



## REPORT TO CITY PLAN COMMISSION

**Plan Commission Public Hearing Date:** June 13, 2017

**Common Council Meeting Date:** June 21, 2017

**Item:** Special Use Permit #6-17 for an essential services facility (utility substation) and electronic tower

**Case Manager:** David Kress

### **GENERAL INFORMATION**

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**Owner/Applicant:** Wisconsin Electric Power Company (We Energies) c/o Matthew Miller

**Address/Parcel #:** 419 East Winnebago Street (Tax Id #31-1-0108-00)

**Petitioner's Request:** The applicant is requesting a Special Use Permit for an essential services facility (utility substation) and electronic tower.

### **BACKGROUND**

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The applicant's 0.75-acre site is located south of East Winnebago Street and east of North Drew Street, directly adjacent to the railroad right-of-way. An existing utility (electric) substation is currently located immediately east of the subject area. The applicant proposes to replace the existing 34.5 kV–4 kV electric substation on the neighboring site (parcel #31-1-0114-00) with a new 34.5 kV–12 kV electric substation on the subject site. This is part of a larger effort to convert the aging 4 kV system to the modern 12 kV standard. The initial phases of the conversion included the construction of a new 12 kV substation on Northland Avenue and the retirement/removal of the 4 kV substations at Northland Avenue and Wisconsin Avenue.

### **STAFF ANALYSIS**

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**Project Summary:** The applicant proposes to raze the existing buildings and establish an essential services facility (utility substation) and electronic tower on the subject site. Equipment, including transformers, a metal-clad power distribution center, and 75-foot lightning mast, will be enclosed in a fenced area and screened by landscaping, as shown on the attached development plan. The antennas on the lightning mast (electronic tower) are needed for communication between We Energies sites only; no other companies are allowed to co-locate. Two driveways are proposed on East Winnebago Street, with the western-most being the primary entrance. The final grade within the substation yard will be crushed aggregate.

**Existing Site Conditions:** The site is currently developed with two buildings, with a combined area of approximately 5,220 square feet. According to Assessor's Office records, both buildings were constructed in 1920. Concrete supports that once held above ground tanks for a gas distribution company also remain on the property. The site also includes paved and gravel areas that have been used for off-street parking. Access is currently provided by one curb cut on East Winnebago Street.

## **Special Use Permit #6-17**

**June 13, 2017**

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**Zoning Ordinance Requirements:** The subject property has a zoning designation of M-2 General Industrial District. Per Section 23-132(e) of the Municipal Code, an essential services facility (utility substation) and electronic tower require a Special Use Permit in the M-2 District. The definition of essential services, per the Zoning Ordinance, means overhead or underground electrical, gas, steam or water transmission or distribution systems, and collection, communication, supply or disposal systems and structures used by public utilities or governmental departments or commissions or systems as are required for the protection of public health, safety or general welfare, including: utility substations, towers, poles, wires, mains, drains, sewers, pipes, conduits, cables and similar improvements. An electronic tower, per the Zoning Ordinance, means radio, television, broadcasting tower or station, microwave and other electronic transmission or receiving tower in excess of 60 feet (from ground level) in height. Electronic towers shall not include wireless telecommunication towers or facilities. In order to permit an essential services facility (utility substation) and electronic tower, the Plan Commission makes a recommendation to the Common Council who will make the final decision on the Special Use Permit. A two-thirds (2/3) vote of the Common Council is required for approval.

Pursuant to Sections 23-66(h)(1) and 23-66(h)(2) of the Municipal Code, there are minimum standards that apply to electronic towers and utility substations. Based on the attached development plan, all identified buildings and equipment would be located outside of any required setbacks, a fence enclosure and landscaping would prevent unauthorized access and provide visual screening, and noise levels would not exceed 60 decibels at any lot line of the subject property. While landscaping is already proposed along the west side of the subject site, given that residential properties are also located across the street, a stipulation is drafted requiring landscaping along the north side of the subject site as well. Therefore, the minimum standards would be met, as long as all stipulations are satisfied. Ultimately, Site Plan review and approval is required, pursuant to Section 23-570 of the Municipal Code, prior to the issuance of a building permit by the Inspections Division.

The legal description for the subject area includes multiple lots, and as a result, historic lot lines still remain. Since the proposed development crosses these historic lot lines, a lot combination via Certified Survey Map (CSM) will be needed.

**Operational Information:** A plan of operation is attached to the Staff Report.

**Surrounding Zoning and Land Uses:** The surrounding area is under the jurisdiction of the City of Appleton (north, south, east, and west). The uses are generally industrial and residential in nature.

**North:** PD/R-3 Planned Development Multi-Family District. The adjacent land uses to the north are currently multi-family residential.

**South:** M-2 General Industrial District. Railroad right-of-way is immediately south of the subject property.

**East:** M-2 General Industrial District. The adjacent land uses to the east are currently a mix of industrial uses, including an existing utility substation.

**West:** R-2 Two-Family District and R-1C Central City Residential District. The adjacent land uses to the west are currently a mix of two-family and single-family residential.

**Appleton Comprehensive Plan 2010-2030:** Community and Economic Development staff has reviewed this proposal and determined it is compatible with the Industrial designation shown on the City's *Comprehensive Plan 2010-2030* Future Land Use Map. Listed below are related excerpts from the City's *Comprehensive Plan 2010-2030*.

*Goal 5 – Utilities and Community Services*

*Appleton will provide excellent public utility and community services at a reasonable cost, and will work with private utility companies to ensure quality service delivery.*

**OBJECTIVE 7.2 Utilities and Community Facilities:**

*Ensure that municipal services and utilities, as well as privately distributed energy sources are delivered in a safe and sustainable manner.*

**OBJECTIVE 10.2 Land Use:**

*Encourage redevelopment to meet the demand for a significant share of future growth, and to enhance the quality of existing neighborhoods.*

**Finding of Fact:** This request was reviewed in accordance with the standards for granting a Special Use Permit under Sections 23-66(e)(1-6), 23-66(h)(1), and 23-66(h)(2) of the Municipal Code, which were found in the affirmative, as long as all stipulations are satisfied.

**Technical Review Group (TRG) Report:** This item was discussed at the May 23, 2017 Technical Review Group meeting. No negative comments were received from participating departments.

