 2ND FLOOR WALLINGFORD, CT 06492 (800) 841 5900 www.chappelleng.com</p>	<p>ENGINEER/AND SURVIVOR: _____ DATE _____</p>									
<p>SEAL:</p>	<p>REVISIONS:</p> <table border="1"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ISSUED FOR PER REVIEW</td> <td>2/29/24</td> </tr> <tr> <td>2</td> <td>FOR CONSTRUCTION (FINAL)</td> <td>2/29/24</td> </tr> </tbody> </table>	NO.	DESCRIPTION	DATE	1	ISSUED FOR PER REVIEW	2/29/24	2	FOR CONSTRUCTION (FINAL)	2/29/24	<p>PROJECT NAME: EAST HARTFORD 8 CT RELO</p> <p>PROJECT ADDRESS: 330 ROBERTS STREET EAST HARTFORD, CT 06108</p>
NO.	DESCRIPTION	DATE									
1	ISSUED FOR PER REVIEW	2/29/24									
2	FOR CONSTRUCTION (FINAL)	2/29/24									
<p>DRAWING TITLE: TITLE SHEET</p>		<p>DATE: T01</p>									
<p>SCALE: AS SHOWN SHEET NO.: 06108.01 DATE: 2/29/24</p>		<p>PROJECT NO.: 2024-001</p>									

CHAPPELL ENGINEERING ASSOCIATES, LLC
and Associates, Inc.
 P.L. EXECUTIVE CENTRE
 201 BOSTON POST ROAD WEST
 SUITE 101
 HARTFORD, CT 06108
 (860) 481-7100
 www.chappell-engineering.com

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR PERMITS	2/27/24
1	ISSUED FOR CONSTRUCTION (PWA)	2/28/24

PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
330 ROBERTS STREET
EAST HARTFORD, CT 06108

DRAWING TITLE:
PROPERTY PLAN

REVISIONS LINE:
C01

SCALE:
1" = 30'

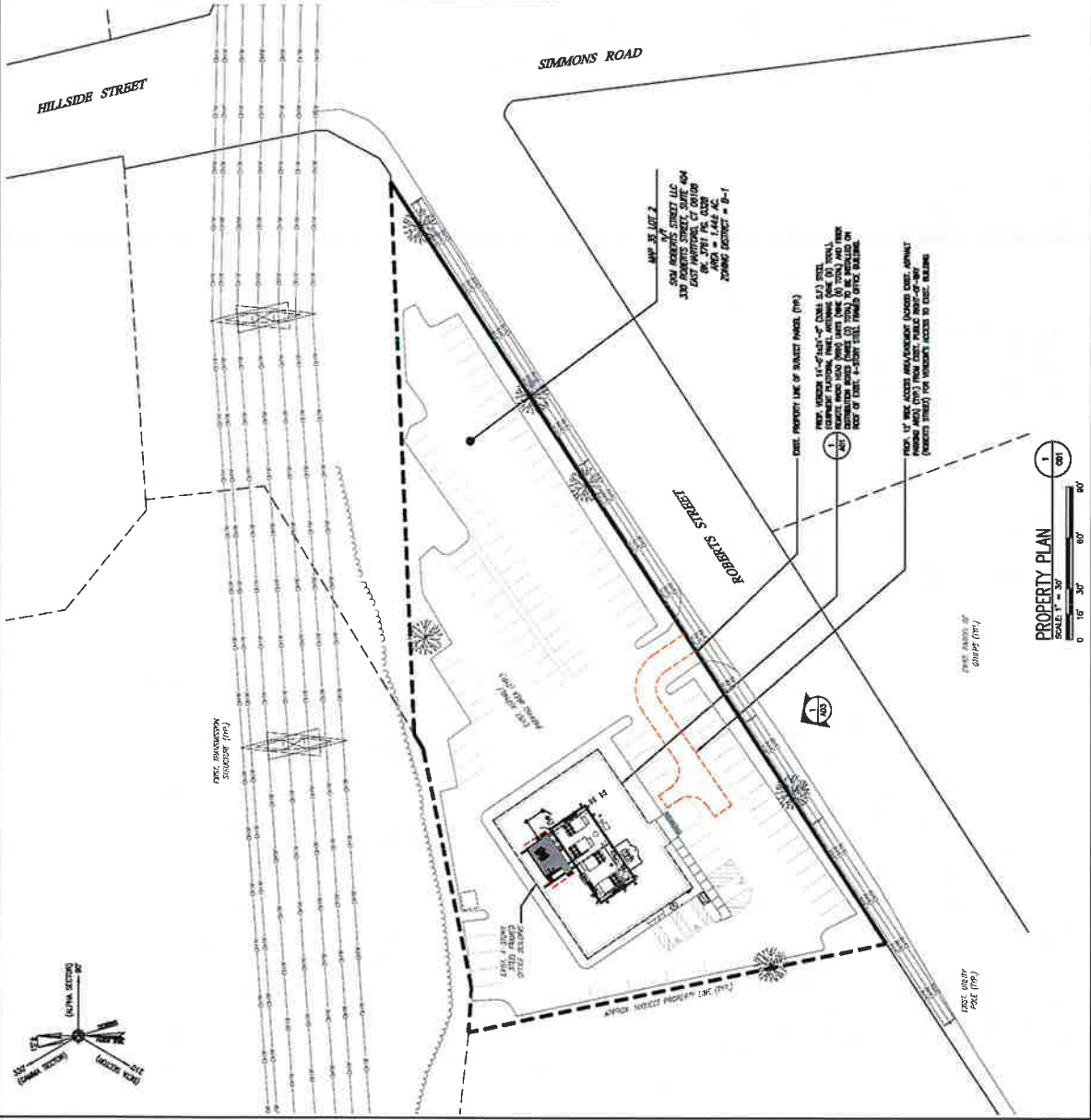
DATE:
2/27/24

PROJECT NO.:
279/24

REVISIONS:
R010.01

GENERAL NOTES:

1. ALL DIMENSIONS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS UNLESS OTHERWISE NOTED.
3. ALL DIMENSIONS UNLESS OTHERWISE NOTED.
4. ALL DIMENSIONS UNLESS OTHERWISE NOTED.
5. ALL DIMENSIONS UNLESS OTHERWISE NOTED.
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10. ALL DIMENSIONS UNLESS OTHERWISE NOTED.
11. ALL DIMENSIONS UNLESS OTHERWISE NOTED.
12. ALL DIMENSIONS UNLESS OTHERWISE NOTED.
13. ALL DIMENSIONS UNLESS OTHERWISE NOTED.
14. ALL DIMENSIONS UNLESS OTHERWISE NOTED.



PROPERTY PLAN
 SCALE: 1" = 30'
 0 15' 30' 60' 90'



CHAPPPELL ENGINEERING ASSOCIATES, LLC
ENGINEERING
 Civil, Mechanical, Electrical, Plumbing, Fire, and Energy
 P.O. EXECUTIVE CENTRE
 201 BUSINESS CENTER
 SUITE 101 LINDA WREST
 MARTINBOROUGH, VA 01752
 (540) 981-7600
 www.chappell-engineering.com



ENGINEER/AND SURVEYOR DATE

DRAWING SCALE NOTE

THIS DRAWING IS THE PROPERTY OF CHAPPPELL ENGINEERING ASSOCIATES, LLC. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREON. ANY REUSE OR MODIFICATION OF THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF CHAPPPELL ENGINEERING ASSOCIATES, LLC IS PROHIBITED.

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR CONSTRUCTION (RNO)	3/25/24
1	ISSUED FOR CONSTRUCTION (RNO)	3/25/24

PROJECT NAME
EAST HARTFORD B CT

PROJECT ADDRESS
630 ROBERTS STREET
EAST HARTFORD, CT 06108

DRAWING TITLE
ROOF PLAN

DRAWING NO.
A01

PROJ. NO.
24-01

DATE
3/25/24

BY
RNO

CHECKED BY
RNO

APPROVED BY
RNO

SCALE
AS SHOWN

PLOT DATE
3/25/24

LEGEND

ITEM	DESCRIPTION
1	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3)
2	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
3	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
4	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
5	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
6	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
7	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
8	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
9	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
10	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
11	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
12	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
13	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
14	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
15	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
16	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
17	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
18	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
19	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.
20	ROOF VERTICAL 15'-0" x 15'-0" (FOR 6:3) WITH SHOWN COMPONENT PLATFORM WITHIN 15'-0" x 15'-0" (FOR 6:3) LINE AREA.

ROBERTS STREET (BEYOND)

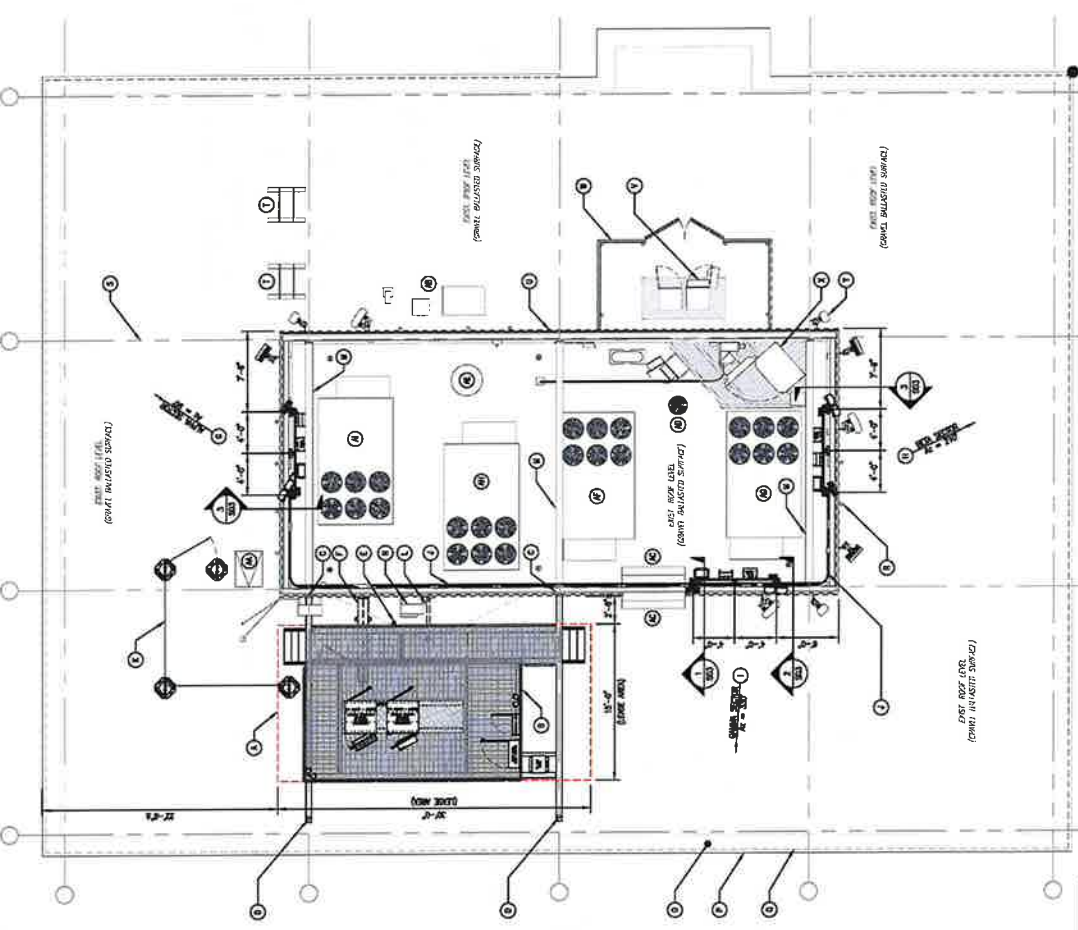
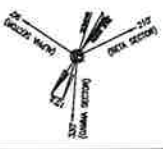
1 1/8"

ROOF PLAN
SCALE 3/16" = 1'-0"

SEE CORNER CORNER

N 17° 14' 38" W 141.88'
S 72° 37' 14" W 135.00'
W 72° 37' 14" W 135.00'
E 85.5' N 85.5' W 85.5' N 85.5' W

PER C.A. 1A SURVEY





ARCHITECT/ENGINEER

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil, Mechanical, Land Surveying

P.O. EXECUTIVE CENTER
201 BOSTON POST ROAD WEST
NASHUA, NH 07432
(603) 481-7100
www.chappellengineering.com

SEAL

ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE: N.T.S.

THIS DOCUMENT HAS BEEN REVIEWED IN ACCORDANCE WITH THE PROFESSIONAL ENGINEERING STATUTES OF THE STATE OF NEW HAMPSHIRE AND THE REGULATIONS OF THE BOARD OF ENGINEERING AND PROFESSIONAL SURVEYING TO ALTER THIS DOCUMENT.

NO.	DESCRIPTION	DATE
2	ISSUED FOR PERMIT	2/29/24
1	ISSUED FOR CONSTRUCTION (P.A.)	2/29/24

PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
830 ROBERTS STREET
EAST HARTFORD, CT 06108

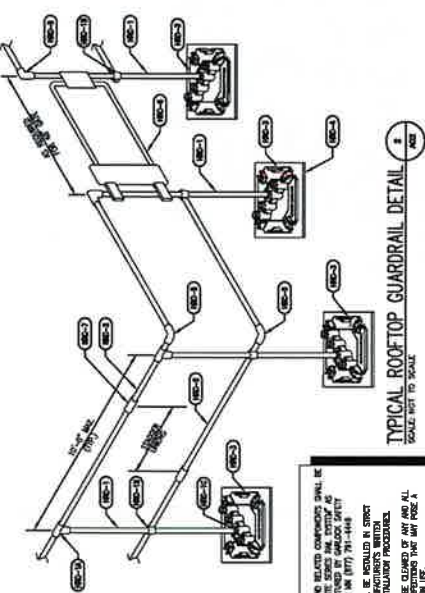
DRAWING TITLE:
SITE DETAILS

DRAWING NO.
A02

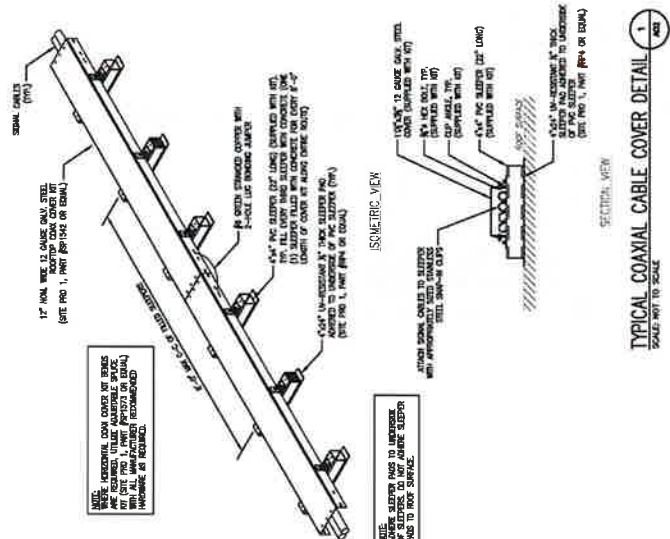
REV.	DATE	BY	APP'D.	DESCRIPTION
02	2/29/24	RJR	RJR	ISSUED FOR CONSTRUCTION

GARLOCK RAILGUARD 200 FIT-RITE SERIES RAIL SYSTEM LEGEND

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
02-1	STEEL STRUT SUPPORTS FOR FIT RITE SERIES RAILGUARD SYSTEM	02-2	4017B	4017B	UNFINISHED STEEL WIPED OFF
02-3	QUANDED STEEL 1/2" THICK	02-4	13078	13078	3/4"x24"x48" TUBES W/4-1/4" HOLES
02-5	QUANDED STEEL 1/2" THICK	02-6	13079	13079	40' SLUMP FITTING
02-7	3/4" DIA. LOCK PIN	02-8	13079	13079	ADJUSTABLE QUANDED SELF-CLOSING ROPED LOCKER JOINT (AUGUST 2-08)
02-9	1.5" DIA. 304L STAINLESS STEEL LOCKER PIN (FOR 1.5" DIA. LOCKER PIN) (ON SUPPLY BY ALUMINUM (0600))	02-10	13079	13079	40' SLUMP FITTING



- 1. ALL MATERIALS, PARTS AND RELATED COMPONENTS SHALL BE PROVIDED BY THE MANUFACTURER OF THE SYSTEM. THE SYSTEM SHALL BE PROVIDED BY THE MANUFACTURER OF THE SYSTEM. THE SYSTEM SHALL BE PROVIDED BY THE MANUFACTURER OF THE SYSTEM.
- 2. ALL COMPONENTS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN SPECIFICATIONS AND INSTALLATION PROCEDURES.
- 3. THESE CALL OUTS IDENTIFY ITEMS THAT ARE NOT SUPPLIED BY THE MANUFACTURER OF THE SYSTEM. ITEMS IDENTIFIED IN THESE CALL OUTS SHALL BE PROVIDED BY THE MANUFACTURER OF THE SYSTEM.



NOTE: COAXIAL CABLE COVER FASTENERS SHALL BE PROVIDED BY THE MANUFACTURER OF THE SYSTEM. FASTENERS SHALL BE PROVIDED BY THE MANUFACTURER OF THE SYSTEM. FASTENERS SHALL BE PROVIDED BY THE MANUFACTURER OF THE SYSTEM.

NOTE: SLUMP FITTING SHALL BE PROVIDED BY THE MANUFACTURER OF THE SYSTEM. SLUMP FITTING SHALL BE PROVIDED BY THE MANUFACTURER OF THE SYSTEM. SLUMP FITTING SHALL BE PROVIDED BY THE MANUFACTURER OF THE SYSTEM.



ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
 201 BOSTON COMMON
 SUITE 101
 HARTFORD, CT 06103
 (860) 481-7400
 www.chappell-engineering.com



ENGINEER/LAND SURVEYOR DATE
 DRAWING SCALE NOTE:
 THIS DRAWING IS A MEASUREMENT OF AN EXISTING STRUCTURE. THE SURVEYOR HAS CONDUCTED A VISUAL SURVEY OF THE STRUCTURE AND HAS FOUND IT TO BE IN SUBSTANTIAL COMPLIANCE WITH THE REQUIREMENTS OF THE STATE OF CONNECTICUT. THE SURVEYOR HAS NOT CONDUCTED A STRUCTURAL ANALYSIS OR INSPECTION OF THE STRUCTURE'S FOUNDATIONS OR INTERIOR STRUCTURE. THE SURVEYOR'S RESPONSIBILITY IS LIMITED TO THE ACCURACY OF THE MEASUREMENTS AND THE REPRESENTATION OF THE STRUCTURE'S EXTERIOR APPEARANCE. THE SURVEYOR DOES NOT WARRANT THE ACCURACY OF THE MEASUREMENTS OR THE REPRESENTATION OF THE STRUCTURE'S EXTERIOR APPEARANCE. THE SURVEYOR'S LIABILITY IS LIMITED TO THE COST OF THE SURVEY.

NO.	DESCRIPTION	DATE
1	ISSUED FOR PER REVIEW	2/29/24
2	ISSUED FOR CONSTRUCTION (FINAL)	2/29/24

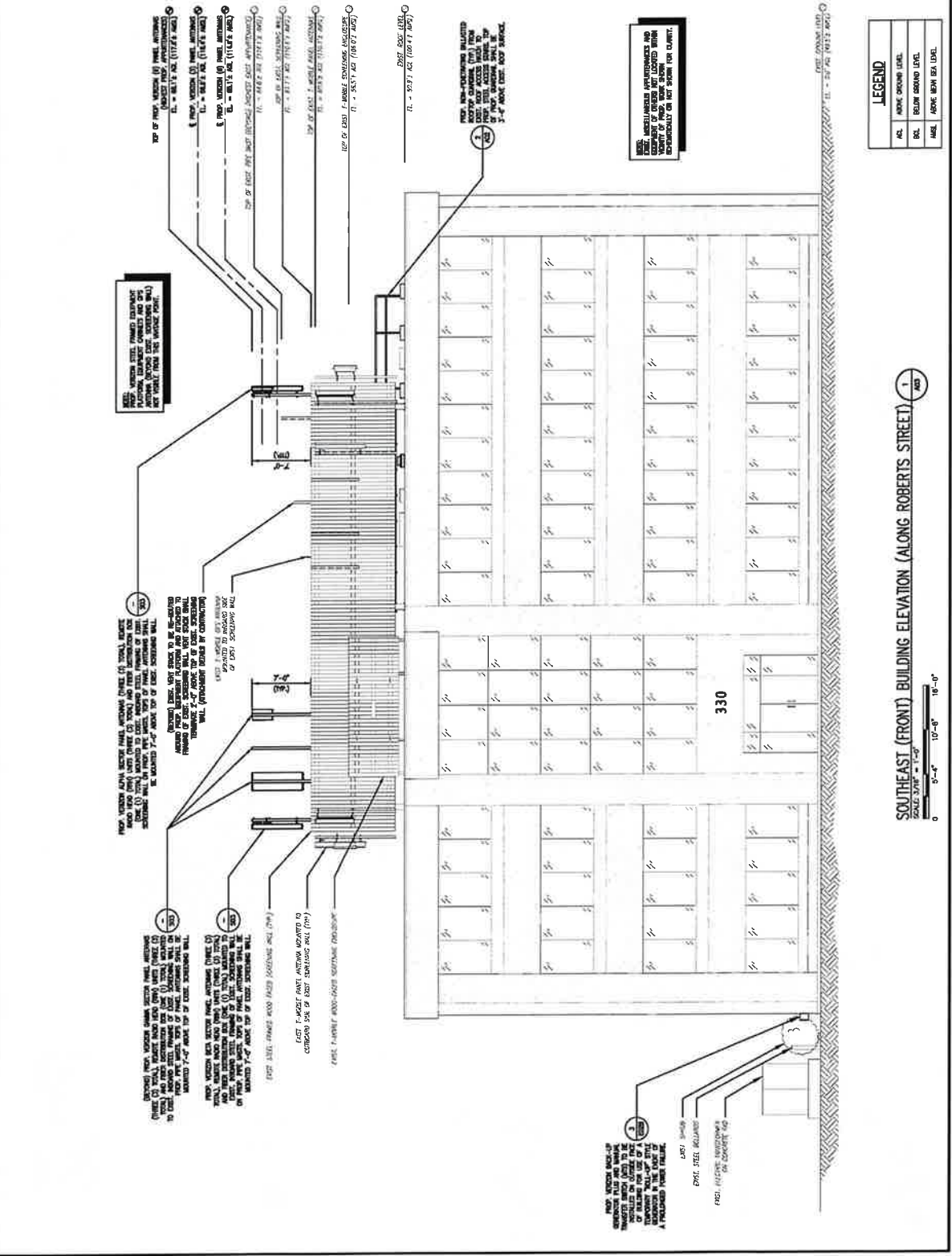
PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
 800 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
SOUTHEAST (FRONT) BUILDING ELEVATION (ALONG ROBERTS STREET)

DRAWING NO.:
A03

SCALE	DATE	BY	CHECKED
1/8" = 1'-0"	2/29/24	JDC	JDC



NOTE: ALL UNLabeled DIMENSIONS AND LOCATIONS ARE TO BE VERIFIED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOT SHOWING THE CURBLINE.

LEGEND

ACL	ARCHITECTURAL LEVEL
BCL	BELOW GROUND LEVEL
MSL	MEAN SEA LEVEL

SOUTHEAST (FRONT) BUILDING ELEVATION (ALONG ROBERTS STREET)

SCALE: 3/16" = 1'-0"

0 0'-0" 10'-0" 18'-0"



ARCHITECT/ENGINEER
CHAPPELL ENGINEERING ASSOCIATES, LLC
 201 BOSTON POST ROAD WEST
 HARTFORD, CT 06105
 www.chappell-engineering.com



ENGINEER/LAND SURVEYOR DATE
 DRAWING SCALE: N/A

REVISIONS

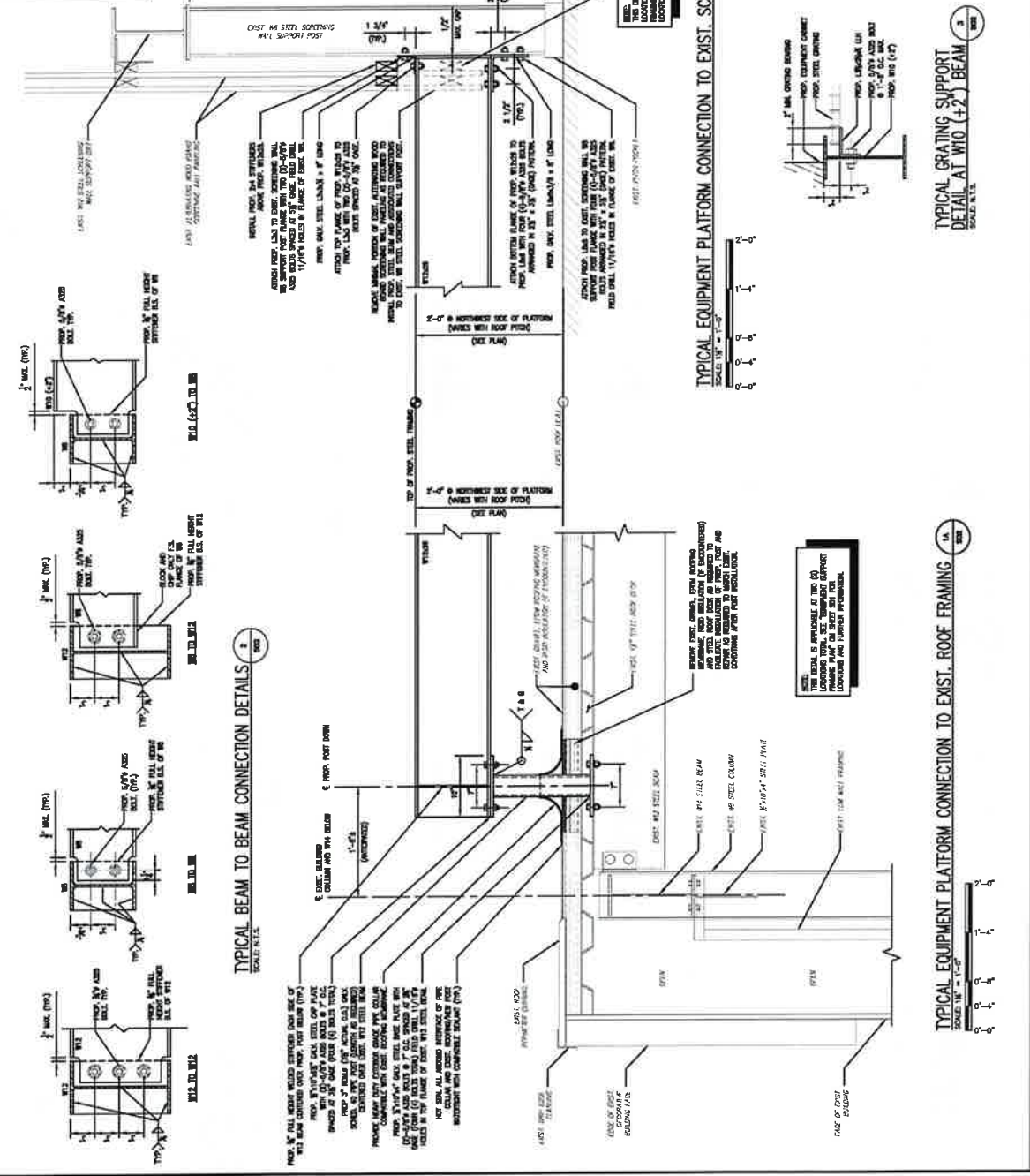
NO.	DESCRIPTION	DATE
0	ISSUED FOR BIDDING	2/25/14
1	ISSUED FOR CONSTRUCTION (FINAL)	3/25/14

PROJECT NAME:
EAST HARTFORD 8 CT RELO
PROJECT ADDRESS:
 330 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
EQUIPMENT SUPPORT FRAMING DETAILS
DRAWING NO.:
S02

DESIGNED BY	DATE
CHECKED BY	DATE
IN CHARGE	DATE
DATE	DATE

STEEL FABRICATION NOTES:
 1) EXIST. WELDED STEEL CONNECTIONS WILL BE REPAIRED TO ORIGINAL CONDITION. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH THE WELDING CODE SPECIFICATIONS FOR STRUCTURAL STEEL.
 2) ALL WELDS SHALL BE CLEANED TO REMOVE SPATTER AND TO PROVIDE A CLEAN SURFACE FOR THE WELD METAL.
 3) ALL WELDS SHALL BE CLEANED TO REMOVE SPATTER AND TO PROVIDE A CLEAN SURFACE FOR THE WELD METAL.
 4) ALL WELDS SHALL BE CLEANED TO REMOVE SPATTER AND TO PROVIDE A CLEAN SURFACE FOR THE WELD METAL.
 5) ALL WELDS SHALL BE CLEANED TO REMOVE SPATTER AND TO PROVIDE A CLEAN SURFACE FOR THE WELD METAL.



NOTES:
 1) THE BEAM IS APPLICABLE AT TWO (2) LOCATIONS ONLY. SEE EQUIPMENT SUPPORT FRAMING PLAN FOR BEAM LOCATION AND FUNCTIONAL INFORMATION.
 2) THE BEAM IS APPLICABLE AT TWO (2) LOCATIONS ONLY. SEE EQUIPMENT SUPPORT FRAMING PLAN FOR BEAM LOCATION AND FUNCTIONAL INFORMATION.
 3) THE BEAM IS APPLICABLE AT TWO (2) LOCATIONS ONLY. SEE EQUIPMENT SUPPORT FRAMING PLAN FOR BEAM LOCATION AND FUNCTIONAL INFORMATION.



ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
Capital Construction & Planning
 8-K EXETER COURSE
 201 BOSTON POST ROAD WEST
 SUITE 101
 MARLBOROUGH, MA 01752
 (508) 481-7400
 www.chappellengineering.com



ENGINEER/AND SURVEYOR _____ **DATE** _____
TRAINING SCALE: _____
 IN THE EVENT OF A DISCREPANCY BETWEEN THE DRAWING AND THE FIELD CONDITIONS, THE FIELD CONDITIONS SHALL PREVAIL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND CONDITIONS IN THE FIELD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL AUTHORITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL AUTHORITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL AUTHORITIES.

NO.	DESCRIPTION	DATE
1	ISSUED FOR BIDDING	2/29/24
2	REVISED FOR CONSTRUCTION (RVS)	3/19/24

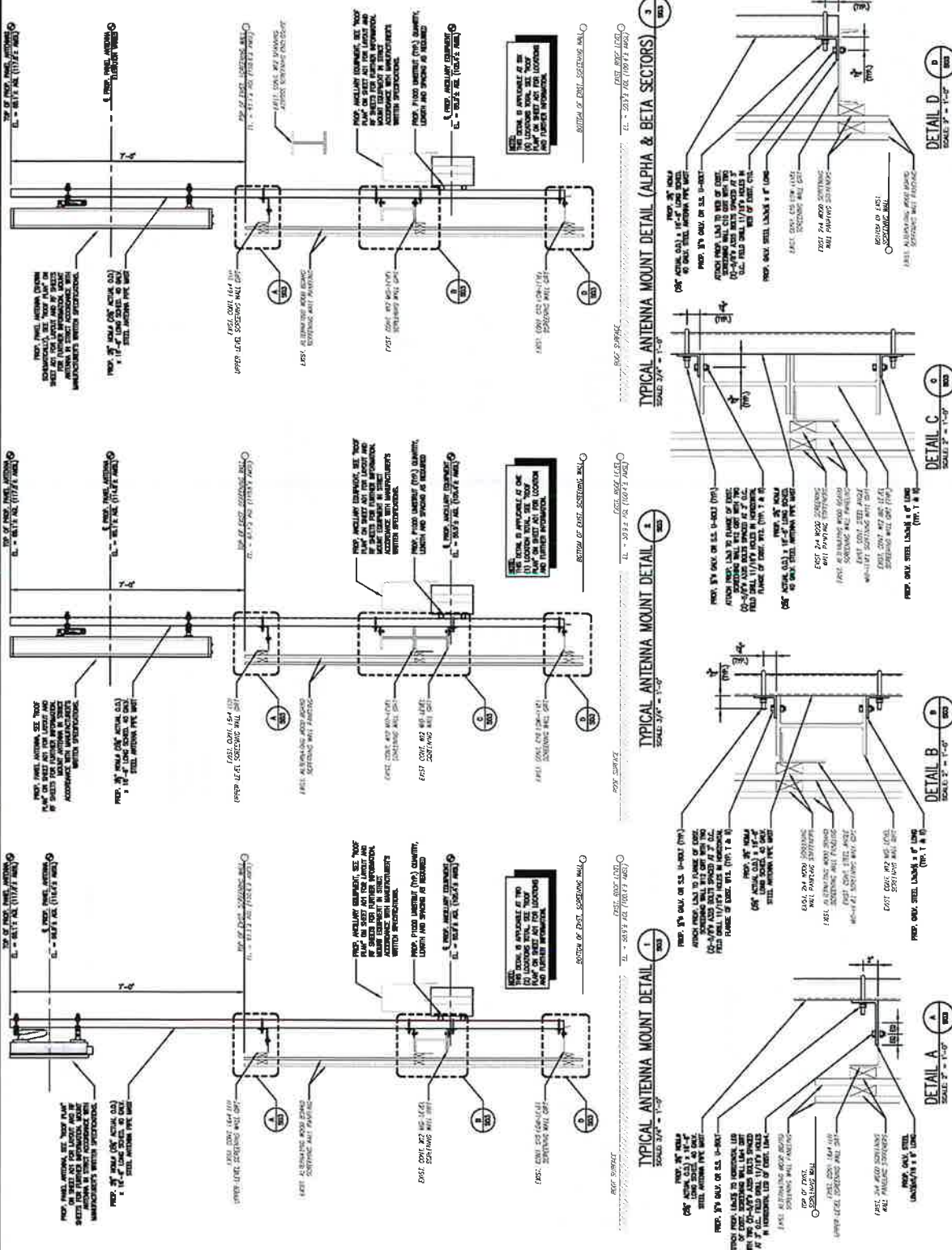
PROJECT NAME:
EAST HARTFORD 8 CT
RELO

PROJECT ADDRESS:
 380 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
 ANTENNA
 MOUNTING DETAILS

DRAWING NO.:
S03

NO.	DESCRIPTION	DATE
1	ISSUED FOR BIDDING	2/29/24
2	REVISED FOR CONSTRUCTION (RVS)	3/19/24



TYPICAL ANTENNA MOUNT DETAIL (ALPHA & BETA SECTORS)
 SCALE: 3/4" = 1'-0"

TYPICAL ANTENNA MOUNT DETAIL
 SCALE: 3/4" = 1'-0"

TYPICAL ANTENNA MOUNT DETAIL
 SCALE: 3/4" = 1'-0"

DETAIL D
 SCALE: 3/4" = 1'-0"

DETAIL C
 SCALE: 3/4" = 1'-0"

DETAIL B
 SCALE: 3/4" = 1'-0"

DETAIL A
 SCALE: 3/4" = 1'-0"

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil, Structural & Mechanical Engineering

8 K. EXETER DRIVE
 SUITE 101
 HARTFORD, CT 06103
 (860) 481-7400
 www.chappell-engineering.com

ENGINEER/AND SURVEYOR _____ DATE _____

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR PER REVIEW	2/7/24
1	ISSUED FOR CONSTRUCTION (FINAL)	2/7/24

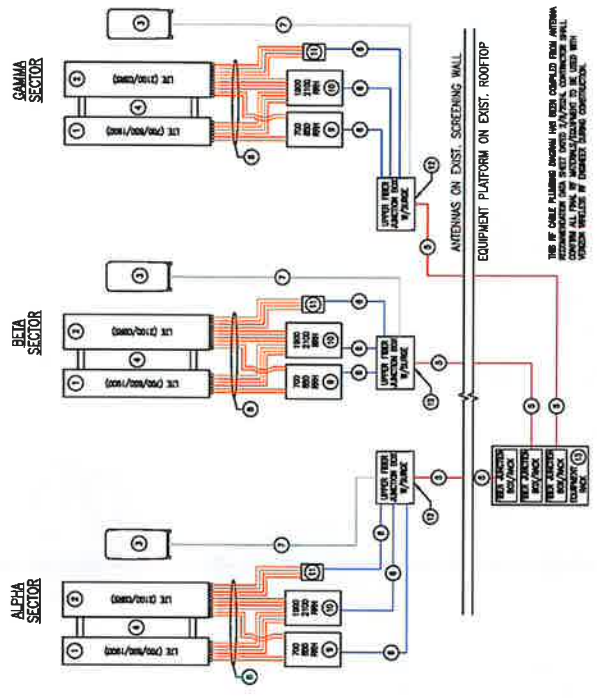
PROJECT NAME:
EAST HARTFORD 8 CT
RELO

PROJECT ADDRESS:
 380 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
**RF BILL OF MATERIALS
 AND RF CABLE
 PLUMBING DIAGRAM**

DRAWING NO.:
RF02

NOTE: THIS BILL OF MATERIALS AND RF CABLE PLUMBING DIAGRAM IS FOR THE PROPOSED VERIZON ANTENNA SYSTEM. ALL MATERIALS AND EQUIPMENT SHALL BE APPROVED BY THE PROJECT ENGINEER AND THE VERIZON PROJECT MANAGER. ANY CHANGES TO THIS BILL OF MATERIALS MUST BE APPROVED BY THE PROJECT ENGINEER AND THE VERIZON PROJECT MANAGER.



RF CABLE PLUMBING DIAGRAM (FINAL CONFIGURATION)
 SCALE: 1/8" = 1'-0"

RF BILL OF MATERIALS (PROP. (FINAL CONFIGURATION))
 A = ALPHA SECTOR B = BETA SECTOR G = GAMMA SECTOR

ITEM (SEE PLAN)	DESCRIPTION	BAND	QTY	STATUS	CABLE LENGTH/UNIT SIZE	COMMENTS
1	PANEL ANTENNA	700/800	3 TOTAL (A/B/G)	PROP.	72.0" x 118.0" x 1.5" (0.57 lbs. each)	MARKET TO PROP. SEE RF-CABLE SHORT
2	PANEL ANTENNA	2100/2400	3 TOTAL (A/B/G)	PROP.	72.0" x 118.0" x 1.5" (0.57 lbs. each)	MARKET TO PROP. SEE RF-CABLE SHORT
3	PANEL ANTENNA	2700-3600	3 TOTAL (A/B/G)	PROP.	36.0" x 134.0" x 1.5" (0.23 lbs. each)	MARKET TO PROP. SEE RF-CABLE SHORT
4	RF-CABLE ANTENNA MOUNTING KIT	-	3 TOTAL (A/B/G)	PROP.	25.4 lbs. each	MARKET TO PROP. SEE RF-CABLE SHORT
5	6-1/2" FIBER OPTIC CABLE (RPM LITE)	-	3 TOTAL (A/B/G)	PROP.	40 FT. (A, B, F) & 70 FT. (G) (40 FT. @ 0.12 lbs./ft.)	MARKET TO PROP. SEE RF-CABLE SHORT. THESE RACKS REQUIRE FIBER OPTIC CABLE. CHECK AGAIN SUPPLY OF RACK. CABLE COLOR SHALL BE WHITE. FIBER JUNCTION BOXES SHALL BE WHITE.
6	1/4" FIBER OPTIC CABLE (AMPER)	-	1 TOTAL (A/B/G)	PROP.	30 FT. (SEE SHORT)	MARKET TO PROP. SEE RF-CABLE SHORT
7	1/4" FIBER OPTIC CABLE (AMPER)	-	1 TOTAL (A/B/G)	PROP.	30 FT. (SEE SHORT)	MARKET TO PROP. SEE RF-CABLE SHORT
8	1/4" FIBER OPTIC CABLE (AMPER)	-	1 TOTAL (A/B/G)	PROP.	30 FT. (SEE SHORT)	MARKET TO PROP. SEE RF-CABLE SHORT
9	RF-CABLE ANTENNA MOUNTING KIT	-	3 TOTAL (A/B/G)	PROP.	36.0" x 134.0" x 1.5" (0.23 lbs. each)	MARKET TO PROP. SEE RF-CABLE SHORT
10	RF-CABLE ANTENNA MOUNTING KIT	-	3 TOTAL (A/B/G)	PROP.	36.0" x 134.0" x 1.5" (0.23 lbs. each)	MARKET TO PROP. SEE RF-CABLE SHORT
11	RF-CABLE ANTENNA MOUNTING KIT	-	3 TOTAL (A/B/G)	PROP.	36.0" x 134.0" x 1.5" (0.23 lbs. each)	MARKET TO PROP. SEE RF-CABLE SHORT
12	UPPER FIBER JUNCTION BOX WITH SHIELD	-	3 TOTAL (A/B/G)	PROP.	36.0" x 134.0" x 1.5" (0.23 lbs. each)	MARKET TO PROP. SEE RF-CABLE SHORT
13	LOWER FIBER JUNCTION BOX WITH SHIELD	-	3 TOTAL (A/B/G)	PROP.	36.0" x 134.0" x 1.5" (0.23 lbs. each)	MARKET TO PROP. SEE RF-CABLE SHORT

NOTE: THIS BILL OF MATERIALS AND RF CABLE PLUMBING DIAGRAM IS FOR THE PROPOSED VERIZON ANTENNA SYSTEM. ALL MATERIALS AND EQUIPMENT SHALL BE APPROVED BY THE PROJECT ENGINEER AND THE VERIZON PROJECT MANAGER. ANY CHANGES TO THIS BILL OF MATERIALS MUST BE APPROVED BY THE PROJECT ENGINEER AND THE VERIZON PROJECT MANAGER.

RF BILL OF MATERIALS (FINAL CONFIGURATION)
 SCALE: NONE

LEGEND

- RED - FIBER CABLE (RPM LITE)
- PURPLE - COAXIAL CABLE (RPM LITE)
- BLUE - 1/4" FIBER OPTIC CABLE (AMPER)
- CYAN - 1/4" FIBER OPTIC CABLE (AMPER)
- ORANGE - 1/4" FIBER OPTIC CABLE (AMPER)
- GREEN - RF CONTROL CABLES (AMPER)



ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
 201 BOSTON COMMON
 SUITE 101
 HARTFORD, CT 06103
 (860) 487-7400
 www.chappell-engineering.com



DRAWN BY: _____ DATE: _____
 CHECKED BY: _____ DATE: _____
 REVISIONS: _____

NO.	DESCRIPTION	DATE
0	ISSUED FOR CONSTRUCTION (P/N)	2/25/18
1	ISSUED FOR CONSTRUCTION (P/N)	2/25/18

PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
 850 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
RF COLOR CODE SPECIFICATIONS

DRAWING NO:
RF03

HYBRID CABLE COLOR CODE SPECIFICATIONS 3 OF 3

Hybrid Cable on Rooftops and Water tanks

Hybrid Cable 1

Sector	Identification Color	-48V	RTH
700 Alpha	Blue	○	○
AMS Alpha	Purple	○	○
PCS Alpha	Green	○	○
BSO Alpha	Brown	○	○
Spare	Yellow	○	○
Spare	White	○	○

Hybrid Cable 2

Sector	Identification Color	-48V	RTH
700 Beta	Blue	○	○
AMS Beta	Purple	○	○
PCS Beta	Green	○	○
BSO Beta	Brown	○	○
Spare	Yellow	○	○
Spare	White	○	○

Hybrid Cable 3

Sector	Identification Color	-48V	RTH
700 Gamma	Blue	○	○
AMS Gamma	Purple	○	○
PCS Gamma	Green	○	○
BSO Gamma	Brown	○	○
Spare	Yellow	○	○
Spare	White	○	○

Color Code	Color	Length	Notes
Alpha Sector	Blue	45' ±	CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN METER AND REFLECTED AS AN ADJUSTED VALUE TO COMPENSATE FOR CABLE LENGTH IN MEASUREMENTS OF ANTENNA CABLE LENGTH IS TO BE PROVIDED IN ALL PROJECTS TO BE BLACK AND NOT SPARE. THE LENGTH PROVIDED BELOW IS THE INDICATION OF THE GLOBAL CONNECTION
Beta Sector	Blue	85' ±	CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN METER AND REFLECTED AS AN ADJUSTED VALUE TO COMPENSATE FOR CABLE LENGTH IN MEASUREMENTS OF ANTENNA CABLE LENGTH IS TO BE PROVIDED IN ALL PROJECTS TO BE BLACK AND NOT SPARE. THE LENGTH PROVIDED BELOW IS THE INDICATION OF THE GLOBAL CONNECTION
Gamma Sector	Blue	60' ±	CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN METER AND REFLECTED AS AN ADJUSTED VALUE TO COMPENSATE FOR CABLE LENGTH IN MEASUREMENTS OF ANTENNA CABLE LENGTH IS TO BE PROVIDED IN ALL PROJECTS TO BE BLACK AND NOT SPARE. THE LENGTH PROVIDED BELOW IS THE INDICATION OF THE GLOBAL CONNECTION

LINE COLOR CODE SPECIFICATIONS 1 OF 3



ARCHITECT/ENGINEER
CHAPPELL ENGINEERING ASSOCIATES, LLC
an Electrical Joint Venture
 84 EXECUTIVE CENTRE
 201 BOSTON EAST ROAD WEST
 SUITE 101
 MARIETTA, MA 01952
 (508) 481-7400
 www.chappellengineering.com



ENGINEER/ARCHITECT SURVEYOR _____ **DATE** _____
ISSUING SCALE NOTE:
 ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE NOTED. DIMENSIONS IN PARENTHESES ARE FOR INFORMATION ONLY. DIMENSIONS IN PARENTHESES ARE TO BE USED ONLY IN THE EVENT THAT THE DIMENSIONS SHOWN ARE UNREADABLE OR UNUSABLE. DIMENSIONS IN PARENTHESES ARE TO BE USED ONLY IN THE EVENT THAT THE DIMENSIONS SHOWN ARE UNREADABLE OR UNUSABLE. DIMENSIONS IN PARENTHESES ARE TO BE USED ONLY IN THE EVENT THAT THE DIMENSIONS SHOWN ARE UNREADABLE OR UNUSABLE.