**RECOMMENDATION**

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Staff recommends, based on the above, that Special Use Permit #6-17 for an essential services facility (utility substation) and electronic tower at 419 East Winnebago Street (Tax Id #31-1-0108-00), as shown on the attached maps and per attached plan of operation, along with the attached resolution, **BE APPROVED** to run with the land, subject to the following conditions:

1. The applicant is responsible for compliance with all applicable local, state, and federal rules and regulations, and must obtain all appropriate permits and approvals.
2. Any deviations from the approved development plan may require a major or minor amendment request to this Special Use Permit, pursuant to Section 23-66(g) of the Municipal Code.
3. Compliance with the plan of operation is required at all times. Changes to the plan of operation shall be submitted to the Community and Economic Development Department for review and approval.
4. The minimum standards for an electronic tower found in Section 23-66(h)(1) of the Municipal Code shall be complied with, as applicable.
5. If electrical interference occurs after the lightning mast with antennas (electronic tower) begins operation or if interference is anticipated, the applicant shall provide appropriate steps to eliminate

said interference.

6. Along the west and north side of the site, except where gates are shown, minimum landscaping shall consist of at least one row of evergreen trees or shrubs, at least four feet high at the time of planting, which are spaced not more than 10 feet apart and planted within 25 feet of the site boundary.
7. The minimum standards for a utility substation found in Section 23-66(h)(2) of the Municipal Code shall be complied with, as applicable.
8. A security fence around the perimeter of the transformers, power distribution center, lightning mast with antennas, and other related equipment shall be continuously maintained to provide for visual screening and safety.
9. The level of noise emanating from the utility substation shall not exceed 60 decibels measured at any lot line of the subject property.
10. The driveways accessing the subject site shall be paved from the lot line and up to the entrance gates of the utility substation compound to be compatible with adjacent paved driveway surfaces and to control dust, drainage, and weeds.
11. Approval is needed from the Appleton Redevelopment Authority, as the subject property is within the boundaries of Appleton Redevelopment Project Area #21.
12. The legal description for the subject area includes multiple lots, and as a result, historic lot lines still remain. Since the proposed development crosses these historic lot lines, a lot combination via Certified Survey Map is needed.
13. Site Plan review and approval is required, pursuant to Section 23-570 of the Municipal Code, prior to the issuance of a building permit by the Inspections Division.

## RESOLUTION

### CITY OF APPLETON RESOLUTION APPROVING SPECIAL USE PERMIT #6-17

**WHEREAS**, Wisconsin Electric Power Company (We Energies) has applied for a Special Use Permit for an essential services facility (utility substation) and electronic tower located at 419 East Winnebago Street, also identified as Parcel Number(s) 31-1-0108-00; and

**WHEREAS**, the location for the proposed essential services facility (utility substation) and electronic tower is located in the M-2 General Industrial District and the proposed use is permitted by special use within this zoning district; and

**WHEREAS**, the City of Appleton Plan Commission held a public hearing on June 13, 2017, on Special Use Permit #6-17 at which all those wishing to be heard were allowed to speak or present written comments, and other materials presented at the public hearing; and

**WHEREAS**, the City of Appleton Plan Commission has considered the application, the staff reports, oral and written, the Comprehensive Plan and zoning on the subject property, the testimony, written comments, and other materials presented at the public hearing; and

**WHEREAS**, the City of Appleton Plan Commission reviewed the standards for granting a Special Use Permit under Sections 23-66(e)(1-6), 23-66(h)(1), and 23-66(h)(2) of the Municipal Code, and forwarded Special Use Permit #6-17 to the City of Appleton Common Council with a favorable or not favorable (CIRCLE ONE) recommendation; and

**WHEREAS**, the City of Appleton Common Council has reviewed the report and recommendation of the City of Appleton Plan Commission at their meeting on \_\_\_\_\_, 2017 and found it to be acceptable.

**NOW, THEREFORE, BE IT RESOLVED**, that the City of Appleton Common Council approves Special Use Permit #6-17 for an essential services facility (utility substation) and electronic tower located at 419 East Winnebago Street, also identified as Parcel Number(s) 31-1-0108-00 and orders as follows:

#### CONDITIONS OF SPECIAL USE PERMIT #6-17

1. The applicant is responsible for compliance with all applicable local, state, and federal rules and regulations, and must obtain all appropriate permits and approvals.
2. Any deviations from the approved development plan may require a major or minor amendment request to this Special Use Permit, pursuant to Section 23-66(g) of the Municipal Code.
3. Compliance with the plan of operation is required at all times. Changes to the plan of operation shall be submitted to the Community and Economic Development Department for review and approval.

4. The minimum standards for an electronic tower found in Section 23-66(h)(1) of the Municipal Code shall be complied with, as applicable.
5. If electrical interference occurs after the lightning mast with antennas (electronic tower) begins operation or if interference is anticipated, the applicant shall provide appropriate steps to eliminate said interference.
6. Along the west and north side of the site, except where gates are shown, minimum landscaping shall consist of at least one row of evergreen trees or shrubs, at least four feet high at the time of planting, which are spaced not more than 10 feet apart and planted within 25 feet of the site boundary.
7. The minimum standards for a utility substation found in Section 23-66(h)(2) of the Municipal Code shall be complied with, as applicable.
8. A security fence around the perimeter of the transformers, power distribution center, lightning mast with antennas, and other related equipment shall be continuously maintained to provide for visual screening and safety.
9. The level of noise emanating from the utility substation shall not exceed 60 decibels measured at any lot line of the subject property.
10. The driveway accessing the subject site shall be paved from the lot line and up to the entrance gates of the utility substation compound to be compatible with adjacent paved driveway surfaces and to control dust, drainage, and weeds.
11. Approval is needed from the Appleton Redevelopment Authority, as the subject property is within the boundaries of Appleton Redevelopment Project Area #21.
12. The legal description for the subject area includes multiple lots, and as a result, historic lot lines still remain. Since the proposed development crosses these historic lot lines, a lot combination via Certified Survey Map is needed.
13. Site Plan review and approval is required, pursuant to Section 23-570 of the Municipal Code, prior to the issuance of a building permit by the Inspections Division.

Adopted this \_\_\_\_\_ day of \_\_\_\_\_, 2017.

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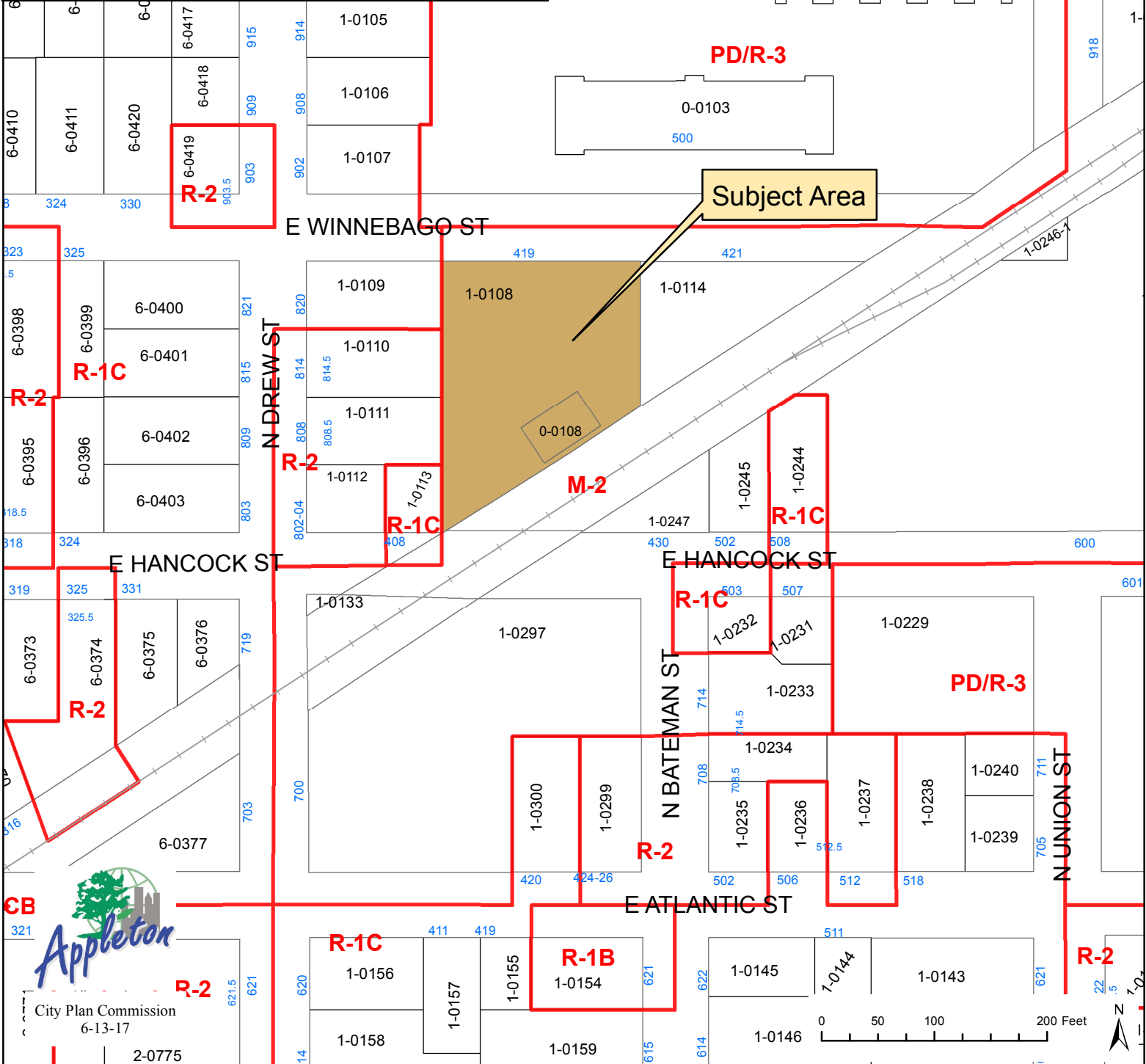
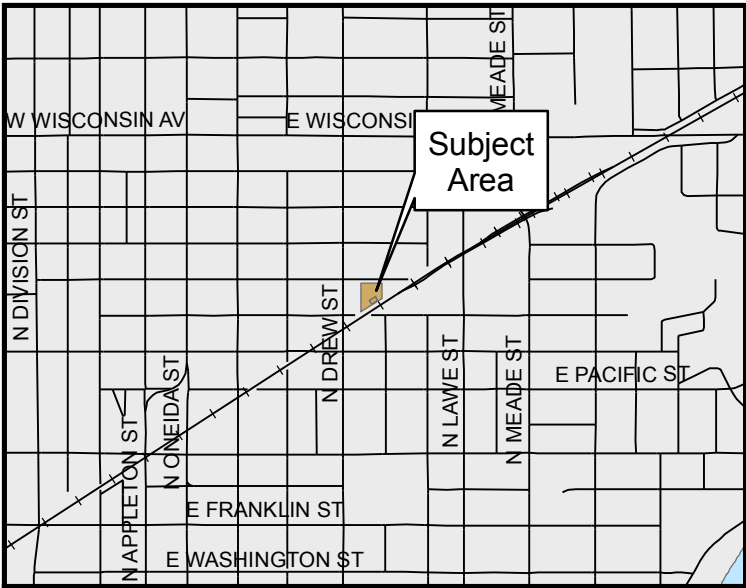
Timothy M. Hanna, Mayor

ATTEST:

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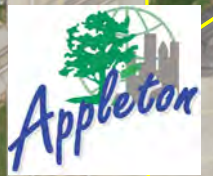
Kami Lynch, City Clerk

# 419 East Winnebago Street Special Use Permit Essential Services Facility (Utility Substation) and Electronic Tower Zoning Map

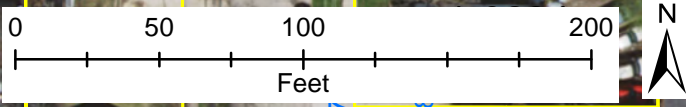


Subject Area

419 East Winnebago Street  
Special Use Permit  
Essential Services Facility  
(Utility Substation) and Electronic Tower  
Aerial Map