NO.	DESCRIPTION	DATE
1	ISSUED FOR PER REVIEW	3/7/24
2	REVISED FOR CONSTRUCTION (P&I)	3/7/24

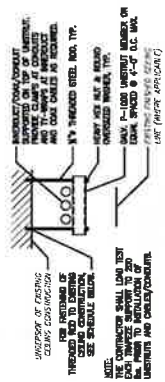
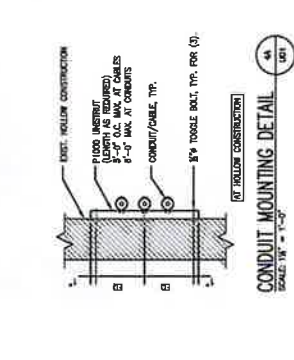
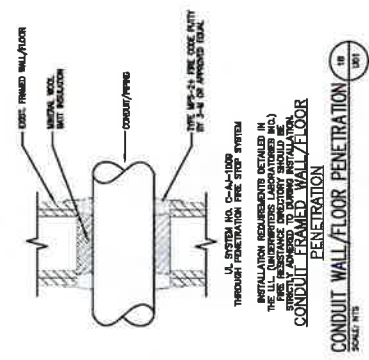
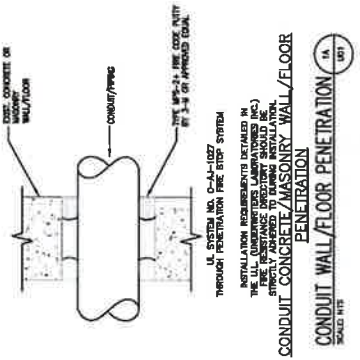
PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
 880 ROBERTS STREET
 EAST HARTFORD, CT 06108

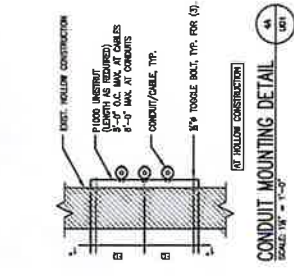
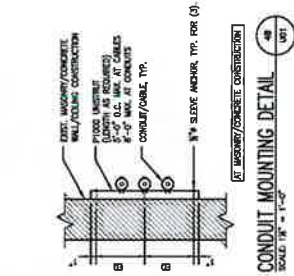
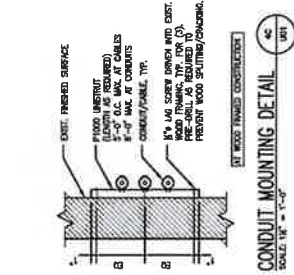
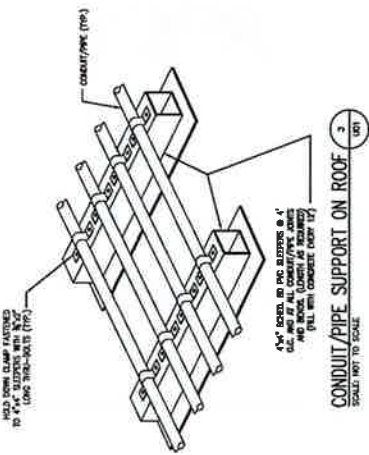
ISSUING TITLE:
 UTILITY CONDUIT/PIPE ROUTING DETAILS

ISSUING NO.:
 U01

REV.	DATE	DESCRIPTION
1	3/7/24	ISSUED FOR PER REVIEW
2	3/7/24	REVISED FOR CONSTRUCTION (P&I)



THROUGH ROOF PENETRATION SCHEDULE	INSTALLATION
CONCRETE	1" MIN. CONCRETE
MASONRY	1" MIN. MASONRY
STEEL FRAMING	1" MIN. STEEL FRAMING
WOOD FRAMING	1" MIN. WOOD FRAMING



CHAPPELL ENGINEERING ASSOCIATES, LLC
 201 BOSTON POST ROAD WEST
 BOSTON, MA 02112
 (617) 481-7100
 www.chappell-engineering.com

ARCHITECT/OWNER:
 201 BOSTON POST ROAD WEST
 BOSTON, MA 02112
 (617) 481-7100
 www.chappell-engineering.com

ENGINEER/AND SURVEYOR: _____ DATE: _____
 DRAWING SCALE: _____
 PROJECT NO.: _____
 PROJECT TITLE: _____
 PROJECT ADDRESS: _____
 PROJECT TITLE: _____
 PROJECT ADDRESS: _____
 PROJECT TITLE: _____
 PROJECT ADDRESS: _____

REVISIONS

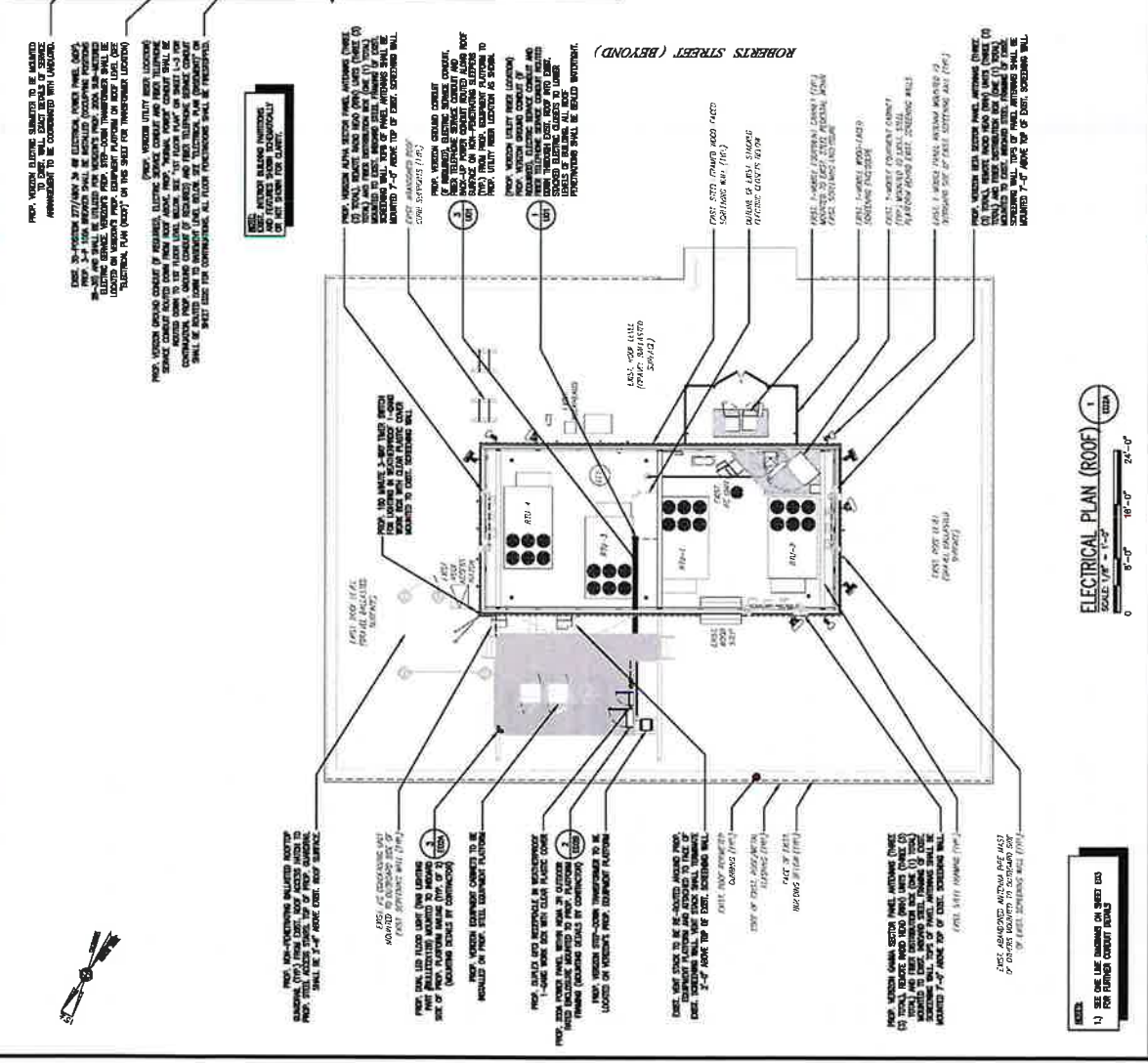
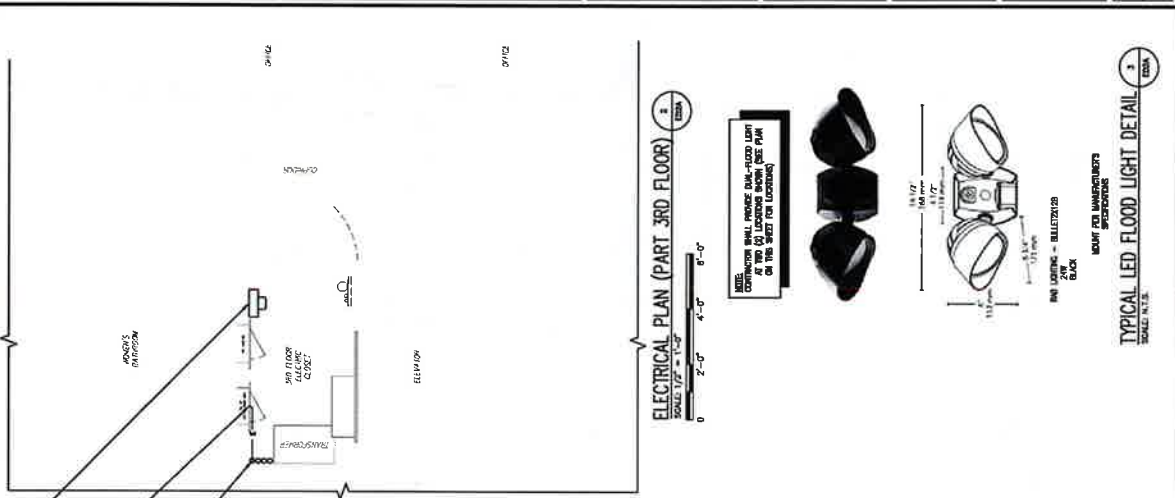
NO.	DESCRIPTION	DATE
0	ISSUED FOR PERMIT	5/29/24
1	ISSUED FOR CONSTRUCTION (FINAL)	7/29/24

PROJECT NAME:
E02A

PROJECT ADDRESS:
800 ROBERTS STREET
EAST HARTFORD, CT 06108

PROJECT TITLE:
ELECTRICAL PLAN
(ROOF AND PART 3RD
FLOOR PLAN) AND
ELECTRICAL DETAILS


PROJECT NO.:
E02A




NOTES:

- SEE THE LATEST REVISIONS OF THESE DOCUMENTS FOR PERMIT AND CONSTRUCTION DETAILS.

CLIENT:



ARCHITECT/ENGINEER:



CHAPPELL
ENGINEERING
ASSOCIATES, LLC

201 BOSTON COMMON WEST
BOSTON, MA 02108
(617) 452-7100
www.chappelleng.com

ENGINEER/LAND SURVEYOR: _____ DATE: _____

DRAWING SCALE: _____ NOTE: _____

REVISIONS:

NO.	DESCRIPTION	DATE
0	ISSUED FOR BIDDING	2/29/24
1	REVISED FOR CONSTRUCTION (P/N)	3/29/24

PROJECT NAME:

**EAST HARTFORD 8 CT
RELO**

PROJECT ADDRESS:

850 ROBERTS STREET
EAST HARTFORD, CT 06108

DRAWING TITLE:

**ELECTRICAL PLAN
(1ST FLOOR)
AND ELECTRICAL DETAILS**

DRAWING NO.:

E02B

NO.	DESCRIPTION	DATE
1	ISSUED FOR BIDDING	2/29/24
2	REVISED FOR CONSTRUCTION (P/N)	3/29/24

USE ONLY THESE SYMBOLS FOR THE ELECTRICAL PANEL SCHEDULE. THE PANEL SCHEDULE SHOULD BE USED TO IDENTIFY THE PANELS SHOWN IN THE ELECTRICAL PLAN.

SYMBOL	DESCRIPTION
1	RECEPT P
2	RECEPT P
3	RECEPT P
4	RECEPT P
5	RECEPT P
6	RECEPT P
7	RECEPT P
8	RECEPT P
9	RECEPT P
10	RECEPT P
11	RECEPT P
12	RECEPT P
13	RECEPT P
14	RECEPT P
15	RECEPT P
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96	RECEPT P
97	RECEPT P
98	RECEPT P
99	RECEPT P
100	RECEPT P

UTILITY CONTACTS

ELECTRICAL: VERIZON, 210 BOSTON COMMON WEST, BOSTON, MA 02108, (617) 441-3810

TELEPHONE: VERIZON, 100 FRENCH STREET, BOSTON, MA 02108, (617) 441-3810

NOTE: 1) SEE ONE LINE DRAWING ON SHEET E03 FOR FURTHER CABLE ROUTING.

ELECTRICAL PLAN (1ST FLOOR)

SCALE: 1/8" = 1'-0"

POWER SOURCE ONE LINE DIAGRAM

SCALE: NOT TO SCALE

REVISIONS:

- SEE ONE LINE DRAWING ON SHEET E03 FOR FURTHER CABLE ROUTING.

UTILITY CONTACTS:

- ELECTRICAL: VERIZON, 210 BOSTON COMMON WEST, BOSTON, MA 02108, (617) 441-3810
- TELEPHONE: VERIZON, 100 FRENCH STREET, BOSTON, MA 02108, (617) 441-3810

NOTES:

- SEE ONE LINE DRAWING ON SHEET E03 FOR FURTHER CABLE ROUTING.



CLIENT

ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
Chappell & Associates, Inc.
 P.O. BOX 1000
 201 BOSTON EAST ROAD WEST
 SUITE 101
 WILMINGTON, MA 01897
 (508) 481-7400
 www.chappellengineering.com

SCALE:

ENGINEER/AND SURVEYOR _____ **DATE** _____

WORKING SCALE NOTES:
 THIS DRAWING IS THE PROPERTY OF CHAPPELL ENGINEERING ASSOCIATES, LLC. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREON. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF CHAPPELL ENGINEERING ASSOCIATES, LLC.

IF A VALUATION OF LAB TIME FOR ANY PERSONAL USE OF THIS DRAWING IS REQUIRED, THE USER SHALL CONTACT CHAPPELL ENGINEERING ASSOCIATES, LLC TO ALTER THE DRAWING.

REVISIONS

NO.	DESCRIPTION	DATE
0	DESIGNED FOR BLUE PRINT	2/28/24
1	REVISED FOR CONSTRUCTION (RVA)	2/28/24

PROJECT NAME:
EAST HARTFORD 8 CT
RELO

PROJECT ADDRESS:
 800 ROBERTS STREET
 EAST HARTFORD, CT 06108

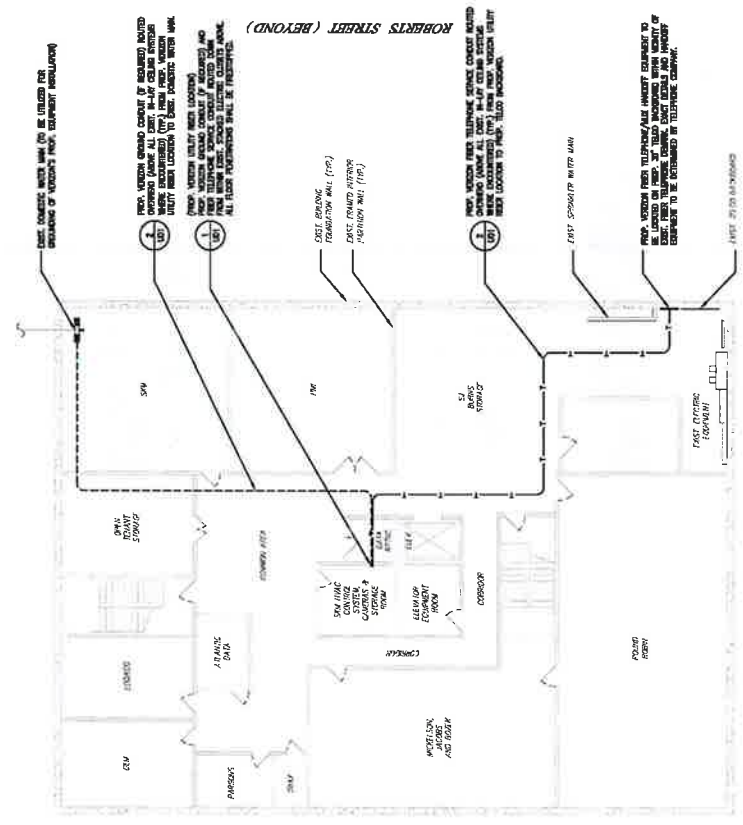
DRAWING TITLE:
ELECTRICAL PLAN (BASEMENT)

DRAWING NO.:
E02C

DATE	REVISED BY	DATE
1/28/24		
2/28/24		

PROJECT NO.: 24-0000000-00
DRAWING NO.: E02C
SCALE: 1/8" = 1'-0"
DATE: 2/28/24

NOTE: ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE 2017 NATIONAL ELECTRICAL CODE AND ALL APPLICABLE LOCAL ORDINANCES AND REGULATIONS. ALL WORK SHALL BE SUBJECT TO INSPECTION BY THE LOCAL AUTHORITY.



ELECTRICAL PLAN (BASEMENT)
 SCALE: 1/8" = 1'-0"
 0 8'-0" 16'-0" 24'-0"



ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
 201 BOSTON ROAD, SUITE 101
 HARTFORD, CT 06108
 www.chappell-engineering.com

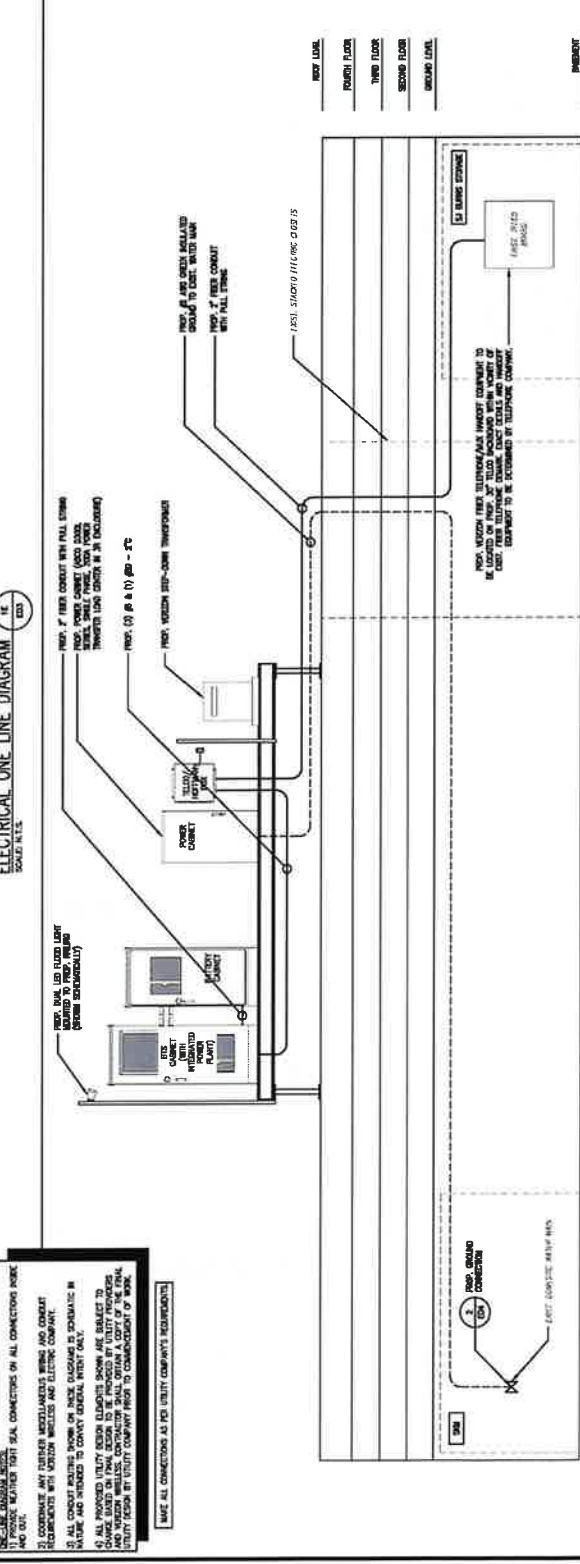
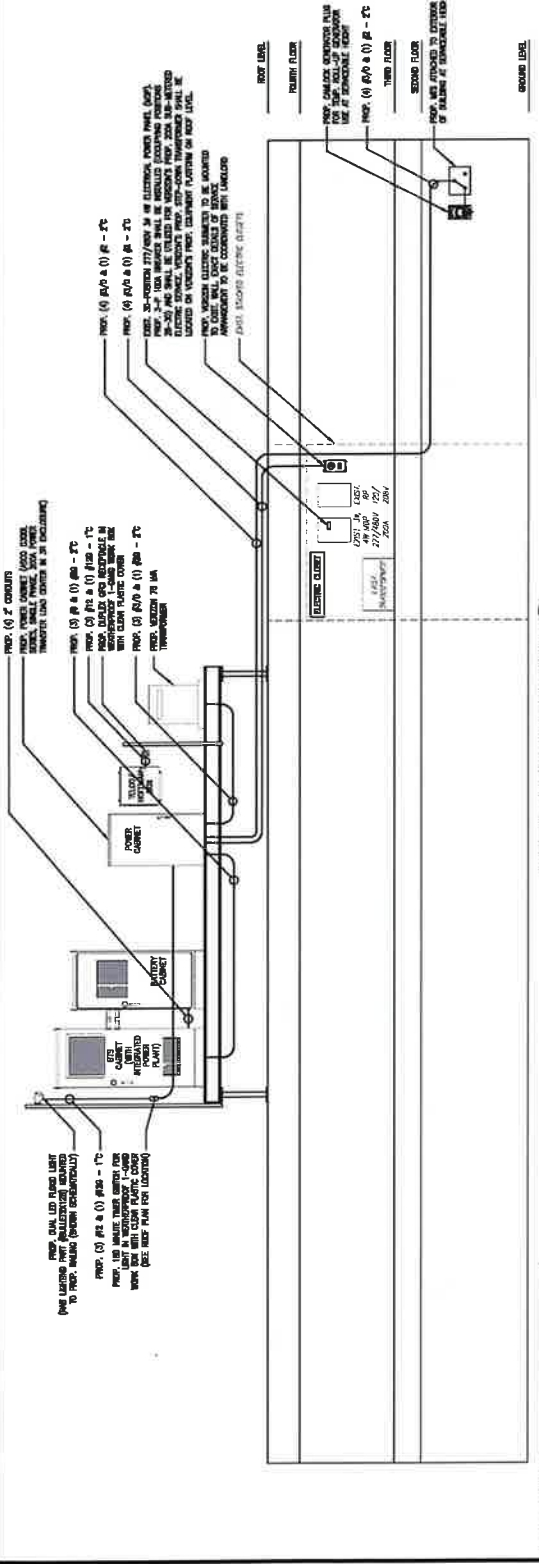
ENGINEER/AND SURVEYOR DATE
 DRAWING SCALE: NOTE
 ALL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND ALL OTHER APPLICABLE CODES AND REGULATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL AUTHORITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF ALL FIELD CONDITIONS AND SURVEY DATA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL AUTHORITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF ALL FIELD CONDITIONS AND SURVEY DATA.

NO.	DESCRIPTION	DATE
0	ISSUED FOR BIDDING	2/29/24
1	ISSUED FOR CONSTRUCTION (FINAL)	3/26/24

PROJECT NAME:
EAST HARTFORD 8 CT RELO
 PROJECT ADDRESS:
880 ROBERTS STREET EAST HARTFORD, CT 06108
 DRAWING TITLE:
ELECTRICAL AND TELCO/FIBER ONE LINE DIAGRAMS
 DRAWING NO.:
E03

CLIENT:
verizon

NO.	DESCRIPTION	DATE
0	ISSUED FOR BIDDING	2/29/24
1	ISSUED FOR CONSTRUCTION (FINAL)	3/26/24



SEE THE GENERAL NOTES.
 1) PROVIDE MATERIAL TESTS, CONNECTIONS ON ALL CONNECTIONS IN AND OUT.
 2) COORDINATE ANY FURTHER MODIFICATIONS WITH THE CONTRACTOR.
 3) ALL CONDUIT SHALL BE FULL CONDUIT WITH FULL CONDUIT.
 4) ALL CONDUIT SHALL BE FULL CONDUIT WITH FULL CONDUIT.
 5) ALL CONDUIT SHALL BE FULL CONDUIT WITH FULL CONDUIT.
 6) ALL CONDUIT SHALL BE FULL CONDUIT WITH FULL CONDUIT.
 7) ALL CONDUIT SHALL BE FULL CONDUIT WITH FULL CONDUIT.
 8) ALL CONDUIT SHALL BE FULL CONDUIT WITH FULL CONDUIT.
 9) ALL CONDUIT SHALL BE FULL CONDUIT WITH FULL CONDUIT.
 10) ALL CONDUIT SHALL BE FULL CONDUIT WITH FULL CONDUIT.

MAKE ALL CONNECTIONS AS PER UTILITY COMPANY'S REQUIREMENTS.

CLIENT



ARCHITECT/ENGINEER

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil Structural Land Surveying

201 BOSTON ROAD WEST
 SUITE 101
 HARTFORD, CT 06115
 (860) 481-7400
 www.chappell-engineering.com

SEAL



ENGINEER/LAND SURVEYOR DATE

TRAINING SCALE NOTE

IF THIS SCALE IS USED FOR ANY OTHER PROJECT, THE USER SHALL BE RESPONSIBLE FOR VERIFYING THAT THE SCALE IS APPROPRIATE FOR THE PROJECT. THE USER SHALL BE RESPONSIBLE FOR VERIFYING THAT THE SCALE IS APPROPRIATE FOR THE PROJECT. THE USER SHALL BE RESPONSIBLE FOR VERIFYING THAT THE SCALE IS APPROPRIATE FOR THE PROJECT.

NO.	REVISIONS	DATE
1	ISSUED FOR CONSTRUCTION (FINAL)	3/27/24
2	ISSUED FOR USE REVIEW	3/27/24

PROJECT NAME:
EAST HARTFORD 8 CT
RIELO

PROJECT ADDRESS:
 800 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
**GROUNDING DIAGRAM,
 NOTES AND DETAILS**

DRAWING NO.

E04

NO.	REVISIONS	DATE
1	ISSUED FOR CONSTRUCTION (FINAL)	3/27/24

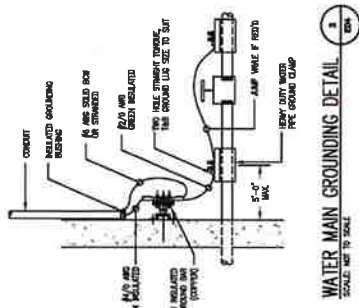
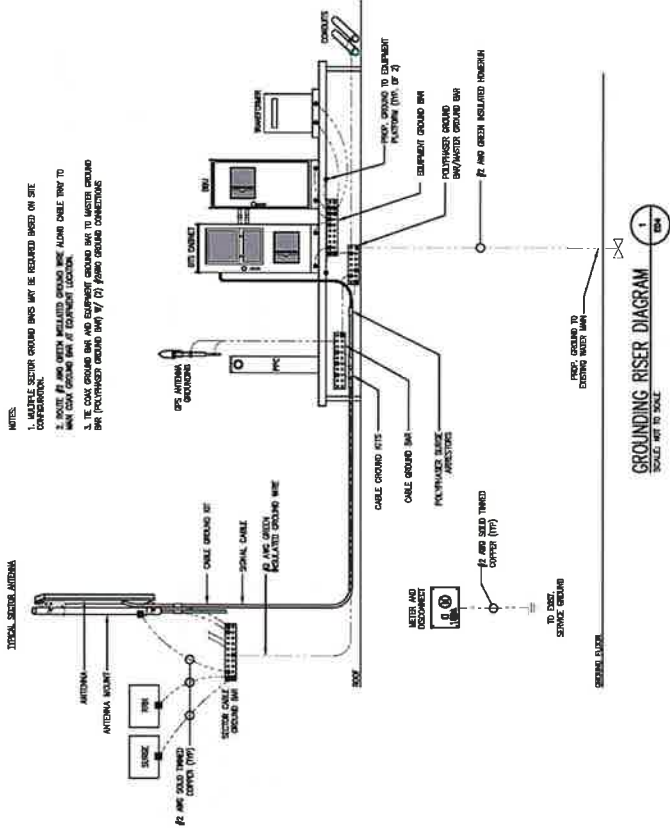
GROUNDING GENERAL NOTES

1. ALL EXTERIOR CONNECTIONS SHALL BE #2 AWG SOLID BARE THINW GROUND UNLESS OTHERWISE NOTED. ALL EXTERIOR CONNECTIONS SHALL BE IDENTIFIED BY NUMBER.
2. ALL CONNECTIONS TO MAIN GROUND BARS AND ALL OTHER THINW JUNCTIONS SHALL BE #4 AWG, BARE, STRANDED COPPER WIRE.
3. ALL WIRE-TO-WIRE CONNECTIONS SHALL BE THREE-CLAMP, C-THINW CONNECTIONS (SEE DETAIL 100) OR THREE-CLAMP, C-THINW CONNECTIONS (SEE DETAIL 100) OR THREE-CLAMP, C-THINW CONNECTIONS (SEE DETAIL 100). ALL OTHER CONNECTIONS TO STEEL SURFACES SHALL USE LOC-TITE CONNECTIONS.
4. SEPARATELY RIGID ANTENNA MOUNTS WITH #2 AWG, BARE, STRANDED CONDUCTORS.
5. ALL GROUNDING WORK SHALL COMPLY WITH NATIONAL WIRELESS AND LIGHTING STANDARDS.
6. CONNECT GROUND CONDUCTORS TO EXISTING WHITE METAL, ATTACH TO WALLS, FRAMING, CABLE TRAY, ETC. TO GROUNDING BUS. ALL GROUNDING WORK SHALL BE IDENTIFIED BY NUMBER, INCLUDING ALL GROUNDING BUS, EQUIPMENT GROUND BARS, INTERMEDIATE, WELDED, ETC. TO GROUNDING BUS.

SYMBOL	DESCRIPTION
▲	METALLICAL CONNECTION
■	EXTERIOR WELD (W/OUT)

NOTES:

1. METALLIC SECTION GROUND BARS MAY BE REQUIRED BASED ON SITE CONFIGURATION.
2. ROUTE #2 AWG GREEN INSULATED GROUND WIRE ALONG CABLE TRAY TO MAIN CHAS GROUND BAR AT EQUIPMENT LOCATION.
3. THE CHAS GROUND BAR AND EQUIPMENT GROUND BAR TO MASTER GROUND BAR (POLYMERIZED GROUND BARS) (P) #2 AWG GREEN INSULATED GROUND WIRE.



WATER MAIN GROUNDING DETAIL
SCALE: NET TO SCALE

CLIENT:
verizon

ARCHITECT/ENGINEER:

CHAPPELL ASSOCIATES, LLC
 201 BOZEMAN CENTRE
 201 BOZEMAN CENTRE
 WILMINGTON, MA 01975
 (508) 681-7400
 www.chapppell.com

SCALE



EXPIRES/AND SUPERIOR DATE

DRAWING SCALE: NOTE:

1. THIS DRAWING IS A PART OF THE PROJECT CONTRACT DOCUMENTS. IT IS TO BE USED ONLY FOR THE PROJECT AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF THE ARCHITECT/ENGINEER.

REVISIONS

NO.	DESCRIPTION	DATE
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1	ISSUED FOR CONSTRUCTION (FINAL)	7/29/21

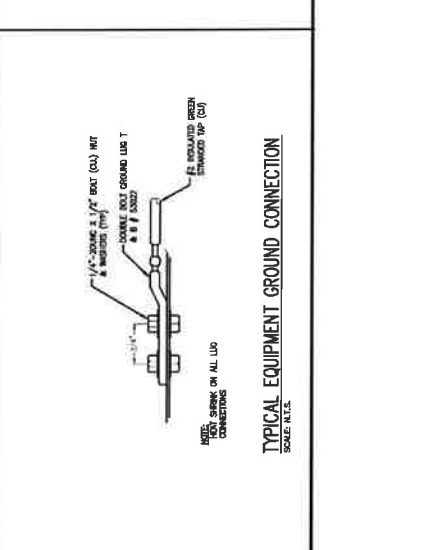
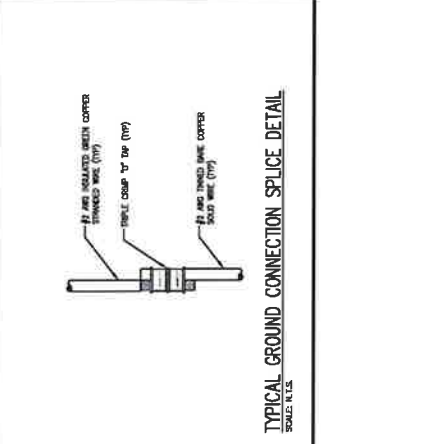
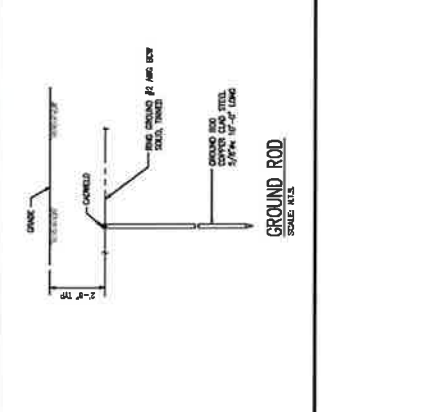
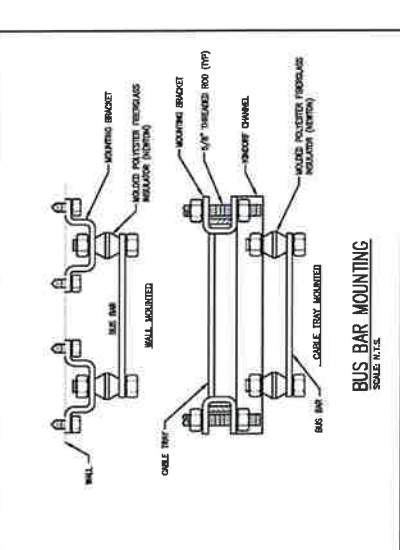
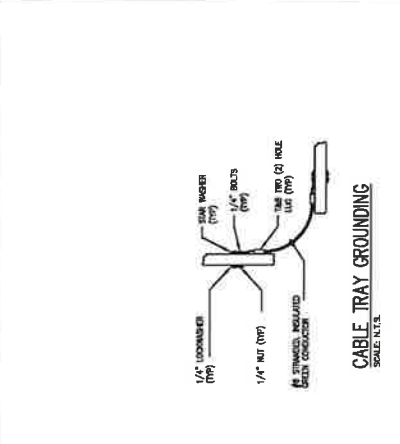
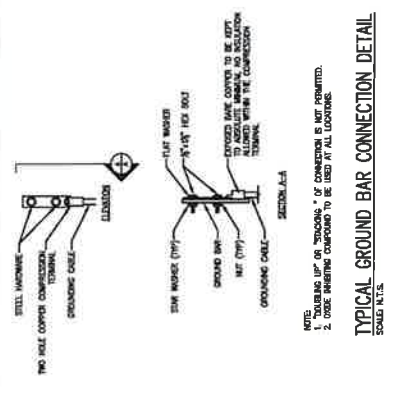
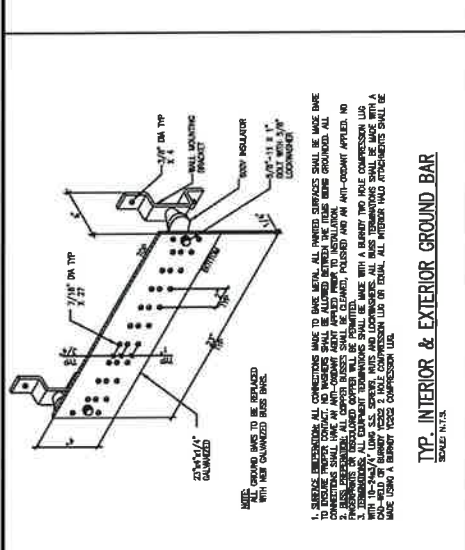
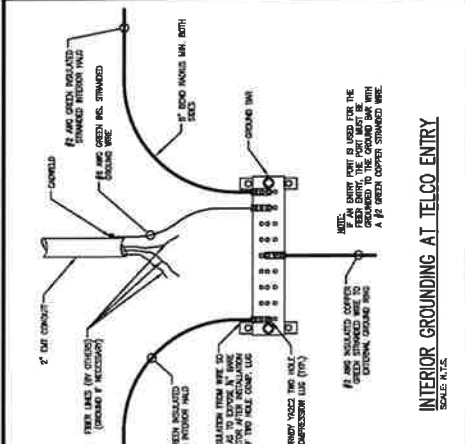
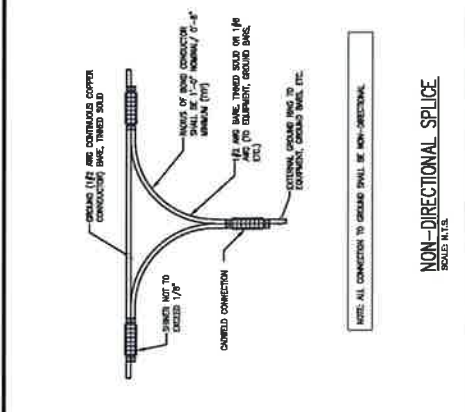
PROJECT NAME:
EAST HARTFORD 8 CT

PROJECT ADDRESS:
800 ROBERTS STREET
EAST HARTFORD, CT 06108

DRAWING TITLE:
GROUNDING DETAILS

DRAWING NO.:
E05

NO.	DATE	BY	CHECKED	APPR.
AS SHOWN				





20 Alexander Drive, 2nd Floor
Wallingford, CT 06492

ANTENNA MOUNT STRUCTURAL ANALYSIS
EAST HARTFORD 8 CT RELO



Address:

330 ROBERTS STREET
EAST HARTFORD, CT 06108

MDG LOCATION ID: 5000924924

Date:

MARCH 25, 2024 (REVISION 1)



March 25, 2024



20 Alexander Drive, 2nd Floor
Wallingford, CT 06492

RE:

Antenna Mount Structural Analysis

Verizon Site Name: East Hartford 8 CT RELO (MDG Location ID:500924924)

Site Address: 330 Roberts Street, East Hartford, CT 06108

CEA Job Number: 96210.431

To whom it may concern:

Chappell Engineering Associates, LLC has performed a structural analysis of the proposed antenna mounts being proposed at the above-referenced location. Our analysis has been performed in accordance with the 2022 Connecticut State Building Code (2021 International Building Code) with Connecticut Amendments. Verizon proposes to install a total of (9) antennas along the inboard side of the existing rooftop screening wall. The existing screening wall is wood faced with an internal steel frame which is secured to the existing structural steel column grid below.

The proposed antenna support structure will consist of nine (9) vertical steel antenna pipe masts secured to the inboard steel framing of the existing rooftop HVAC screening wall. Our analysis has considered the following total major equipment loads indicated on the antenna design summary (included in this report) to be installed on the proposed steel antenna pipe masts:

Appurtenance	Size (HxWxD)(in)	Weight	Location	Status
(3) NHH-65B-R2B Panel Antennas	72.0x11.9x7.1	43.7lbs	Face of Mount	Proposed
(3) NHHSS-65B-R2BT4 Panel Antennas	72.0x11.9x7.1	50.9lbs	Face of Mount	Proposed
(3) Samsung MT6413-77A Panel	28.9x15.8x5.5	57.3lbs	Face of Mount	Proposed
(3) Samsung RF4461d-13A RRH	15.0x15.0x10.2	79.1lbs	Face of Mount	Proposed
(3) Samsung RT4423-48A RRH	11.8x8.7x3.6	15.4lbs	Face of Mount	Proposed
(3) Samsung RRH-BR049 RRH	15.4x15.8x12.0	84.4lbs	Face of Mount	Proposed
(3) Fiber Junction Box	29.58x16.5x12.6	32.0lbs	Face of Mount	Proposed

The proposed antennas and ancillary hardware are shown on the enclosed Construction Drawings.

Based upon our site walks on 06-01-2023 and 06-15-2023, our investigation of the existing HVAC screening wall framing, our review of the proposed loads, and our analysis of the existing rooftop screening wall framing, Chappell Engineering Associates, LLC has determined that the screening wall **has adequate capacity** to support the proposed Verizon antenna and associated ancillary equipment loads as shown on the attached drawings. As currently configured, the screening wall framing is rated at 97%, and the Verizon steel antenna pipe masts are rated at 98% capacity. It should be noted that the proposed steel antenna pipe masts are not significant contributors to the existing screening wall loading.

If you have any questions regarding this matter, please do not hesitate to call.

Very truly yours,



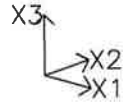

Clement J. Salek, P.E.
Chappell Engineering Associates, LLC
CJS/cjs







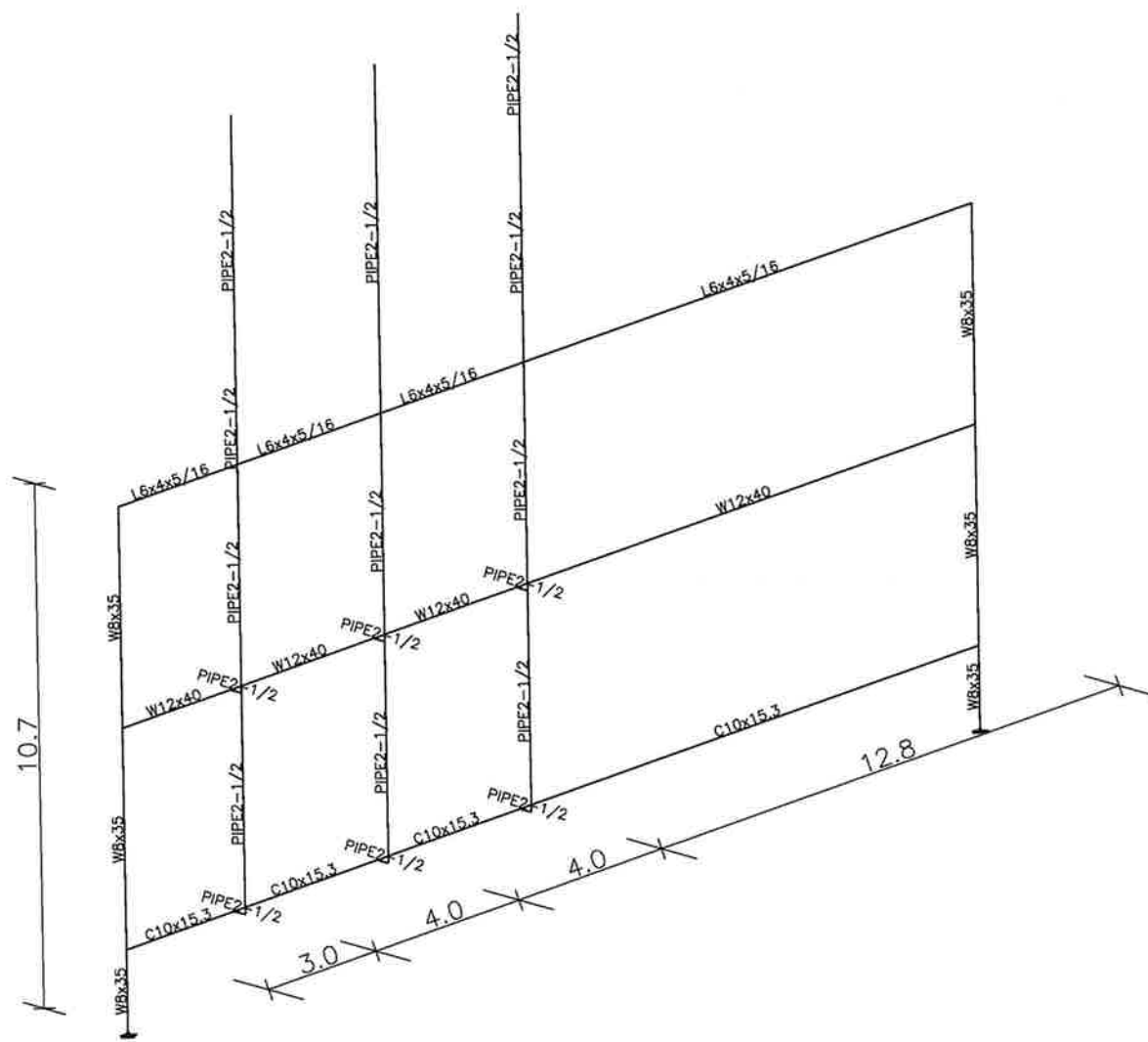
Appendix A – Structural Analysis



SCALE = 1:41

UNITS: kip ft

DATE: 3/20/24



East Hartford 8 MSA

*Prepared by:**Page: 1*
Date: 3/20/24

11:31

Load no. 1: Front Wind (units - kips ft.)

* GROUP NONE
 / JOINT LOADS
 / JOINT LOADS
 FX1 0.18 FX3 -0.05 N 4 13
 FX1 0.045 FX3 -0.03 N 12 14
 / END

FORCE SUMMATION

FX1=0.45 kip
 FX2=0 kip
 FX3=-0.16 kip

Load no. 2: Front Ice (units - kips ft.)

* GROUP NONE
 / JOINT LOADS
 FX1 0.02 FX3 -0.075 N 12 14
 FX1 0.07 FX3 -0.24 N 4 13
 / END

FORCE SUMMATION

FX1=0.18 kip
 FX2=0 kip
 FX3=-0.63 kip

Load no. 3: Side Wind (units - kips ft.)

* GROUP NONE
 / JOINT LOADS
 / JOINT LOADS
 / JOINT LOADS
 FX2 0.11 FX3 -0.05 N 4 13
 FX2 0.015 FX3 -0.03 N 12 14
 / END

FORCE SUMMATION

FX1=0 kip
 FX2=0.25 kip
 FX3=-0.16 kip

East Hartford 8 MSA

Prepared by:**Page: 2****Date: 3/20/24**

11:31

Load no. 4: Side Ice (units - kips ft.)

* GROUP NONE
 / JOINT LOADS
 / JOINT LOADS
 FX2 0.05 FX3 -0.24 N 4 13
 FX2 0.005 FX3 -0.075 N 12 14
 / END

FORCE SUMMATION

FX1=0 kip
 FX2=0.11 kip
 FX3=-0.63 kip

Load no. 5: Selfweight (units - kips ft.)

* GROUP NONE
 / BEAM LOADS
 SELF X3 -1. B 16 3 2 1 6 5 4 17 9 8 7
 / END

FORCE SUMMATION

FX1=0 kip
 FX2=0 kip
 FX3=-0.2826 kip

Load no. 6: Front Frame Wind (units - kips ft.)

* GROUP NONE
 / BEAM LOADS
 DIST GL FX1 0.007 B 3 TO 9 BY 3
 / END

FORCE SUMMATION

FX1=0.0963 kip
 FX2=0 kip
 FX3=0 kip

Load no. 7: Side Frame Wind (units - kips ft.)

* GROUP NONE
 / BEAM LOADS
 DIST GL FX2 0.007 B 16 3 6 17 9
 / END

East Hartford 8 MSA

Prepared by:

Page: 3
Date: 3/20/24

11:31

Load no. 7: Side Frame Wind (units - kips ft.)**FORCE SUMMATION**FX1=0 kip
FX2=0.1522 kip
FX3=0 kip**Load no. 8: Front Frame Ice (units - kips ft.)*** GROUP NONE
/ BEAM LOADS
DIST GL FX1 0.0015 B 3 TO 9 BY 3
/ END**FORCE SUMMATION**FX1=0.0206 kip
FX2=0 kip
FX3=0 kip**Load no. 9: Side Frame Ice (units - kips ft.)*** GROUP NONE
/ BEAM LOADS
DIST GL FX2 0.0015 B 16 3 6 17 9
/ END**FORCE SUMMATION**FX1=0 kip
FX2=0.0326 kip
FX3=0 kip**Load no. 10: screenwall wind (units - kips ft.)*** GROUP NONE
/ GLOBAL LOADS
/ GLOBAL LOADS
/ GLOBAL LOADS
/ GLOBAL LOADS
DIST FX1 0.028 PLANE -0.3 -3 0 -0.3 -3 9 -0.3 20.8 9 PT 0 23.8 BEAMS
/ END**FORCE SUMMATION**FX1=5.9976 kip
FX2=0 kip
FX3=0 kip

East Hartford 8 MSA

Page: 4
Date: 3/20/24

Prepared by:

11:31

Load no. 11: screen ice (units - kips ft.)