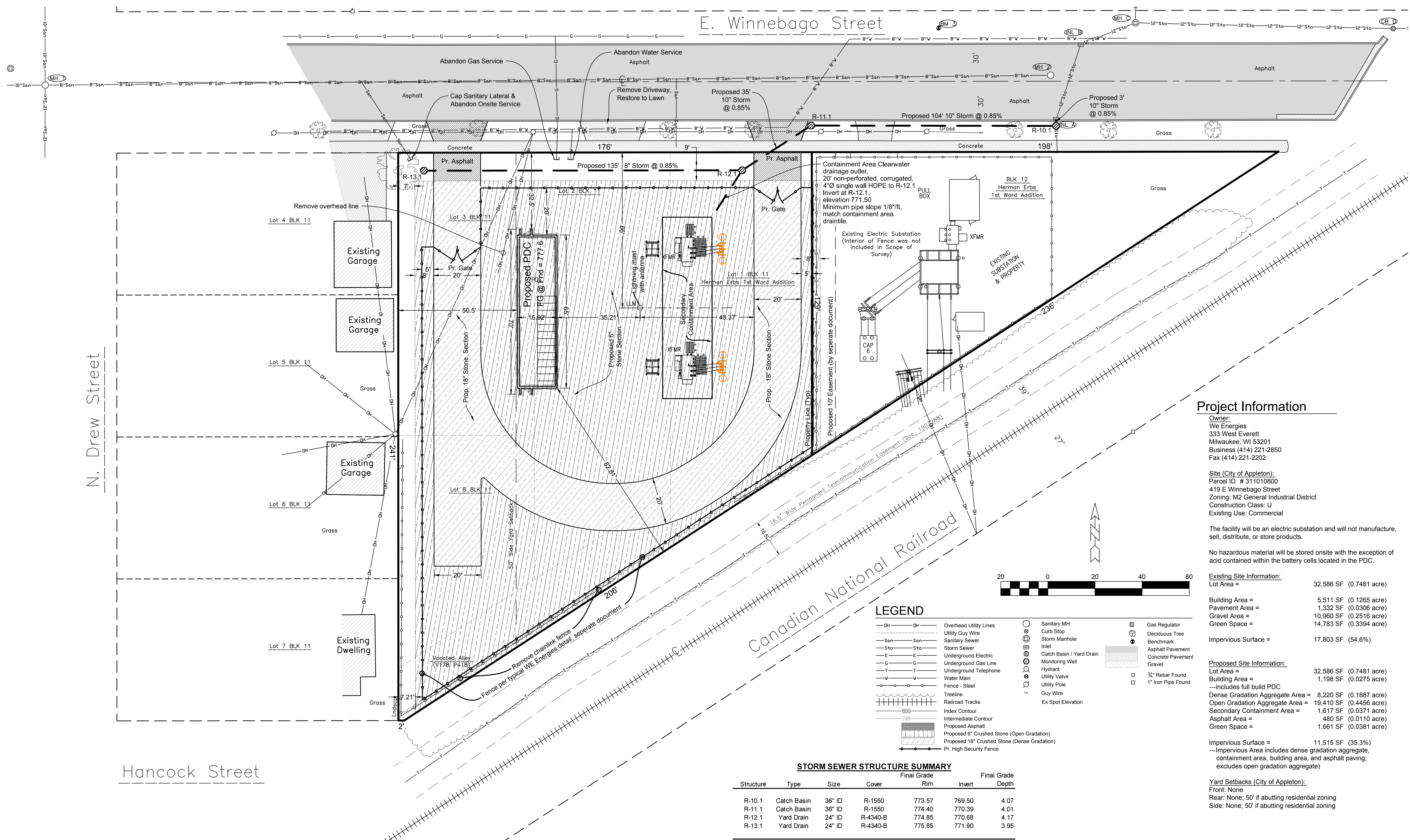


City Plan Commission  
6-13-17





E. Winnebago Street



Project Information

Owner:  
 We Energies  
 333 West Everett  
 Milwaukee, WI 53201  
 Business (414) 221-2850  
 Fax (414) 221-2202

Site (City of Appleton):  
 Parcel ID # 311010800  
 419 E Winnebago Street  
 Zoning: M2 General Industrial District  
 Construction Class: U  
 Existing Use: Commercial

The facility will be an electric substation and will not manufacture, sell, distribute, or store products.

No hazardous material will be stored onsite with the exception of acid contained within the battery cells located in the PDC.

Existing Site Information:

|                      |                         |
|----------------------|-------------------------|
| Lot Area =           | 32,586 SF (0.7481 acre) |
| Building Area =      | 5,511 SF (0.1265 acre)  |
| Pavement Area =      | 1,332 SF (0.0306 acre)  |
| Gravel Area =        | 10,960 SF (0.2516 acre) |
| Green Space =        | 14,783 SF (0.3394 acre) |
| Impervious Surface = | 17,803 SF (54.6%)       |

Proposed Site Information:

|   |                         |
|---|-------------------------|
| Lot Area =  | 32,586 SF (0.7481 acre) |
| Building Area =   | 1,198 SF (0.0275 acre)  |
| ---includes full build PDC  |                         |
| Dense Gradation Aggregate Area =  | 8,220 SF (0.1887 acre)  |
| Open Gradation Aggregate Area =   | 19,410 SF (0.4456 acre) |
| Secondary Containment Area =  | 1,617 SF (0.0371 acre)  |
| Asphalt Area =  | 480 SF (0.0110 acre)    |
| Green Space =   | 1,661 SF (0.0381 acre)  |
| Impervious Surface =  | 11,515 SF (35.3%)       |
| ---Impervious Area includes dense gradation aggregate, containment area, building area, and asphalt paving; excludes open gradation aggregate |                         |

Yard Setbacks (City of Appleton):  
 Front: None  
 Rear: None; 50' if abutting residential zoning  
 Side: None; 50' if abutting residential zoning

SHEET INDEX:

| Sheet                           | Page |
|---------------------------------|------|
| Site Plan                       | C1.0 |
| Topographic Survey              | C1.1 |
| Drainage and Grading Plan       | C1.2 |
| Erosion & Sediment Control Plan | C1.3 |
| Landscape Plan                  | C1.4 |
| Construction Details            | C2.1 |
| Erosion Control Details         | C2.2 |