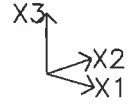
* GROUP NONE
/ GLOBAL LOADS
/ GLOBAL LOADS
/ GLOBAL LOADS
DIST FX1 0.009 PLANE -0.3 -3 0 -0.3 -3 9 -0.3 20.8 9 PT 0 23.8 BEAMS
/ END STATIC

FORCE SUMMATION

FX1=1.9278 kip
FX2=0 kip
FX3=0 kip

East Hartford 8 MSA

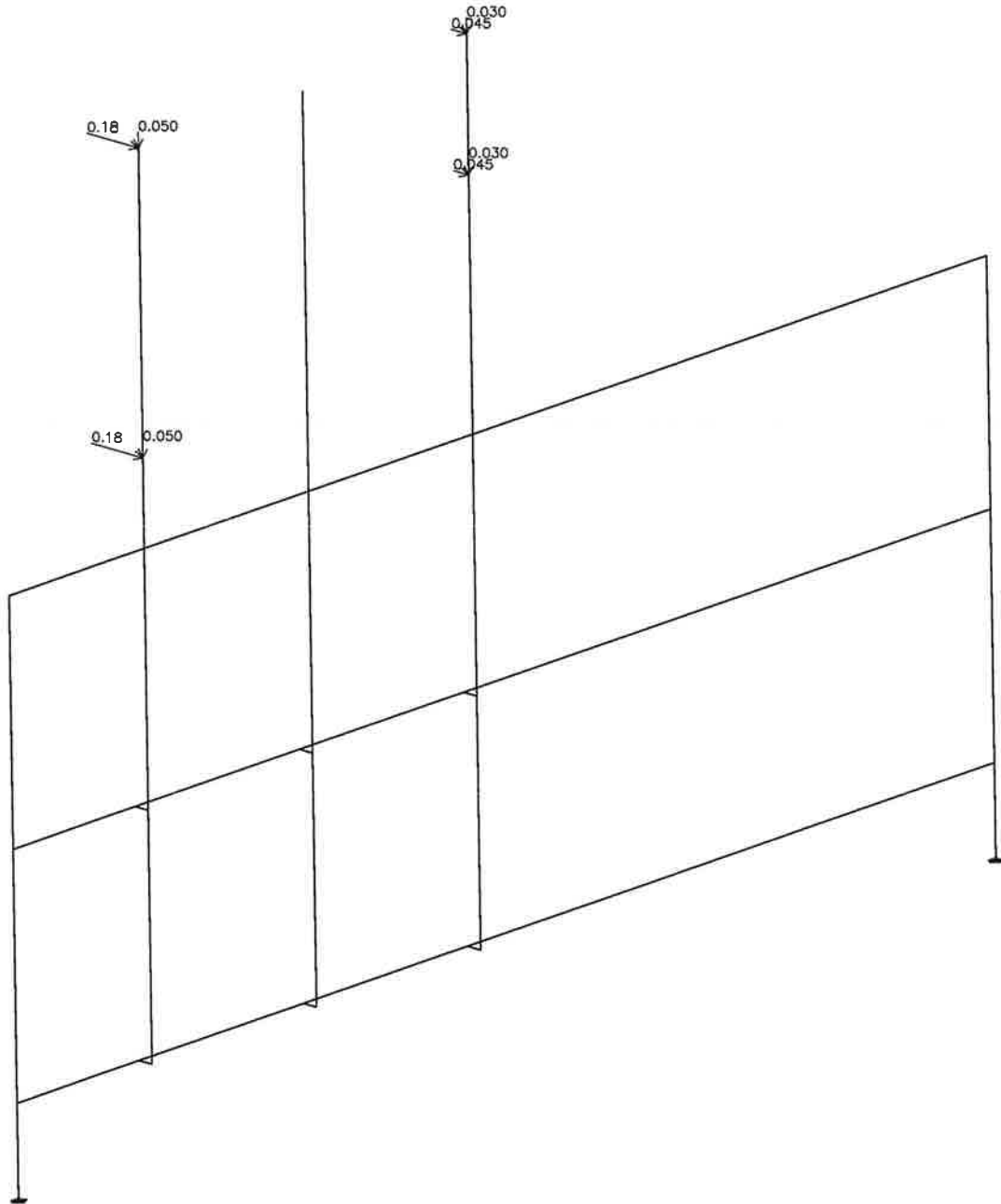
Load 1: Front Wind



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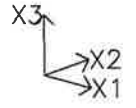
UNITS: kip ft

DATE: 3/20/24



East Hartford 8 MSA

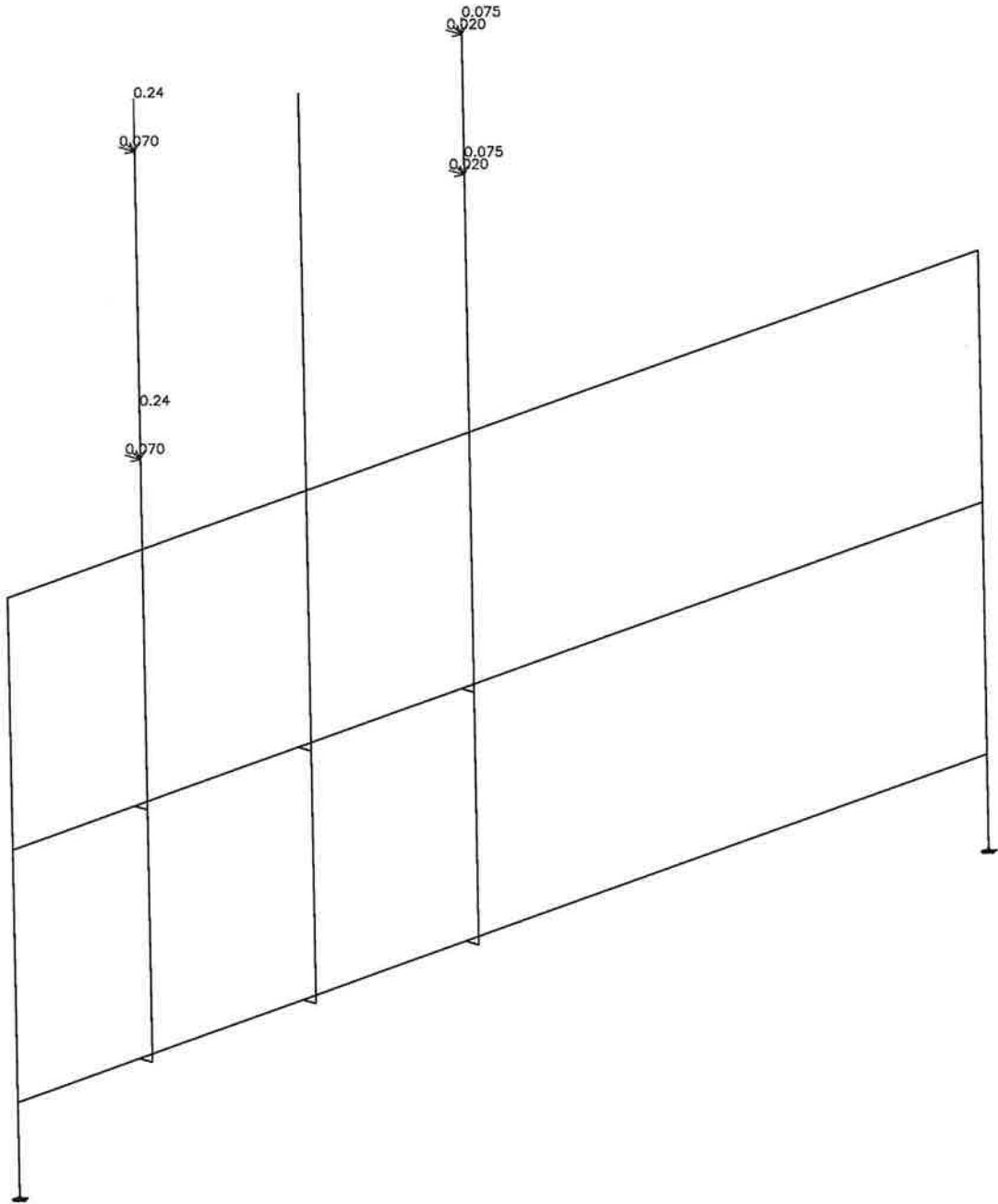
Load 2: Front Ice



SCALE = 1:34

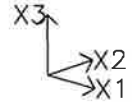
UNITS: kip ft

DATE: 3/20/24



East Hartford 8 MSA

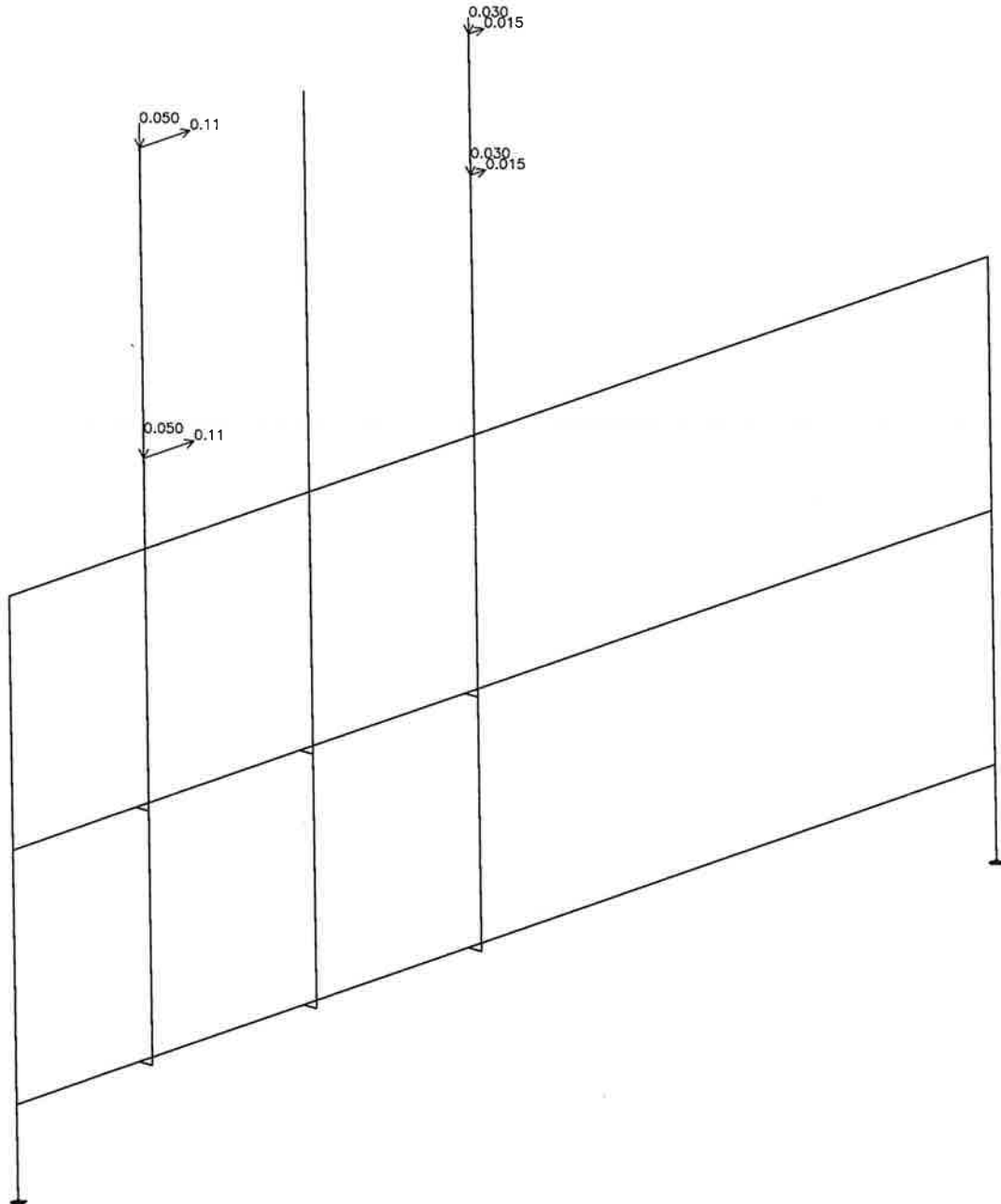
Load 3: Side Wind



SCALE = 1:34

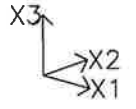
UNITS: kip ft

DATE: 3/20/24



East Hartford 8 MSA

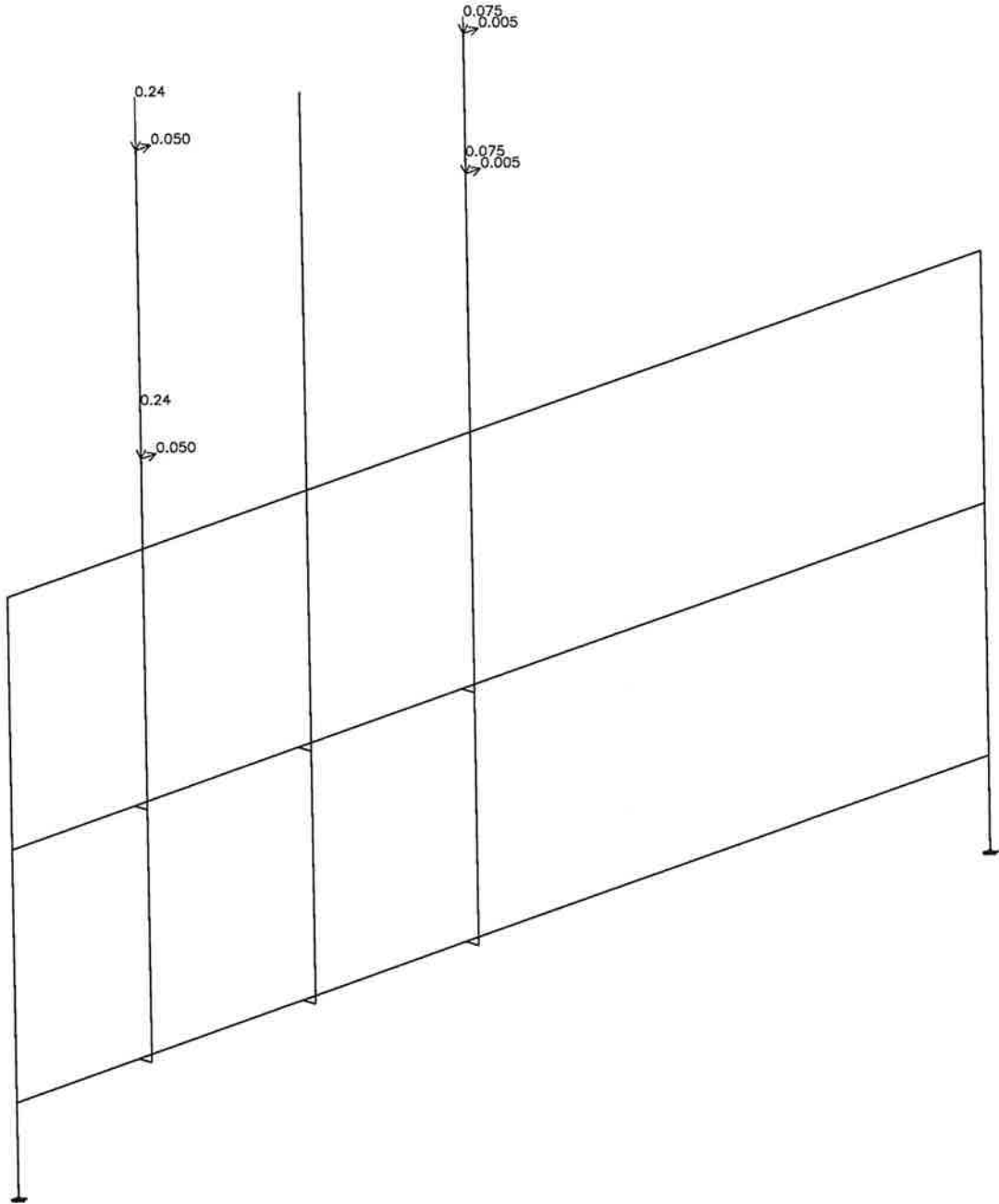
Load 4: Side Ice



SCALE = 1:34

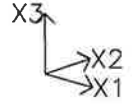
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DATE: 3/20/24



East Hartford 8 MSA

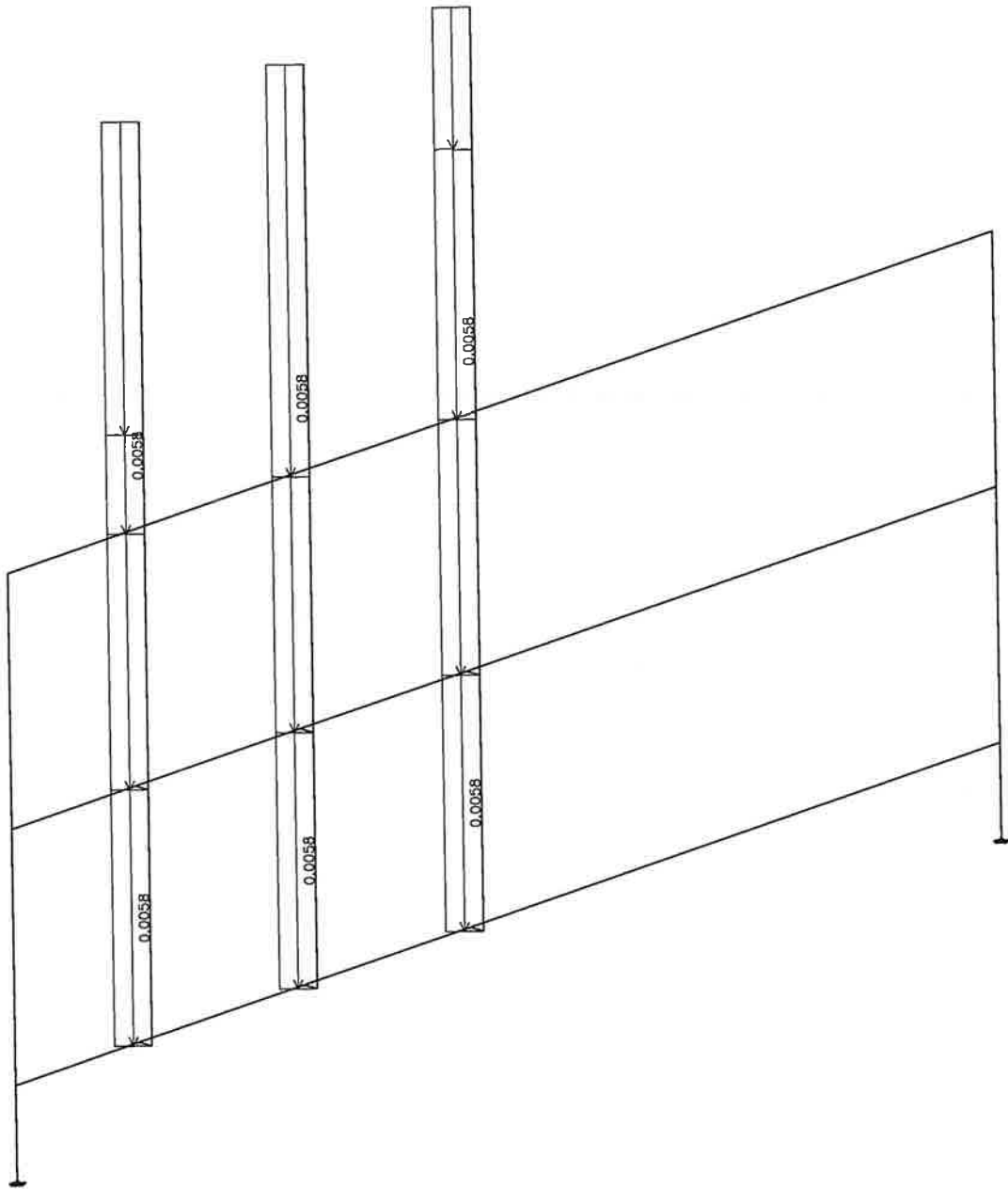
Load 5: Selfweight



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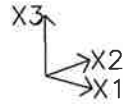
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DATE: 3/20/24



East Hartford 8 MSA

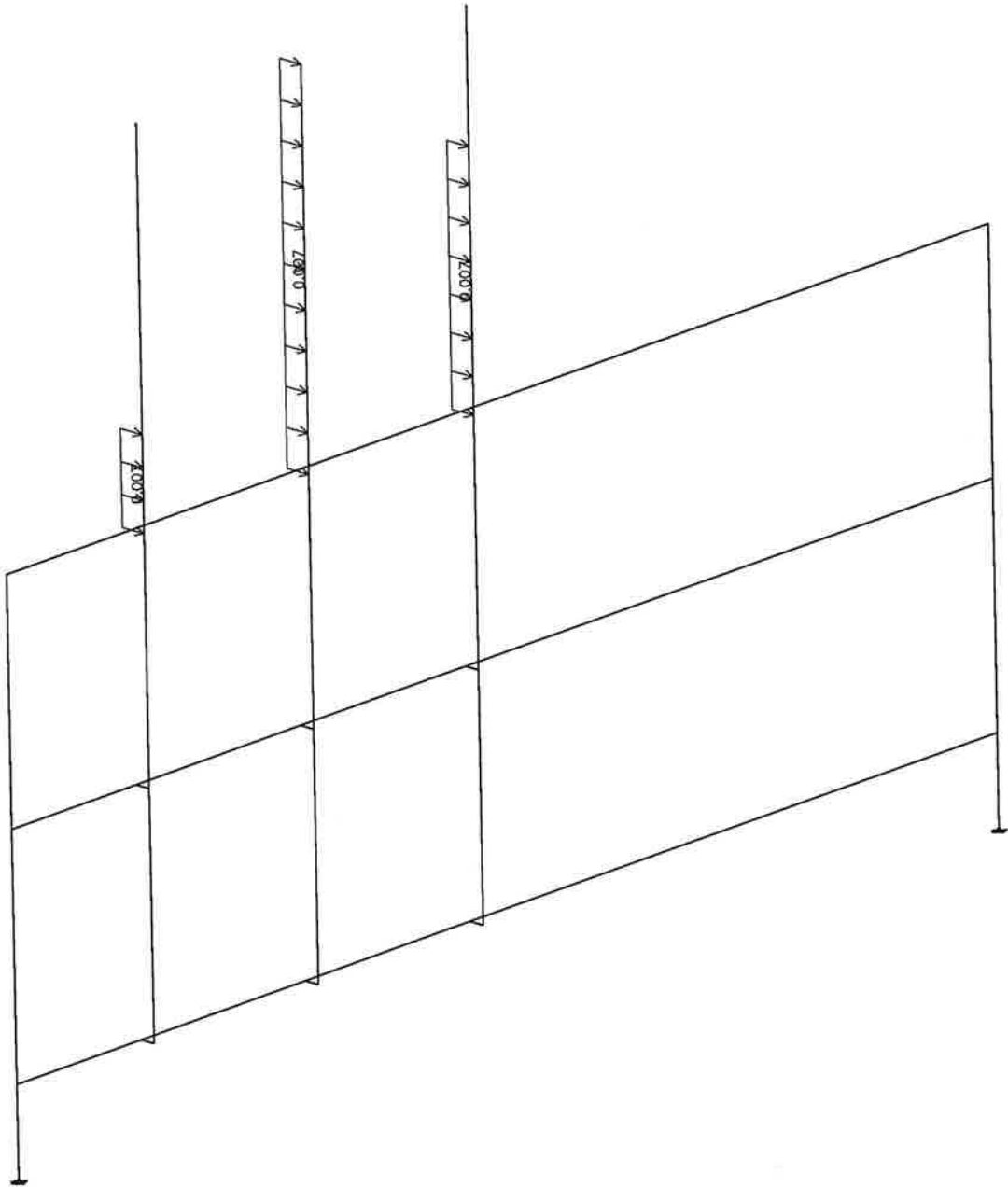
Load 6: Front Frame Wind



SCALE = 1:34

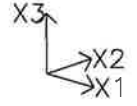
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DATE: 3/20/24



East Hartford 8 MSA

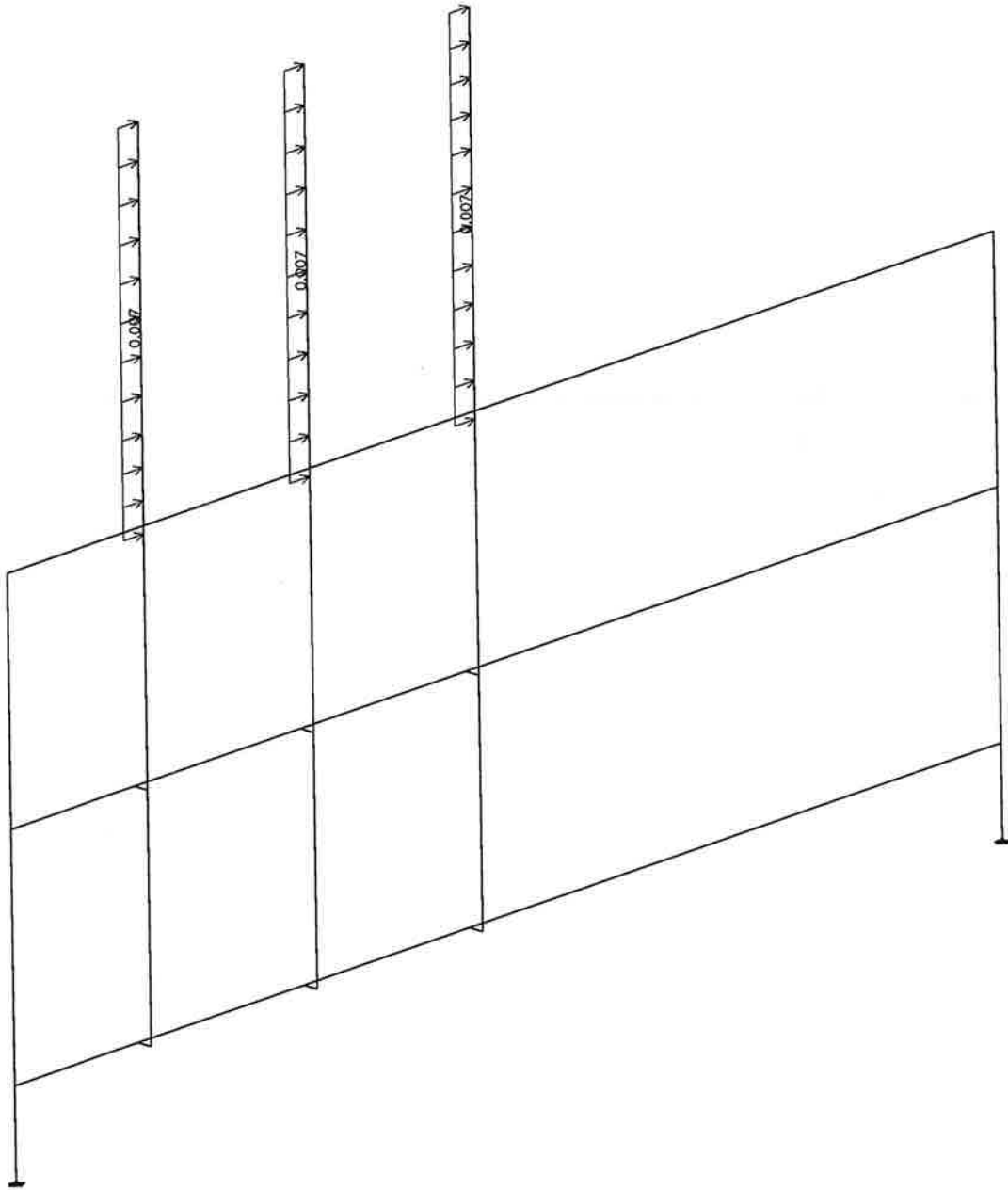
Load 7: Side Frame Wind



SCALE = 1:34

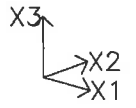
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DATE: 3/20/24



East Hartford 8 MSA

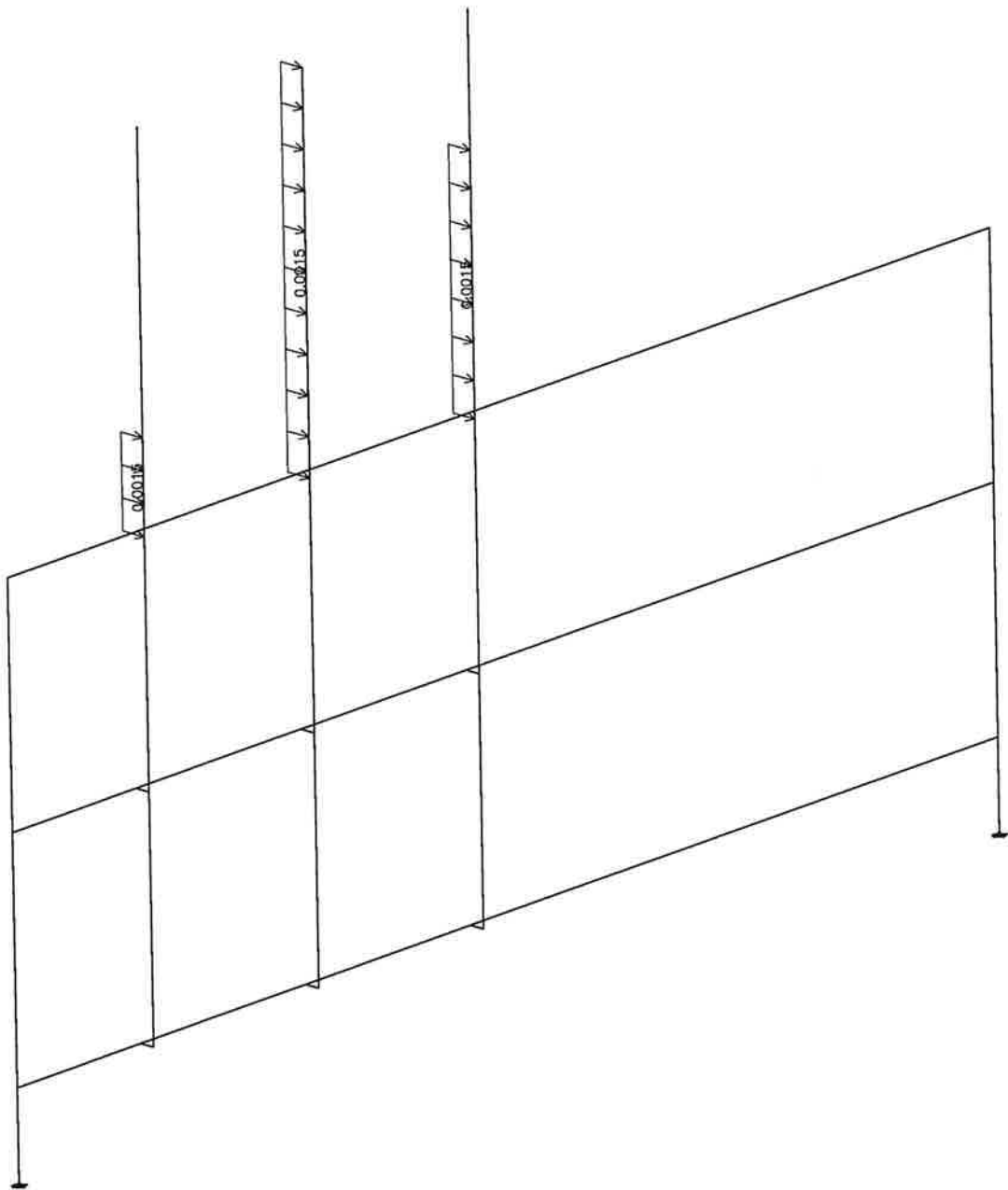
Load 8: Front Frame Ice



SCALE = 1:34

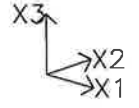
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DATE: 3/20/24



East Hartford 8 MSA

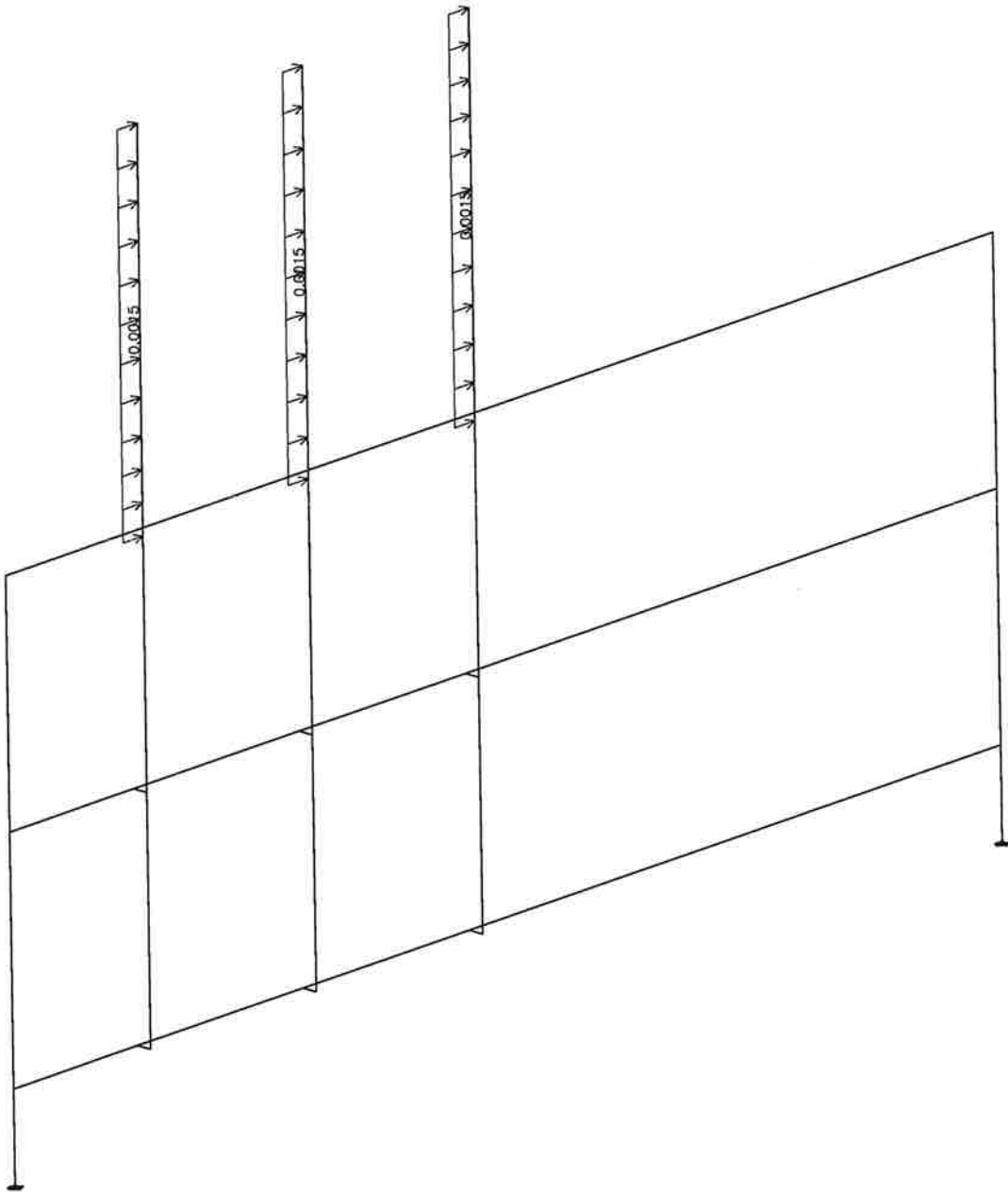
Load 9: Side Frame Ice



SCALE = 1:34

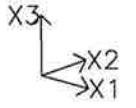
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DATE: 3/20/24



East Hartford 8 MSA

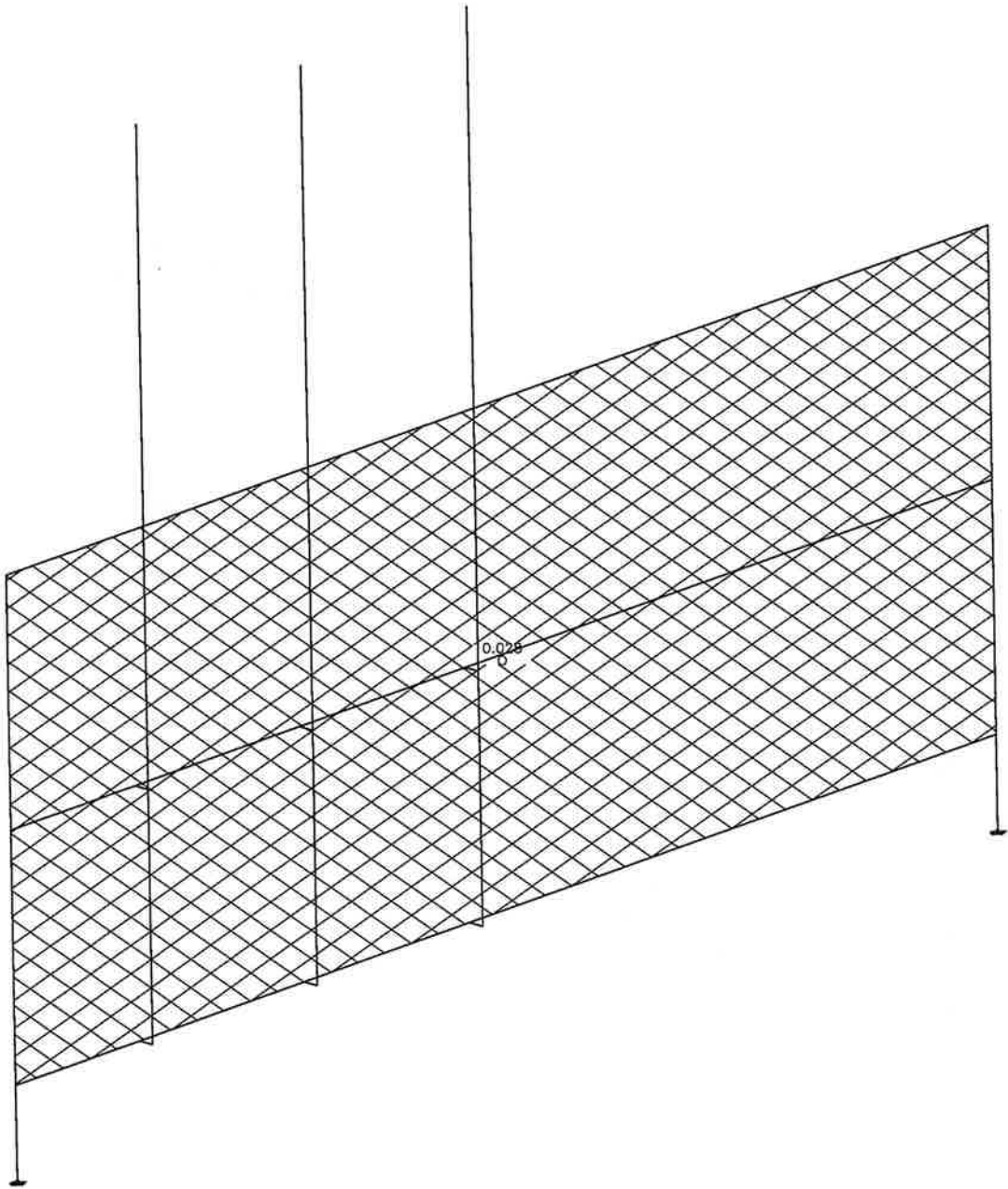
Load 10: screenwall wind



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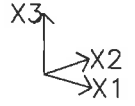
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DATE: 3/20/24



East Hartford 8 MSA

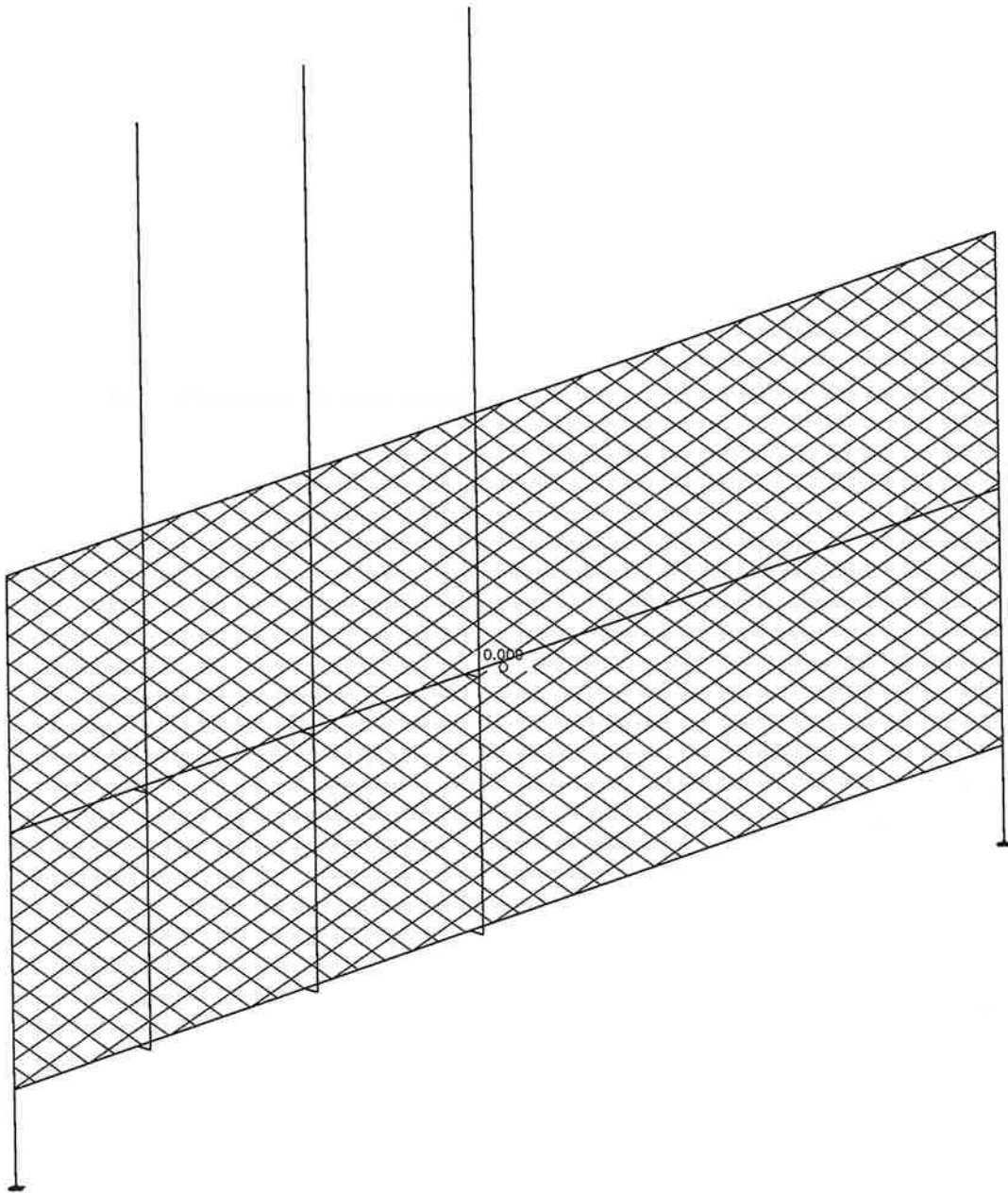
Load 11: screen ice



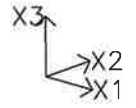
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UNITS: kip ft

DATE: 3/20/24



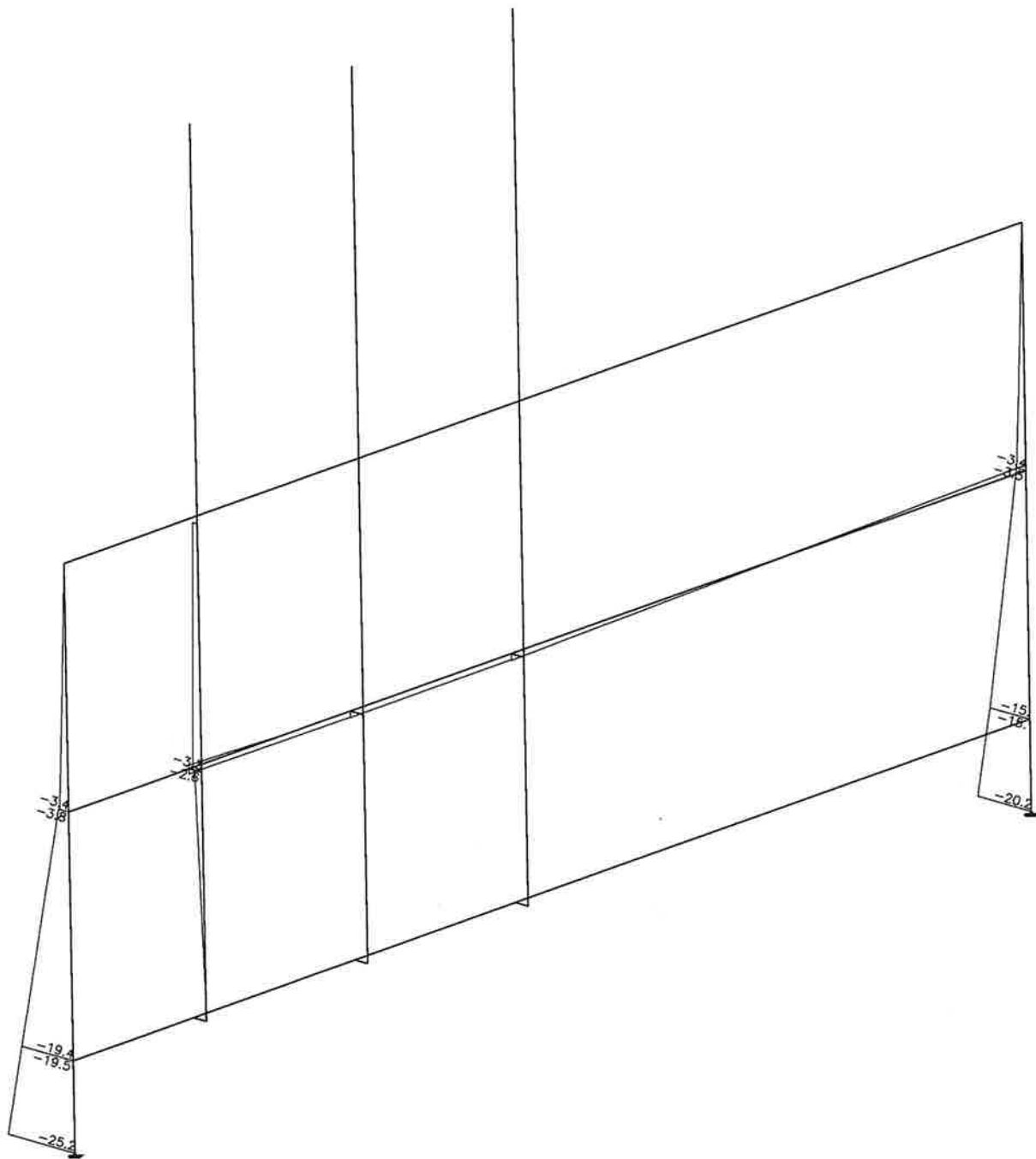
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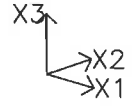


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UNITS: kip*ft

DATE: 3/20/24

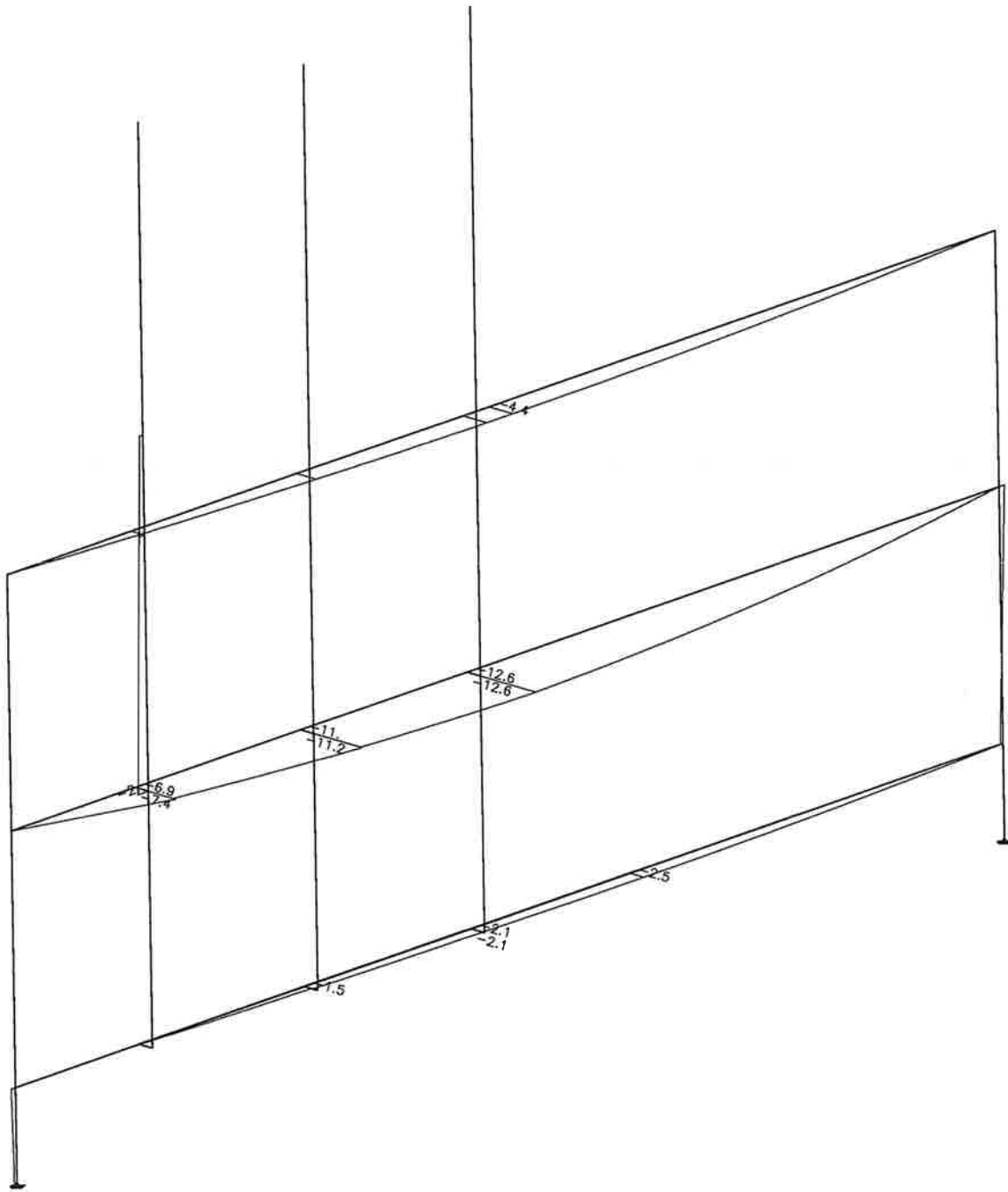


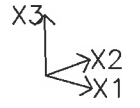


SCALE = 1:32

UNITS: kip*ft

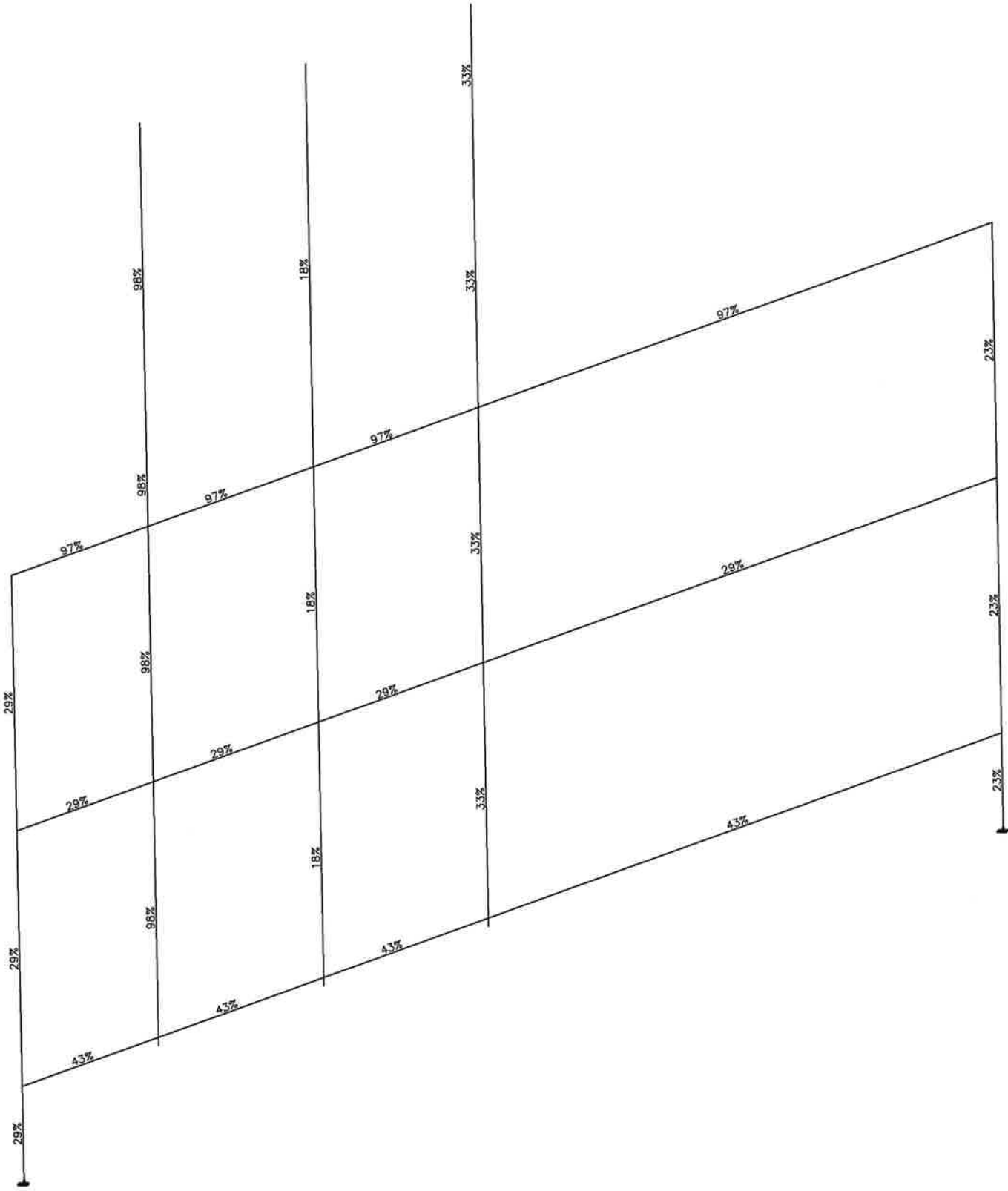
DATE: 3/20/24



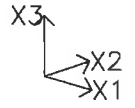


SCALE = 1:27

DATE: 3/20/24



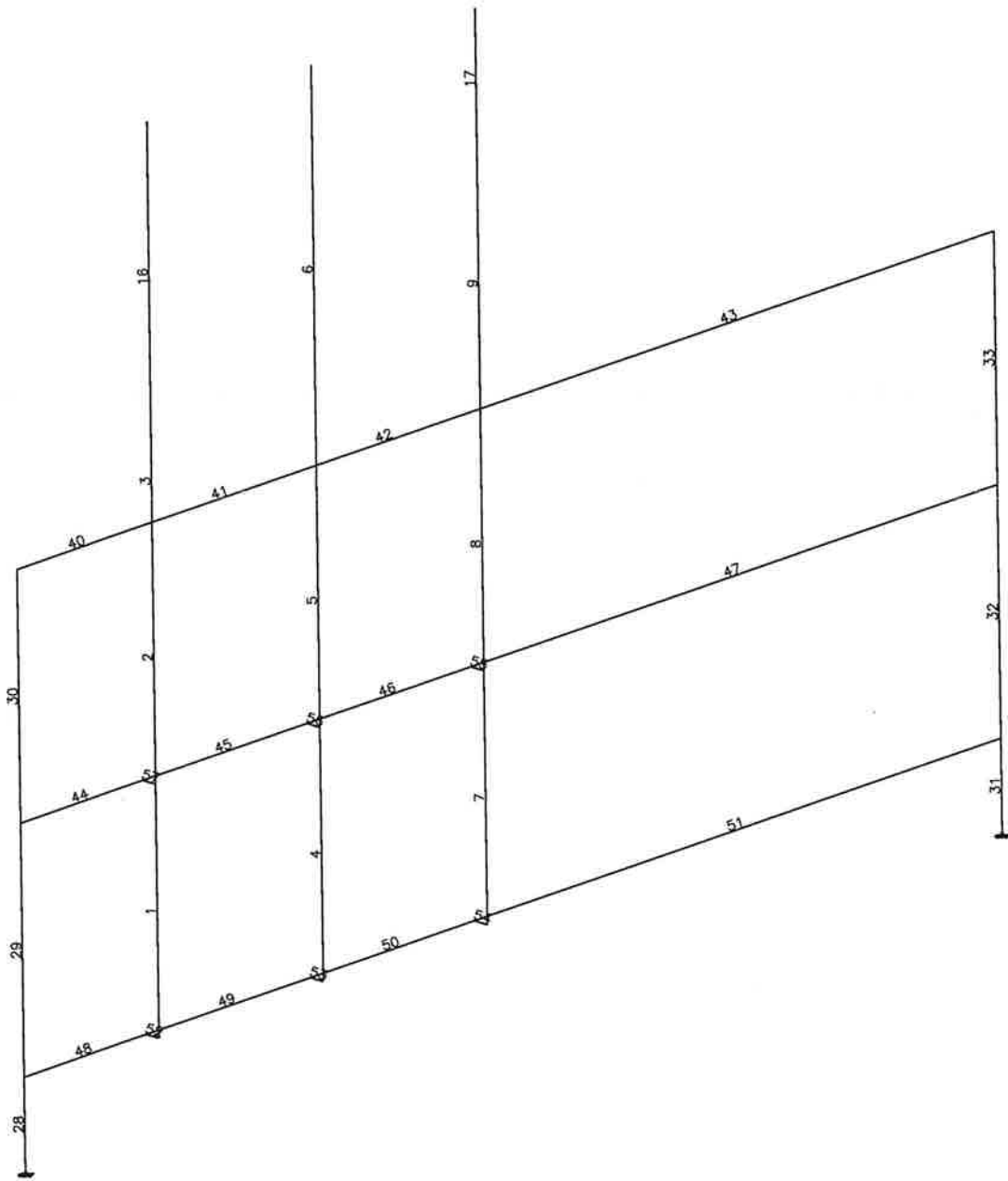
Actual/allowable Moment+Axial



SCALE = 1:34

UNITS: kip ft

DATE: 3/20/24



East Hartford 8 MSA

Code: AISC-LRFD

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Prepared by:

-11:38-

Results Summary Table

Beam	Section	Com	Defl L/	Sten	CAPACITY					Combined Axial+Mom	
					Axial	Dir	Shear	Mom	LTB		
1	PIPE 2-1/2	1	87	206	-0.05	MJ	0.04	0.87	0.87	0.98	***
						MI	0.01	0.52	0.00		
4	PIPE 2-1/2	1	599	206	-0.01	MJ	0.01	0.17	0.17	0.18	
						MI	0.00	0.11	0.00		
7	PIPE 2-1/2	1	234	206	-0.02	MJ	0.01	0.31	0.31	0.33	***
						MI	0.00	0.11	0.00		
30	W 8x35	1	2298	63	0.00	MJ	0.07	0.27	0.27	0.29	
						MI	0.00	0.02	0.00		
33	W 8x35	1	2844	63	0.00	MJ	0.06	0.22	0.22	0.23	
						MI	0.00	0.02	0.00		
40	L 6x4x5/16	1	100	324	-0.02	MI	0.00	0.48	0.00	0.97	***
						MJ	0.02	0.36	0.71		
44	W 12x40	1	290	148	0.00	MJ	0.01	0.01	0.01	0.29	
						MI	0.02	0.28	0.00		
48	C 10x15.3	1	2151	401	-0.02	MI	0.02	0.23	0.00	0.43	***
						MJ	0.01	0.06	0.19		

East Hartford 8 MSA

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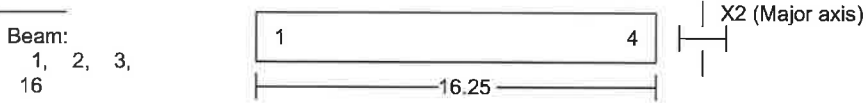
Page: 1

Date: 3/20/24

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Detailed Results Table for Beam 1 - 16

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch



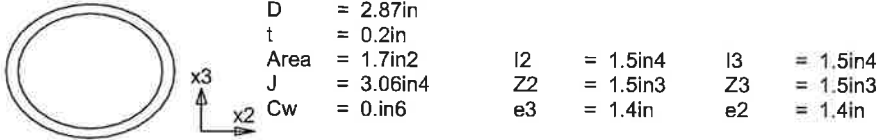
CONSTRAINTS

- Sections : Check
- Steel Grade: A53

DESIGN DATA

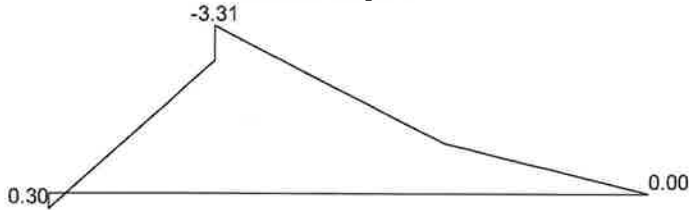
- Kx = 1.00 - Ky = 1.00
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

Section: PIPE 2-1/2



DESIGN COMBINATION = 1

M2 Moment Diagram



Max. AXIAL Force = -0.95 (compr.) Max. SHEAR Force = 0.65

M3 Moment Diagram



Max. AXIAL Force = -0.95 (compr.) Max. SHEAR Force = 0.11

SECTION CLASSIFICATION: *** COMPACT ***

Limiting Ratios: Compact Non-Compact Slender -axial
 d/t = 14.04 < 58.0 256.9 91.1 (Fy = 35.0 R = 0.016)

DESIGN	EQUATION	FACTORS	VALUES	RESULT
V2 Shear G2.1.b-i	$V_u/0.9V_n < 1.00$ $V_n = 0.6 \cdot F_y \cdot A_w$	$A_w = 0.85$	$V_u = 0.11$ $V_n = 17.89$	0.01
M3 Moment (F8-1) without LTB	$M / (0.9M_n) < 1.00$	$Z = 1.45$	$M = 0.28$ $M_n = 4.24$	0.07
V3 Shear G2.1.b-i	$V_u/0.9V_n < 1.00$ $V_n = 0.6 \cdot F_y \cdot A_w$	$A_w = 0.85$	$V_u = 0.65$ $V_n = 17.89$	0.04

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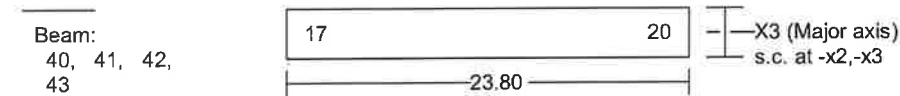
Detailed Results Table for Beam 1 - 16

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch

DESIGN	EQUATION	FACTORS	VALUES	RESULT
M2 Moment (F8-1) without LTB	$\frac{M}{0.9M_n} < 1.00$	Z = 1.45	M = 3.31 Mn = 4.24	0.87
Deflection	$\frac{\text{defl.}}{L / 240} < 1.00$		defl = 2.23944	2.76
Axial Force (E3-1)	$\frac{P_u}{0.9A_g F_{cr}}$ Slender. reduct. < 1.00	(kL/r)x = 114 (kL/r)y = 114 x = 0.56	Pu = 0.95 Ag = 1.70 Fcr = 17.95 y = 0.56	0.03
Combined Forces (compress.) (H1-1b)	$\frac{P_r}{2\phi P_n} + \frac{M_{rx}}{\phi M_{nx}} + \frac{M_{ry}}{\phi M_{ny}} < 1.00$	Cmx = 1.00 Cmy = 1.00 Pex = 37.36 Pey = 37.36	Mrx = 3.39 Mry = 0.29 B1x = 1.03 B1y = 1.03	0.98

Detailed Results Table for Beam 40 - 43

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch



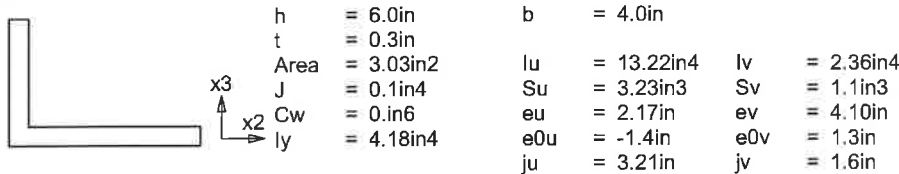
CONSTRAINTS

- Sections : Check
- Steel Grade: A36

DESIGN DATA

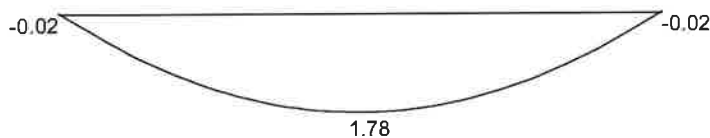
- Kx = 1.00 - Ky = 1.00
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

Section: L 6x4x5/16



DESIGN COMBINATION = 1

Mv (M2) Moment Diagram



Max. AXIAL Force = 0.00 (compr.) Max. SHEAR Force = 0.00

East Hartford 8 MSA

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Prepared by:

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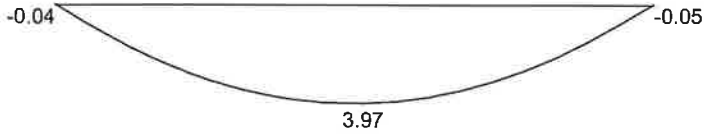
Date: 3/20/24

11:39

Detailed Results Table for Beam 40 - 43

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch

Mu (M3) Moment Diagram



Max. AXIAL Force = 0.00 (compr.) Max. SHEAR Force = 0.68

SECTION CLASSIFICATION: *** NON-COMPACT / SLENDER ***

Limiting Ratios: Compact Non-Compact Slender -axial
 d/t= 19.29 < 15.3 25.8 12.8 (Fy= 36.0)
 b/t= 12.86 < 15.3 25.8 12.8

DESIGN	EQUATION	FACTORS	VALUES	RESULT
V2 Shear G2.1.b-i	$\frac{Vu}{0.9Vn} < 1.00$ $Vn = 0.6 * Fy * Aw$	Aw = 1.87	Vu = 0.68 Vn = 40.31	0.02
M3 Moment (F10-6) FLB	$\frac{M}{0.9Mn} < 1.00$	$\lambda = 19.29$ $\lambda_p = 15.33$ $\lambda_r = 25.83$	M = 3.97 Mn = 12.21 Mp = 14.52 Mr = 8.37	0.36
M2 Moment (F10-6) FLB	$\frac{M}{0.9Mn} < 1.00$	$\lambda = 19.29$ $\lambda_p = 15.33$ $\lambda_r = 25.83$	M = 1.78 Mn = 4.11 Mp = 4.89 Mr = 2.82	0.48
Deflection	$\frac{\text{defl.}}{L / 240} < 1.00$		defl = 2.85326	2.40
Axial Force (E7-1)	$\frac{Pu}{0.9AeFcr} < 1.00$	(kL/r)x = 147 (kL/r)y = 324 Ae = 3.03	Pu = 0.00 Ag = 3.03 Fcr = 2.39	0.00
Lateral Torsional Buckling (F10-2,3)	$\frac{M}{0.9Mn} < 1.00$ Critical Segment from 0.00 to 23.80 at: Long leg tip Segment End Moments: -0.04 and -0.05	Lb = 23.80 Cb = 1.14	M = 3.97 Mn = 6.17 My = 9.68 Mcr = 7.90	0.71
Combined Forces (compress.) (H1-1b)	$\frac{Pr}{2\phi Pn} + \frac{Mrx}{\phi Mn_x} + \frac{Mry}{\phi Mn_y} < 1.00$ Critical Segment from 0.00 to 23.80 at: Long leg tip	Cmx = 1.00 Cmy = 1.00 Pex = 40.00 Pey = 8.27 Mnx = 6.17 (0.00 + 0.71 + 0.25)	Mrx = 3.97 Mry = 1.78 B1x = 1.00 B1y = 1.00 Mny = 7.87	0.97

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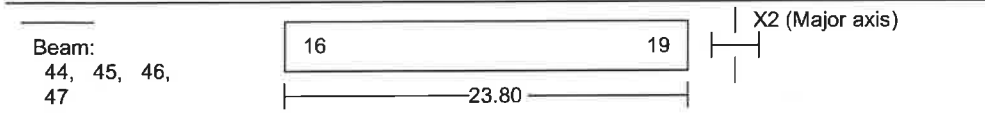
Prepared by:

Date: 3/20/24

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Detailed Results Table for Beam 44 - 47

Moments: kips*foot, Forces: kips, Stresses: ksi, Section prop.: inch



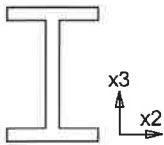
CONSTRAINTS

- Sections : Check
- Steel Grade: A36

DESIGN DATA

- Kx = 1.00 - Ky = 1.00
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

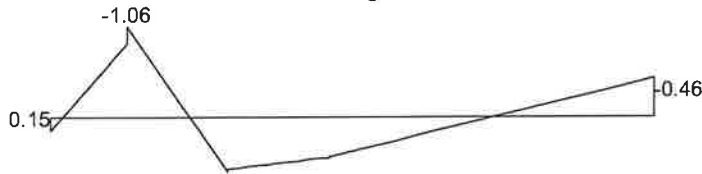
Section: W 12x40



h = 11.94in	bf = 8.0in		
tw = 0.3in	tf = 0.5in		
Area = 11.80in ²	I ₂ = 310.0in ⁴	I ₃ = 44.10in ⁴	
J = 0.9in ⁴	Z ₂ = 57.50in ³	Z ₃ = 16.80in ³	
C _w = 1437in ⁶	e ₃ = 5.97in	e ₂ = 4.0in	

DESIGN COMBINATION = 1

M2 Moment Diagram



Max. AXIAL Force = -0.14 (compr.) Max. SHEAR Force = 0.42
M3 Moment Diagram



Max. AXIAL Force = -0.14 (compr.) Max. SHEAR Force = 2.59

SECTION CLASSIFICATION: *** COMPACT ***

Limiting Ratios:	Compact	Non-Compact	Slender -axial	
d/t= 32.87	< 106.7	161.8	42.3	(Fy= 36.0 R= 0.000)
b/t= 7.76	< 10.8	28.4	15.9	

DESIGN	EQUATION	FACTORS	VALUES	RESULT
V2 Shear G2.1.b-i	$V_u/0.9V_n < 1.00$ $V_n = 0.6 * F_y * A_w$	$A_w = 8.26$	$V_u = 2.59$ $V_n = 178.33$	0.02
M3 Moment (F6-1) without LTB	$M / 0.9M_n < 1.00$	$Z = 16.80$	$M = 12.62$ $M_n = 50.40$	0.28
V3 Shear G2.1.a	$V_u/V_n < 1.00$ $V_n = 0.6 * F_y * A_w$	$A_w = 3.53$	$V_u = 0.42$ $V_n = 76.16$	0.01

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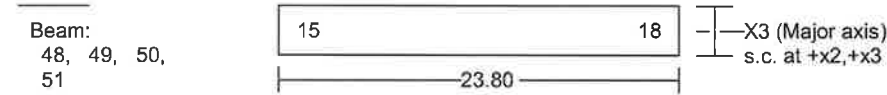
Detailed Results Table for Beam 44 - 47

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch

DESIGN	EQUATION	FACTORS	VALUES	RESULT
M2 Moment (F2-1) without LTB	$\frac{M}{0.9M_n} < 1.00$	Z = 57.50	M = 1.06 M _n = 172.51	0.01
Deflection	$\frac{\text{defl.}}{L / 240} < 1.00$		defl = 0.98652	0.83
Axial Force (E3-1)	$\frac{P_u}{0.9A_g F_{cr}} < 1.00$	(kL/r) _x = 55 (kL/r) _y = 145	P _u = 0.14 A _g = 11.80 F _{cr} = 11.93	0.00
Combined Forces (compress.) (H1-1b)	$\frac{P_r}{2\phi P_n} + \frac{M_{rx}}{\phi M_{nx}} + \frac{M_{ry}}{\phi M_{ny}} < 1.00$	C _{mx} = 1.00 C _{my} = 1.00 P _{ex} = 1128.38 P _{ey} = 160.52	M _{rx} = 1.06 M _{ry} = 12.63 B _{1x} = 1.00 B _{1y} = 1.00	0.29

Detailed Results Table for Beam 48 - 51

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch



CONSTRAINTS

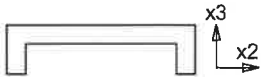
- Sections : Check
- Steel Grade: A36

DESIGN DATA

- K_x = 1.00 - K_y = 1.00
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

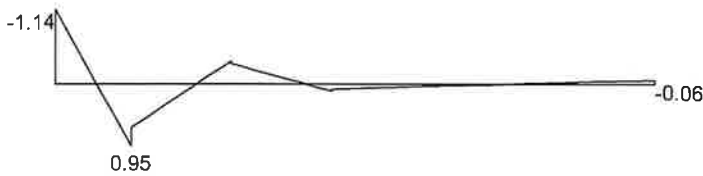
Section: C 10x15.3

h = 10.0in	bf = 2.60in		
tw = 0.2in	tf = 0.4in		
Area = 4.50in ²	I ₂ = 2.28in ⁴	I ₃ = 67.40in ⁴	
J = 0.2in ⁴	Z ₂ = 2.35in ³	Z ₃ = 15.80in ³	
C _w = 44.69in ⁶	e ₃ = 2.0in	e ₂ = 5.0in	



DESIGN COMBINATION = 1

M2 Moment Diagram



Max. AXIAL Force = -0.21 (compr.) Max. SHEAR Force = 0.70

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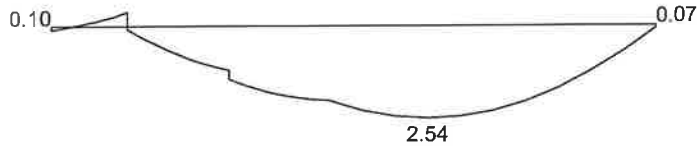
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Detailed Results Table for Beam 48 - 51

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch

M3 Moment Diagram



Max. AXIAL Force = -0.21 (compr.) Max. SHEAR Force = 0.49

SECTION CLASSIFICATION: *** COMPACT ***

Limiting Ratios:	Compact	Non-Compact	Slender -axial	
d/t= 33.31	< 106.7	161.8	42.3	(Fy= 36.0 R= 0.001)
b/t= 5.95	< 10.8	28.4	15.9	

DESIGN	EQUATION	FACTORS	VALUES	RESULT
V2 Shear G2.1.b-i	$\frac{V_u}{0.9V_n} < 1.00$ $V_n = 0.6 \cdot F_y \cdot A_w$	$A_w = 2.40$	$V_u = 0.49$ $V_n = 51.87$	0.01
M3 Moment (F2-1) without LTB	$\frac{M}{0.9M_n} < 1.00$	$Z = 15.80$	$M = 2.54$ $M_n = 47.40$	0.06
V3 Shear G2.1.b-i	$\frac{V_u}{0.9V_n} < 1.00$ $V_n = 0.6 \cdot F_y \cdot A_w$	$A_w = 2.27$	$V_u = 0.70$ $V_n = 49.05$	0.02
M2 Moment (F6-1) without LTB	$\frac{M}{0.9M_n} < 1.00$	$Z = 1.86$	$M = 1.14$ $M_n = 5.57$	0.23
Deflection	$\frac{\text{defl.}}{L / 240} < 1.00$		defl = 0.13277	0.11
Axial Force (E3-1)	$\frac{P_u}{0.9A_g F_{cr}} < 1.00$ Slender. reduct.	$(kL/r)_x = 51$ $(kL/r)_y = 277$ $x = 0.69$	$P_u = 0.21$ $A_g = 4.50$ $F_{cr} = 3.26$ $y = 0.69$	0.02
Lateral Torsional Buckling (F2-3)	$\frac{M}{0.9M_n} < 1.00$ Critical Segment from 0.00 to 23.80 on +z flange Segment End Moments: 0.10 and 0.07	$L_b = 23.80$ $L_p = 2.96$ $L_r = 11.00$ $C_b = 1.26$	$M = 2.54$ $M_n = 14.87$ $M_r = 28.31$ $F_{cr} = 13.23$	0.19
Combined Forces (compress.) (H1-1b)	$\frac{P_r}{2\phi P_n} + \frac{M_{rx}}{\phi M_n x} + \frac{M_{ry}}{\phi M_n y} < 1.00$	$C_{mx} = 1.00$ $C_{my} = 1.00$ $P_{ex} = 493.95$ $P_{ey} = 16.71$	$M_{rx} = 2.54$ $M_{ry} = 1.15$ $B_{1x} = 1.00$ $B_{1y} = 1.01$	0.43

East Hartford 8 MSA

Code: AISC-LRFD

Prepared by:

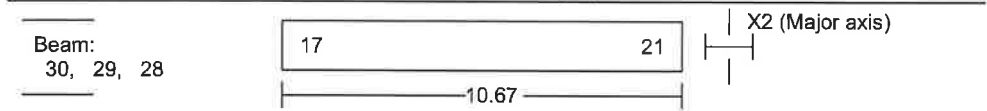
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Detailed Results Table for Beam 30 - 28

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch



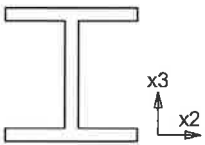
CONSTRAINTS

- Sections : Check
- Steel Grade: A36

DESIGN DATA

- Kx = 1.00 - Ky = 1.00
- Allow. Slend. : 200 (compr.) 300 (tens.)
- Allowable Deflection : 1/240
- Tension Area Reduction Factor : 1.00
- Building type : Unbraced

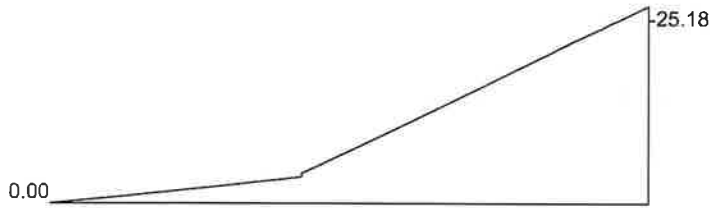
Section: W 8x35



h = 8.12in bf = 8.02in
tw = 0.3in tf = 0.5in
Area = 10.31in² I2 = 127.0in⁴ I3 = 42.60in⁴
J = 0.8in⁴ Z2 = 34.70in³ Z3 = 16.10in³
Cw = 618.17in⁶ e3 = 4.06in e2 = 4.01in

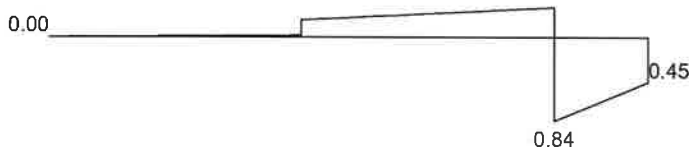
DESIGN COMBINATION = 1

M2 Moment Diagram



Max. AXIAL Force = 0.34 (tens.), -0.36 (compr.) Max. SHEAR Force = 3.55

M3 Moment Diagram



Max. AXIAL Force = 0.34 (tens.), -0.36 (compr.) Max. SHEAR Force = 0.23

SECTION CLASSIFICATION: *** COMPACT ***

Limiting Ratios: Compact Non-Compact Slender -axial
d/t= 20.33 < 106.7 161.8 42.3 (Fy= 36.0 R= 0.001)
b/t= 8.08 < 10.8 28.4 15.9

DESIGN	EQUATION	FACTORS	VALUES	RESULT
M3 Moment (F6-1) without LTB	$\frac{M}{0.9M_n} < 1.00$	Z = 16.10	M = 0.84 Mn = 48.29	0.02
V3 Shear G2.1.a	$\frac{V_u}{V_n} < 1.00$ $V_n = 0.6 \cdot F_y \cdot A_w$	Aw = 2.52	Vu = 3.55 Vn = 54.54	0.07

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Date: 3/20/24

Prepared by:

11:39

Detailed Results Table for Beam 30 - 28

Moments: kips*foot , Forces: kips , Stresses: ksi , Section prop.: inch

DESIGN	EQUATION	FACTORS	VALUES	RESULT
M2 Moment (F2-1) without LTB	$\frac{M}{0.9M_n} < 1.00$	Z = 34.70	M = 25.18 Mn = 104.09	0.27
Deflection	$\frac{\text{defl.}}{L / 240} < 1.00$		defl = 0.05571	0.10
Axial Force (E3-1)	$\frac{P_u}{0.9A_g F_{cr}} < 1.00$ flexural torsional buckling is critical: equivalent Slender. reduct.	(kL/r)x = 11 (kL/r)y = 19 (kL/r)t = 50 x = 0.30	Pu = 0.36 Ag = 10.31 Fcr = 31.55 y = 0.30	0.00
Lateral Torsional Buckling (F2-2)	$\frac{M}{0.9M_n} < 1.00$	Lb = 10.67 Lp = 8.46 Lr = 36.06 Cb = 2.20	M = 25.18 Mn = 104.09 Mr = 65.70 Mp = 104.09	0.27
Critical Segment from 0.00 to 10.67 on -z flange Segment End Moments: 0.00 and -25.18				
Combined Forces (compress.) (H1-1b)	$\frac{P_r}{2\phi P_n} + \frac{M_{rx}}{\phi M_{nx}} + \frac{M_{ry}}{\phi M_{ny}} < 1.00$	Cmx = 1.00 Cmy = 1.00 Pex = 24559.11 Pey = 8237.79	Mrx = 25.18 Mry = 0.84 B1x = 1.00 B1y = 1.00	0.29

Appendix B – Construction Drawings

SUPPORTING DOCUMENTS

PHOTO FREQUENCY (RF) DESIGN DATE: 3/8/24
 ANTENNA MOUNT STRUCTURAL ANALYSIS DATE: 3/29/24
 SUPPORT STRUCTURE FRAME (4) STORY STEEL FRAMED OFFICE BUILDING
 STRUCTURAL ANALYSIS DATE: 3/29/24



20 ALEXANDER DRIVE, 2nd Floor, WALLINGFORD, CT 06492
EAST HARTFORD 8 CT RELO

330 ROBERTS STREET
 EAST HARTFORD, CT 06108

**PROJECT TYPE: WIRELESS TELECOMMUNICATIONS INSTALLATION ON
 ROOFTOP OF EXISTING (4)-STORY STEEL FRAMED OFFICE BUILDING**

SITE INFORMATION:

PROPERTY OWNER: 330 ROBERTS STREET, SUITE 404
 EAST HARTFORD, CT 06108

APPLICANT: CELCO PARTNERSHIP
 20 ALEXANDER DRIVE, 2nd FLOOR
 WALLINGFORD, CT 06492

SITE ADDRESS: 330 ROBERTS STREET
 EAST HARTFORD, CT 06108

COUNTY: HARTFORD COUNTY, CONNECTICUT

SITE COORDINATE: SOUTH CORNER OF EXISTING BUILDING
 N 41° 49' 08.04" (41.768007) (RAD 30)
 W 77° 53' 14.80" (79.887004) (RAD 90)

ARCHITECT/ENGINEER: CHAPPELL ENGINEERING ASSOCIATES, LLC
 247 STATION DRIVE, 5th FLOOR, SUITE 101
 MARLBOROUGH, MA 01752

POWER COMPANY: ENERCON ENERGY
 247 STATION DRIVE, SE 210
 WESTWOOD, MA 02090
 (508) 441-5916

TELEPHONE COMPANY: VERIZON WIRELESS
 BOSTON, MA 02107
 (800) 641-5900

GENERAL NOTES

- CONTRACTOR SHALL VERIFY ALL PLANS, LISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. CALLING TO ADVERT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
- NEW CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES:
 - BUILDING CODE: 2022 CONNECTICUT STATE BUILDING CODE
 - STRUCTURAL CODE: IACIA 2218 STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.



AT LEAST 72 HOURS PRIOR TO
 BEGINNING TO CALL 911 AT 911

VICINITY MAP

SCALE: 1"=1000'



DRIVING DIRECTIONS

FROM WALLINGFORD, TAKE I-91 NORTH, TAKE EXIT 14 FOR U.S. 5 IN CONNECTICUT. IS NORTH EAST TOWARD EAST HARTFORD. TAKE RIGHT TURN ON TO ALEXANDER DRIVE. TAKE RIGHT TURN ON TO ROBERTS STREET. THE SITE IS LOCATED ON THE LEFT HAND SIDE OF ROBERTS STREET. KEEP LEFT TO STAY ON ROBERTS STREET.

SHEET INDEX

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R01	ANTENNA DETAILS AND INCALLY EQUIPMENT SPECIFICATIONS	1
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R04	UTILITY CONDUIT PENETRATING DETAILS	1
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E04	ELECTRICAL AND TELEVISION ONE LINE DIAGRAMS	1
E05	GROUNDING DIAGRAM, NOTES AND DETAILS	1

DO NOT SCALE DRAWINGS

ALL PLANS, CONDITIONS, DIMENSIONS, AND CONDITIONS IN THE PROPOSED PROJECT SITE SHALL BE VERIFIED IN THE FIELD DURING THE CONSTRUCTION PHASE. THE PROJECT CONTRACTOR REPRESENTATIVE SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES IMMEDIATELY UPON THE DISCOVERY OF SUCH DISCREPANCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CORRECTION OF SUCH DISCREPANCIES IN THE FIELD AT HIS OWN RISK AND WITHOUT ANY LIABILITY TO THE ARCHITECT. THE ARCHITECT'S RESPONSIBILITY FOR THE PRELIMINARY DESIGN AND SPECIFICATIONS FOR CONSTRUCTION.

PROJECT DESCRIPTION

- THIS IS AN UNMANNED AND UNRESTRICTED ACCESS COMMERCIAL INSTALLATION AND WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC WIRELESS TELECOMMUNICATIONS SERVICE.
- NO WASTE WATER WILL BE GENERATED AT THIS LOCATION.
- NO POTABLE WATER SUPPLY IS TO BE PROVIDED AT THIS LOCATION.
- NO WASTE WATER WILL BE GENERATED AT THIS LOCATION.
- NO SOLID WASTE WILL BE GENERATED AT THIS LOCATION.

ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
 201 BOSTON DRIVE AND WEST SUITE 101
 MARLBOROUGH, MA 01752
 (508) 481-7400
 www.chappelleng.com

ENGINEER/LAND SURVEYOR _____ DATE _____
 DRAWING SCALE: NOTE _____

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR PERMIT	2/29/24
1	ISSUED FOR CONSTRUCTION (FINAL)	2/29/24

PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
 330 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
 TITLE SHEET

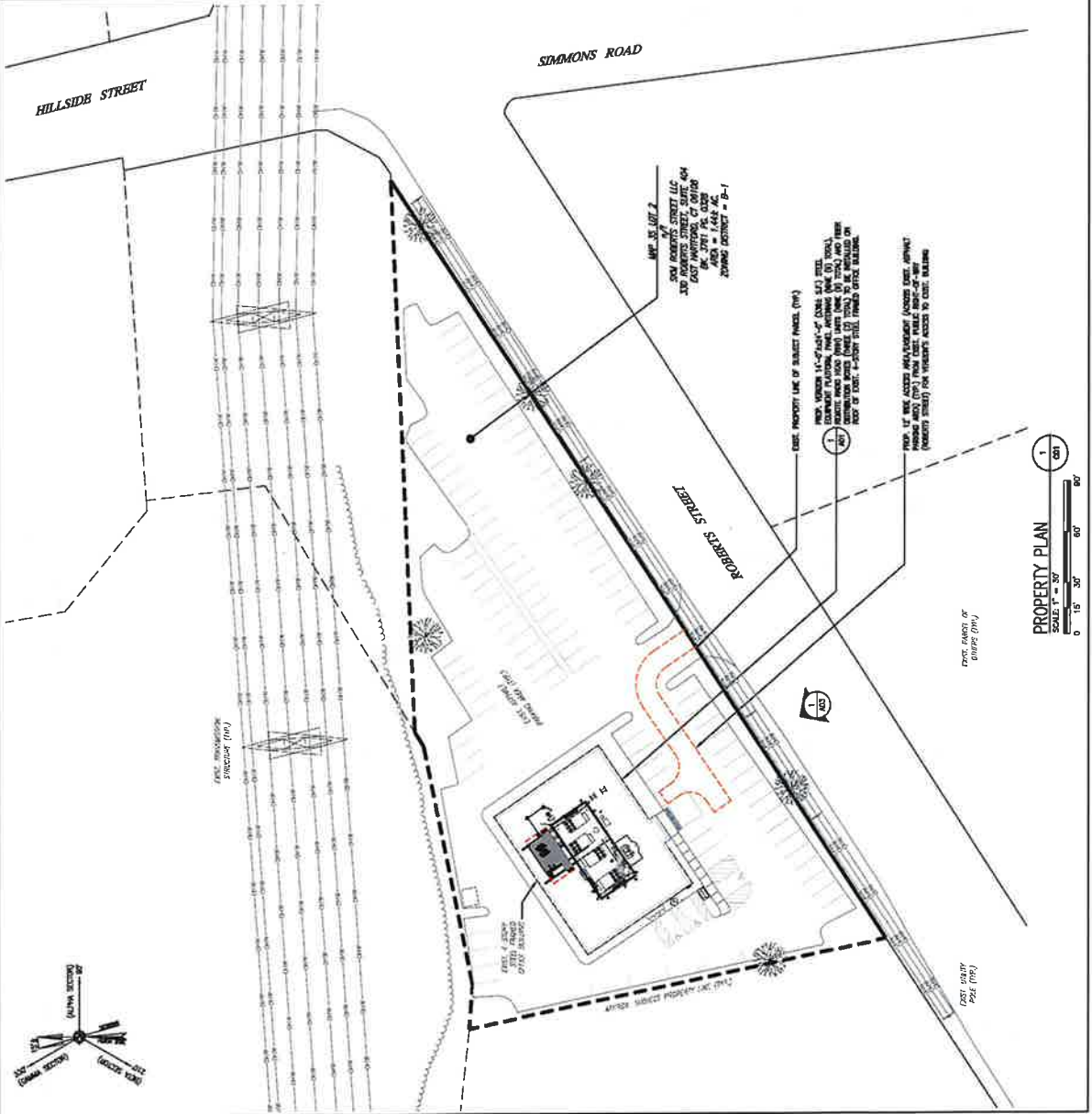
DRAWING NO.:
T01

DATE	BY	FOR	BY
3/29/24	AS SHOWN	NO CHANGES	NO CHANGES
3/29/24	AS SHOWN	NO CHANGES	NO CHANGES

CLIENT: 	ARCHITECT/ENGINEER: CHAPPELL ENGINEERING ASSOCIATES, LLC <i>Cost-Effective Land Surveying</i> P.L.C. EXECUTIVE CENTRE 201 BOSTON COMMONS DRIVE SUITE 101 MARIETTA, VA 01852 (800) 481-7400 www.chappell-engineering.com	 SEAL:	ENGINEER/LAND SURVEYOR _____ DATE _____ DRAWING SCALE NOTE: THIS DRAWING IS A LAND SURVEY AND IS NOT TO BE USED FOR ANY OTHER PURPOSES. ALL DIMENSIONS ARE TO BE TAKEN FROM THE CORNERS OF THE LOTS. IF IT IS A REQUIREMENT OF LAW FOR ANY PURPOSE, THE SURVEYOR SHALL BE CONTACTED. THIS DRAWING IS THE PROPERTY OF CHAPPELL ENGINEERING ASSOCIATES, LLC. TO BE USED FOR THE PROJECT DESCRIBED HEREIN ONLY.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>ISSUED FOR SET REVIEW</td> <td>2/29/24</td> </tr> <tr> <td>1</td> <td>ISSUED FOR CONSTRUCTION (FINAL)</td> <td>2/29/24</td> </tr> </tbody> </table>	NO.	DESCRIPTION	DATE	0	ISSUED FOR SET REVIEW	2/29/24	1	ISSUED FOR CONSTRUCTION (FINAL)	2/29/24	PROJECT NAME: EAST HARTFORD 8 CT RELO PROJECT ADDRESS: 500 ROBERTS STREET EAST HARTFORD, CT 06108 DRAWING TITLE: PROPERTY PLAN DRAWING NO.: C01	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>FIELD NO.</td> <td>DATE</td> <td>NO. PLANNED BY</td> </tr> <tr> <td>1</td> <td>2/29/24</td> <td>CHAPPELL ENGINEERING ASSOCIATES, LLC</td> </tr> <tr> <td>2</td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> </tr> <tr> <td>5</td> <td></td> <td></td> </tr> <tr> <td>6</td> <td></td> <td></td> </tr> <tr> <td>7</td> <td></td> <td></td> </tr> <tr> <td>8</td> <td></td> <td></td> </tr> <tr> <td>9</td> <td></td> <td></td> </tr> <tr> <td>10</td> <td></td> <td></td> </tr> <tr> <td>11</td> <td></td> <td></td> </tr> <tr> <td>12</td> <td></td> <td></td> </tr> <tr> <td>13</td> <td></td> <td></td> </tr> <tr> <td>14</td> <td></td> <td></td> </tr> <tr> <td>15</td> <td></td> <td></td> </tr> <tr> <td>16</td> <td></td> <td></td> </tr> <tr> <td>17</td> <td></td> <td></td> </tr> <tr> <td>18</td> <td></td> <td></td> </tr> <tr> <td>19</td> <td></td> <td></td> </tr> <tr> <td>20</td> <td></td> <td></td> </tr> <tr> <td>21</td> <td></td> <td></td> </tr> <tr> <td>22</td> <td></td> <td></td> </tr> <tr> <td>23</td> <td></td> <td></td> </tr> <tr> <td>24</td> <td></td> <td></td> </tr> <tr> <td>25</td> <td></td> <td></td> </tr> <tr> <td>26</td> <td></td> <td></td> </tr> <tr> <td>27</td> <td></td> <td></td> </tr> <tr> <td>28</td> <td></td> <td></td> </tr> <tr> <td>29</td> <td></td> <td></td> </tr> <tr> <td>30</td> <td></td> <td></td> </tr> </table>	FIELD NO.	DATE	NO. PLANNED BY	1	2/29/24	CHAPPELL ENGINEERING ASSOCIATES, LLC	2			3			4			5			6			7			8			9			10			11			12			13			14			15			16			17			18			19			20			21			22			23			24			25			26			27			28			29			30		
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GENERAL NOTES:

- UNITS: HORIZONTAL: FEET; VERTICAL: FEET
- VERTICAL DATUM: NORTH AMERICAN DATUM OF 1983
- HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983
- SITE CONTROL POINT: 500 ROBERTS STREET, SUITE 404, EAST HARTFORD, CT 06108
- LAND OWNER: 500 ROBERTS STREET, SUITE 404, EAST HARTFORD, CT 06108
- SITE ADDRESS: 500 ROBERTS STREET, SUITE 404, EAST HARTFORD, CT 06108
- APPLICATOR: CHAPPELL ENGINEERING ASSOCIATES, LLC
- ALL UNDERGROUND UTILITY INFORMATION PROVIDED HEREON WAS OBTAINED FROM PUBLIC RECORDS AND PLANS OF RECORD. ALL UNDERGROUND UTILITIES SHOULD BE LOCATED AND MARKED PRIOR TO ANY CONSTRUCTION. CALL BEFORE YOU DIG. (800) 481-7400
- THE PROPERTY LINES SHOWN WERE COMPARED UTILING RECORDED DEEDS, PLANS OF RECORD AND LATEST SURVEY OF THE PROPERTY PREPARED BY CHAPPELL ENGINEERING ASSOCIATES, LLC ON 11/15/23. THE LATEST SURVEY WAS MADE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONNECTICUT DEED ACT AND THE CONSTRUCTION OF THE DEEDS AND PLANS OF RECORD FOR THE TOWN OF EAST HARTFORD, CT (TWP NUMBER CROSSROADS) EXTENSIVE 2/4/2018.





REGISTERED ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
 P.E. EXCERISE CENTRE
 201 BROADWAY, SUITE 101
 MARYHURD, VA 01832
 (540) 481-7400
 www.chappell-engineering.com



ENGINEER/LAND SURVEYOR DATE
 DRAWING SCALE: NOTE
 THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE PROPERTY OF CHAPPELL ENGINEERING ASSOCIATES, LLC. ALL RIGHTS RESERVED. NO PART OF THIS DRAWING MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN PERMISSION OF CHAPPELL ENGINEERING ASSOCIATES, LLC.

NO.	DESCRIPTION	DATE
0	ISSUED FOR BIDDING	3/29/24
1	ISSUED FOR CONSTRUCTION (FINAL)	3/29/24

PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
 600 PARSONS STREET
 EAST HARTFORD, CT 06108

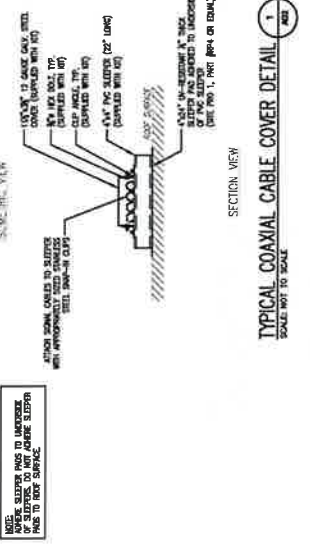
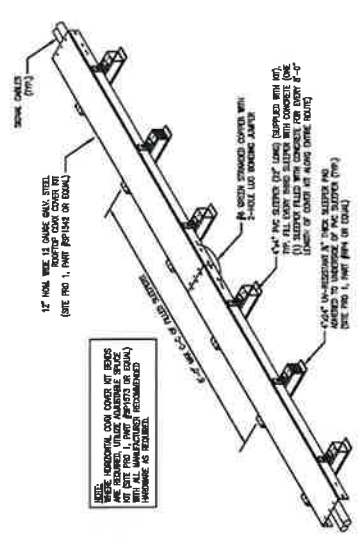
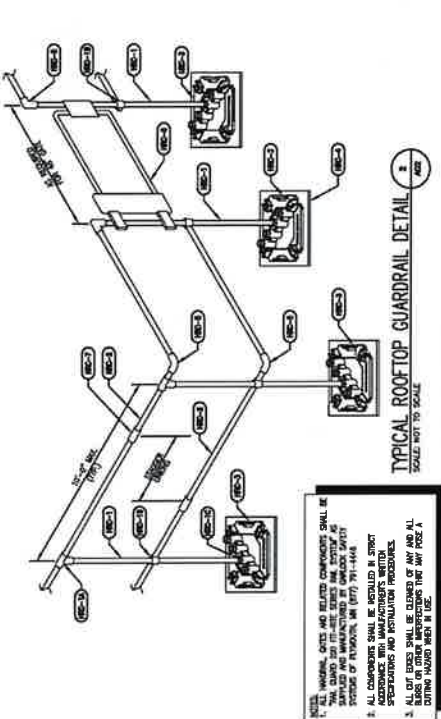
DRAWING TITLE:
SITE DETAILS

DRAWING NO:
A02

SCALE	DATE	BY	CHKD	APP'D
AS SHOWN	3/29/24			
REVISION	3/29/24			

GARLOCK RAILGUARD 200 FT-RITE SERIES RAIL SYSTEM LEGEND

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
15000	STEEL STRONG STANCHION W/ 4" STANDARD GALVANIZED FISH	40718	(SEE DETAIL)	GALVANIZED STEEL WEATHER DAVE
15001	GALVANIZED STEEL 2" X 2" X 1/4"	15000	(SUPPLIED WITH STANCHION KIT)	2" X 2" X 1/4" GALV. STEEL
15002	GALVANIZED STEEL 1/2" X 3/4" X 1/4"	15000	(SUPPLIED WITH STANCHION KIT)	1/2" X 3/4" X 1/4" GALV. STEEL
15003	3/8" X 1/2" X 1/4" LUG PIN	15000	(SUPPLIED WITH STANCHION KIT)	3/8" X 1/2" X 1/4" LUG PIN
15004	1/2" X 1/2" X 1/4" LUG PIN	15000	(SUPPLIED WITH STANCHION KIT)	1/2" X 1/2" X 1/4" LUG PIN
15005	1/2" X 1/2" X 1/4" LUG PIN	15000	(SUPPLIED WITH STANCHION KIT)	1/2" X 1/2" X 1/4" LUG PIN



CLIENT:



ARCHITECT/ENGINEER:

CHAPPELL ENGINEERING ASSOCIATES, LLC
Chief Strategist, Land Subdivision
 R.K. EXCLUSIVE COURSE
 201 BOSTON POST ROAD WEST
 SUITE 101
 MAIDENHEAD, MA 01922
 (508) 481-7400
 www.chappell-engineering.com

SEAL



ENGINEER/LAND SURVEYOR DATE

TRAINING SCALE: NONE

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNDER THIS SEAL AND SIGNATURE, TO PREPARE OR SIGN ANY ENGINEERING DRAWING OR SPECIFICATION FOR WHICH HE OR SHE IS NOT A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR.