LEGEND

- DH— DH — Overhead Utility Lines
- San— San — Sanitary Sewer
- Sto— Sto — Storm Sewer
- E— E — Underground Electric
- G— G — Underground Gas Line
- T— T — Underground Telephone
- W— W — Water Main
- V— V — Fence - Steel
- T— T — Treeline
- R— R — Railroad Tracks
- 900— 900 — Index Contour
- 799— 799 — Intermediate Contour
- Proposed Asphalt
- Proposed 6" Crushed Stone (Open Gradation)
- Proposed 18" Crushed Stone (Dense Gradation)
- Pr. High Security Fence
- Sanitary MH
- Curb Stop
- Storm Manhole
- Inlet
- Catch Basin / Yard Drain
- Monitoring Well
- Hydrant
- Utility Valve
- Utility Pole
- Guy Wire
- Ex Spot Elevation
- Gas Regulator
- Deciduous Tree
- Benchmark
- Asphalt Pavement
- Concrete Pavement
- Gravel
- 3/4" Rebar Found
- 1" Iron Pipe Found

STORM SEWER STRUCTURE SUMMARY

| Structure | Type        | Size   | Cover    | Final Grade |        |
|-----------|-------------|--------|----------|-------------|--------|
|           |             |        |          | Rim         | Invert |
| R-10.1    | Catch Basin | 36" ID | R-1550   | 773.57      | 769.50 |
| R-11.1    | Catch Basin | 36" ID | R-1550   | 774.40      | 770.39 |
| R-12.1    | Yard Drain  | 24" ID | R-4340-B | 774.85      | 770.68 |
| R-13.1    | Yard Drain  | 24" ID | R-4340-B | 775.85      | 771.90 |
| Total =   |             |        |          | 16.21       |        |