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR PER REVIEW	2/29/24
1	ISSUED FOR CONSTRUCTION (FINAL)	3/29/24

PROJECT NAME:

**EAST HARTFORD 8 CT
RELO**

PROJECT ADDRESS:

300 ROBERTS STREET
EAST HARTFORD, CT 06108

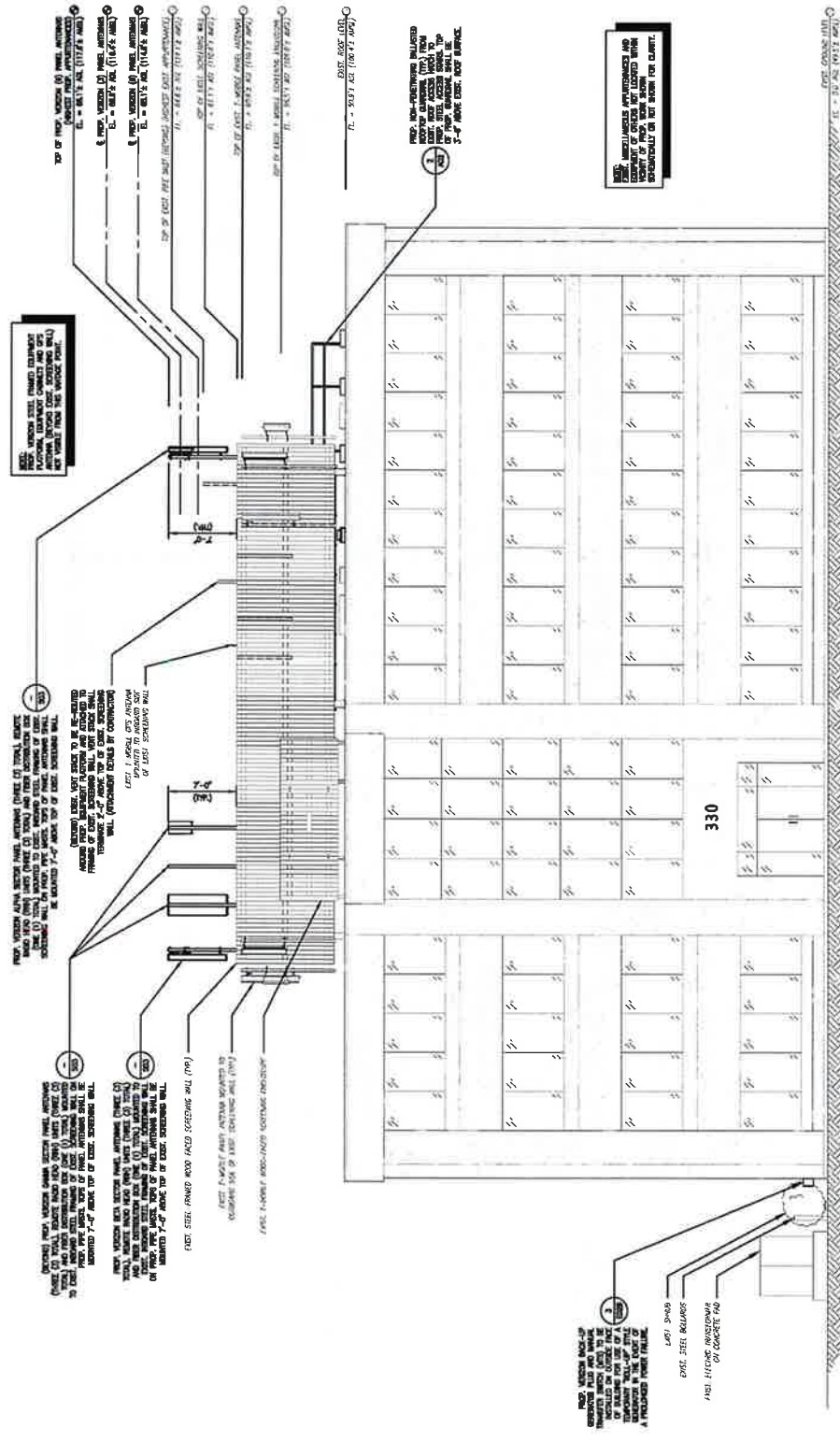
DRAWING TITLE:

**SOUTHEAST (FRONT)
BUILDING ELEVATION
(ALONG ROBERTS STREET)**

DRAWING NO.:

A03

DATE	ISSUED FOR	BY
2/29/24	FOR PERMIT	...
3/29/24	FOR CONSTRUCTION	...



LEGEND

ACL	ANODE ORANGE LEVEL
BCL	BOTTOM GROUND LEVEL
AMEL	ANODE BROWN ISOL. LEVEL



SOUTHEAST (FRONT) BUILDING ELEVATION (ALONG ROBERTS STREET)

SCALE: 3/8" = 1'-0"
 0 5'-0" 10'-0" 15'-0"



ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
 301 BEDFORD ROAD WEST
 SUITE 101
 MARIENBORO, MA 01752
 www.chappell-engineering.com



ENGINEER/ARCHITECT SURVEYOR DATE

DRAWING SCALE NOTE:
 ALL DIMENSIONS ARE TO FACE UNLESS NOTED OTHERWISE.
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NO.	DESCRIPTION	DATE
0	ISSUED FOR PERMITS	2/28/24
1	ISSUED FOR CONSTRUCTION (FINAL)	2/28/24

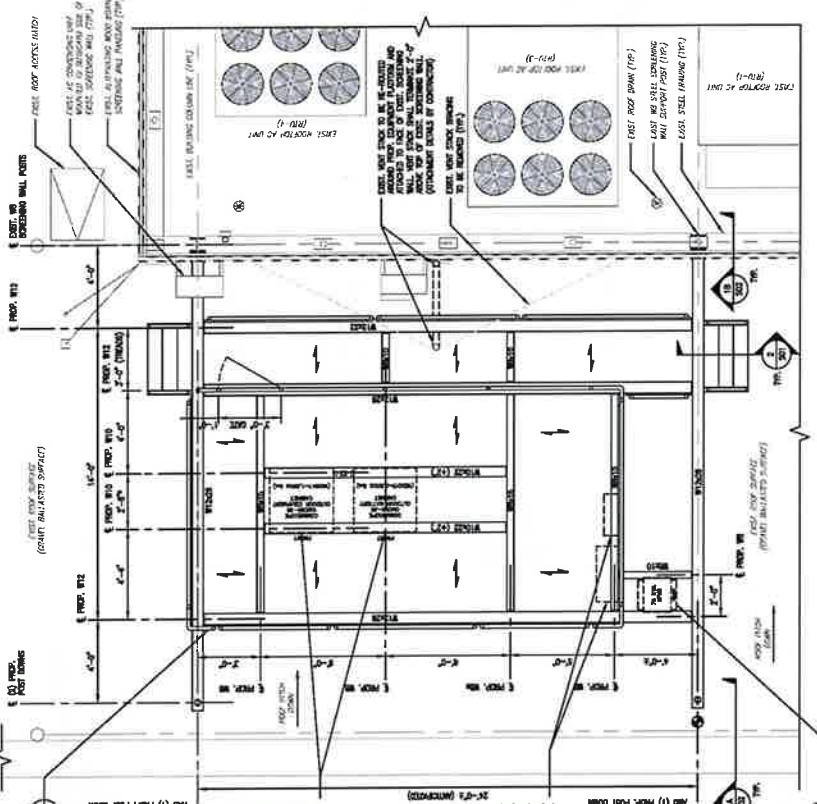
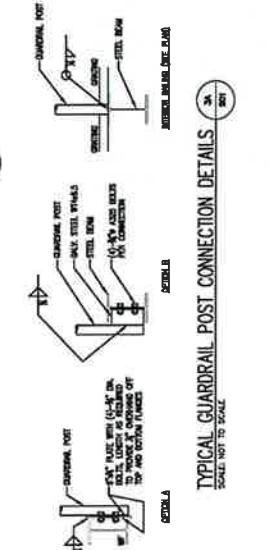
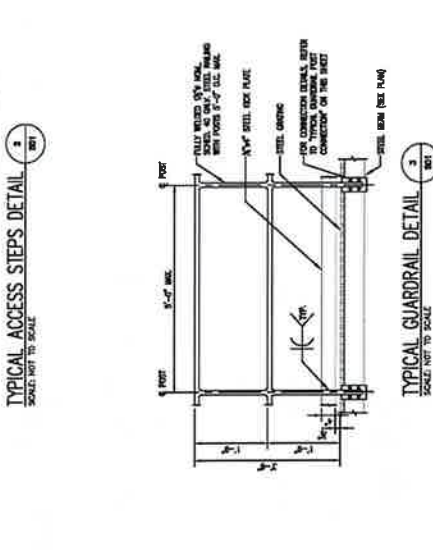
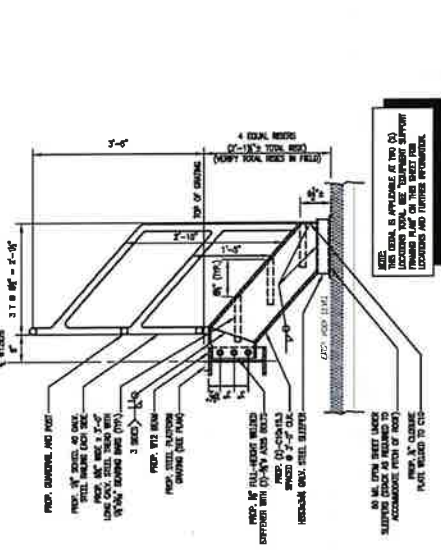
PROJECT NAME:
 EAST HARTFORD 8 CT
RELO

PROJECT ADDRESS:
 800 ROBERTS STREET
 EAST HARTFORD, CT 06108

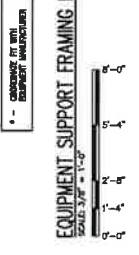
DRAWING TITLE:
 EQUIPMENT FRAMING
 PLAN AND DETAILS

DRAWING NO.:
 S01

DATE	BY	CHKD BY	APP'D BY
2/28/24			



- CONTRACT SUPPORT FRAMING PLAN NOTES:**
- 1) ALL STEEL SHALL BE STANDARD LEVEL MILLING CONDITION UNLESS NOTED OTHERWISE.
 - 2) ALL STEEL SHALL BE GALVANNEAL UNLESS NOTED OTHERWISE.
 - 3) ALL STEEL SHALL BE 1/4" THICK UNLESS NOTED OTHERWISE.
 - 4) ALL STEEL SHALL BE 10-14 STEEL UNLESS NOTED OTHERWISE.
 - 5) ALL STEEL SHALL BE 1/4" THICK UNLESS NOTED OTHERWISE.
 - 6) ALL STEEL SHALL BE 10-14 STEEL UNLESS NOTED OTHERWISE.
 - 7) ALL STEEL SHALL BE 1/4" THICK UNLESS NOTED OTHERWISE.
 - 8) ALL STEEL SHALL BE 10-14 STEEL UNLESS NOTED OTHERWISE.
 - 9) ALL STEEL SHALL BE 1/4" THICK UNLESS NOTED OTHERWISE.
 - 10) ALL STEEL SHALL BE 10-14 STEEL UNLESS NOTED OTHERWISE.
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 - 15) ALL STEEL SHALL BE 1/4" THICK UNLESS NOTED OTHERWISE.
 - 16) ALL STEEL SHALL BE 10-14 STEEL UNLESS NOTED OTHERWISE.
 - 17) ALL STEEL SHALL BE 1/4" THICK UNLESS NOTED OTHERWISE.
 - 18) ALL STEEL SHALL BE 10-14 STEEL UNLESS NOTED OTHERWISE.
 - 19) ALL STEEL SHALL BE 1/4" THICK UNLESS NOTED OTHERWISE.
 - 20) ALL STEEL SHALL BE 10-14 STEEL UNLESS NOTED OTHERWISE.



CONTRACT SUPPORT FRAMING PLAN NOTES:

1) ALL STEEL SHALL BE STANDARD LEVEL MILLING CONDITION UNLESS NOTED OTHERWISE.

2) ALL STEEL SHALL BE GALVANNEAL UNLESS NOTED OTHERWISE.

3) ALL STEEL SHALL BE 1/4" THICK UNLESS NOTED OTHERWISE.

4) ALL STEEL SHALL BE 10-14 STEEL UNLESS NOTED OTHERWISE.

5) ALL STEEL SHALL BE 1/4" THICK UNLESS NOTED OTHERWISE.

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20) ALL STEEL SHALL BE 10-14 STEEL UNLESS NOTED OTHERWISE.



CHAPPELL ASSOCIATES, LLC
 Civil Structural / Land Surveying
 R.K. EXCOURSE COURSE
 201 BOSTON POST ROAD WEST
 SUITE 101
 MARIETTA, GA 30067
 (678) 491-7400
 www.chappell-engineering.com

SCALE



ENGINEER/LAND SURVEYOR DATE
 DRAWING SCALE NOTES
 THIS DRAWING IS THE PROPERTY OF CHAPPELL ASSOCIATES, LLC. IT IS TO BE USED ONLY FOR THE PROJECT AND LOCATION SPECIFICALLY IDENTIFIED HEREON. IT IS NOT TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF CHAPPELL ASSOCIATES, LLC.

NO.	DESCRIPTION	DATE
0	ISSUED FOR PER REVIEW	2/29/24
1	ISSUED FOR CONSTRUCTION (FINAL)	3/26/24

PROJECT NAME:
EAST HARTFORD 8 CT RELO

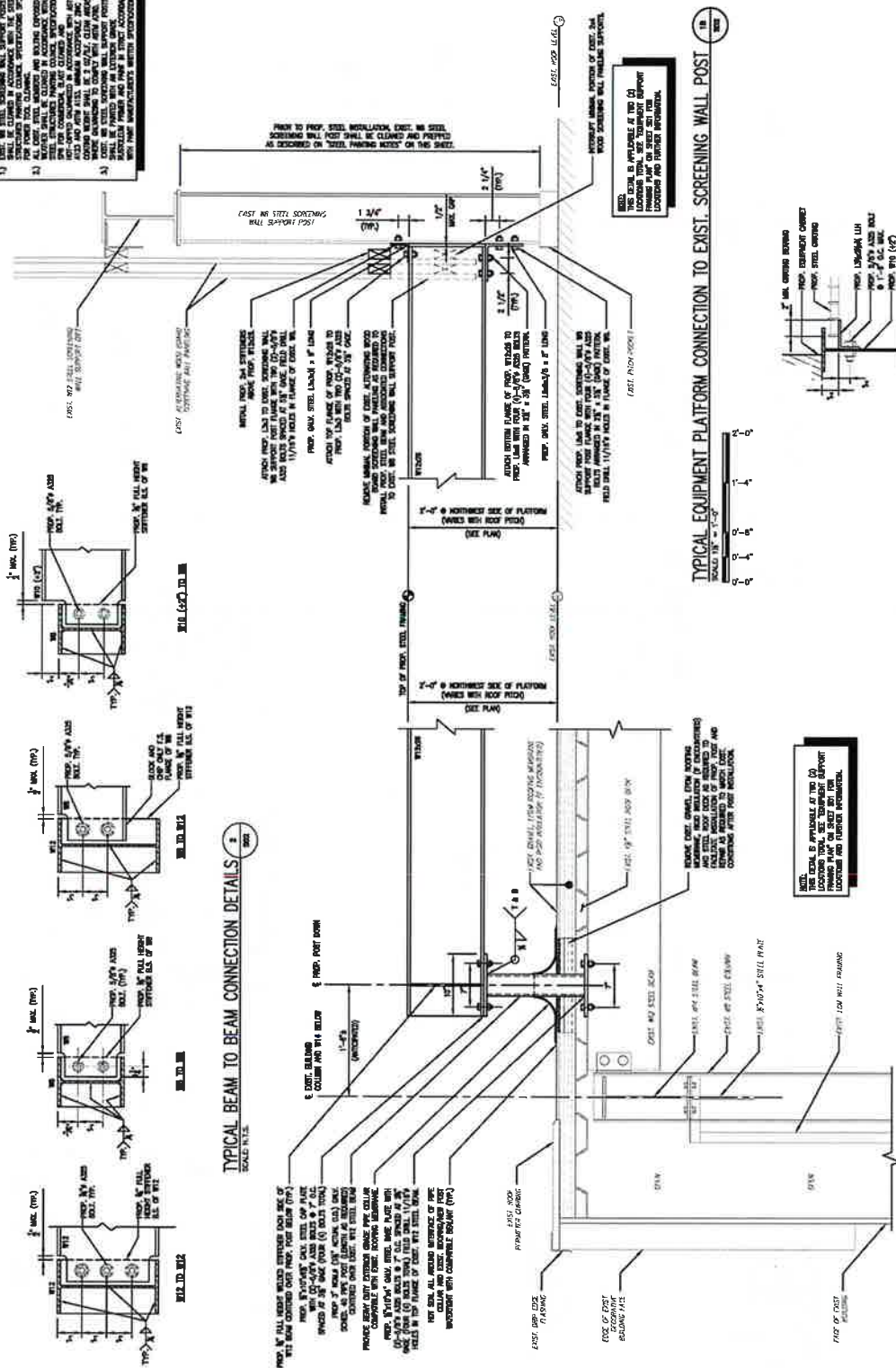
PROJECT ADDRESS:
 300 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
EQUIPMENT SUPPORT FRAMING DETAILS

DRAWING NO.:
S02

NO.	DATE	BY	CHKD.	APP.
1	2/29/24	AS SHOWN		
2	3/26/24			

STEEL FRAMING NOTES:
 1) ALL STEEL FRAMING SHALL BE FABRICATED AND WELDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC. (AISC) 13TH EDITION, PART 16, AND THE AMERICAN WELDED INSTITUTE (AWI) 1010. ALL WELDS SHALL BE CLEANED AND INSPECTED TO THE REQUIREMENTS OF THE AMERICAN WELDED INSTITUTE (AWI) 1010. ALL STEEL SHALL BE A36 STEEL UNLESS OTHERWISE SPECIFIED.
 2) ALL CONNECTIONS SHALL BE DESIGNED AND WELDED TO THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC. (AISC) 13TH EDITION, PART 16, AND THE AMERICAN WELDED INSTITUTE (AWI) 1010.
 3) ALL STEEL SHALL BE GALVANNEAL UNLESS OTHERWISE SPECIFIED.
 4) ALL STEEL SHALL BE PRIMED AND PAINTED TO THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC. (AISC) 13TH EDITION, PART 16, AND THE AMERICAN WELDED INSTITUTE (AWI) 1010.



NOTES:
 1) THE BEAM IS APPROXIMATELY AT THE (0) LOCATION. THE EXIST. ROOF FRAMING SHALL BE REINFORCED AND WELDED TO THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC. (AISC) 13TH EDITION, PART 16, AND THE AMERICAN WELDED INSTITUTE (AWI) 1010.

NOTES:
 1) THE BEAM IS APPROXIMATELY AT THE (0) LOCATION. THE EXIST. SCREENING WALL SHALL BE REINFORCED AND WELDED TO THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC. (AISC) 13TH EDITION, PART 16, AND THE AMERICAN WELDED INSTITUTE (AWI) 1010.

NOTES:
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verizon

ARCHITECT/ENGINEER: **CHAPPELL ASSOCIATES, LLC**
 201 BOSTON COMMON
 SUITE 1101
 BOSTON, MA 02108
 (617) 452-7400
 www.chappellassociates.com

CLIENT: **VERIZON**

PROJECT NAME: **EAST HARTFORD 6 CT RELO**

PROJECT ADDRESS: **600 ROBERTS STREET EAST HARTFORD, CT 06108**

DRAWING TITLE: **ANTENNA MOUNTING DETAILS**

DRAWING NO.: **S03**

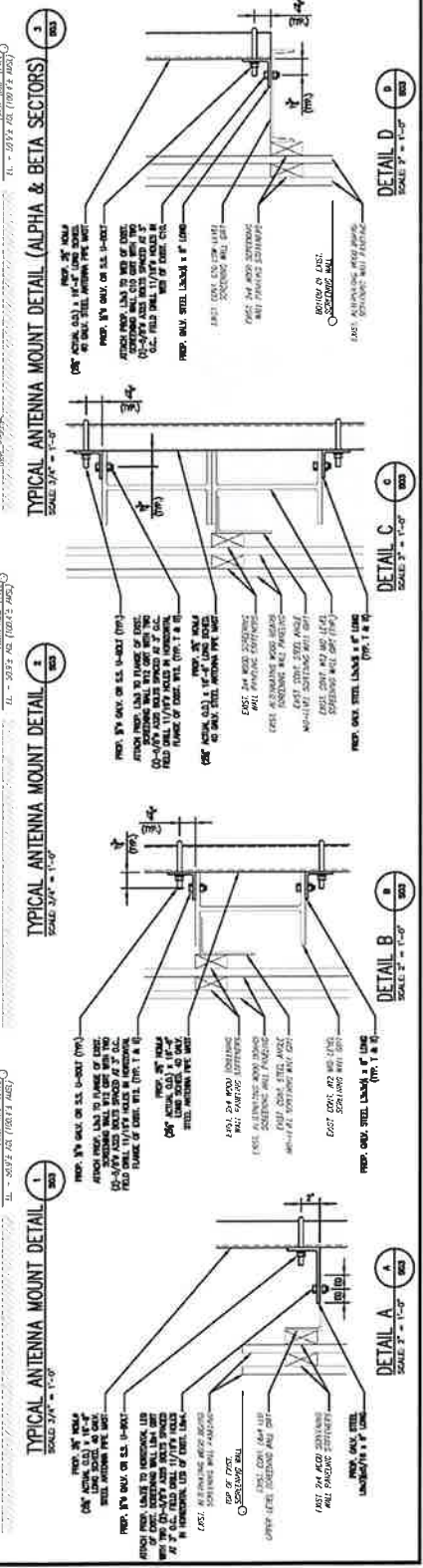
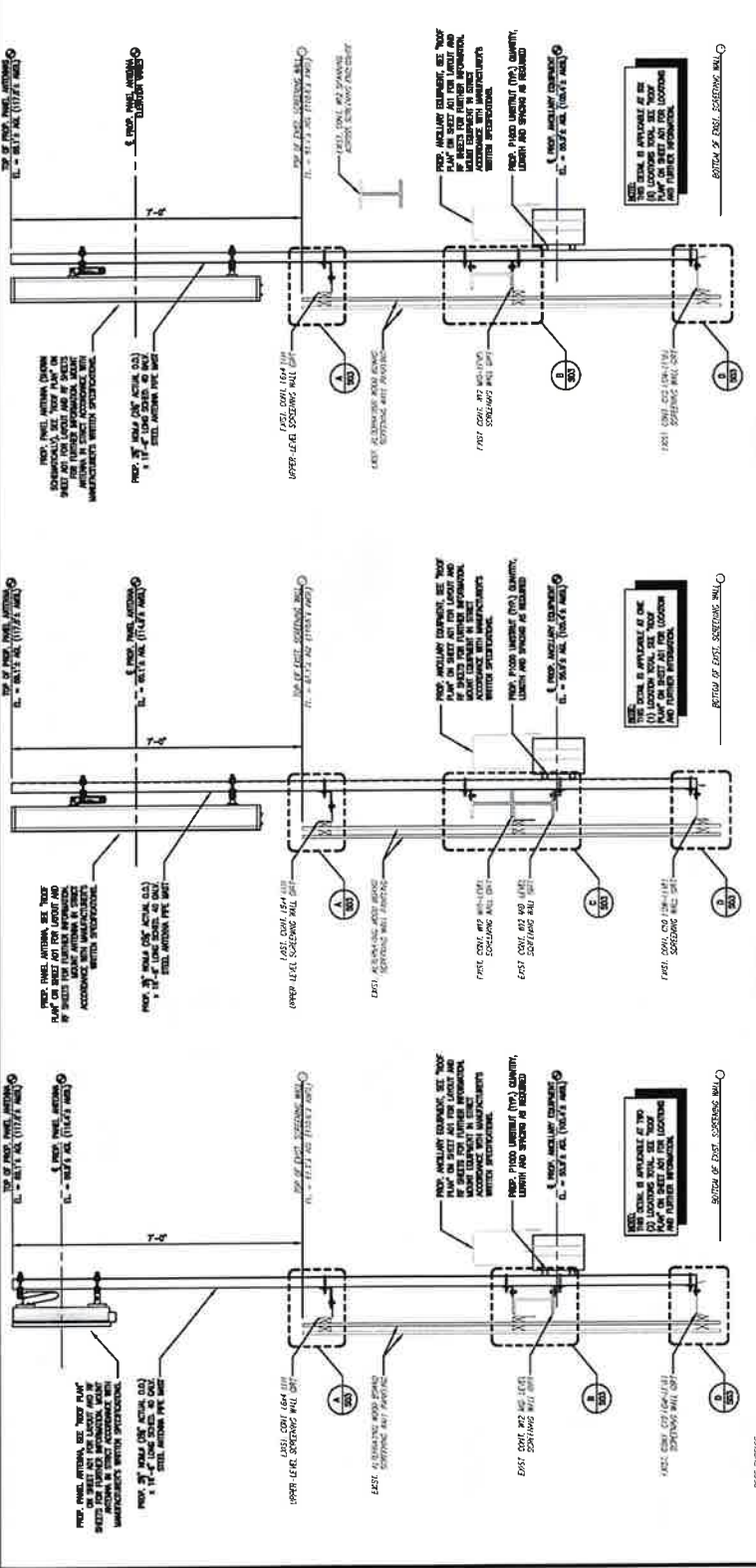
NO.	DESCRIPTION	DATE
0	ISSUED FOR PERMITS	3/22/21
1	ISSUED FOR CONSTRUCTION (FINAL)	3/25/21

ENGINEER/LAND SURVEYOR: [Signature]

DATE: [Blank]

DRAWING SCALE: [Blank]

NOTES:
 1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE IBC AND ALL APPLICABLE CODES.
 2. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE IBC AND ALL APPLICABLE CODES.
 3. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE IBC AND ALL APPLICABLE CODES.





ARCHITECT/ENGINEER
CHAPPELL ENGINEERING ASSOCIATES, LLC
 Civil / Structural / Earth Retention
 8-K EXECUTIVE COURSE
 SUITE 101
 201 BOXTON HILL ROAD WEST
 MAINE SPRING, VT 05752
 (508) 481-7400
 www.chappell-engineering.com



ENGINEER / AND SURVEYOR _____ **DATE** _____
 I HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF VERMONT AND THAT I AM THE DESIGNER OF THE ABOVE PROJECT. I HAVE REVIEWED THE PROJECT AND I AM SURE THAT THE PROJECT AS SHOWN ON THESE DRAWINGS IS IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS. I AM NOT PROVIDING ANY GUARANTEE OR WARRANTY, EXPRESS OR IMPLIED, FOR THE PROJECT OR THE RESULTS THEREOF. I AM NOT PROVIDING ANY CONSULTING OR ADVISORY SERVICES TO ANY OTHER PARTY IN CONNECTION WITH THIS PROJECT.
 I AM NOT PROVIDING ANY CONSULTING OR ADVISORY SERVICES TO ANY OTHER PARTY IN CONNECTION WITH THIS PROJECT.

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR PER REVIEW	2/7/24
1	ISSUED FOR CONSTRUCTION (FINAL)	2/7/24

PROJECT NAME
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS
 880 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE
ANTENNA DETAILS AND ANCILLARY EQUIPMENT SPECIFICATIONS

DRAWING NO.
RF01

DATE	BY	CHKD	APP'D
02/01/24	AS SHOWN	AS SHOWN	AS SHOWN
02/01/24	AS SHOWN	AS SHOWN	AS SHOWN



SAMSUNG RFL692-58A

ITEM 11

(BAND 46 (LS CH2)) NR AU RRH

11.4" H x 8.7" W x 3.1" D
 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED



SAMSUNG RFL692-58A

ITEM 10

PCS-MPS (1900/2100 MHz) REMOTE RADIO HEAD UNIT

11.4" H x 11.4" W x 11.4" D
 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED



SAMSUNG RFL692-58A

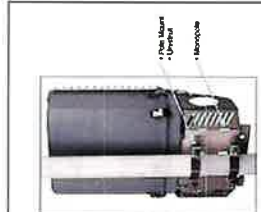
ITEM 9

LTE-MR (700/650 MHz) REMOTE RADIO HEAD UNIT

11.4" H x 11.4" W x 11.4" D
 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED

TYPICAL REMOTE RADIO HEAD (RRH) UNIT DIMENSIONS
 SCALE: 1/8" = 1'-0"



- Procedure**
1. A mounting plate is attached to the RRH unit. The plate is attached to the RRH unit by means of the screws provided with the RRH unit. The plate is attached to the RRH unit by means of the screws provided with the RRH unit.
 2. The RRH unit is mounted to the antenna mounting plate by means of the screws provided with the RRH unit.
 3. The RRH unit is mounted to the antenna mounting plate by means of the screws provided with the RRH unit.
 4. The RRH unit is mounted to the antenna mounting plate by means of the screws provided with the RRH unit.

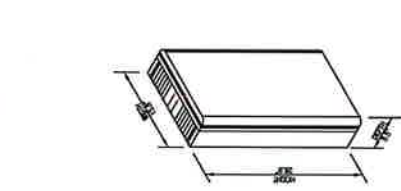


FIBER JUNCTION BOX

24.0" H x 16.5" W x 11.4" D
 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED

TYPICAL FIBER JUNCTION BOX DIMENSIONS, SCHEMATIC AND MOUNTING PROCEDURE
 SCALE: 1/8" = 1'-0"



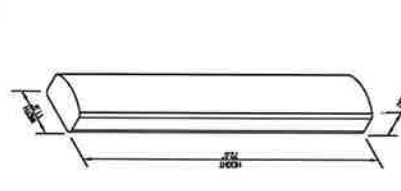
SAMSUNG MTR413-77A

ITEM 3

MTR413-77A ANTENNA

24.0" H x 11.4" W x 3.1" D
 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED



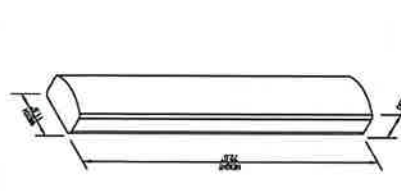
COMMSCOPE MHS-888-82814

ITEM 2

LTE (700/650 MHz) PANEL ANTENNA

24.0" H x 11.4" W x 7.1" D
 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED



COMMSCOPE MHS-888-828

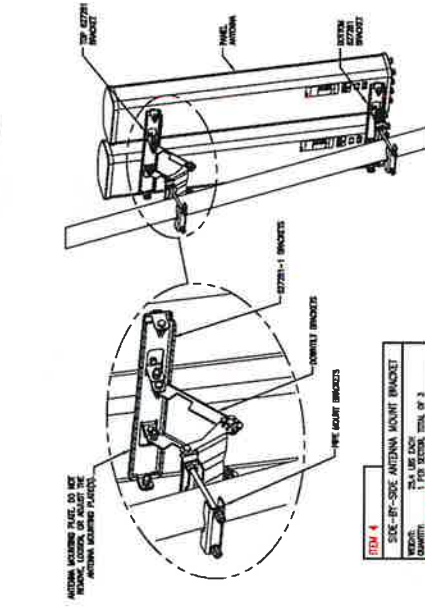
ITEM 1

LTE (700/650/1900 MHz) PANEL ANTENNA

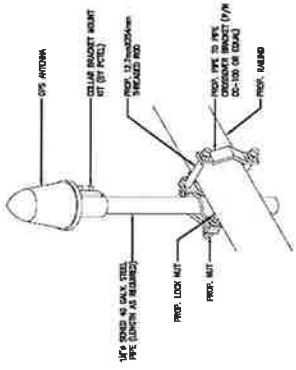
24.0" H x 11.4" W x 7.1" D
 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED

TYPICAL PROP. PANEL ANTENNA SPECIFICATIONS
 SCALE: 1/8" = 1'-0"



TYPICAL SIDE-BY-SIDE ANTENNA MOUNT KIT (COMMSCOPE PART #BSMNT1-SBS-1-2)
 SCALE: NOT TO SCALE



TYPICAL GFS ANTENNA MOUNTING DETAIL
 SCALE: 1/8" = 1'-0"

CHAPPELL ENGINEERING ASSOCIATES, LLC
 301 BOSTON STREET
 SUITE 101
 HARTFORD, CT 06108
 (860) 234-1111
 www.chappell-engineering.com

PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
800 ROBERTS STREET
EAST HARTFORD, CT 06108

DRAWING TITLE:
RF BILL OF MATERIALS AND RF CABLE PLUMBING DIAGRAM

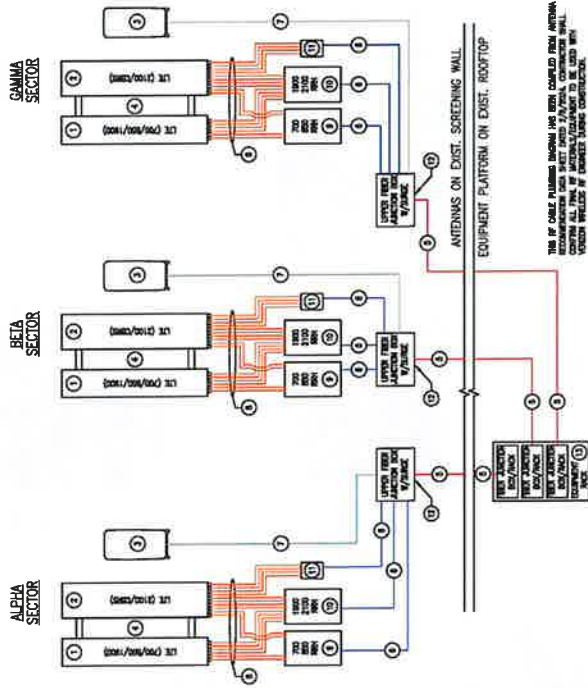
DRAWING NO.:
RF02

DATE:
2/25/24

REVISIONS:

NO.	DESCRIPTION	DATE
1	ISSUED FOR CONSTRUCTION (FINAL)	2/25/24

NOTE: APPROVED BY ANTENNA, SIGNAL PANEL AND RACK, FROM THE PLUMBING CONTRACTOR. THE CONTRACTOR SHALL VERIFY THE CABLES FROM THE PLUMBING CONTRACTOR. THE CONTRACTOR SHALL VERIFY THE CABLES FROM THE PLUMBING CONTRACTOR. THE CONTRACTOR SHALL VERIFY THE CABLES FROM THE PLUMBING CONTRACTOR.



RF CABLE PLUMBING DIAGRAM (FINAL CONFIGURATION) 2 OF 2

RF BILL OF MATERIALS (PROP. (FINAL) CONFIGURATION)

SITE NAME: EAST HARTFORD 8 CT RELO A = ALPHA SECTOR B = BETA SECTOR G = GAMMA SECTOR

ITEM (SEE PLAN)	DESCRIPTION	BAND	QTY	STATUS	CABLE LENGTH/UNIT SIZE	COMMENTS
1	PANEL ANTENNA	700/800	3 TOTAL (A/B/G)	PROP.	72.0' x 11.0' x 3.175' (34.3 lbs. each)	WARRANT TO PROP. SEE RF-BE-01-001
2	PANEL ANTENNA	2100/2300	3 TOTAL (A/B/G)	PROP.	72.0' x 11.0' x 3.175' (34.3 lbs. each)	WARRANT TO PROP. SEE RF-BE-01-001
3	PANEL ANTENNA	2700-3300	3 TOTAL (A/B/G)	PROP.	36.0' x 18.0' x 3.175' (27.2 lbs. each)	WARRANT TO PROP. PPE UNIT
4	TRAC-IT-ONE ANTENNA MOUNT KIT	-	3 TOTAL (A/B/G)	PROP.	25.4 lbs. each	WARRANT TO PROP. PPE UNIT
5	1/4" HYBRID SIGNAL CABLE (MAIN LINK)	-	48 TOTAL (A/B, 16 FT. @ FT. 2 @ FT. 2 @ FT. 2 @)	PROP.	48 FT. 2 @ (A/B, 16 FT. 2 @, 16 FT. 2 @)	WARRANT TO PROP. SEE RF-BE-01-001
6	1/4" HYBRID SIGNAL CABLE (AMP/PT)	-	8 TOTAL (A/B/G)	PROP.	20 FT. 16.0' (20.0 lbs. each)	WARRANT TO PROP. SEE RF-BE-01-001
7	1/4" HYBRID SIGNAL CABLE (AMP/PT)	-	8 TOTAL (A/B/G)	PROP.	20 FT. 16.0' (20.0 lbs. each)	WARRANT TO PROP. SEE RF-BE-01-001
8	1/4" COAXIAL CABLE (AMP/PT)	-	116 TOTAL (A/B/G)	PROP.	20 FT. 16.0' (20.0 lbs. each)	WARRANT TO PROP. SEE RF-BE-01-001
9	REMOVAL OF OLD (R/O) UNIT	700/800	3 TOTAL (A/B/G)	PROP.	18.0' x 18.0' x 18.0' (18.0 lbs. each)	WARRANT TO PROP. UNIT/REPLACE
10	REMOVAL OF OLD (R/O) UNIT	1900/2100	3 TOTAL (A/B/G)	PROP.	18.0' x 18.0' x 18.0' (18.0 lbs. each)	WARRANT TO PROP. UNIT/REPLACE
11	REMOVAL OF OLD (R/O) UNIT	BAND 46	3 TOTAL (A/B/G)	PROP.	11.0' x 11.0' x 11.0' (11.0 lbs. each)	WARRANT TO PROP. UNIT/REPLACE
12	UPPER FLOOR JUNCTION BOX WITH BATTERY	-	3 TOTAL (A/B/G)	PROP.	18.0' x 18.0' x 18.0' (18.0 lbs. each)	WARRANT TO PROP. UNIT/REPLACE
13	LOWER FLOOR JUNCTION BOX/W/SPACE	-	1 TOTAL	PROP.	24.0' x 18.0' x 18.0' (24.0 lbs. each)	WARRANT TO PROP. UNIT/REPLACE

RF BILL OF MATERIALS (FINAL CONFIGURATION) 1 OF 2

NOTE: APPROVED BY ANTENNA, SIGNAL PANEL AND RACK, FROM THE PLUMBING CONTRACTOR. THE CONTRACTOR SHALL VERIFY THE CABLES FROM THE PLUMBING CONTRACTOR. THE CONTRACTOR SHALL VERIFY THE CABLES FROM THE PLUMBING CONTRACTOR.

LEGEND

- RED = HYBRID CABLE (MAIN LINK)
- PURPLE = COAXIAL CABLE (MAIN LINK)
- BLUE = 1/4" HYBRID CABLE (AMP/PT)
- CYAN = 1/4" COAXIAL CABLE (AMP/PT)
- ORANGE = 1/4" COAXIAL CABLE (AMP/PT)
- GREEN = 1/4" COAXIAL CABLE (AMP/PT)



ARCHITECT/ENGINEER
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Cost-Strategic Engineering
 201 BRANTON POST ROAD WEST
 SUITE 101
 HARTFORD, CT 06108
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 www.chappellengineering.com



ENGINEER/LAND SURVEYOR DATE
 DRAWING SCALE: 1/8"=1'-0"
 THIS DRAWING AND ANY INFORMATION CONTAINED HEREIN IS THE PROPERTY OF CHAPPELL ENGINEERING ASSOCIATES, LLC. IT IS A VIOLATION OF LAW FOR ANY PERSON, FIRM OR COMPANY TO REPRODUCE OR TRANSMIT THIS DRAWING OR ANY INFORMATION CONTAINED HEREIN IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF CHAPPELL ENGINEERING ASSOCIATES, LLC. IF YOU ARE THE OWNER OF THIS DRAWING, YOU MAY NOT REPRODUCE OR TRANSMIT THIS DRAWING OR ANY INFORMATION CONTAINED HEREIN IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF CHAPPELL ENGINEERING ASSOCIATES, LLC.

NO.	DESCRIPTION	DATE
0	ISSUED FOR PER REVIEW	2/29/24
1	ISSUED FOR CONSTRUCTION (FINAL)	3/25/24

PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
 300 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
RF COLOR CODE SPECIFICATIONS

DRAWING NO.:
RF03

SCALE	DATE	BY	CHKD	APP'D
N/A				
DATE PLOTTED: 2/29/24				
DATE PRINTED: 2/29/24				

Hybrid Cable on Rooftops and Water tanks

Hybrid Cable 1

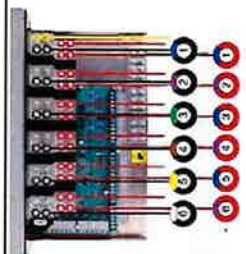
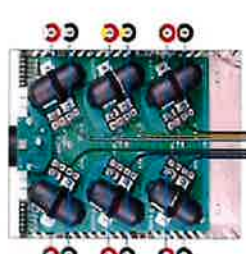

Sector	Identification Color	-4BY	RTN
700 Alpha	Blue	Blue	Blue
AMS Alpha	Purple	Purple	Purple
PCS Alpha	Green	Green	Green
850 Alpha	Brown	Brown	Brown
Spare	Yellow	Yellow	Yellow
Spare	White	White	White

Hybrid Cable 2

Sector	Identification Color	-4BY	RTN
700 Beta	Blue	Blue	Blue
AMS Beta	Purple	Purple	Purple
PCS Beta	Green	Green	Green
850 Beta	Brown	Brown	Brown
Spare	Yellow	Yellow	Yellow
Spare	White	White	White

Hybrid Cable 3

Sector	Identification Color	-4BY	RTN
700 Gamma	Blue	Blue	Blue
AMS Gamma	Purple	Purple	Purple
PCS Gamma	Green	Green	Green
850 Gamma	Brown	Brown	Brown
Spare	Yellow	Yellow	Yellow
Spare	White	White	White

HYBRID CABLE COLOR CODE SPECIFICATIONS 3

Main Line Cable Length/Information	Alpha Bundle A1 - 80'			Beta Bundle A2 - 120'			Gamma Bundle A3 - 120'		
	Color	Length	Count	Color	Length	Count	Color	Length	Count
<p>NOTE: LENGTH PROVIDED PER SET IS APPROXIMATE IN ORDER AND SUBJECT TO AN ADJUSTED WALK TO PROVIDE ACCURATE LENGTH. ANY FIELD IS ENCOURAGED IN AN EFFORT TO REDUCE BLACK AND SPARE LENGTHS TO MINIMIZE WASTE. ANY SURPLUS LENGTHS PROVIDED BELOW AT THE DISCRETION OF THE GENERAL CONTRACTOR.</p> <p style="text-align: center;">PROPOSED 45'± (ONE (1) PROP. 6x12 HYBRID SIGNAL CABLE)</p>	Blue	45'	12	Blue	45'	12	Blue	45'	12
	Purple	45'	12	Purple	45'	12	Purple	45'	12
	Green	45'	12	Green	45'	12	Green	45'	12
	Brown	45'	12	Brown	45'	12	Brown	45'	12
	Yellow	45'	12	Yellow	45'	12	Yellow	45'	12
	White	45'	12	White	45'	12	White	45'	12
	Blue	45'	12	Blue	45'	12	Blue	45'	12
	Purple	45'	12	Purple	45'	12	Purple	45'	12
	Green	45'	12	Green	45'	12	Green	45'	12
	Brown	45'	12	Brown	45'	12	Brown	45'	12
	Yellow	45'	12	Yellow	45'	12	Yellow	45'	12
	White	45'	12	White	45'	12	White	45'	12
<p>NOTE: LENGTH PROVIDED PER SET IS APPROXIMATE IN ORDER AND SUBJECT TO AN ADJUSTED WALK TO PROVIDE ACCURATE LENGTH. ANY FIELD IS ENCOURAGED IN AN EFFORT TO REDUCE BLACK AND SPARE LENGTHS TO MINIMIZE WASTE. ANY SURPLUS LENGTHS PROVIDED BELOW AT THE DISCRETION OF THE GENERAL CONTRACTOR.</p> <p style="text-align: center;">PROPOSED 85'± (ONE (1) PROP. 6x12 HYBRID SIGNAL CABLE)</p>	Blue	85'	12	Blue	85'	12	Blue	85'	12
	Purple	85'	12	Purple	85'	12	Purple	85'	12
	Green	85'	12	Green	85'	12	Green	85'	12
	Brown	85'	12	Brown	85'	12	Brown	85'	12
	Yellow	85'	12	Yellow	85'	12	Yellow	85'	12
	White	85'	12	White	85'	12	White	85'	12
	Blue	85'	12	Blue	85'	12	Blue	85'	12
	Purple	85'	12	Purple	85'	12	Purple	85'	12
	Green	85'	12	Green	85'	12	Green	85'	12
	Brown	85'	12	Brown	85'	12	Brown	85'	12
	Yellow	85'	12	Yellow	85'	12	Yellow	85'	12
	White	85'	12	White	85'	12	White	85'	12
<p>NOTE: LENGTH PROVIDED PER SET IS APPROXIMATE IN ORDER AND SUBJECT TO AN ADJUSTED WALK TO PROVIDE ACCURATE LENGTH. ANY FIELD IS ENCOURAGED IN AN EFFORT TO REDUCE BLACK AND SPARE LENGTHS TO MINIMIZE WASTE. ANY SURPLUS LENGTHS PROVIDED BELOW AT THE DISCRETION OF THE GENERAL CONTRACTOR.</p> <p style="text-align: center;">PROPOSED 60'± (ONE (1) PROP. 6x12 HYBRID SIGNAL CABLE)</p>	Blue	60'	12	Blue	60'	12	Blue	60'	12
	Purple	60'	12	Purple	60'	12	Purple	60'	12
	Green	60'	12	Green	60'	12	Green	60'	12
	Brown	60'	12	Brown	60'	12	Brown	60'	12
	Yellow	60'	12	Yellow	60'	12	Yellow	60'	12
	White	60'	12	White	60'	12	White	60'	12
	Blue	60'	12	Blue	60'	12	Blue	60'	12
	Purple	60'	12	Purple	60'	12	Purple	60'	12
	Green	60'	12	Green	60'	12	Green	60'	12
	Brown	60'	12	Brown	60'	12	Brown	60'	12
	Yellow	60'	12	Yellow	60'	12	Yellow	60'	12
	White	60'	12	White	60'	12	White	60'	12

LINE COLOR CODE SPECIFICATIONS 1



ARCHITECT/ENGINEER
CHAPPELL ENGINEERING ASSOCIATES, LLC
 201 WESTON ROAD WEST
 WESTON, MA 01092
 www.chappelleng.com



ENGINEER/AND SURVEYOR DATE
 DRAWING SCALE NOTE
 ALL DIMENSIONS UNLESS OTHERWISE NOTED ARE IN FEET AND INCHES. DIMENSIONS IN PARENTHESES ARE ALTERNATE DIMENSIONS. DIMENSIONS IN PARENTHESES ARE TO BE USED ONLY IF THE DIMENSIONS IN THE MAIN DIMENSION LINE ARE UNREADABLE. DIMENSIONS IN PARENTHESES ARE TO BE USED ONLY IF THE DIMENSIONS IN THE MAIN DIMENSION LINE ARE UNREADABLE.

NO.	DESCRIPTION	DATE
0	ISSUED FOR BIDDING	2/29/24
1	ISSUED FOR CONSTRUCTION (FINAL)	3/29/24

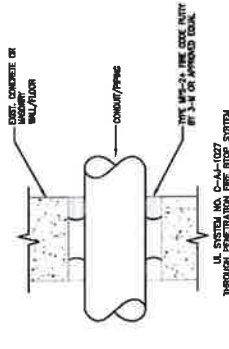
PROJECT NAME:
**EAST HARTFORD 8 CT
 RELO**

PROJECT ADDRESS:
 380 ROBERTS STREET
 EAST HARTFORD, CT 06108

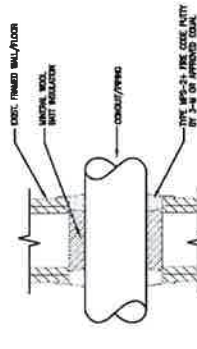
DRAWING TITLE:
**UTILITY CONDUIT/PIPE
 ROUTING DETAILS**

DRAWING NO.:
U01

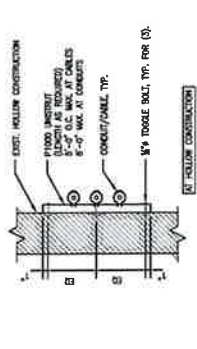
NO.	DATE	BY	CHKD.
1	2/29/24	RJC/BAI	RJC



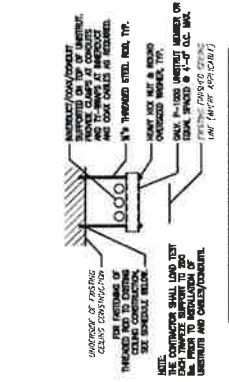
CONDUIT WALL/FLOOR PENETRATION
 SCALE: 1/4" = 1'-0"



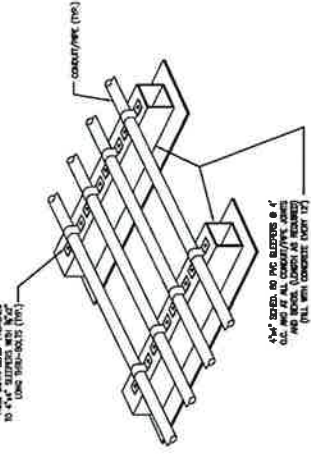
CONDUIT WALL/FLOOR PENETRATION
 SCALE: 1/4" = 1'-0"



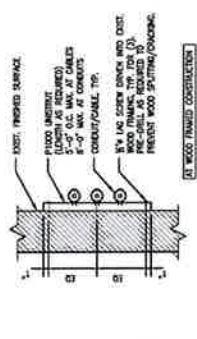
CONDUIT MOUNTING DETAIL
 SCALE: 1/4" = 1'-0"



TYPICAL TRAPEZE SUPPORT DETAIL
 SCALE: 1/4" = 1'-0"



CONDUIT/PIPE SUPPORT ON ROOF
 SCALE: 1/4" = 1'-0"



CONDUIT MOUNTING DETAIL
 SCALE: 1/4" = 1'-0"



ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
 Structural & Land Development
 P.O. BOX 101752
 BOSTON, MA 02111
 (617) 452-1100
 www.chappelleng.com



ENGINEER/LAND SURVEYOR DATE
 DRAWING SCALE NOTE:
 THIS DRAWING IS A PART OF A SET OF DRAWINGS. THE SCALE OF THIS DRAWING IS INDICATED BY THE TITLE BLOCK. THE SCALE OF THE OTHER DRAWINGS IN THE SET IS INDICATED BY THEIR RESPECTIVE TITLE BLOCKS. THIS DRAWING IS TO BE USED IN CONJUNCTION WITH THE OTHER DRAWINGS IN THE SET. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPLICABLE AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF ALL INFORMATION PROVIDED TO THE CONTRACTOR BY THE ARCHITECT/ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPLICABLE AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF ALL INFORMATION PROVIDED TO THE CONTRACTOR BY THE ARCHITECT/ENGINEER.

NO.	DESCRIPTION	DATE
0	ISSUED FOR BIDDING	2/28/24
1	ISSUED FOR CONSTRUCTION (PWA)	3/29/24

PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
 380 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
ELECTRICAL PLAN (1ST FLOOR) AND ELECTRICAL DETAILS

DRAWING NO.:
E02B

SCALE	DATE	BY	CHKD	APP'D
AS SHOWN	2/28/24			

ELECTRICAL PANEL SCHEDULE
 SCALE: 1/8" = 1'-0"

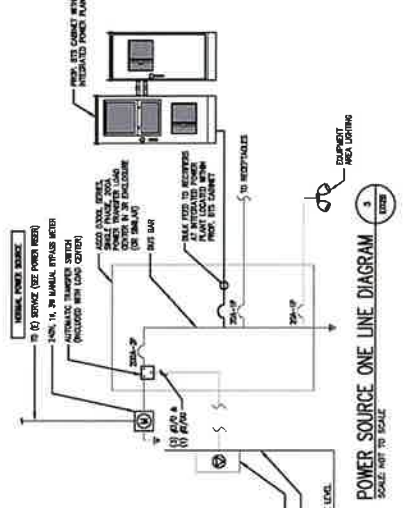
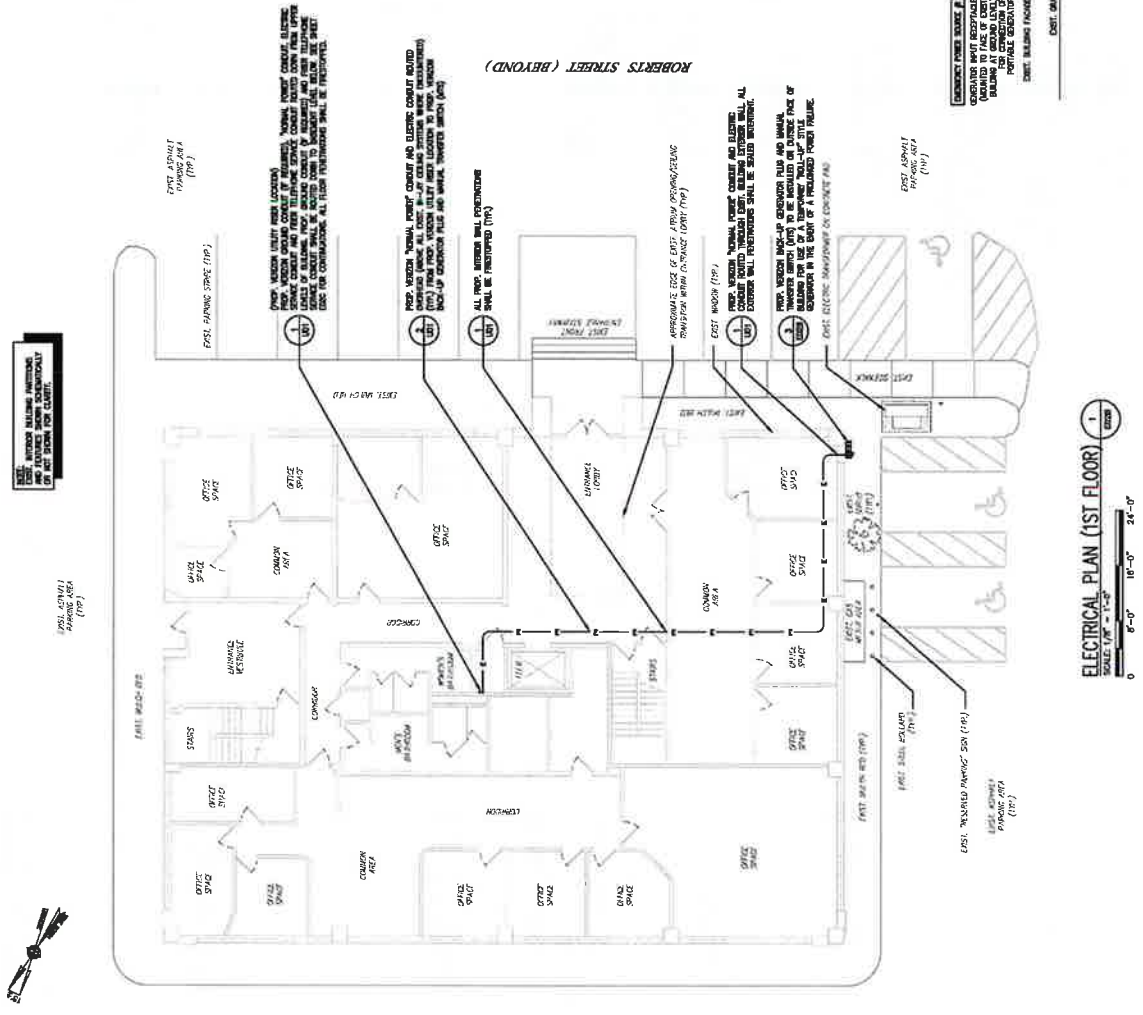
NO.	DESCRIPTION	TYPE	LOCATION
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2	RECEPT	2	RECEPT
3	RECEPT	3	RECEPT
4	RECEPT	4	RECEPT
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7	RECEPT	7	RECEPT
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9	RECEPT	9	RECEPT
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13	RECEPT	13	RECEPT
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16	RECEPT	16	RECEPT
17	RECEPT	17	RECEPT
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26	RECEPT	26	RECEPT
27	RECEPT	27	RECEPT
28	RECEPT	28	RECEPT
29	RECEPT	29	RECEPT
30	RECEPT	30	RECEPT

ELECTRICAL PANEL SCHEDULE
 SCALE: 1/8" = 1'-0"

UTILITY CONTACTS
 ELECTRICAL:
 SUPERIOR ENERGY
 247 ESTATE DRIVE, SU 210
 EAST HARTFORD, CT 06108
 (860) 441-3600

TELEPHONE:
 VERIZON
 800-944-4600

NOTES:
 1. SEE THE WORK ON SHEET E03 FOR NUMBER CONTACT DETAILS



ELECTRICAL PLAN (1ST FLOOR)
 SCALE: 1/8" = 1'-0"



CLIENT: **verizon**

ARCHITECT/ENGINEER:
CHAPPELL ENGINEERING ASSOCIATES, LLC
Specialty Land Development
 P.O. EXECUTIVE CENTRE
 201 BOSTON COMMONS
 SUITE 10
 MANHATTAN, MA 02122
 (508) 481-7400
 www.chappell-engineering.com



ENGINEER/LAND SURVEYOR DATE

DRAWING SCALE NOTE:
 THIS DRAWING WAS PREPARED BY ME OR A QUALIFIED PERSON UNDER MY CLOSE PERSONAL SUPERVISION AND I AM A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MASSACHUSETTS. I AM NOT PROVIDING ANY GUARANTEE OR WARRANTY, EXPRESS OR IMPLIED, FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION CONTAINED HEREIN. IT IS A VIOLATION OF LAW FOR ANY PERSON TO REPRODUCE OR TRANSMIT THIS DRAWING OR ANY PART OF IT WITHOUT THE WRITTEN PERMISSION OF A LICENSED PROFESSIONAL ENGINEER. THIS DRAWING IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREIN.

NO.	DESCRIPTION	DATE
0	ISSUED FOR PER REVIEW	2/29/24
1	ISSUED FOR CONSTRUCTION (TYP.)	3/29/24

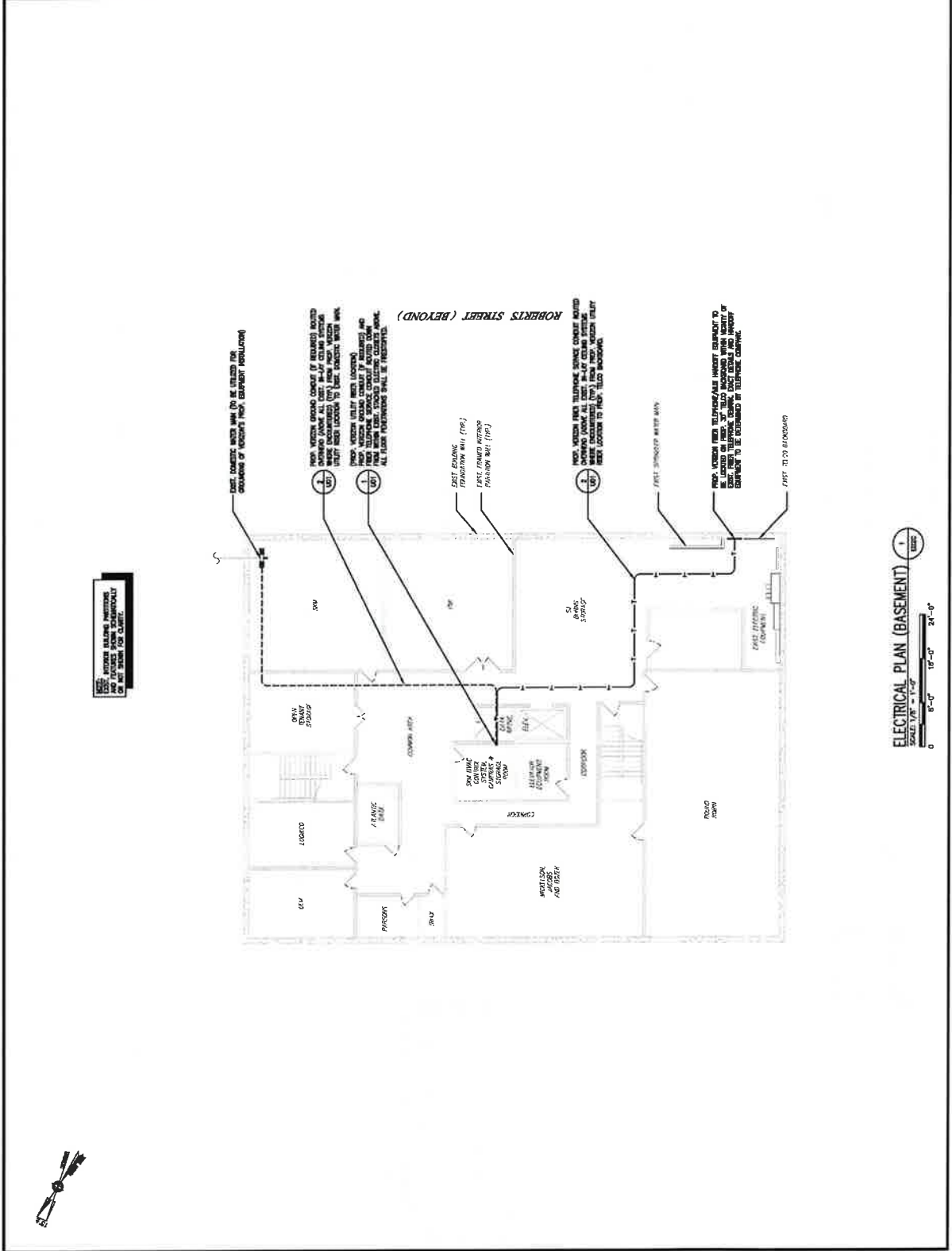
PROJECT NAME:
**EAST HARTFORD 8 CT
 RELO**

PROJECT ADDRESS:
 800 ROBERTS STREET
 EAST HARTFORD, CT 06108

DRAWING TITLE:
**ELECTRICAL PLAN
 (BASEMENT)**

DRAWING NO.:
E02C

NO.	DESCRIPTION	DATE



NOTE: BEFORE MAKING ANYTHING OR ANYTHING FOR CHANGE.

ELECTRICAL PLAN (BASEMENT)
 SCALE: 1/8" = 1'-0"
 0 8'-0" 16'-0" 24'-0"



CHAPPELL ASSOCIATES, LLC
 ARCHITECT/ELECTRICAL ENGINEER
 201 BOSTON FORT ROAD WEST
 SUITE 101
 HARTFORD, CT 06102
 (860) 481-7100
 www.chappellassociates.com

SEAL

ENGINEER/AND SURVEYOR DATE

ENGINEERING SCALE NOTE:
 THIS DRAWING IS FOR INFORMATION ONLY. IT IS NOT TO BE USED FOR CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND CONDITIONS ON THE JOB. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS. IT IS A VIOLATION OF LAW FOR ANY PERSON TO ALTER THIS DRAWING IN ANY MANNER WITHOUT THE WRITTEN CONSENT OF CHAPPELL ASSOCIATES, LLC.

NO.	DESCRIPTION	DATE
0	ISSUED FOR BIDDING	2/29/24
1	ISSUED FOR CONSTRUCTION (FINAL)	3/29/24

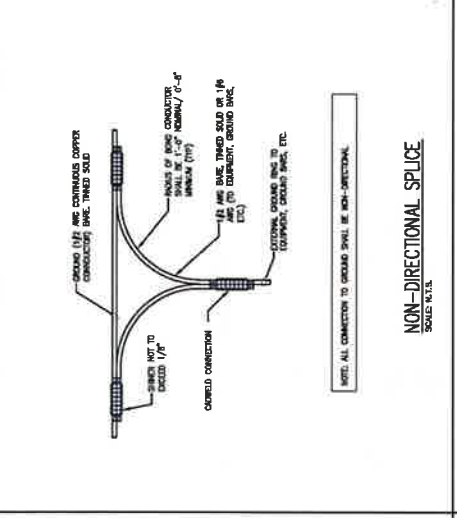
PROJECT NAME:
EAST HARTFORD 8 CT RELO

PROJECT ADDRESS:
 350 ROBERTS STREET
 EAST HARTFORD, CT 06108

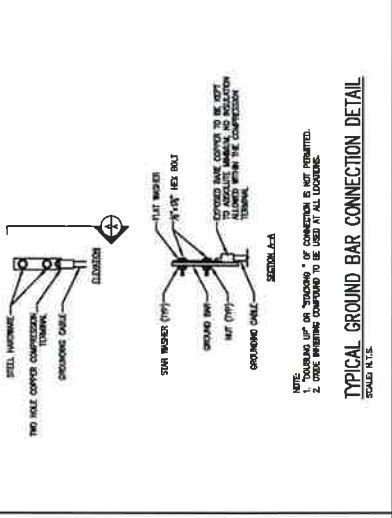
DRAWING TITLE:
GROUNDING DETAILS

DRAWING NO.:
E05

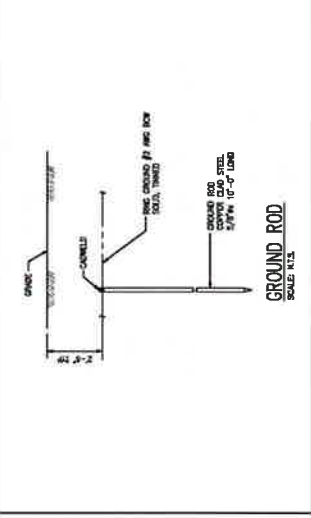
SCALE	DATE	BY	CHKD	APP'D
AS SHOWN	2/29/24			



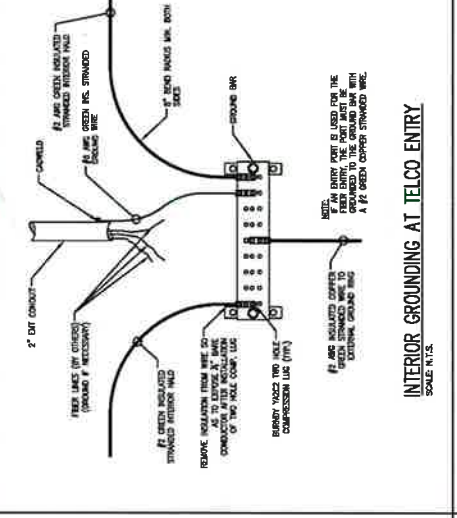
NON-DIRECTIONAL SPLICE
 SCALE: N.T.S.



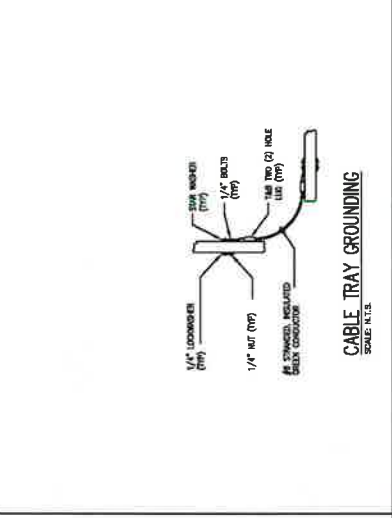
TYPICAL GROUND BAR CONNECTION DETAIL
 SCALE: N.T.S.



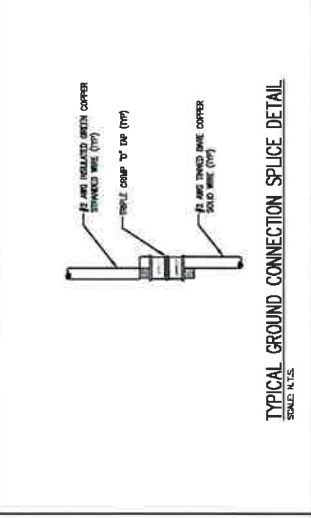
GROUND ROD
 SCALE: N.T.S.



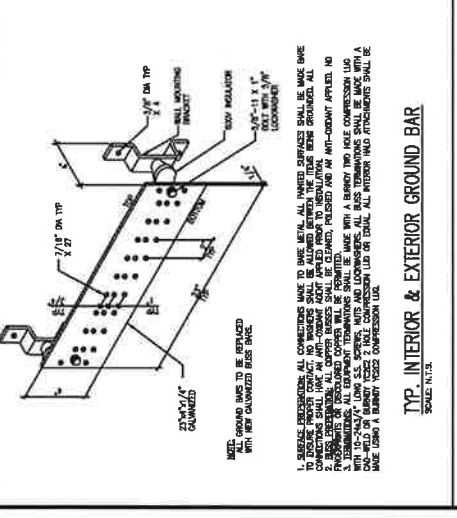
INTERIOR GROUNDING AT TELCO ENTRY
 SCALE: N.T.S.



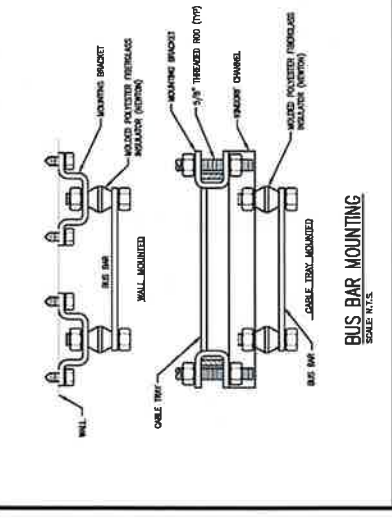
CABLE TRAY GROUNDING
 SCALE: N.T.S.



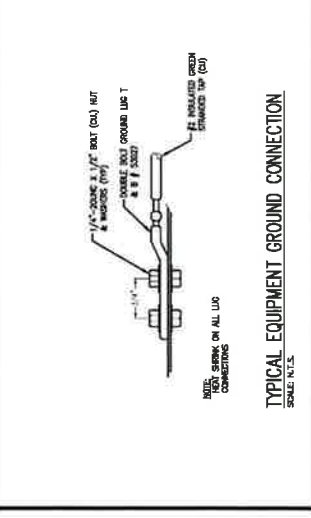
TYPICAL GROUND CONNECTION SPLICE DETAIL
 SCALE: N.T.S.



TYP. INTERIOR & EXTERIOR GROUND BAR
 SCALE: N.T.S.



BUS BAR MOUNTING
 SCALE: N.T.S.



TYPICAL EQUIPMENT GROUND CONNECTION
 SCALE: N.T.S.

ATTACHMENT 5



VISIBILITY ANALYSIS



**EAST HARTFORD 8 CT RELO
330 ROBERTS STREET
EAST HARTFORD, CT**

PREPARED FOR:



PREPARED BY:

**All-Points Technology Corporation, P.C.
567 Vauxhall Street Extension – Suite 311
Waterford, CT 06385**

VISUAL ASSESSMENT & PHOTO-SIMULATIONS

Cellco Partnership d/b/a Verizon Wireless ("Verizon Wireless") is seeking approval for the installation of a wireless communications facility (the "Facility") at 330 Roberts Street in the town of East Hartford, Connecticut (the "Host Property"). At the request of Verizon Wireless, All-Points Technology Corporation, P.C. ("APT") completed this assessment to evaluate the potential visual effects of the proposed Facility from within a half-mile radius (the "Study Area").

Project Setting

The Host Property is a ±1.44-acre commercially developed parcel located on the north side of Roberts Street. A four-story office building is located on the west side of parcel. Paved parking encompasses the remainder of the lot. The rooftop of the building currently houses T-Mobile antennas and appurtenances mounted to and behind a screening wall.

Land use in the immediate vicinity consists of a mix of commercial, industrial, and residential development. A transmission line corridor abuts the parcel to the north, Interstate 84 ("I-84") is located to the south, and the Hockanum River transects the Study Area to the north beyond the transmission line corridor.

The topography within the Study Area consists of relatively level terrain. Ground elevations range from approximately 6 feet above mean sea level ("AMSL") along the Hockanum River to approximately 50 feet AMSL immediately adjacent to the Site. Tree cover within the Study Area (consisting of primarily of mixed deciduous hardwoods) occupies approximately 1/3 of the 503-acre Study Area.

Project Undertaking

The proposed Facility is intended to replace Verizon Wireless's current East Hartford 8 site located across the street at 363 Roberts Street. It is APT's understanding that the existing building and other structures located at 363 Roberts Street are to be demolished.

Based on information contained in the Site Plans (prepared by Chappell Engineering Associates, LLC dated March 25, 2024), the proposed Facility would be located on the rooftop of the Host Property building (the "Site"). Verizon Wireless would install nine (9) panel antennas with a top height of ±68.1' above ground level ("AGL") pipe mounted to the existing screening wall. Three (3) fiber distribution junction boxes and nine (9) remote radio heads ("RRHs") would also be mounted to the pipe mounts. Associated equipment will be placed on a new 14' by 24' steel

equipment platform mounted at roof-level. A new generator plug and manual transfer switch will be installed on the west façade of the building near grade for use with a temporary generator in emergency situations.

Methodology

APT used the combination of a predictive computer model, in-field analysis, and a review of various data sources to evaluate the visibility associated with the proposed Facility on both a quantitative and qualitative basis. The predictive model provides a measurable assessment of visibility throughout the entire Study Area, including private properties and other areas inaccessible for direct observations. The in-field analysis consisted of a field reconnaissance of the Study Area to record existing conditions, verify results of the model, inventory areas of visibility, and provide photographic documentation from publicly accessible areas. A description of the procedures used in the analysis is provided below.

Preliminary Computer Modeling

To conduct this assessment, a predictive computer model was developed specifically for this project using ESRI's ArcMap GIS¹ software and available GIS data. The predictive model incorporates Project- and Study Area-specific data, including the Site location, its ground elevation and the proposed Facility height, as well as the surrounding topography, existing vegetation, and structures (the primary features that can block direct lines of sight).

A digital surface model ("DSM"), capturing both the natural and built features on the Earth's surface, was generated for the extent of the Study Area utilizing State of Connecticut 2016 LiDAR² LAS³ data points. LiDAR is a remote-sensing technology that develops elevation data by measuring the time it takes for laser light to return from the surface to the instrument's sensors. The varying reflectivity of objects also means that the "returns" can be classified based on the characteristics of the reflected light, normally into categories such as "bare earth," "vegetation," "road," "surface water" or "building." Derived from the 2016 LiDAR data, the LAS datasets contain the corresponding elevation point data and return classification values. The Study Area DSM incorporates the first return LAS dataset values that are associated with the highest feature in the landscape, typically a treetop, top of a building, and/or the highest point of other tall structures.

Once the DSM was generated, ESRI's Viewshed Tool was utilized to identify locations within the Study Area where the proposed Facility may be visible. ESRI's Viewshed Tool predicts visibility

¹ ArcMap is a Geographic Information System desktop application developed by the Environmental Systems Research Institute for creating maps, performing spatial analysis, and managing geographic data.

² Light Detection and Ranging

³ An LAS file is an industry-standard binary format for storing airborne LiDAR data.

by identifying those cells⁴ within the DSM that can be seen from an observer location. Cells where visibility was indicated were extracted and converted from a raster dataset to a polygon feature which was then overlaid onto aerial photograph and topographic base maps. Since the DSM includes the highest relative feature in the landscape, isolated “visible” cells are often indicated within heavily forested areas (e.g., from the top of the highest tree) or on building rooftops during the initial processing. It is recognized that these areas do not represent typical viewer locations and overstate visibility. As such, the resulting polygon feature is further refined by extracting those areas. The viewshed results are also cross-checked against the most current aerial photographs to assess whether significant changes (a new housing development, for example) have occurred since the time the LiDAR-based LAS datasets were captured.

The results of the preliminary analysis are intended to provide a representation of those areas where portions of the Facility may potentially be visible to the human eye without the aid of magnification, based on a viewer eye-height of five (5) feet above the ground and the combination of intervening topography, trees and other vegetation, and structures. However, the Facility may not necessarily be visible from all locations within those areas identified by the predictive model, which has its limitations. For instance, the computer model cannot account for mass density, tree diameters and branching variability of trees, or the degradation of views that occurs with distance. As a result, some areas depicted on the Viewshed Analysis maps as theoretically offering potential visibility of the Facility may be over-predictive because the quality of those views is not sufficient for the human eye to recognize the Facility or discriminate it from other surrounding or intervening objects.

Seasonal Visibility

Visibility also varies seasonally with increased, albeit obstructed, views occurring during “leaf-off” conditions. Beyond the variabilities associated with density of woodland stands found within any given Study Area, each individual tree also has its own unique trunk, pole timber and branching patterns that provide varying degrees of screening in leafless conditions which, as introduced above, cannot be precisely modeled. Seasonal visibility is therefore estimated based on a combination of factors including the type, size, and density of trees within a given area; topographic constraints; and other visual obstructions that may be present. Considering these dynamics, areas depicting seasonal visibility on the Viewshed Analysis maps are intended to represent locations from where there is a potential for views through intervening trees, as opposed to indicating that leaf-off views will exist from within an entire seasonally-shaded area.

⁴ Each DSM cell size is 1 square meter.

Field Reconnaissance

To supplement the results of the computer modeling efforts, APT completed in-field verification activities on February 26, 2024. APT conducted a Study Area reconnaissance by driving publicly accessible roads to inventory where the existing building/screen wall could, and could not, be seen. Visual observations from the reconnaissance were used to evaluate the results of the preliminary visibility mapping, including identifying any overt discrepancies in the initial modeling, and to obtain photo-documentation from representative locations within the Study Area.

Photographic Documentation and Simulations

Photographs were taken with a Canon EOS 6D digital camera body⁵ and Canon EF 24 to 105 millimeter (“mm”) zoom lens. The coordinates of the proposed tower location were entered as a “waypoint” into a handheld global positioning system (“GPS”) device, with the “find” tool on the GPS unit then used to provide the distance and orientation to the proposed Facility. The geographic coordinates of each photo location were recorded as meta data using GPS technology internal to the camera. On occasion, photos are taken at lower focal lengths to provide a greater depth of field and to provide context to the scene by including surrounding features within the photograph. During this evaluation, one (1) photograph each was taken at a 35mm and 24 mm focal length, as noted in Table 1 – Photo Locations.

Photographic simulations were generated to portray scaled renderings of the proposed Facility from 13 locations presented herein where the Facility will be recognizable above, or seasonally through, the trees⁶. Using field data, site plan information and 3-dimensional (3D) modeling software, spatially referenced models of the Site and Facility were generated and merged. The geographic coordinates obtained in the field for the photograph locations were incorporated into the model to produce virtual camera positions within the spatial 3D model. Photo-simulations were then created using a combination of renderings generated in the 3D model and photo-rendering software programs, which were ultimately composited and merged with the existing conditions photographs (using Adobe Photoshop image editing software). The scale of the subjects in the photograph (the existing building/screen wall) and the corresponding simulation (the Facility) is proportional to their surroundings.

For presentation purposes in this report, the photographs were produced in an approximate 7-inch by 10.5-inch format. When reproducing the images in this format size, we believe it is

⁵ The Canon EOS 6D is a full-framed camera which includes a lens receptor of the same size as the film used in 35 mm cameras. As such, the images produced are comparable to those taken with a conventional 35 mm camera.

⁶ In some locations depicted on the viewshed map as seasonally visible, the Facility will not be recognizable through intervening vegetation, as evidenced by observations made during the field reconnaissance. In those instances; no photo-simulations have been generated and the view has been characterized as “obscured”.

important to present the largest view while providing key contextual landscape elements (existing developments, street signs, utility poles, etc.) so that the viewer can determine the proportionate scale of each object within the scene. Photo-documentation of the field reconnaissance and photo-simulations of the proposed Facility are presented in the attachment at the end of this report. The photo-simulations are intended to provide the reader with a general understanding of the different view characteristics associated with the Facility from various locations. Photographs were taken from publicly accessible areas and unobstructed view lines were chosen wherever possible.

Table 1 – Photo Locations summarizes the photographs and simulations presented in the attachment to this report, and includes a description of each location, view orientation, distance from where the photo was taken relative to the Site, and the general characteristics of the view. The photo locations are depicted on the photolog and Viewshed Analysis maps provided as attachments to this report.

Final Visibility Mapping

Information obtained during the field reconnaissance was incorporated into the mapping data layers, including observations of the field reconnaissance, the photograph locations, areas that experienced recent land use changes and those places where the initial model was found to over or under-predict visibility. Once the additional data was integrated into the model, APT recalculated the visibility of the proposed Facility within the Study Area.

Conclusions

As depicted on the viewshed maps, and verified during the field reconnaissance, visibility of the proposed Facility would be limited primarily to locations where the existing structure can be seen. The ± 7 -foot extensions of the proposed antennas above the existing screen wall do not substantially increase the structure's visibility. The addition of the new antennas will be noticeable from some nearby locations. The most prominent views of the Facility are immediately surrounding the Site where the existing telecommunications infrastructure is visible.

Collectively, year-round and seasonal visibility of the proposed Facility is anticipated to occur over approximately 113 acres, or $\pm 22\%$, of the 503-acre Study Area. Due to the commercial setting of the Site and existing infrastructure at the Site and immediately surrounding the Host Property, it is APT's opinion that the proposed Facility would not alter the character of, nor constitute an adverse visual impact to, the surrounding area.

Proximity to Schools And Commercial Child Day Care Centers

No schools or commercial child day care centers are located within 250 feet of the proposed Facility. The Adelbrook Learning Center is approximately 0.83-mile northeast of the Site at 21 Church Street in East Hartford. The closest Commercial Child Day Care is Silva's Youth of Today Childcare Learning Center located approximately 0.43-mile from the Site to the southeast at 656 Silver Lane in East Hartford. The Facility is not expected to be visible from either location.

Limitations

The Viewshed Analysis maps presented in the attachment to this report depict areas where the proposed Facility may potentially be visible to the human eye without the aid of magnification based on a viewer eye-height of five (5) feet above the ground and intervening topography, tree canopy, and structures. This analysis may not account for all visible locations, as it is based on the combination of computer modeling, incorporating aerial photographs, and in-field observations from publicly accessible locations. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the Facility is likely to be seen.

The photo-simulations provide a representation of the Facility under similar settings as those encountered during the field review and reconnaissance. Views of the Facility can change throughout the seasons and the time of day, and are dependent on weather and other atmospheric conditions (e.g., haze, fog, clouds); the location, angle, and intensity of the sun; and the specific viewer location. Weather conditions on the day of the field review included clear.

ATTACHMENTS

Table 1 - Photo Locations

Photo	Location	Orientation	Distance	Visibility
1	MARGARITAS MEXICAN RESTAURANT PARKING LOT	E	+/- 400 FEET	VISIBLE
2	ROBERTS STREET	NE	+/- 475 FEET	VISIBLE
3	ROBERTS STREET*	NNW	+/- 190 FEET	VISIBLE
4	HOST PROPERTY	WSW	+/- 310 FEET	VISIBLE
5	BROOKSIDE LANE	ENE	+/- 0.29 MILE	VISIBLE
6	INTERSTATE 84 OVERPASS - ROBERTS STREET	NE	+/- 0.41 MILE	VISIBLE
7	SILVER LANE	NNE	+/- 0.45 MILE	NOT VISIBLE
8	SILVER LANE	N	+/- 0.44 MILE	VISIBLE
9	SILVER LANE	N	+/- 0.42 MILE	VISIBLE
10	RENTSCHLER FIELD PARKING LOT	NNW	+/- 0.54 MILE	NOT VISIBLE
11	CLEMENT ROAD**	NE	+/- 0.33 MILE	NOT VISIBLE
12	ECHO LANE	NNE	+/- 0.32 MILE	NOT VISIBLE
13	CLEMENT ROAD	N	+/- 0.23 MILE	NOT VISIBLE
14	CUMBERLAND DRIVE AT SIMMONS ROAD	NNW	+/- 0.27 MILE	VISIBLE
15	SIMMONS ROAD	NW	+/- 0.20 MILE	OBSCURED
16	SIMMONS ROAD	W	+/- 0.10 MILE	VISIBLE
17	ROBERTS STREET	WSW	+/- 0.13 MILE	VISIBLE
18	SIMMONS ROAD	WSW	+/- 0.10 MILE	VISIBLE
19	HILLSIDE CEMETERY	SSW	+/- 0.10 MILE	SEASONAL
20	ROBERTS STREET	WSW	+/- 0.39 MILE	OBSCURED
21	HILLSIDE STREET	S	+/- 0.38 MILE	NOT VISIBLE
22	MARTIN PARK	SSE	+/- 0.50 MILE	NOT VISIBLE

*Photograph was taken at 35 mm focal length.

**Photograph was taken at 24 mm focal length.

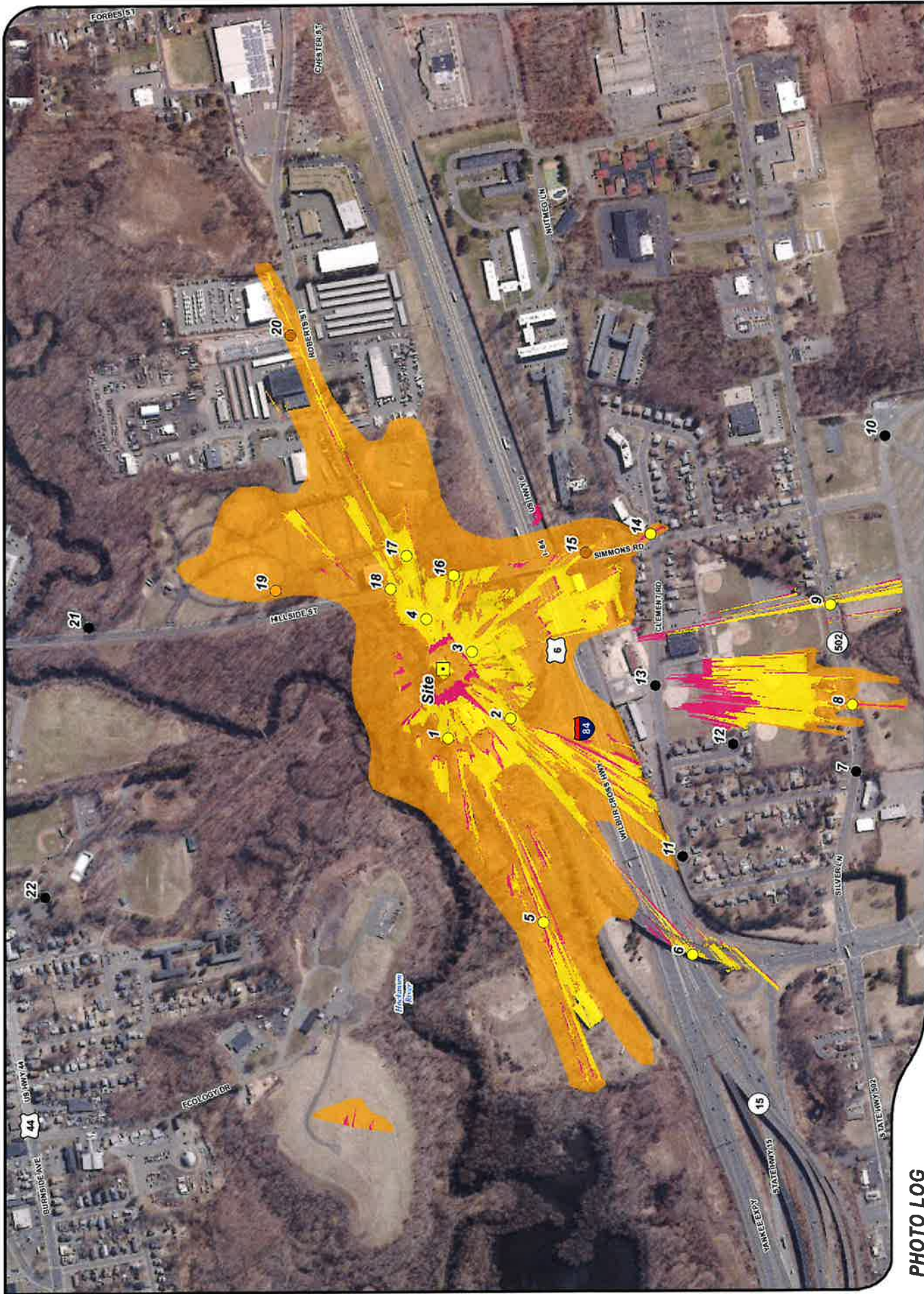


PHOTO LOG

- Legend**
- Site
 - Not Visible
 - Obscured
 - Seasonal
 - Year-Round Visibility
 - Year-Round Visibility of Existing Screening Wall
 - Year-Round Visibility of Proposed Antennas
 - Additional Year-Round Visibility of Proposed Antennas
 - Areas of Potential Seasonal Visibility - Existing and Proposed
 - Predicted Year-Round Visibility

*Visibility layers obtained from visualized analysis mapping contained in this document



EXISTING



PHOTOGRAPHED 01/26/2021

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	MARGARITAS MEXICAN RESTAURANT PARKING LOT	E	+/- 400 FEET	VISIBLE

PROPOSED



PHOTO

1

LOCATION

MARGARITAS MEXICAN RESTAURANT PARKING LOT

ORIENTATION

E

DISTANCE TO SITE

+/- 400 FEET

VISIBILITY

VISIBLE

EXISTING

PHOTOGRAPHED ON 2/26/2021

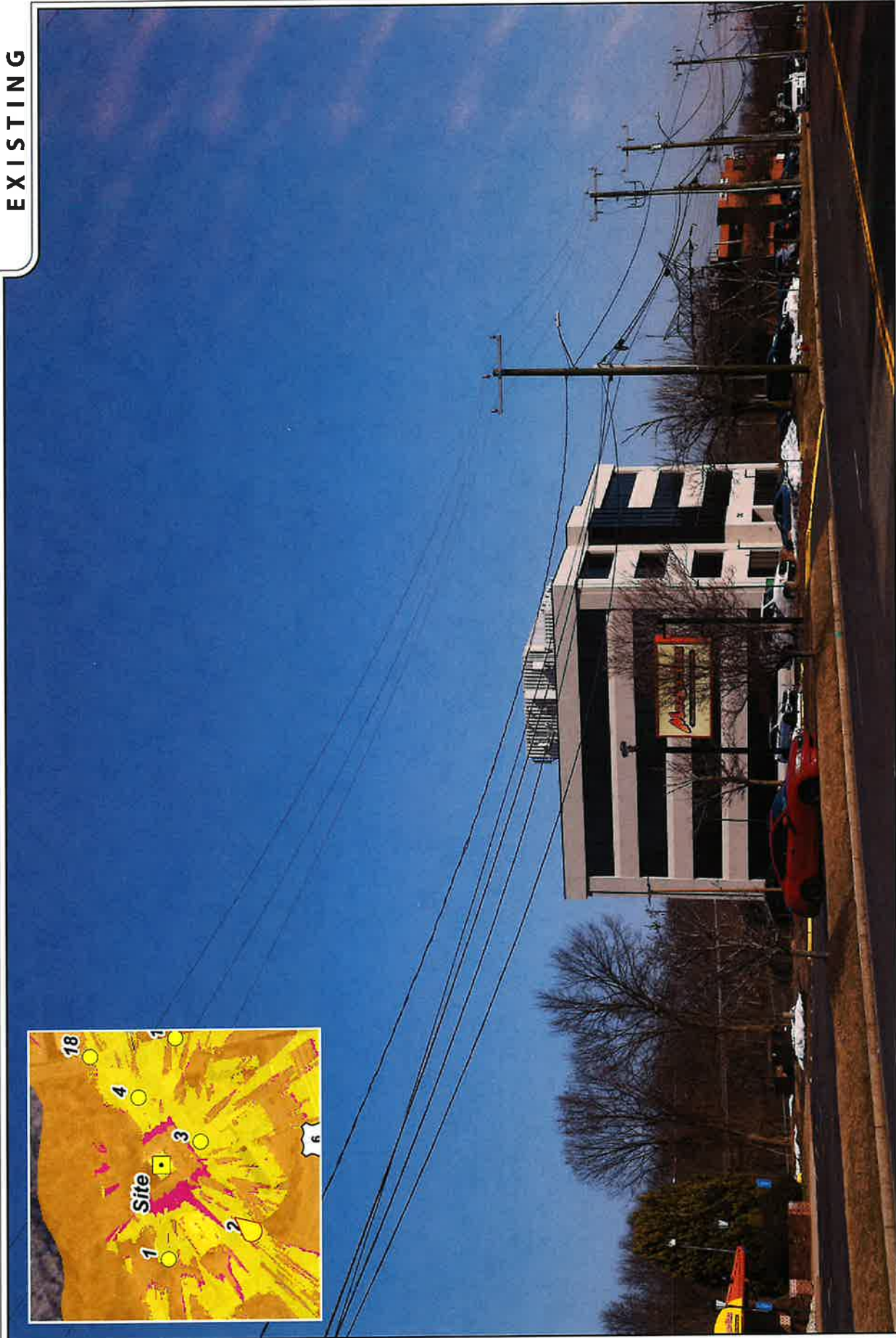
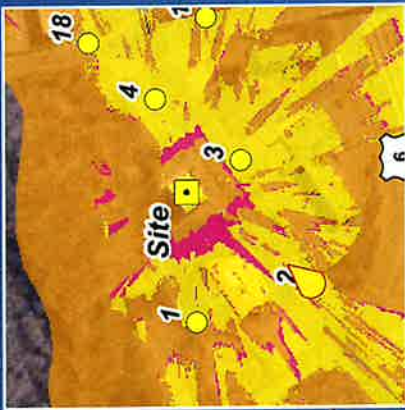


PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	ROBERTS STREET	NE	+/- 475 FEET	VISIBLE



PROPOSED



PHOTO

2

LOCATION

ROBERTS STREET

ORIENTATION

NE

DISTANCE TO SITE

+/- 475 FEET

VISIBILITY

VISIBLE



**ALL-POINTS
TECHNOLOGY CORPORATION**



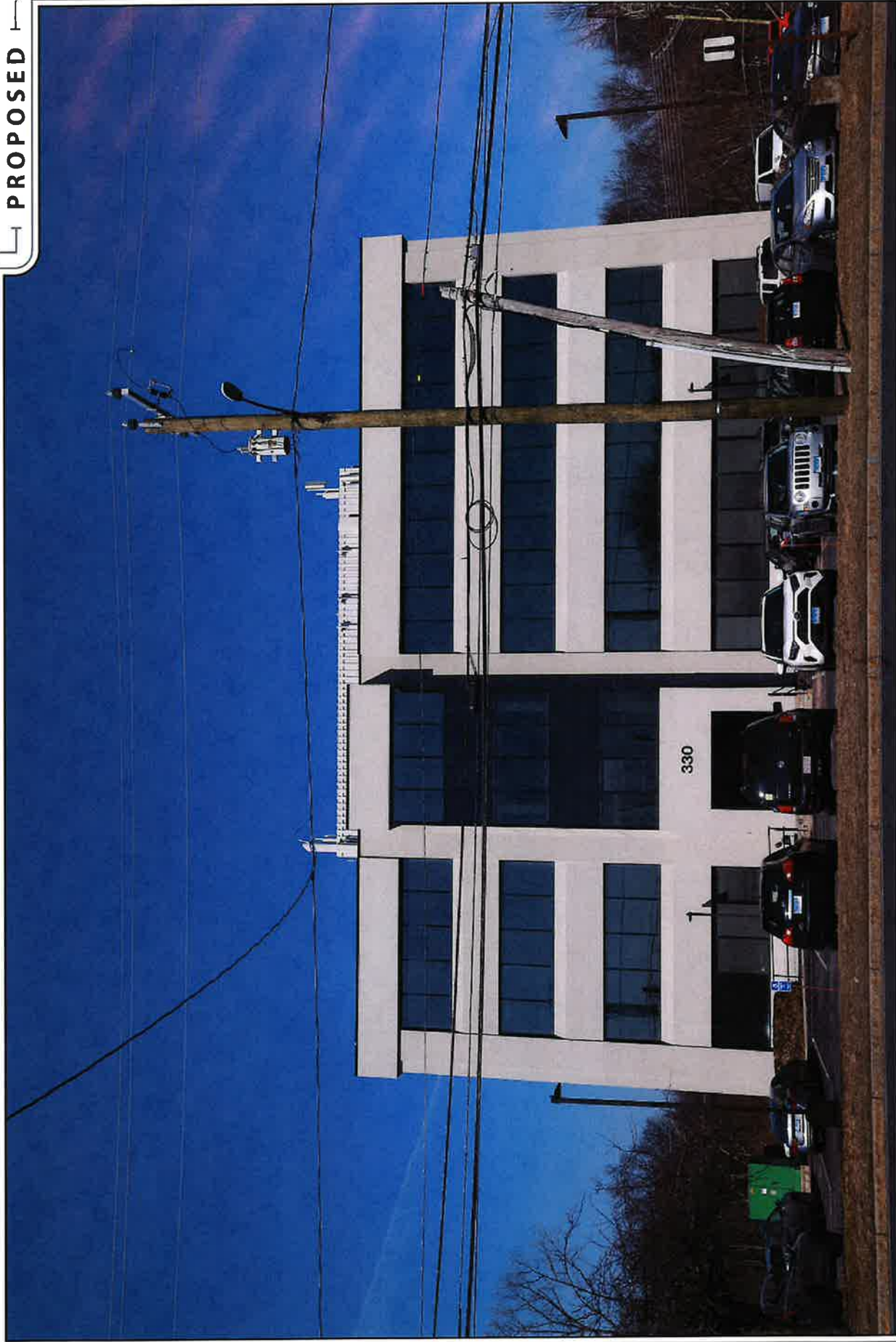
EXISTING



PHOTOGRAPHED ON 2/26/2021
35mm focal length

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	ROBERTS STREET	NNW	+/- 190 FEET	VISIBLE

PROPOSED



PHOTO

3

LOCATION

ROBERTS STREET

ORIENTATION

NNW

DISTANCE TO SITE

+/- 190 FEET

VISIBILITY

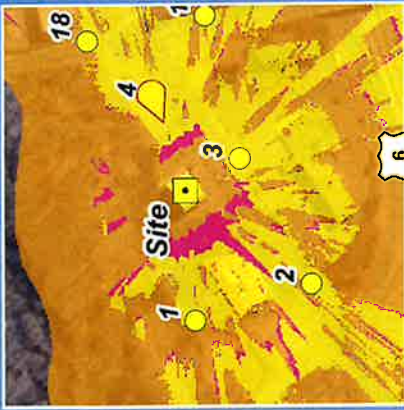
VISIBLE



ALL-POINTS
TECHNOLOGY CORPORATION

verizon

EXISTING



PHOTOGRAPHED 01/26/2021

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	HOST PROPERTY	WSW	+/- 310 FEET	VISIBLE