STORM SEWER PIPE SUMMARY

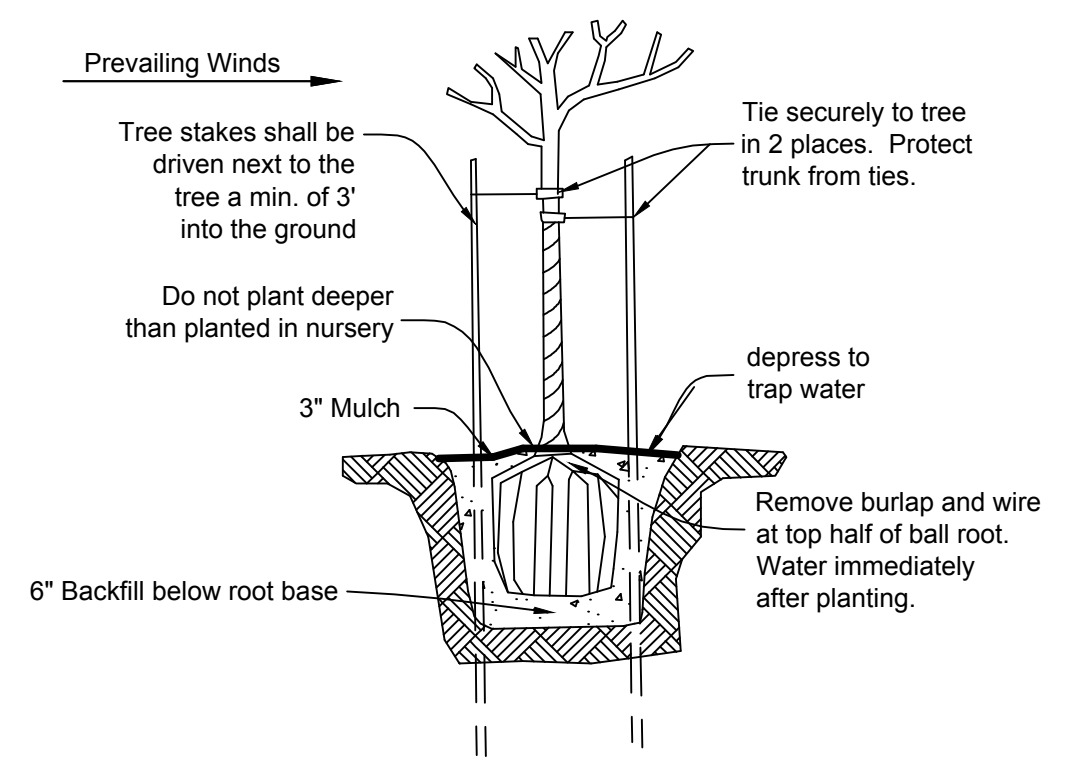
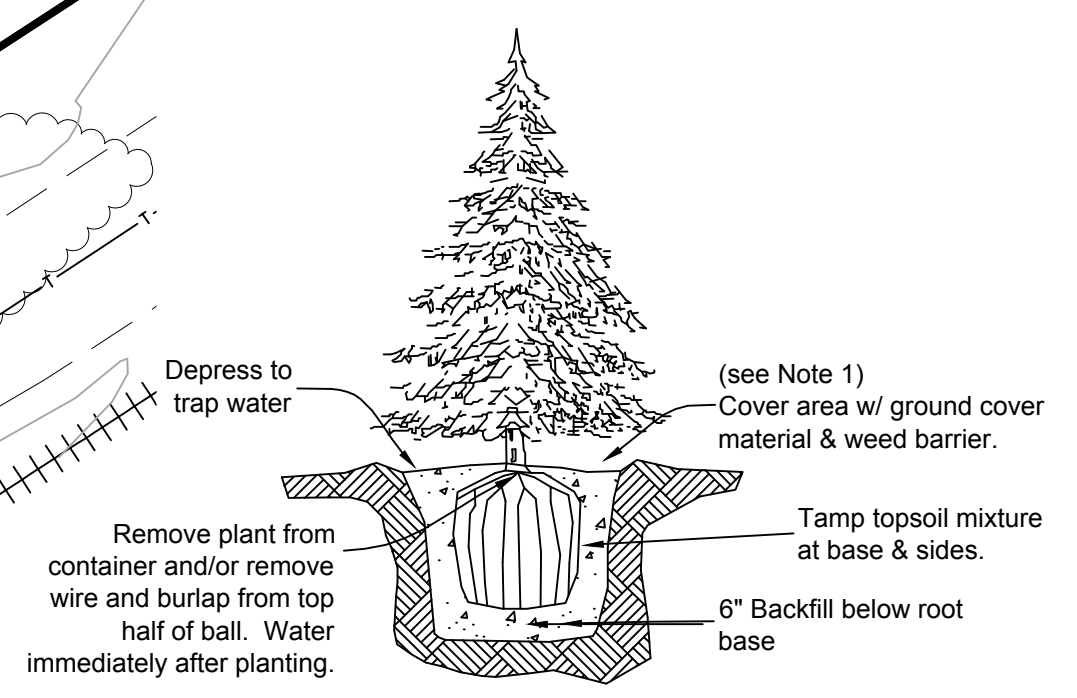
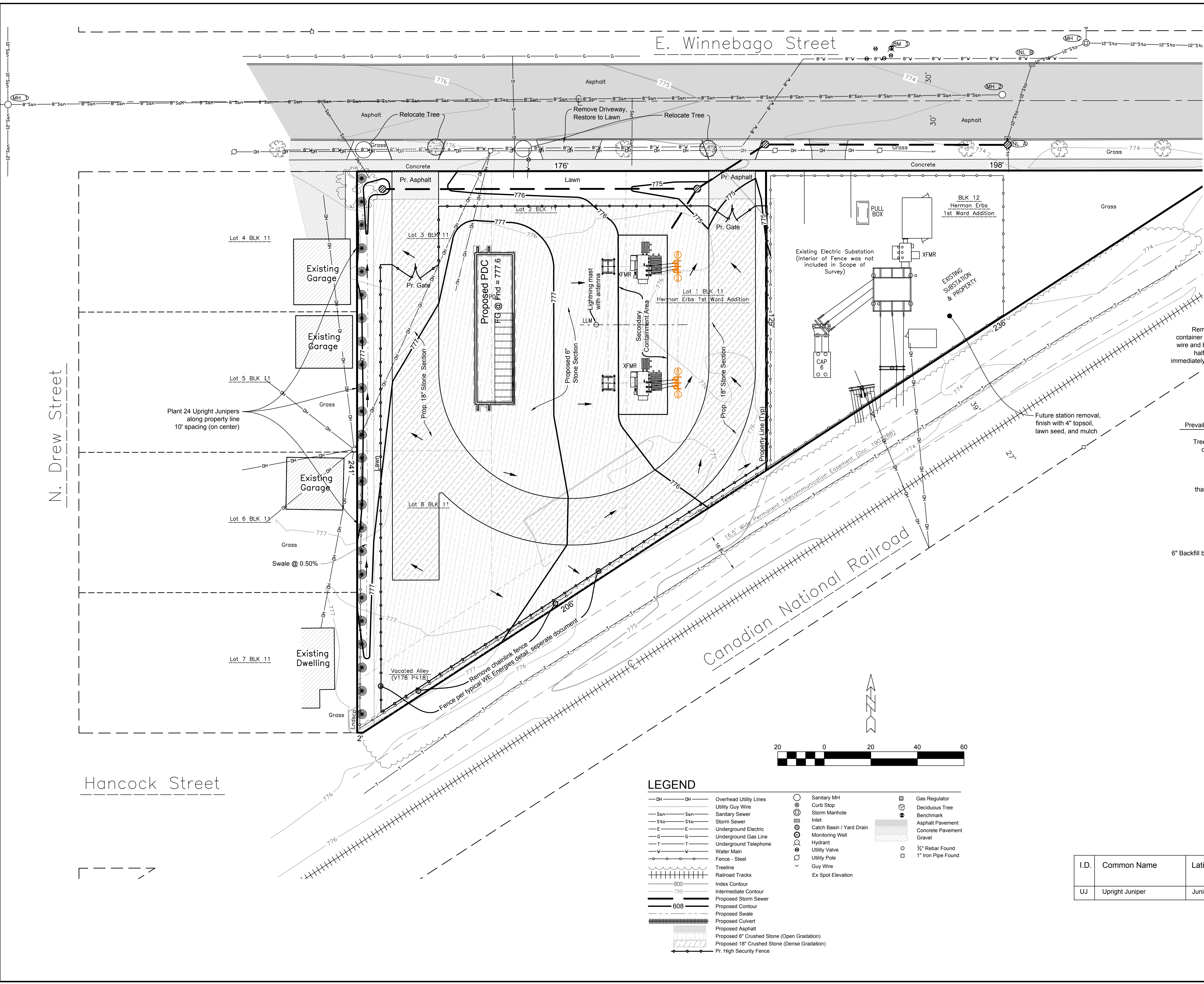
| Reach   | US     | DS | US Inv | DS Inv | Length | Slope  | Size (in) | Node | GRASS     |           | ROOF      |           | PAVEMENT PEAK FLOW |      | Flow* (cfs) | Capacity (cfs) | Velocity (ft/s) |
|---------|--------|----|--------|--------|--------|--------|-----------|------|-----------|-----------|-----------|-----------|--------------------|------|-------------|----------------|-----------------|
|         |        |    |        |        |        |        |           |      | AREA (SF) | AREA (SF) | AREA (SF) | AREA (SF) | GPM                |      |             |                |                 |
| R-10.1  | A      |    | 769.50 | 769.48 | 3      | 0.0085 | 10        | 0.00 | 0         | 0         | 0         | 0         | 0                  | 1.88 | 2.19        | 4.0            |                 |
| R-11.1  | R-10.1 |    | 770.39 | 769.50 | 104    | 0.0085 | 10        | 0.00 | 0         | 0         | 0         | 0         | 0                  | 1.88 | 2.19        | 4.0            |                 |
| R-12.1  | R-11.1 |    | 770.68 | 770.39 | 35     | 0.0085 | 10        | 0.00 | 2007      | 521       | 15250     | 509       | 509                | 1.88 | 2.19        | 4.0            |                 |
| R-13.1  | R-12.1 |    | 771.90 | 770.75 | 135    | 0.0085 | 8         | 0.00 | 3537      | 1530      | 7854      | 335       | 335                | 0.75 | 1.21        | 3.5            |                 |
| Total = |        |    |        |        |        |        |           |      | 276       | 5,544     | 2,051     | 23,104    | 843                |      |             |                |                 |

SITE PLAN

**Winnebago Street Substation**  
 City of Appleton, Outagamie County, WI  
 For: We Energies

**LANDSCAPE PLAN**

**Winnebago Street Substation**  
 City of Appleton, Outagamie County, WI  
 For: We Energies



**Landscape Requirements**

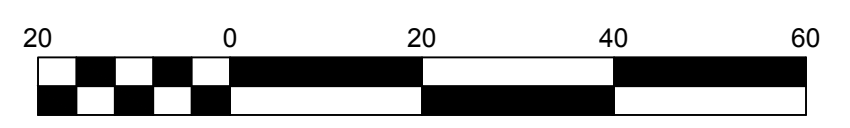
- Note:**
- All onsite Planting beds are to be covered with weed barrier & 1" to 2" round stone.
  - Permanent lawn areas are to be seeded with Wisconsin DOT seed mixture no. 40 or equivalent applied at 2 lbs per 1,000 square feet. Seeded areas not receiving e-mat will be mulched and anchored following DNR Technical Standard 1058.
  - All plantings shall be of adequate size and maturity to screen the substation from the adjacent properties. Deciduous shade trees must have a trunk size of 2.5 inches in diameter. Deciduous ornamental trees must have a trunk size of 1.5 inches in diameter. Evergreen shrubs must be a minimum 24 inches in height.
  - Any plant species substitutions must be approved by the project engineer.
  - Hand digging is required due to the presence of buried electrical cable north of substation, between driveways, and east side.