PROPOSED



PHOTO

4

LOCATION

HOST PROPERTY

ORIENTATION

WSW

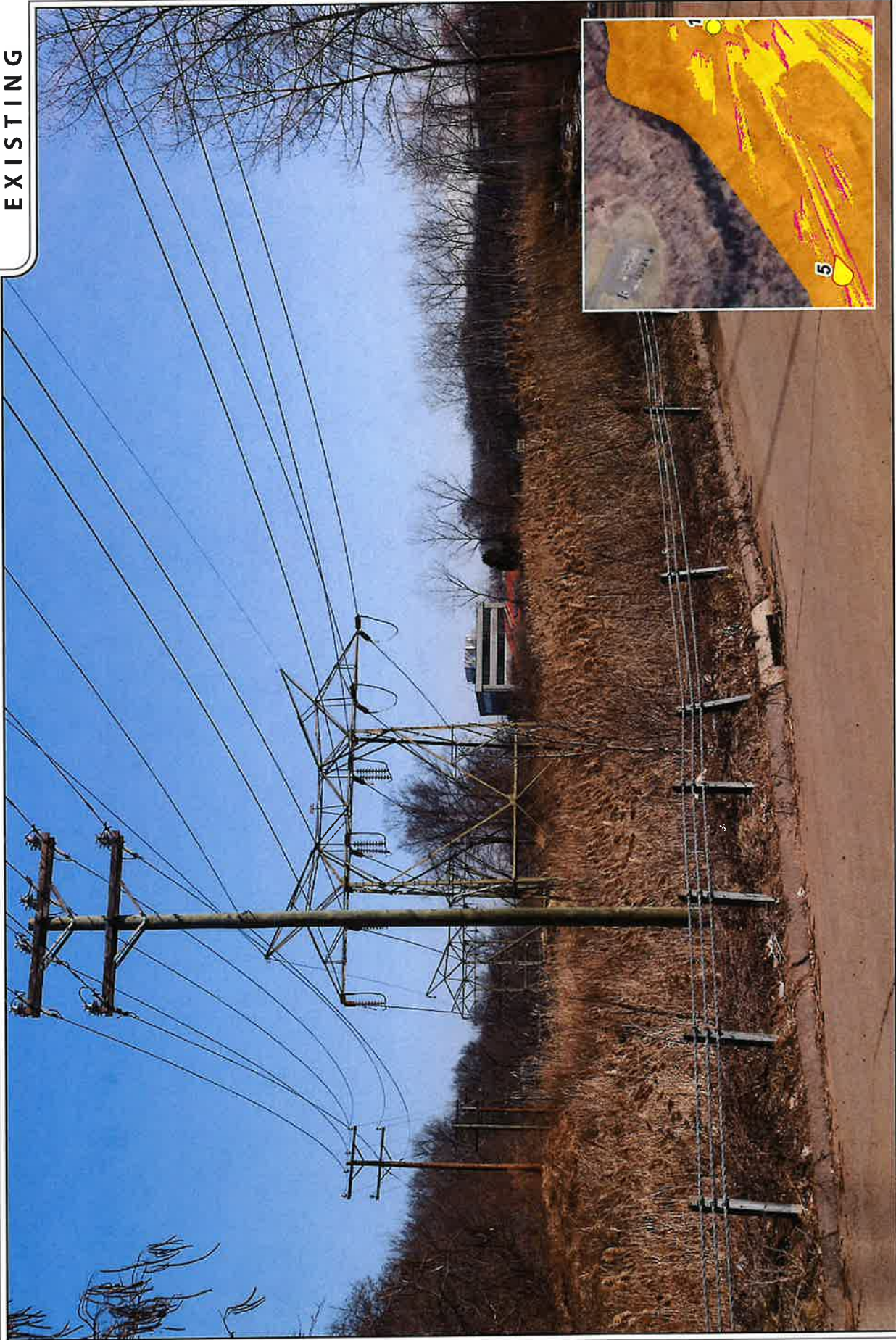
DISTANCE TO SITE

+/- 310 FEET

VISIBILITY

VISIBLE

EXISTING



PHOTOGRAPHED 01/26/2021

PHOTO
5

LOCATION
BROOKSIDE LANE

ORIENTATION
ENE

DISTANCE TO SITE
+/- 0.29 MILE

VISIBILITY
VISIBLE

PROPOSED



PHOTO

5

LOCATION

BROOKSIDE LANE

ORIENTATION

ENE

DISTANCE TO SITE

+/- 0.29 MILE

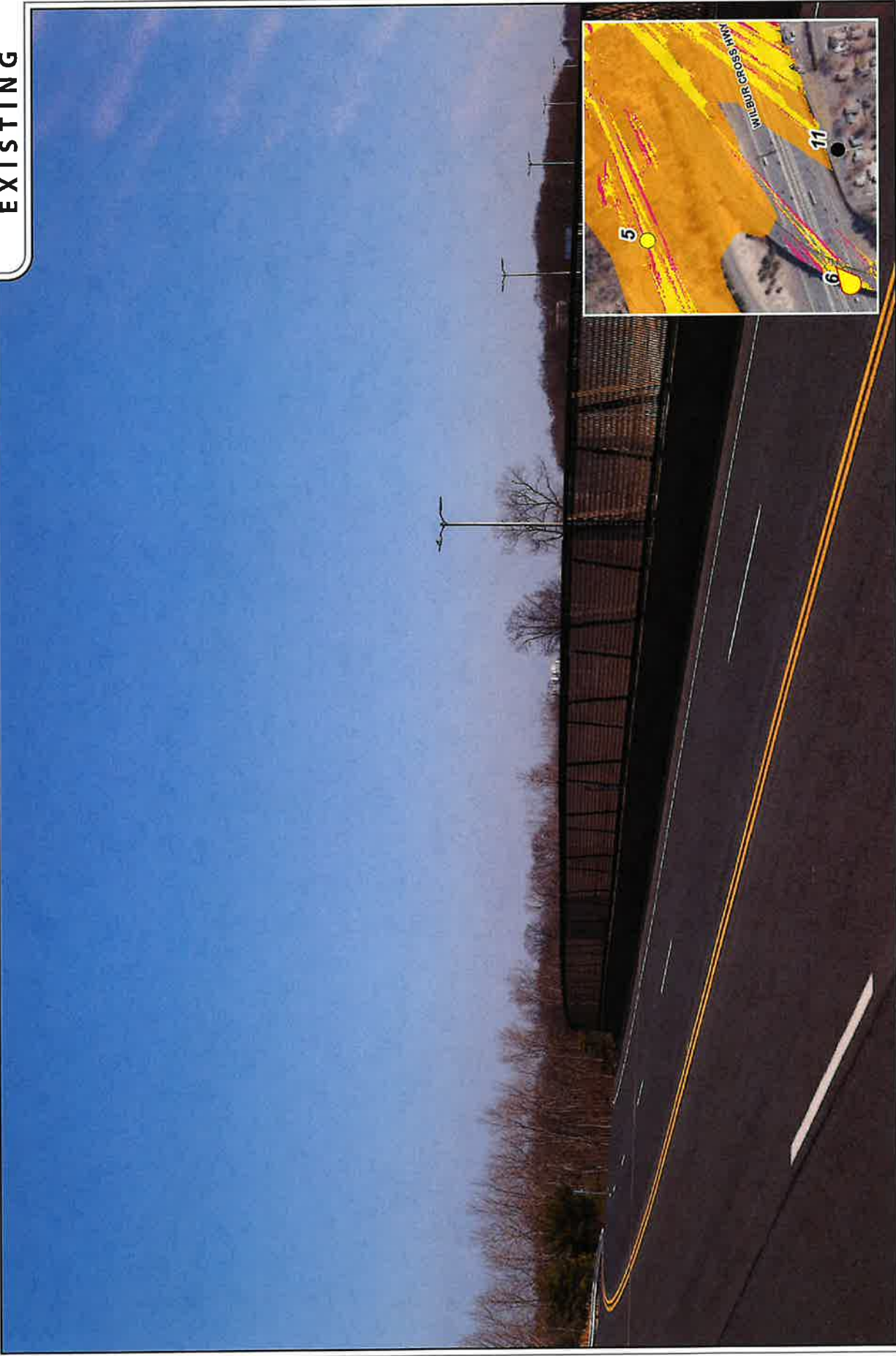
VISIBILITY

VISIBLE



verizon

EXISTING

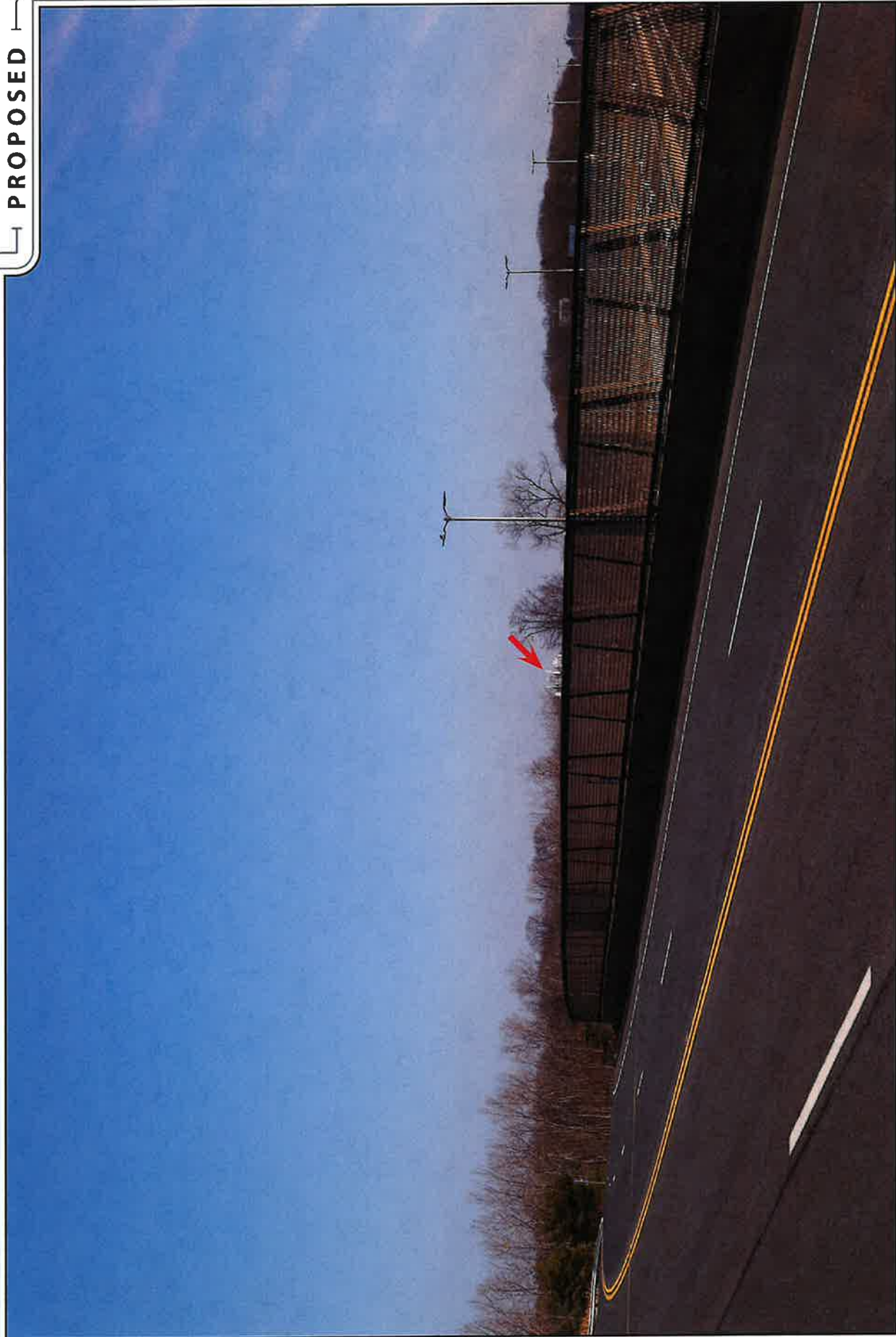


PHOTOGRAPHED ON 2/26/2024

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
6	INTERSTATE 84 OVERPASS - ROBERTS STREET	NE	+/- 0.41 MILE	VISIBLE



PROPOSED



PHOTO

6

LOCATION

INTERSTATE 84 OVERPASS - ROBERTS STREET

ORIENTATION

NE

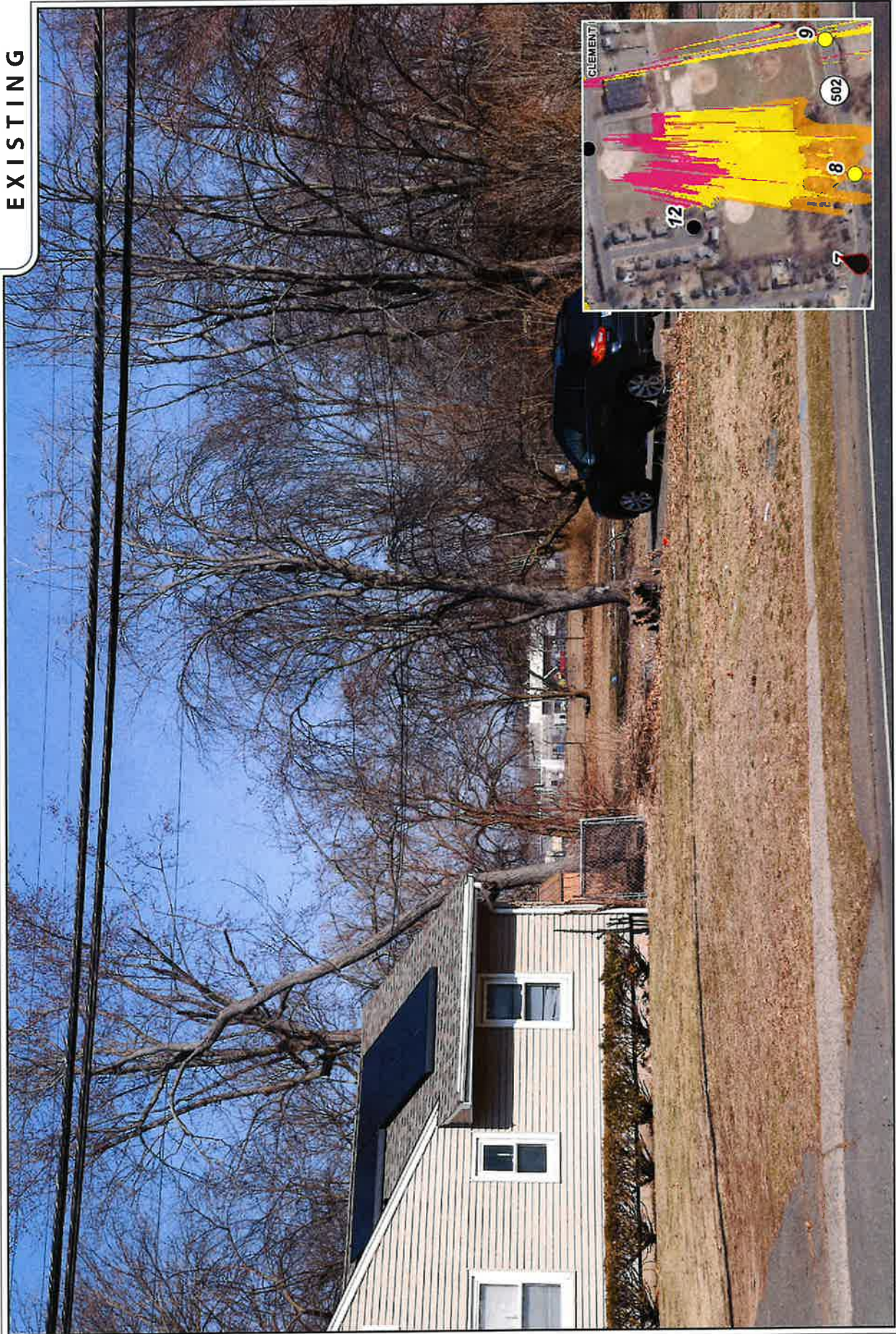
DISTANCE TO SITE

+/- 0.41 MILE

VISIBILITY

VISIBLE

EXISTING



PHOTOGRAPHED ON 2/6/2014

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
7	SILVER LANE	NNE	+/- 0.45 MILE	NOT VISIBLE

EXISTING



PHOTOGRAPHED ON 2/26/2021

PHOTO
8

LOCATION
SILVER LANE

ORIENTATION
N

DISTANCE TO SITE
+/- 0.44 MILE

VISIBILITY
VISIBLE

PROPOSED



PHOTO

8

LOCATION

SILVER LANE

ORIENTATION

N

DISTANCE TO SITE

+/- 0.44 MILE

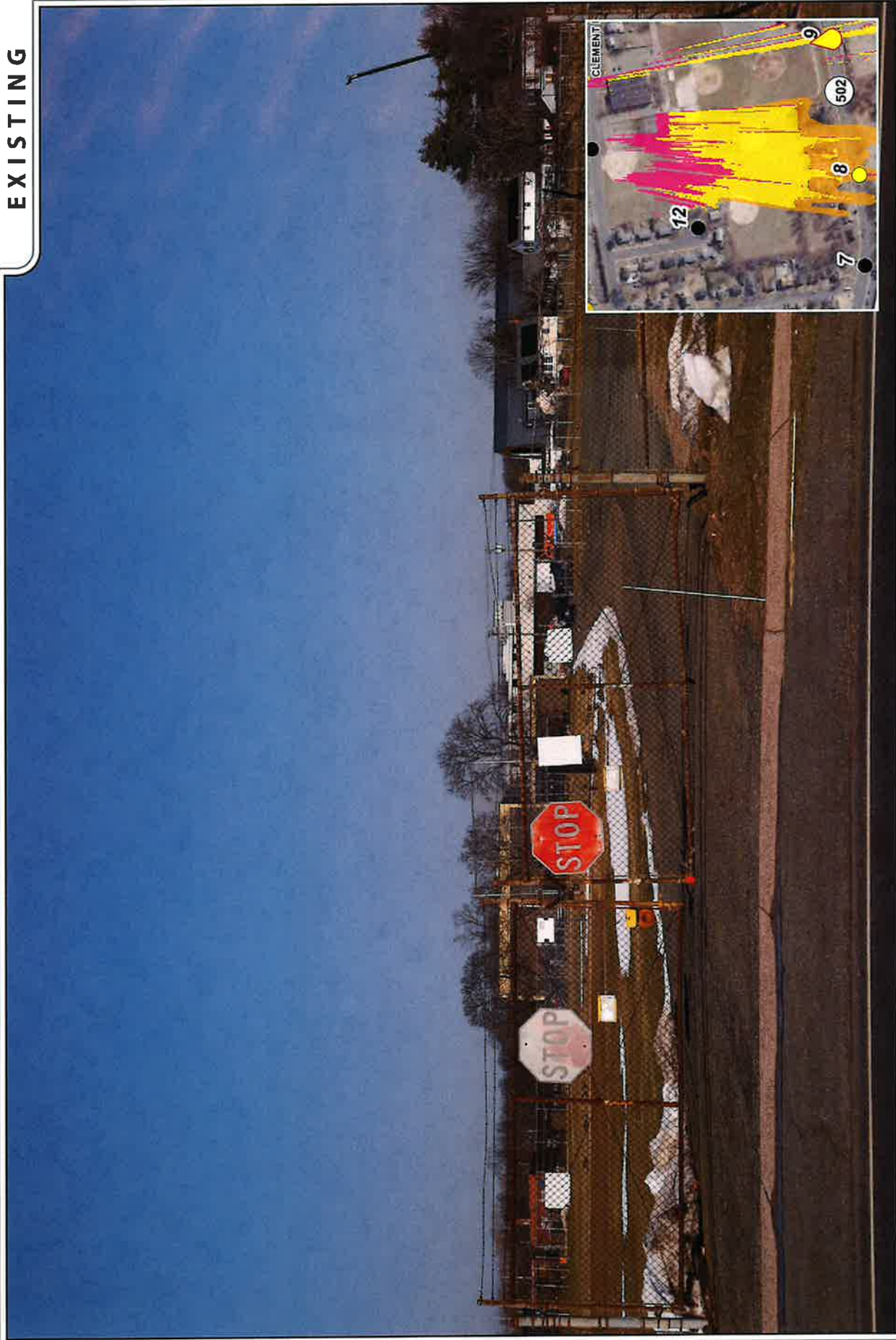
VISIBILITY

VISIBLE



verizon

EXISTING



PHOTOGRAPHED ON 2/26/2023

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
9	SILVER LANE	N	+/- 0.42 MILE	VISIBLE



PROPOSED



PHOTO

9

LOCATION

SILVER LANE

ORIENTATION

N

DISTANCE TO SITE

+/- 0.42 MILE

VISIBILITY

VISIBLE

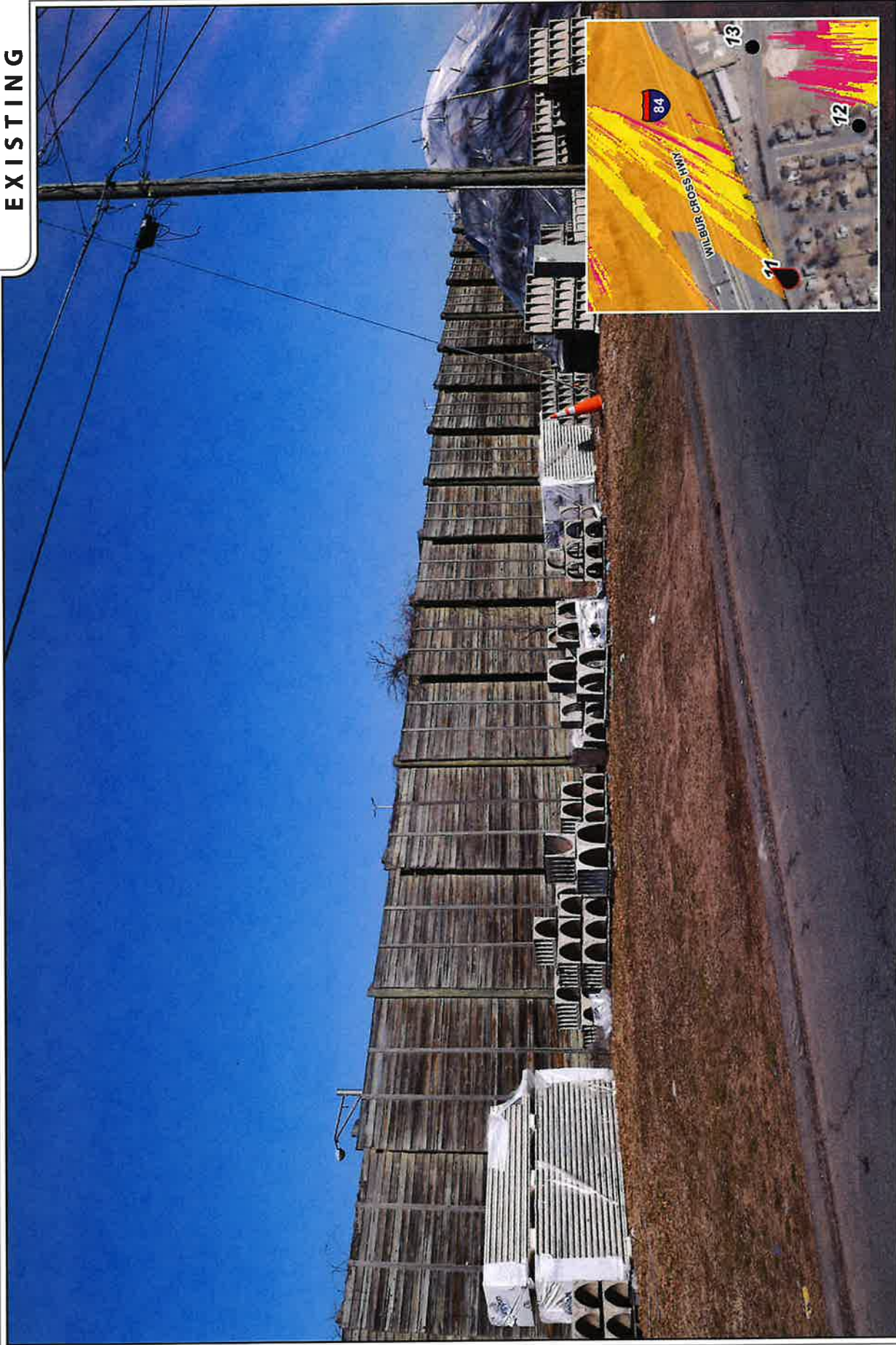
EXISTING



PHOTOGRAPHED ON 2/26/2023

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
10	RENTSCHLER FIELD PARKING LOT	NNW	+/- 0.54 MILE	NOT VISIBLE

EXISTING



PHOTOGRAPHED ON 2/26/2023
Zhen Focal Length

PHOTO
11

LOCATION
CLEMENT ROAD

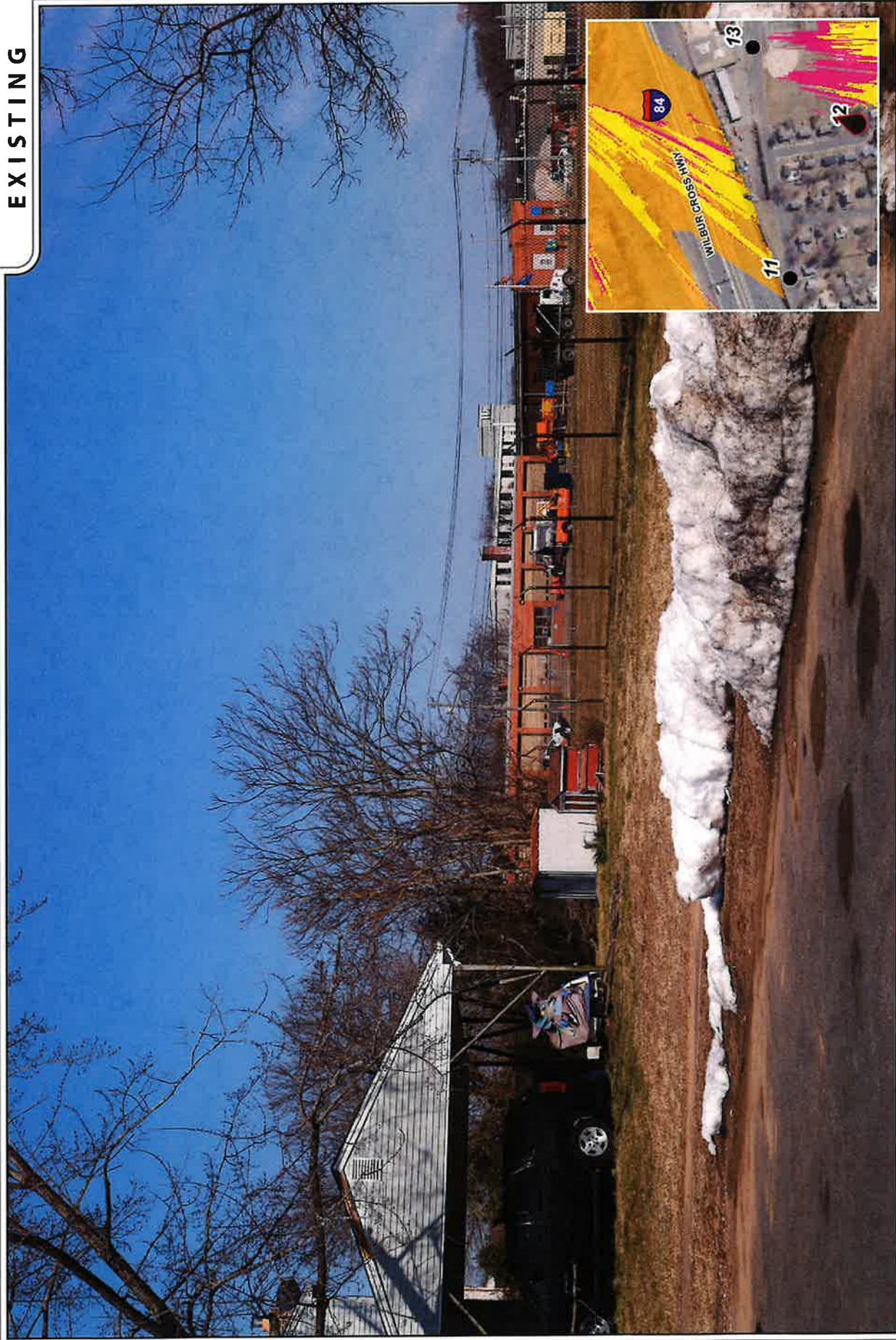
ORIENTATION
NE

DISTANCE TO SITE
+/- 0.33 MILE

VISIBILITY
NOT VISIBLE



EXISTING



PHOTOGRAPHED ON 2/26/2024

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
12	ECHO LANE	NNE	+/- 0.32 MILE	NOT VISIBLE

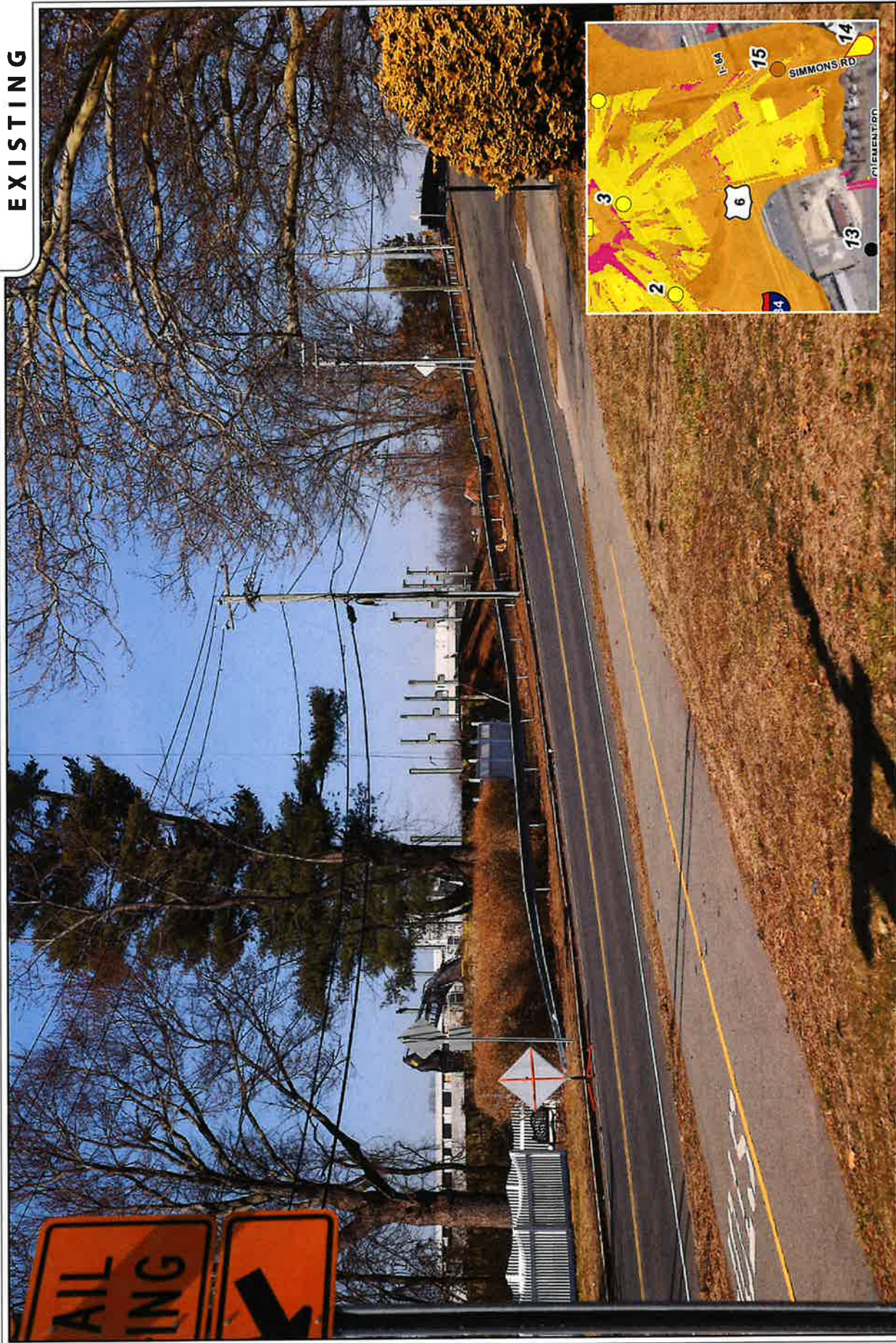
EXISTING



PHOTOGRAPHED ON 2/26/2024

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
13	CLEMENT ROAD	N	+/- 0.23 MILE	NOT VISIBLE

EXISTING



PHOTO

14

LOCATION

CUMBERLAND DRIVE AT SIMMONS ROAD

ORIENTATION

NNW

DISTANCE TO SITE

+/- 0.27 MILE

VISIBILITY

VISIBLE

PROPOSED

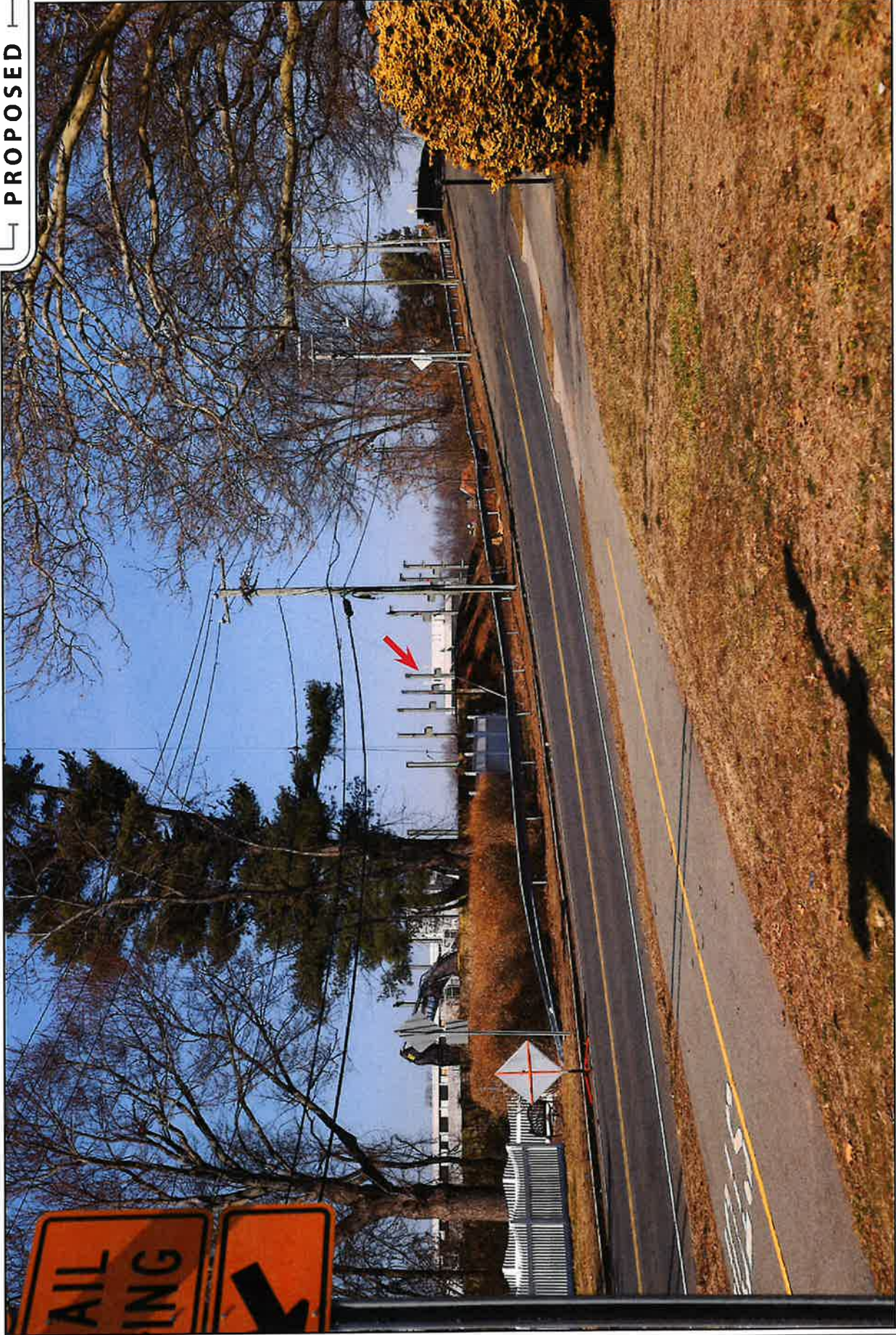


PHOTO
14

LOCATION

CUMBERLAND DRIVE AT SIMMONS ROAD

ORIENTATION

NNW

DISTANCE TO SITE

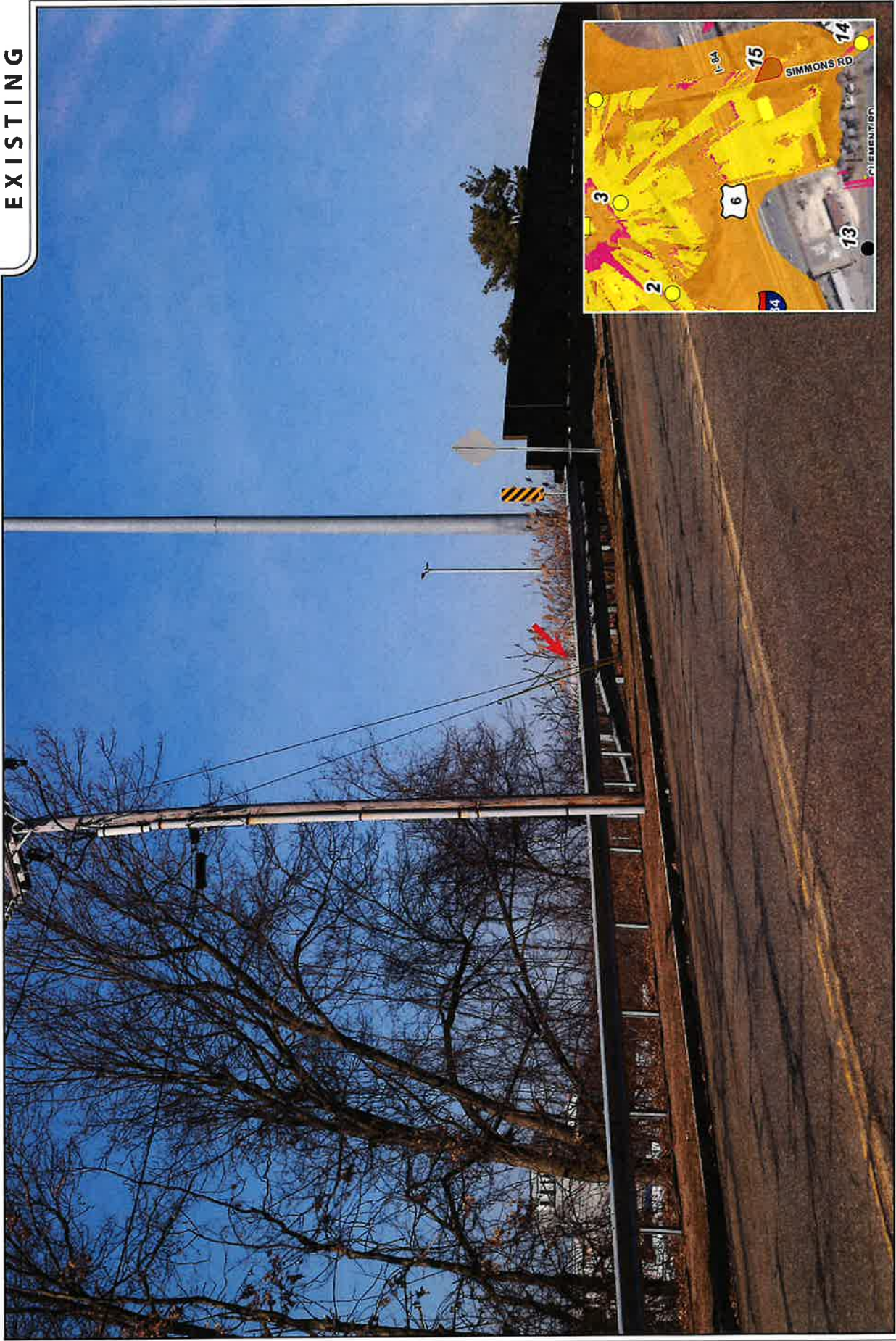
+/- 0.27 MILE

VISIBILITY

VISIBLE



EXISTING

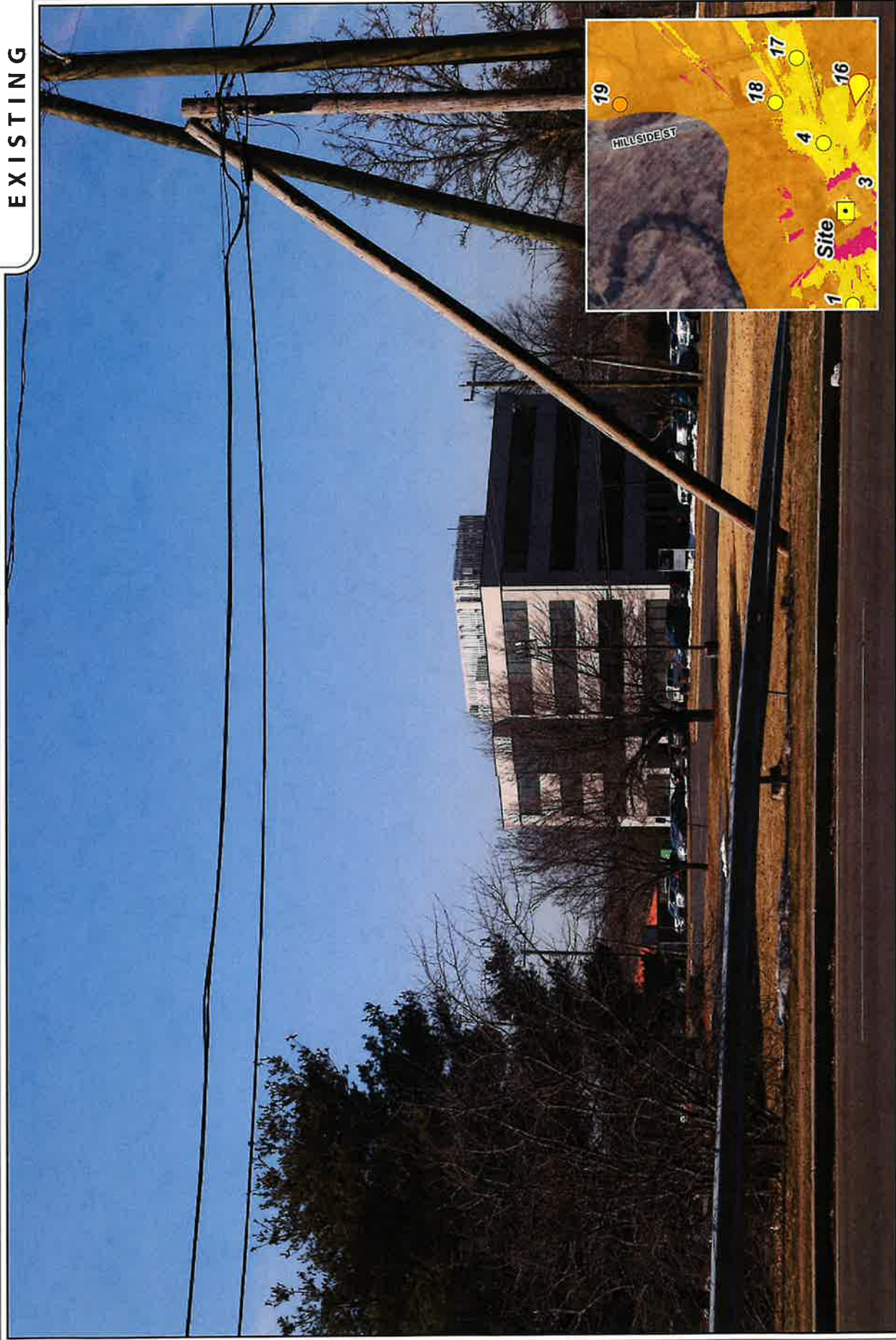


PHOTOGRAPHED ON 2/26/2021

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
15	SIMMONS ROAD	NW	+/- 0.20 MILE	OBSCURED



EXISTING

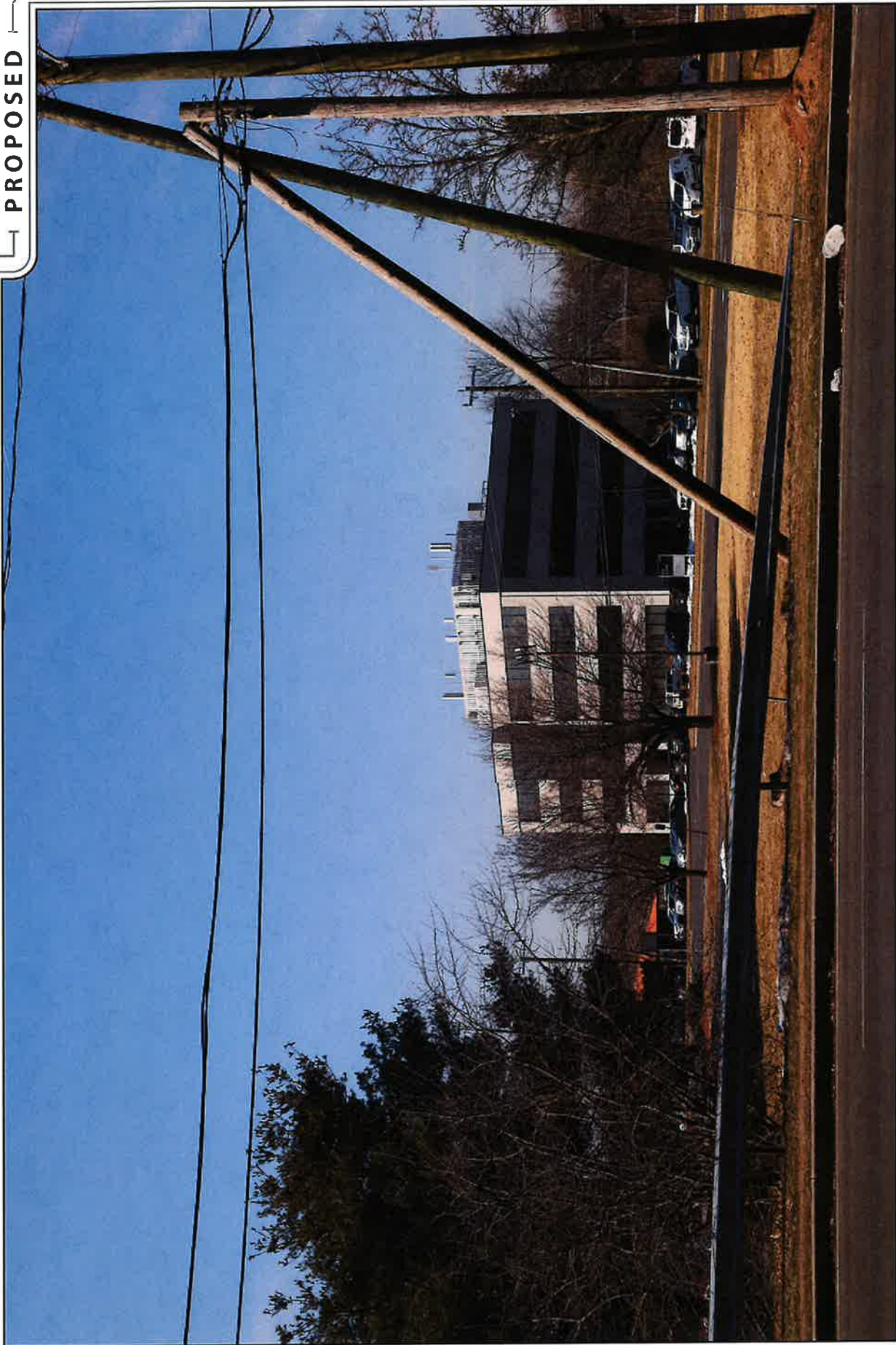


PHOTOGRAPHED 01/27/2021

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
16	SIMMONS ROAD	W	+/- 0.10 MILE	VISIBLE



PROPOSED



PHOTO

16

LOCATION

SIMMONS ROAD

ORIENTATION

W

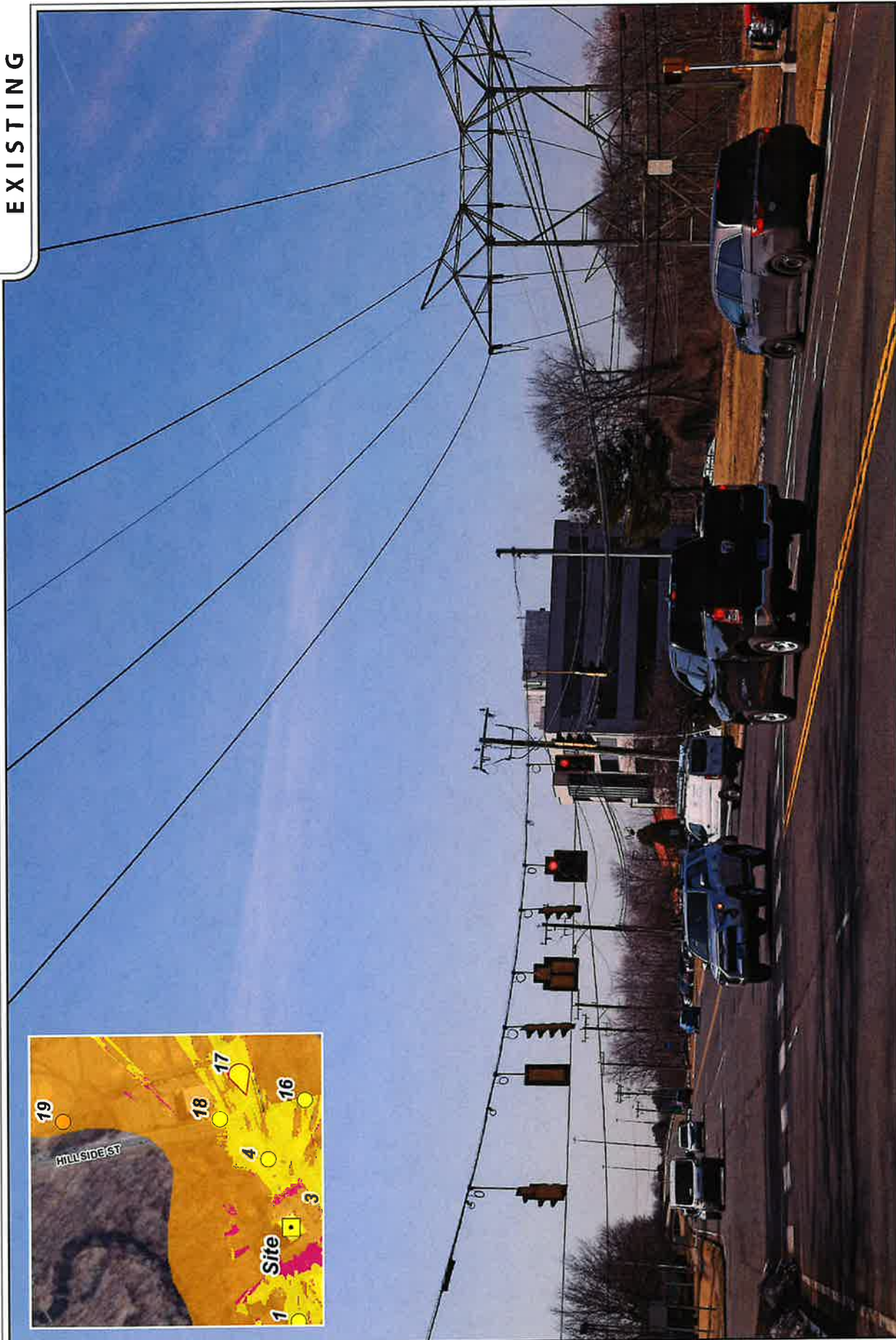
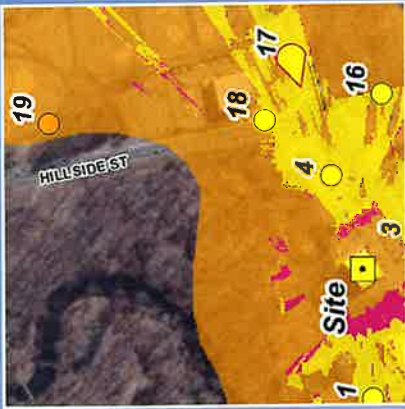
DISTANCE TO SITE

+/- 0.10 MILE

VISIBILITY

VISIBLE

EXISTING



PHOTOGRAPHED 01/26/2021

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
17	ROBERTS STREET	WSW	+/- 0.13 MILE	VISIBLE

PROPOSED

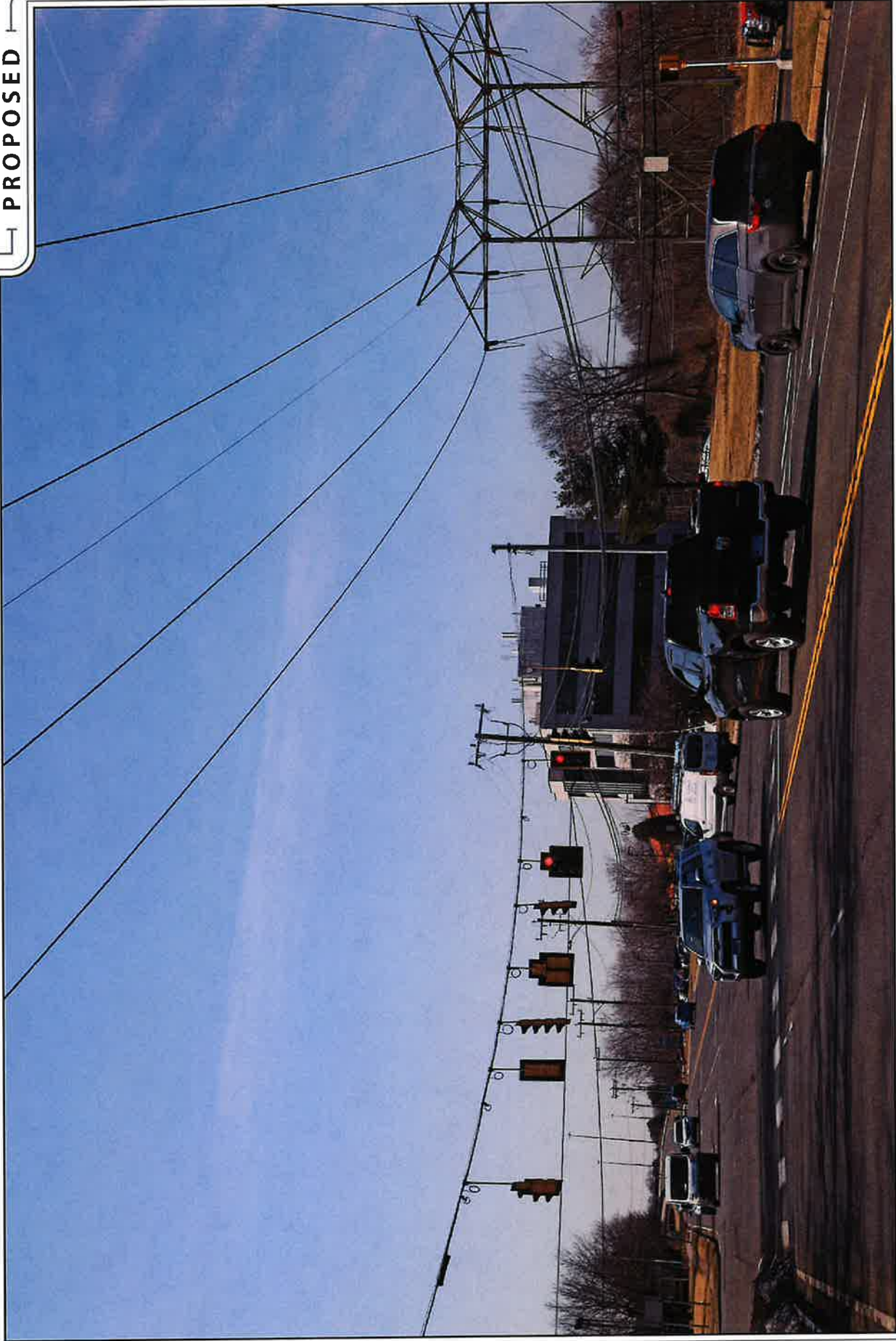


PHOTO
17

LOCATION
ROBERTS STREET

ORIENTATION
WSW

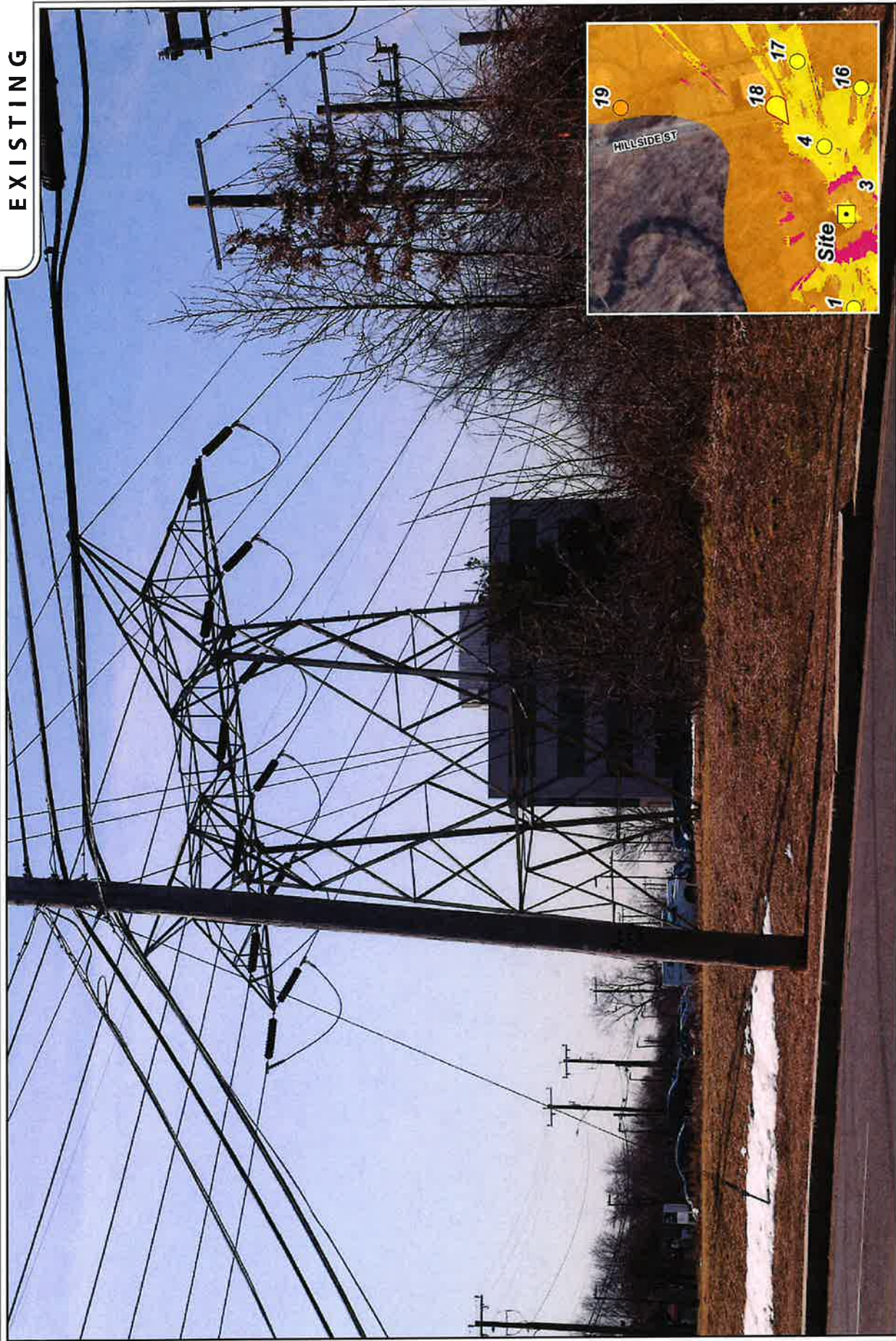
DISTANCE TO SITE
+/- 0.13 MILE

VISIBILITY
VISIBLE



verizon

EXISTING



PHOTOGRAPHED ON 2/26/2021

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
18	SIMMONS ROAD	WSW	+/- 0.10 MILE	VISIBLE

PROPOSED



PHOTO

18

LOCATION

SIMMONS ROAD

ORIENTATION

WSW

DISTANCE TO SITE

+/- 0.10 MILE

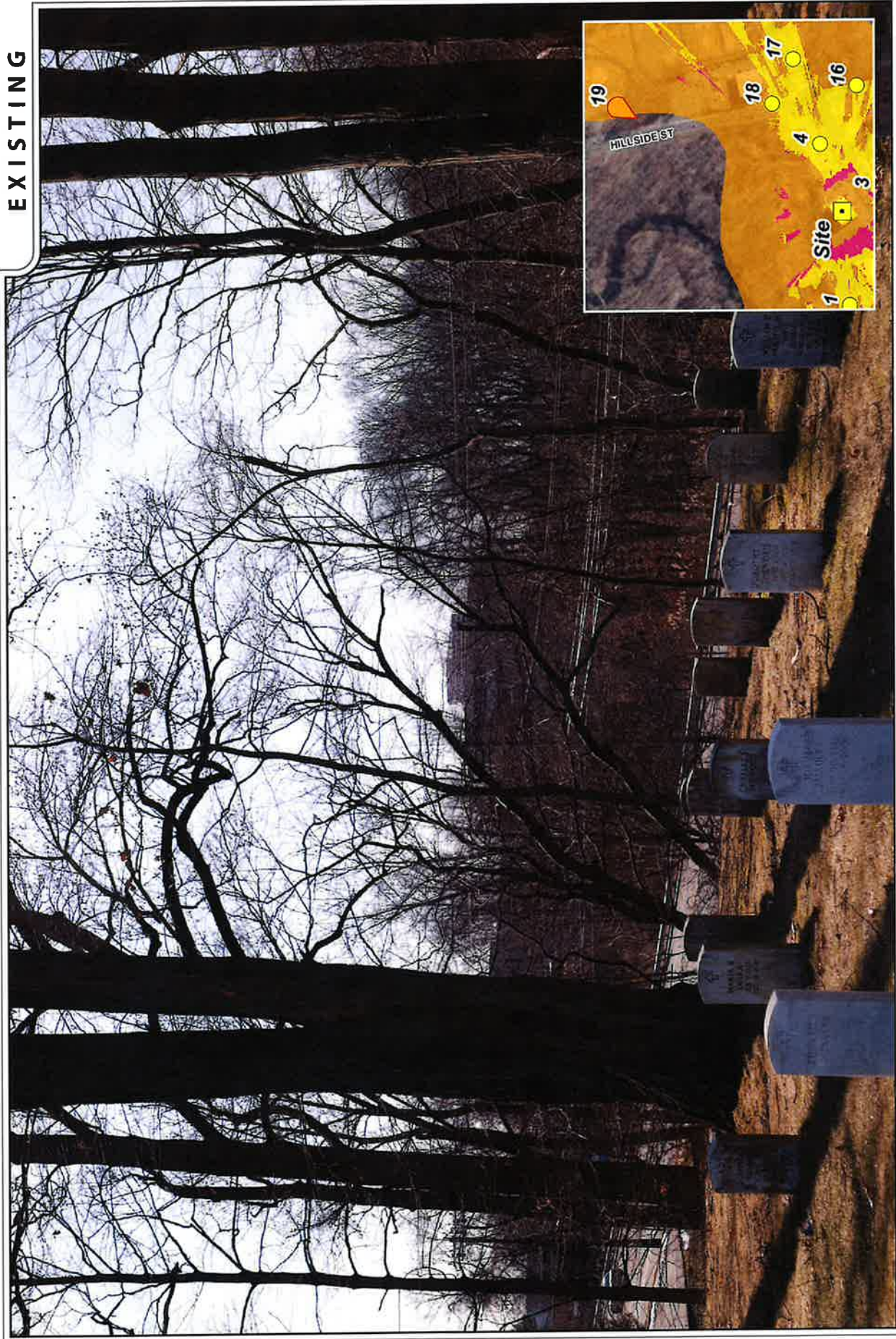
VISIBILITY

VISIBLE



verizon

EXISTING



PHOTOGRAPHED ON 2/26/2021

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
19	HILLSIDE CEMETERY	SSW	+/- 0.10 MILE	SEASONAL



verizon

PROPOSED



PHOTO

19

LOCATION

HILLSIDE CEMETERY

ORIENTATION

SSW

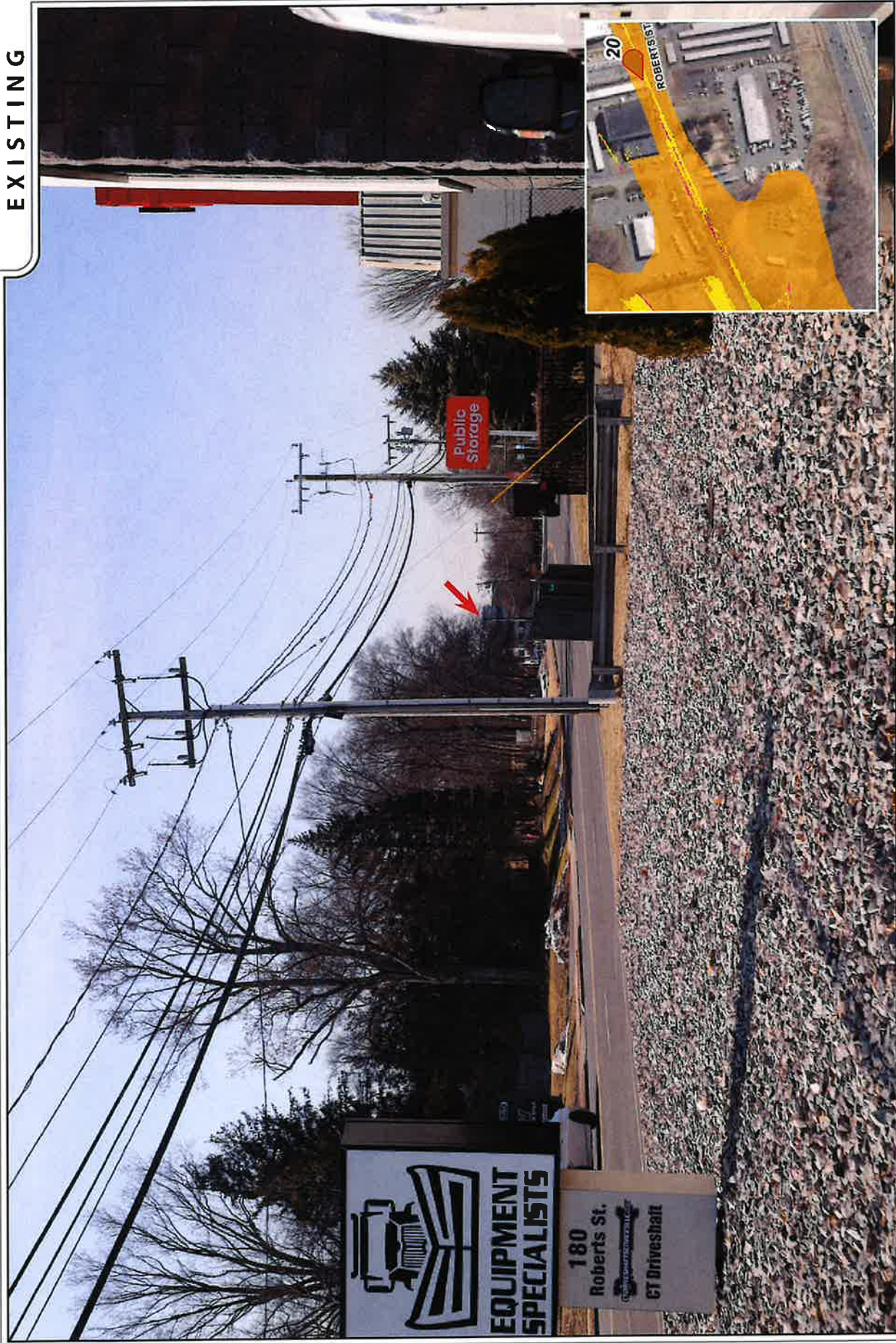
DISTANCE TO SITE

+/- 0.10 MILE

VISIBILITY

SEASONAL

EXISTING



PHOTOGRAPHED 01/26/2021

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
20	ROBERTS STREET	WSW	+/- 0.39 MILE	OBSCURED



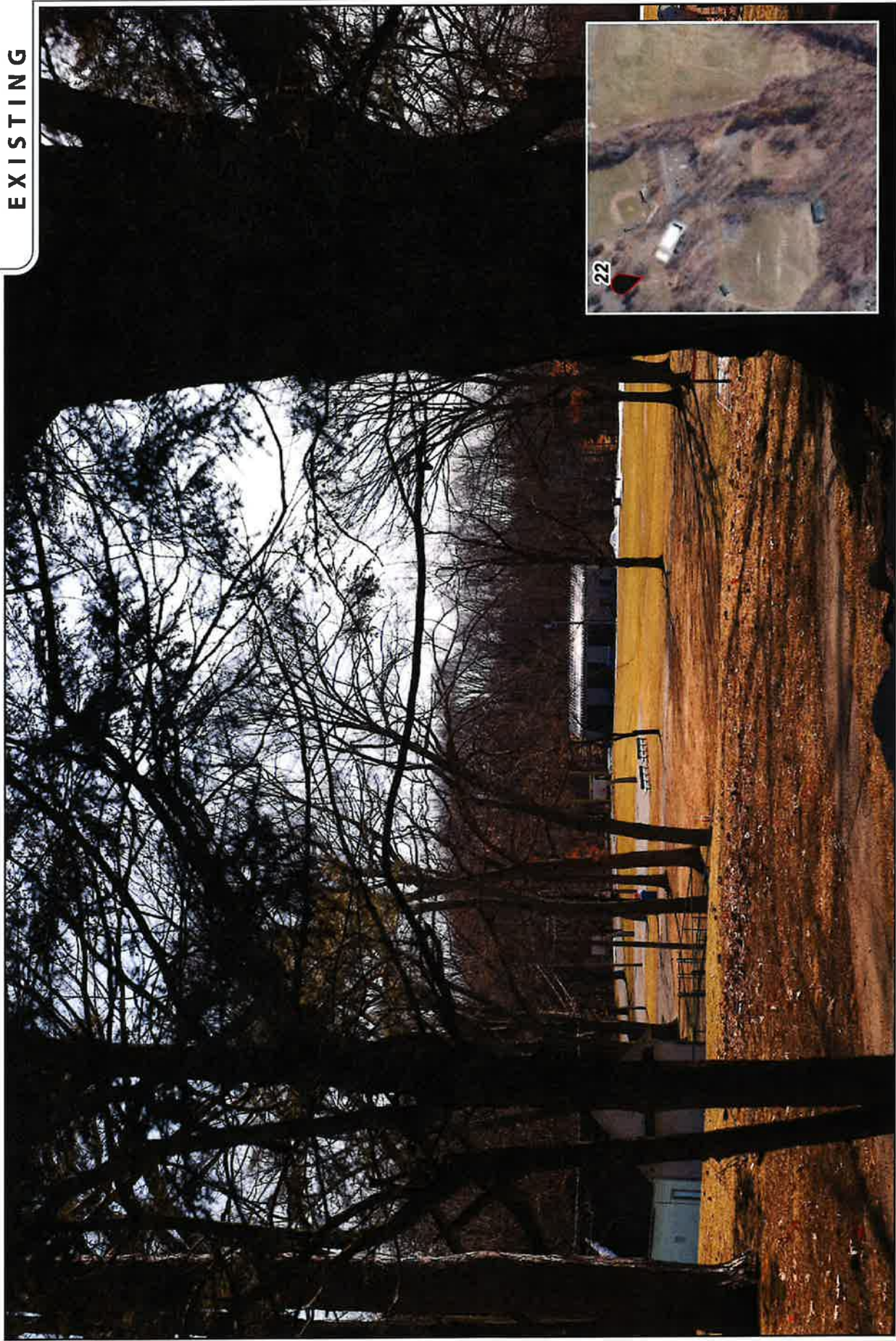
EXISTING



PHOTOGRAPHED 01/26/2021

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
21	HILLSIDE STREET	S	+/- 0.38 MILE	NOT VISIBLE

EXISTING



PHOTOGRAPHED ON 2/26/2024

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
22	MARTIN PARK	SSE	+/- 0.50 MILE	NOT VISIBLE

ATTACHMENT 6



C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions Report



East Hartford 8 Relo
330 Roberts Street, East Hartford, CT

April 12, 2024

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modification of Verizon's antenna arrays mounted on an rooftop located at 330 Roberts Street, East Hartford, CT. The coordinates of the building are 41° 46' 08.04" N, 72° 37' 14.65" W.

Verizon is proposing the following:

- 1) Install nine (9) multi-band antennas, three (3) per sector to support its commercial LTE and 5G network.

This report considers the planned antenna configuration for Verizon¹ and the current configuration for T-Mobile to derive the resulting % MPE of its proposed modification.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm²). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment C of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment C contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

¹ As referenced to Verizon's Radio Frequency Design Sheet updated 2/8/2024.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{\text{GRF}^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Off Beam Loss is determined by the selected antenna patterns

Ground reflection factor (GRF) of 1.6

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

4. Antenna Inventory

Table 1 below outlines Verizon’s proposed antenna configuration for the site. The associated data sheets and antenna patterns for these specific antenna models are included in Attachments C.

Operator	Sector / Azimuth	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Mech Tilt	Length (ft)	Antenna Centerline Height (ft)
Verizon	Alpha / 110°	750	160	14.9	4898	NHH-65B-R2B	65	0	6	65
		850	160	15	5011		60			
		1900	160	17.9	9772		69			
		2100	240	18	14798	NHHSS-65B-R2BT4	64	0	6	65
		3500	4	17.7	200	54	0			
		3700	320	25.5	113540	MT6413-77A	-	0	3.42	66.5
	Beta 110°	750	160	14.9	4898	NHH-65B-R2B	65	0	6	65
		850	160	15	5011		60			
		1900	160	17.9	9772		69			
		2100	240	18	14798	NHHSS-65B-R2BT4	64	0	6	65
		3500	4	17.7	200	54	0			
		3700	320	25.5	113540	MT6413-77A	-	0	3.42	66.5
	Gamma	750	160	14.9	4898	NHH-65B-R2B	65	0	6	65
		850	160	15	5011		60			
		1900	160	17.9	9772		69			
		2100	240	18	14798	NHHSS-65B-R2BT4	64	0	6	65
		3500	4	17.7	200	54	0			
		3700	320	25.5	113540	MT6413-77A	-	0	3.42	66.5

Table 1: Proposed Antenna Inventory^{2,3}

² Antenna heights are in reference to Verizon’s Radio Frequency Design Sheet updated 2/8/2024.

³ Transmit power assumes 0 dB of cable loss.

5. Calculation Results

The calculated power density results are shown in Figure 1 below. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within ± 5 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

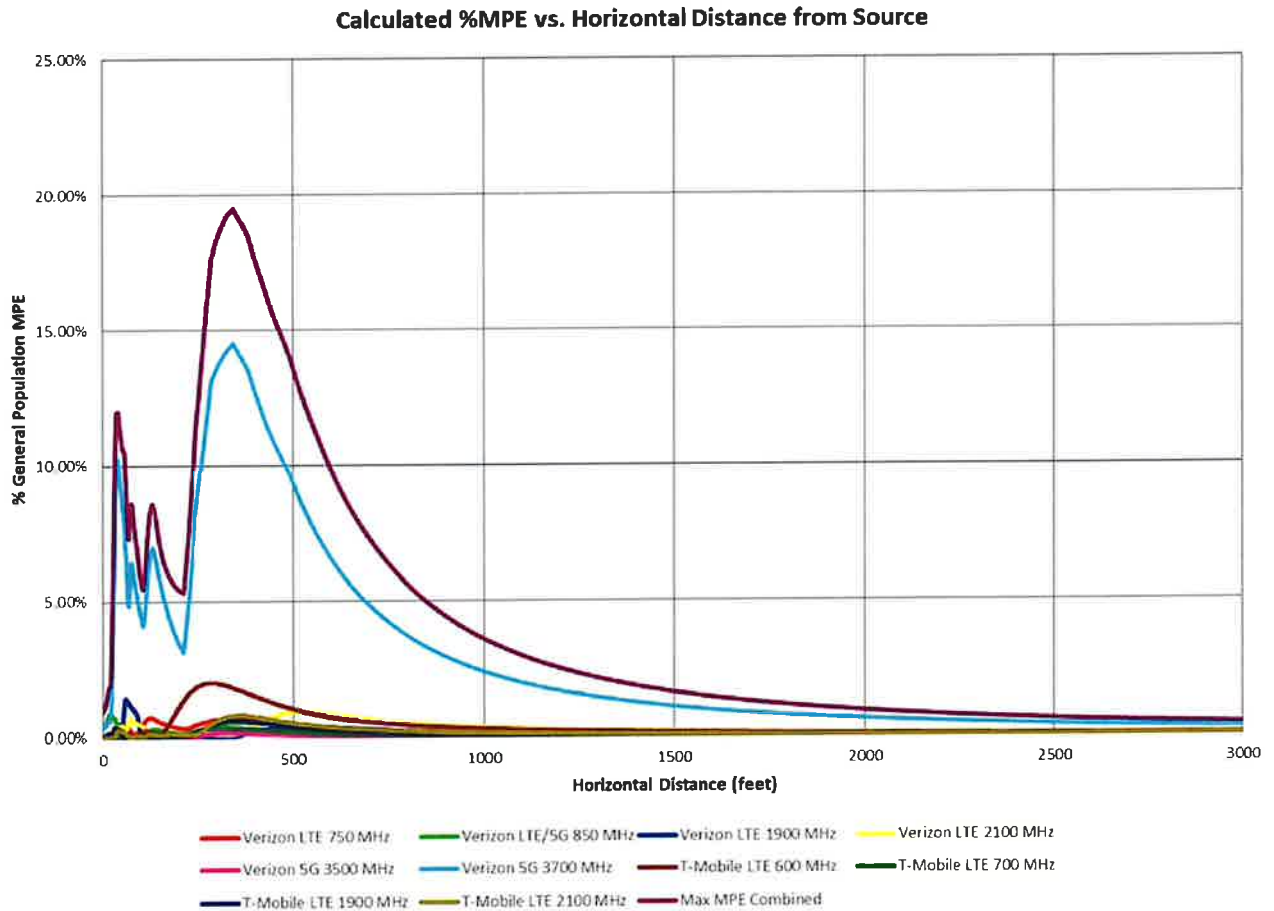


Figure 1: Graph of General Population % MPE vs. Distance

The highest percent of MPE (19.47% of the General Population limit) is calculated to occur at a horizontal distance of 343 feet from antennas. Please note that the percent of MPE calculations close to the site take into account off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 1500 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, RF levels become calculated solely on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below lists percent of MPE values as well as the associated parameters that were included in the calculations. The highest percent of MPE value was calculated to occur at a horizontal distance of 343 feet from the site (reference Figure 1).

As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. In addition, a six foot height offset was considered in this analysis to account for average human height. As a result, the predicted signal levels are significantly higher than the actual signal levels will be from the final configuration. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the tower out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm ²)	Limit (mW/cm ²)	% MPE
T-Mobile LTE 1900 MHz	2	60.0	58.0	343	0.005920	1.000	0.59%
T-Mobile LTE 2100 MHz	2	60.0	58.0	343	0.007639	1.000	0.76%
T-Mobile LTE 600 MHz	1	140.0	58.0	343	0.007186	0.400	1.80%
T-Mobile LTE 700 MHz	2	30.0	58.0	343	0.003168	1.000	0.32%
Verizon 5G 3500 MHz	1	20.0	65.0	343	0.001661	1.000	0.17%
Verizon 5G 3700 MHz	1	320.0	66.5	343	0.145189	1.000	14.52%
Verizon LTE 1900 MHz	1	160.0	65.0	343	0.000471	1.000	0.05%
Verizon LTE 2100 MHz	1	240.0	65.0	343	0.001191	1.000	0.12%
Verizon LTE 750 MHz	1	160.0	65.0	343	0.003174	0.500	0.63%
Verizon LTE/5G 850 MHz	1	160.0	65.0	343	0.002913	0.567	0.51%
						Total	19.47%

Table 2: Maximum Percent of General Population Exposure Values^{4,5,6}

⁴ Frequencies listed are representative of the operating band and are not the specific operating frequency.

⁵ The total % MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

⁶ In the case where antenna pattern data was unavailable from the manufacturer, generic antenna pattern was used based on the frequency, bandwidth and gain of the antenna.

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2019, IEEE Standard Safety Levels With Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2021, IEEE Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields with Respect to Human Exposure to Such Fields, 0 Hz-300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure⁷

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure⁸

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 3: FCC Limits for Maximum Permissible Exposure

⁷ Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

⁸ General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

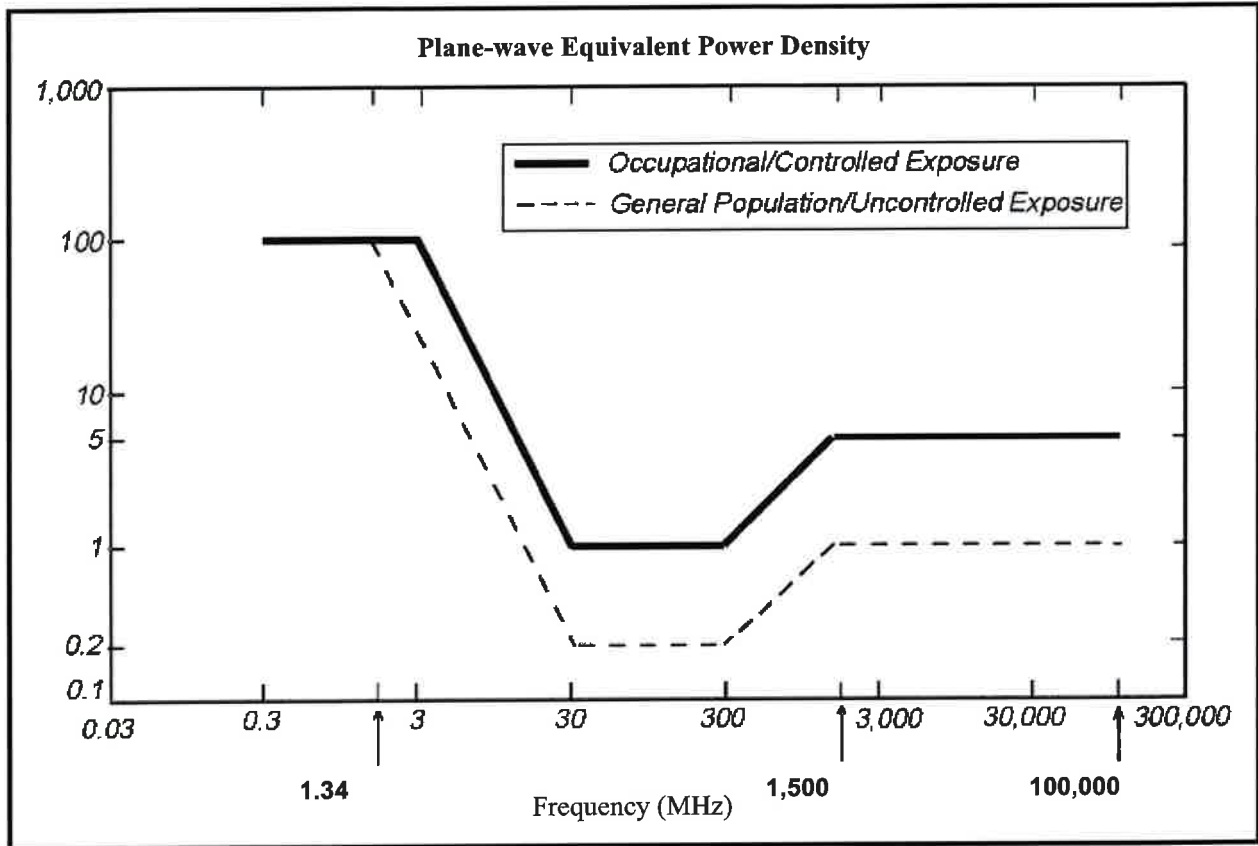
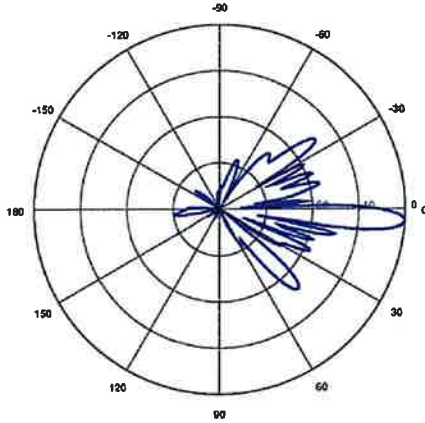
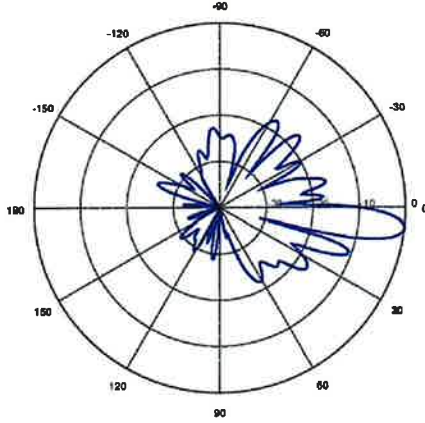
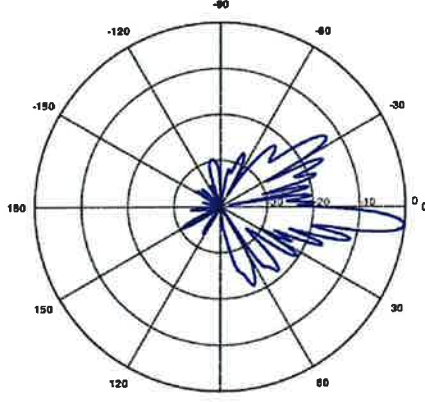
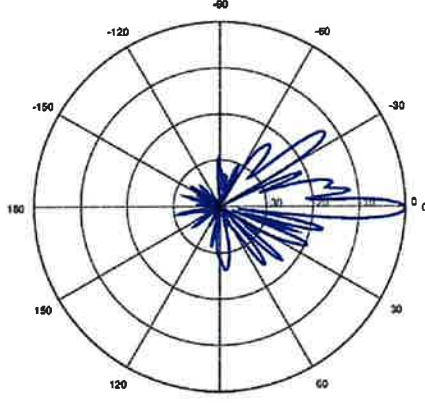


Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Verizon Antenna Model Data Sheets and Electrical Patterns

<p>750 MHz</p> <p>Manufacturer: COMMSCOPE Model #: NHH-65B-R2B Frequency Band: 698-787 MHz Gain: 14.9 dBi Vertical Beamwidth: 12.4° Horizontal Beamwidth: 65° Polarization: ±45° Dimensions (L x W x D): 71.97" x 11.85" x 7.09"</p>	 <p>A polar plot showing the radiation pattern for the 750 MHz antenna. The plot is circular with concentric rings representing gain levels and radial lines representing angles from 0 to 180 degrees. The main lobe is centered at 0 degrees, extending horizontally to the right. The pattern shows a narrow vertical beamwidth and a wider horizontal beamwidth, consistent with the specifications.</p>
<p>850 MHz</p> <p>Manufacturer: COMMSCOPE Model #: NHH-65B-R2B Frequency Band: 824-894 MHz Gain: 15.0 dBi Vertical Beamwidth: 11.2° Horizontal Beamwidth: 60° Polarization: ±45° Dimensions (L x W x D): 71.97" x 11.85" x 7.09"</p>	 <p>A polar plot showing the radiation pattern for the 850 MHz antenna. The plot is circular with concentric rings representing gain levels and radial lines representing angles from 0 to 180 degrees. The main lobe is centered at 0 degrees, extending horizontally to the right. The pattern shows a narrow vertical beamwidth and a wider horizontal beamwidth, consistent with the specifications.</p>

<p>1900 MHz</p> <p>Manufacturer: COMMSCOPE Model #: NHH-65B-R2B Frequency Band: 1850-1990 MHz Gain: 17.7 dBi Vertical Beamwidth: 5.7° Horizontal Beamwidth: 71° Polarization: ±45° Dimensions (L x W x D): 71.97" x 11.85" x 7.09"</p>	
<p>2100 MHz</p> <p>Manufacturer: COMMSCOPE Model #: NHHSS-65B-R2BT4 Frequency Band: 1920-2200 MHz Gain: 18.0 dBi Vertical Beamwidth: 4.9° Horizontal Beamwidth: 64° Polarization: ±45° Dimensions (L x W x D): 71.97" x 11.85" x 7.09"</p>	

ATTACHMENT 7

* Federal Airways & Airspace *
* Summary Report: Alteration Of Existing Structure *
* Non-Antenna Structure *

Airspace User: Not Identified

File: EHTFD8RELO

Location: East Hartford, CT

Latitude: 41°-46'-08.04" Longitude: 72°-37'-14.65"

SITE ELEVATION AMSL.....50 ft.
STRUCTURE HEIGHT.....68 ft.
OVERALL HEIGHT AMSL.....118 ft.

NOTICE CRITERIA

- FAR 77.9(a): NNR (DNE 200 ft AGL)
- FAR 77.9(b): NNR (DNE Notice Slope)
- FAR 77.9(c): NNR (Not a Traverse Way)
- FAR 77.9: NNR FAR 77.9 IFR Notice for HFD (Rwy 20)
- FAR 77.9: NNR FAR 77.9 IFR Straight-In Notice Criteria for 7B6
- FAR 77.9(d): NNR (Off Airport Construction)

NR = Notice Required

NNR = Notice Not Required

PNR = Possible Notice Required (depends upon actual IFR procedure)
For new construction review Air Navigation Facilities at bottom
of this report.

If the proposed construction is an alteration to an existing structure, notice requirements may be superceded by the item exemptions listed below.

The location and analysis were based upon an existing structure. However, no existing aeronautical study number was identified. If the 'existing' structure penetrates an obstruction surface defined by CFR 77.17, 77.19, 77.21 or 77.23 (see below) it is strongly recommended the FAA be notified of the 'existing' structure to determine obstruction marking or lighting requirements. It is not uncommon for the FAA to issue a Determination of No Hazard (DNH) for an existing structure and modify the airspace to accommodate the structure, should that be required. If the FAA issues a DNH enter the aeronautical study number (ASN) in the space provided on the Airspace Analysis Window Form and re-run Airspace.

FAA's No frequencies were identified in this alteration are included in the Co-Location Policy published in the Federal Register November 15, 2007. Therefore, application of the Co-Location Policy notice exemption rule can not be applied.

Title 14 CFR Part 77.9(e), Notice Criteria Exception:

The location and analysis were based upon an existing structure with the alteration limited to the addition of an antenna with a height no greater than 20 feet. Title 14 CFR Part 77.9(e)(4) exempts the requirement for

notice

to the FAA; "Any antenna structure of 20 feet or less in height except one that would increase the height of another antenna structure." If the addition of an antenna of 20 feet or less to an existing structure increase the height of the structure to exceed 200 feet AGL or penetrate an obstruction surface defined by Title 14 CFR 77.17, 77.19, 77.21 or 77.23 notice is recommended. This will allow the FAA to determine the level of obstruction lighting required and any aeronautical impacts, if any, to aircraft operations. Notice of an existing structure almost always receives a No Hazard Determination. Please see Summary Report below plus the Airport and Part 77 Reports for application of the above listed CFRs.

OBSTRUCTION STANDARDS

FAR 77.17(a)(1): DNE 499 ft AGL
FAR 77.17(a)(2): DNE - Airport Surface
FAR 77.19(a): DNE - Horizontal Surface
FAR 77.19(b): DNE - Conical Surface
FAR 77.19(c): DNE - Primary Surface
FAR 77.19(d): DNE - Approach Surface
FAR 77.19(e): DNE - Approach Transitional Surface
FAR 77.19(e): DNE - Abeam Transitional Surface

VFR TRAFFIC PATTERN AIRSPACE FOR: HFD: HARTFORD-BRAINARD

Type: A RD: 11723.21 RE: 18.3

FAR 77.17(a)(1): DNE
FAR 77.17(a)(2): DNE - Height No Greater Than 200 feet AGL.
VFR Horizontal Surface: DNE
VFR Conical Surface: DNE
VFR Primary Surface: DNE
VFR Approach Surface: DNE
VFR Transitional Surface: DNE

The structure is within VFR - Traffic Pattern Airspace Climb/Descent Area. Structures exceeding the greater of 350' AAE, 77.17(a)(2), or VFR horizontal and conical surfaces will receive a hazard determination from the FAA. Maximum AMSL of Traffic Pattern Area is 368 feet.

VFR TRAFFIC PATTERN AIRSPACE FOR: 7B6: SKYLARK AIRPARK

Type: A RD: 58986.3 RE: 112

FAR 77.17(a)(1): DNE
FAR 77.17(a)(2): DNE - Greater Than 5.99 NM.
VFR Horizontal Surface: DNE
VFR Conical Surface: DNE
VFR Primary Surface: DNE
VFR Approach Surface: DNE
VFR Transitional Surface: DNE

FAR 77.17(a)(3) Departure Surface Criteria (40:1)
 DNE Departure Surface

MINIMUM OBSTACLE CLEARANCE ALTITUDE (MOCA)
 FAR 77.17(a)(4): DNE - No Airway Found

PRIVATE LANDING FACILITIES

FACIL IDENT TYP NAME	BEARING To FACIL	RANGE IN NM	DELTA ARP ELEVATION	FAA IFR
CT06 HEL DELTA ONE No Impact to Private Landing Facility Structure is beyond notice limit by 8064 feet.	303.86	2.15	+97	
CT62 HEL TWIN MANUFACTURING COMPANY No Impact to Private Landing Facility Structure is beyond notice limit by 10190 feet.	11.41	2.5	+58	
OCT9 HEL HARTFORD HOSPITAL No Impact to Private Landing Facility Structure 93 ft below heliport.	251.53	2.74	-93	
OCT5 HEL ST FRANCIS HOSPITAL No Impact to Private Landing Facility Structure 66 ft below heliport.	275.69	3.54	-66	
CT38 HEL CORPORATE CENTER No Impact to Private Landing Facility Structure is beyond notice limit by 17542 feet.	156.48	3.71	+14	
CT00 HEL ELECTRO-METHODS INC No Impact to Private Landing Facility Structure is beyond notice limit by 18575 feet.	13.28	3.88	+14	
CT14 AIR BANCROFT No Impact to VFR Transitional Surface. Below surface height of 487 ft above ARP.	2.03	5.87	+66	

AIR NAVIGATION ELECTRONIC FACILITIES

APCH ANGLE	FAC IDNT	ST TYPE	AT	FREQ	VECTOR	DIST (ft)	DELTA ELEVA	ST LOCATION	GRND
.16	HFD	ATCT	I	A/G	214.15	14952	+43	CT HARTFORD-BRAINARD	
	No Impact. Does Not Exceed Navaid EMI Notice Height Criteria.								
.39	HFD	LOCALIZER	I	109.7	212.41	15616	+107	CT RWY 02 HARTFORD-B	
.83	HFD	VOR/DME	R	114.9	156.76	50696	-731	CT HARTFORD	-
.11	BDL	RADAR ASR	I		344.8	64069	-118	CT BRADLEY INTL	-
.06	BAF	VORTAC	R	113.0	349.76	145561	-149	MA BARNES	-

.04	CEF	TACAN	R	114.0	9.3	158290	-122	MA	WESTOVER	-
.03	MAD	VOR/DME	I	110.4	186.71	166956	-98	CT	MADISON	-
.06	ORW	VOR/DME	I	110.0	114.72	186625	-192	CT	NORWICH	-
.4	CTR	VOR/DME	R	115.1	334.98	210271	-1482	MA	CHESTER	-

5G AIRPORT SAFETY AREA

Possible Spectrum conflict with airport HFD
Please review 5G Report: EHTFD8RELO.5GR
Site is located in HFD Zone 4.

CFR Title 47, §1.30000-§1.30004

AM STUDY NOT REQUIRED: Structure is not near a FCC licensed AM station.
Movement Method Proof as specified in §73.151(c) is not required.
Please review 'AM Station Report' for details.

Nearest AM Station: WNEZ @ 5364 meters.

Airspace® Summary Version 24.3.696

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03-22-2024
09:25:00

ATTACHMENT 8

April 17, 2024

Via Certificate of Mailing

Connor Martin, Mayor
Town of East Hartford
50 Chapman Place, B12D
East Hartford, CT 06108

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for Modifications to its Existing Wireless Telecommunications Facility at 330 Roberts Street, East Hartford, Connecticut**

Dear Mayor Martin:

This firm represents Cellco Partnership d/b/a Verizon Wireless (“Cellco”). Today, Cellco filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) seeking approval for the installation of a wireless telecommunications facility at 330 Roberts Street in East Hartford (the “Property”).

The facility will consist of the installation of nine (9) mast-mounted antennas extending above the existing mechanical equipment screen wall. Equipment associated with the antennas will be attached to a steel platform on the north side of the roof.

A copy of the full Petition is attached for your review. Landowners whose parcels are considered to abut the Property were also sent notice of this filing along with a copy of the Petition.

Please contact me if you have any questions regarding this proposal.

Sincerely,



Kenneth C. Baldwin

Attachment

28849866-v1

April 17, 2024

Via Certificate of Mailing

Eileen Buckheit, Development Director
Town of East Hartford
50 Chapman Place, B12
East Hartford, CT 06108

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for Modifications to its Existing Wireless Telecommunications Facility at 330 Roberts Street, East Hartford, Connecticut**

Dear Ms. Buckheit:

This firm represents Cellco Partnership d/b/a Verizon Wireless (“Cellco”). Today, Cellco filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) seeking approval for the installation of a wireless telecommunications facility at 330 Roberts Street in East Hartford (the “Property”).

The facility will consist of the installation of nine (9) mast-mounted antennas extending above the existing mechanical equipment screen wall. Equipment associated with the antennas will be attached to a steel platform on the north side of the roof.

A copy of the full Petition is attached for your review. Landowners whose parcels are considered to abut the Property were also sent notice of this filing along with a copy of the Petition.

Please contact me if you have any questions regarding this proposal.

Sincerely,



Kenneth C. Baldwin

Attachment

28849916-v1

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts
and New York

April 17, 2024

Via Certificate of Mailing

SKM Roberts Street LLC
330 Roberts Street, Suite 404
Hartford, CT 06108

Re: **Petition for Declaratory Ruling Filed with the Connecticut Siting Council for Modifications to its Existing Wireless Telecommunications Facility at 330 Roberts Street, East Hartford, Connecticut**

Dear Sir or Madam:

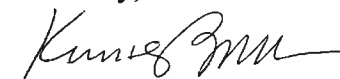
This firm represents Cellco Partnership d/b/a Verizon Wireless (“Cellco”). Today, Cellco filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) seeking approval for the installation of a wireless telecommunications facility at 330 Roberts Street in East Hartford (the “Property”).

The facility will consist of the installation of nine (9) mast-mounted antennas extending above the existing mechanical equipment screen wall. Equipment associated with the antennas will be attached to a steel platform on the north side of the roof.

A copy of the full Petition is attached for your review. Landowners whose parcels are considered to abut the Property were also sent notice of this filing along with a copy of the Petition.

Please contact me if you have any questions regarding this proposal.

Sincerely,



Kenneth C. Baldwin

Attachment

28849941-v1

ATTACHMENT 9

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts
and New York

April 17, 2024

Via Certificate of Mailing

«Name_and_Address»

Re: Petition for Declaratory Ruling Filed with the Connecticut Siting Council for Modifications to its Existing Wireless Telecommunications Facility at 330 Roberts Streets, East Hartford, Connecticut

Dear «Salutation»:

This firm represents Cellco Partnership d/b/a Verizon Wireless (“Cellco”). Today, Cellco filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) seeking approval for the installation of a wireless telecommunications facility at 330 Roberts Street in East Hartford (the “Property”).

The facility will consist of the installation of nine (9) mast-mounted antennas extending above the existing mechanical equipment screen wall. Equipment associated with the antennas will be attached to a steel platform on the north side of the roof.

This notice and a full copy of the Petition is being sent to you because you are listed on the Town Assessor’s records as an owner of land that abuts the Property. If you have any questions regarding the Petition, the Council’s process for reviewing the Petition or the details of the filing itself, please feel free to contact me at the number listed above. You may also contact the Council directly at 860-827-2935.

Sincerely,



Kenneth C. Baldwin

Attachment

28849952-v1

CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS

ABUTTING PROPERTY OWNERS

**330 ROBERTS STREET
EAST HARTFORD, CONNECTICUT**

	Property Address	Owner's and Mailing Address
1.	350 Roberts Street	East Hartford Holding Co, LLC 350 Roberts Street East Hartford, CT 06108
2.	215 Burnside Avenue	Town of East Hartford 740 Main Street East Hartford, CT 06108
3.	294 Roberts Street & 292 Roberts Street	CL&P P.O. Box 270 Hartford, CT 06141
4.	166 Simmons Road	Central Connecticut Hotel Associates 149 Addison Road Windsor, CT 06095
5.	333 Roberts Street	Satyam Realty LLC 333 Roberts Street East Hartford, CT 06108
6.	363 Roberts Street	Kautilya East Hartford Hotel LLC 148 Waverly Avenue Millington, NJ 07946