**Plant Schedule**

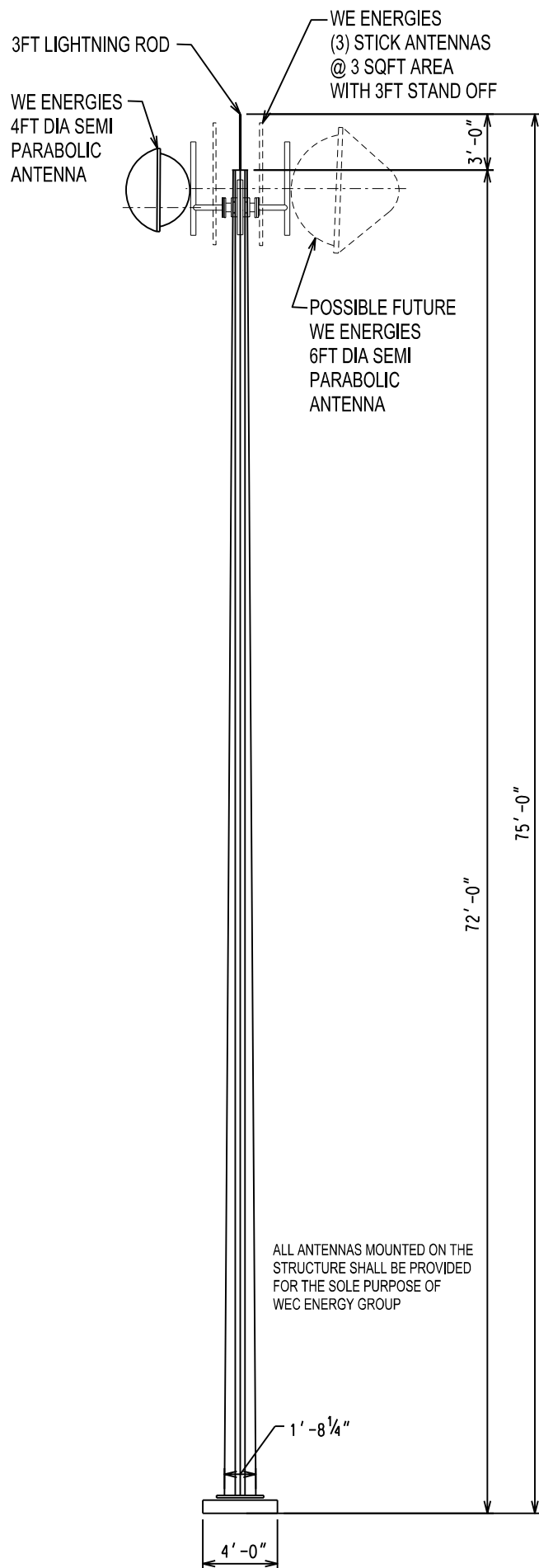
| I.D. | Common Name     | Latin Name          | Planting Size | Mature Size Ht. / Spread | Qty. |
|------|-----------------|---------------------|---------------|--------------------------|------|
| UJ   | Upright Juniper | Juniperus Cultivars | Refer Note #3 | 8-12' / 4'               | 24   |

**LEGEND**

- DH- DH- Overhead Utility Lines
- U- U- Utility Guy Wire
- San- San- Sanitary Sewer
- Sto- Sto- Storm Sewer
- E- E- Underground Electric
- G- G- Underground Gas Line
- T- T- Underground Telephone
- W- W- Water Main
- F- F- Fence - Steel
- R- R- Railroad Tracks
- 800- Intermediate Contour
- 798- Proposed Storm Sewer
- 608- Proposed Contour
- S- S- Proposed Swale
- C- C- Proposed Culvert
- A- A- Proposed Asphalt
- G- G- Proposed 6" Crushed Stone (Open Gradation)
- D- D- Proposed 18" Crushed Stone (Dense Gradation)
- P- P- Pr. High Security Fence
- Sanitary MH
- ⊗ Curb Stop
- ⊕ Storm Manhole
- ⊖ Inlet
- ⊙ Catch Basin / Yard Drain
- ⊗ Monitoring Well
- ⊕ Hydrant
- ⊖ Utility Valve
- ⊙ Utility Pole
- ⊗ Guy Wire
- ⊕ Ex Spot Elevation
- ⊖ Gas Regulator
- ⊙ Deciduous Tree
- ⊗ Benchmark
- ⊕ Asphalt Pavement
- ⊖ Concrete Pavement
- ⊙ Gravel
- 3/4" Rebar Found
- 1" Iron Pipe Found







**DESIGN MODEL - 4-28-17**  
**LIGHTNING MAST WITH**  
**RADIO EQUIP POLE - 72FT**  
**WINNEBAGO SUBSTATION**



Example Substation  
Northland Substation from Southwest  
(Photo taken 05/01/17)



Example Substation  
Northland Substation from Northwest  
(Photo taken 05/01/17)



Example Substation  
Northland Substation from North  
(Photo taken 05/01/17)



Example Substation  
Northland Substation from Southeast  
(Photo taken 05/01/17)



**PLAN OF OPERATION AND LOCATIONAL INFORMATION**

**Business Information:** Wisconsin Electric Power Company d/b/a We Energies  
 Name of business: Winnebago Street Substation  
 Years in operation: 100+

Type of proposed establishment (detailed explanation of business):

New 34.5KV-12KV electric substation replacing  
existing 34.5KV-4KV Winnebago Substation  
located immediately to the east

**Proposed Hours of Operation:** None; Occupied only for maintenance

| Day      | From | To |
|----------|------|----|
| Week Day |      |    |
| Friday   |      |    |
| Saturday |      |    |
| Sunday   |      |    |

*or during  
unplanned  
events.*

**Building Capacity and Area:**

Maximum number of persons permitted to occupy the building or tenant space as determined by the International Building Code (IBC) or the International Fire Code (IFC), whichever is more restrictive: \_\_\_\_\_ persons NA; space is not an occupiable building.

Gross floor area of the existing building(s):

Approximately 5,500 sf; All will be demolished  
prior to construction

Gross floor area of the proposed building(s):

Power Distribution Center (PDC) area is approx 975 sf

Identify location, number, capacity and flammable liquid materials stored in storage tanks or containers:

None

*Much of this is  
covered by  
equipment*

Describe any potential smoke, odors emanating from the proposed use and plans to control them:

None

**Describe Any Potential Noise Emanating From the Proposed Use:**

Describe the noise levels anticipated from all mechanical equipment:

Maximum noise levels for each transformer  
are 65dB; Maximum noise occurs  
with both transformers on at highest capacity

How will the noise be controlled? (typically during extended periods  
of hot weather)

Maximum noise levels are 52.3dB at the  
property boundary (summary calculations attached).

**Outdoor Lighting:**

Type: Downward-shining extenor flood lighting

Location: Above the two entry doors of the PDC and on  
the lightning mast/ antenna pole

**Off-Street Parking:**

Number of spaces existing: Unspecified

Number of spaces proposed: None

Is street access to the subject property adequate or are any street improvements, such as a new turning lane, necessary to minimize impacts on traffic flow?

Replace single curb cut drive into parcel  
with two drives as shown on the Site Plan.

Western-most gate will be primary second  
gate to be utilized only during major  
maintenance or large equipment replacement  
projects.

**Outdoor Uses:**

Type, location, size of outdoor storage area(s) of business property, goods, or merchandise not intended for customer viewing or immediate sale:

None; Equipment and materials may be temporarily stored at the site during maintenance or repair activities

Type and height of screening of plantings/fencing/gating for outdoor storage area(s):

No-cut, no-climb high-security fence per standard We Energies design (details attached).

Landscaping adjacent to properties to west and consistent with existing landscaping to north (see Landscape Plan).

Type, location, size of outdoor display area(s) of merchandise for sale:

None

**Number of Employees:**

Number of existing employees: Unknown - Prior owner is occupying site until June 30.

Number of proposed employees: None

Number of employees scheduled to work on the largest shift: N/A

Once constructed, the substation will be unmanned except for scheduled maintenance and unscheduled repairs.

## **PLAN OF OPERATION** **WINNEBAGO STREET SUBSTATION**

**Overview:** Wisconsin Electric Power Company, under the trade name We Energies, is proposing to build a new electric distribution substation in the City of Appleton, which we refer to as Winnebago Street Substation. It will replace an existing substation of a similar name (Winnebago Substation). This electric distribution substation takes high voltage electricity from 34.5 kV sub-transmission lines and decreases or “steps down” the voltage to 12 kV. 12 kV feeders from Winnebago Street Substation will be used to deliver electricity to area homes and businesses.

Significant portions of the City of Appleton are currently fed from 4 kV distribution lines extended from six 34.5 to 4 kV substations located throughout the City. The existing 4 kV substations and equipment are nearing the end of their design life. As part of We Energies’ “Deliver the Future” plan, we intend to address all of the 4 kV facilities in Appleton within the next four to five years.

Construction of the new Winnebago Street Substation, which will replace the existing substation located just east of the project site, is the next step in converting the City of Appleton 4 kV system to operate at 12 kV. (The initial phases of the conversion included the construction of Northland Substation on Northland Avenue, retirement/removal of the 4 kV substations at Northland Avenue and Wisconsin Avenue, and line conversion/rebuild projects in the areas of those substations.) The new substation will include modern technology, such as microprocessor-based protective devices and other equipment which will allow remote substation control and monitoring.

As the conversion proceeds, significant portions of the area’s distribution poles and overhead conductors will be replaced. The rebuilt poles and overhead conductor will be more resilient to weather events.

Ultimately, converting the distribution system to 12 kV operation will increase reliability, decrease maintenance, and provide for future growth. When the entire Appleton 4 kV conversion project is completed, we expect to make several of the retired 4 kV substation sites available for sale or redevelopment.

**Site Summary:** The new substation will consist of two 20 MVA transformer s with eight 12 kV feeders.

The approximate one acre substation parcel will have equipment enclosed in a fenced yard, approximately 175 feet in the east-west direction by 130-240 feet in the north-south direction, or 0.75 acres. In addition to the transformers, the substation yard will also include the following equipment: a pre-assembled, metal-clad power distribution center (“PDC”); high voltage switches and reclosers; high voltage bus equipment; one lightning mast (with antennas for substation control and monitoring); and other associated equipment and structures. Antennas are needed for communication between We Energies sites only, no other companies are allowed to

co-locate. The PDC switchgear houses indoor type circuit breakers and associated controls along with other electrical equipment and instruments. The PDC and other pole-type structures will be a neutral gray color, either painted or galvanized steel.

Downward shining exterior flood lighting will be located above the two entry doors of the PDC and on both lightning masts. The lights will operate as motion-controlled or manually as necessary for construction, security, and maintenance purposes. Security fencing will surround the substation yard - 7'6" in height, using "no-cut" expanded metal fencing material. For additional safety and security, 12" of barbed wire will also be strung at the top of the fence. There will be one sign, identifying the substation and emergency contact information. The sign is expected to be 24" by 32" and will be hung on the fence adjacent to the northwest entrance gate.

Two gates will be installed on the north side of the substation fencing. Access to the substation will occur primarily from the western-most entrance off of Winnebago Street. The second gate is needed to allow larger vehicles to pull completely through the station and to access all major equipment. The final grade within the substation yard will be crushed aggregate. The substation driveway will be gravel inside of the substation with asphalt pavement present outside of the substation fence and adjacent to Winnebago Street.

**Construction:** Construction of the substation is expected to begin in the fall of 2017, with the primary construction activities completed by the spring of 2018. Limited site restoration activities may not be completed until later in 2018, depending upon weather and the timing for demolition of the old, adjacent substation. Materials and equipment will be delivered directly to the site, by truck, periodically during the periods of construction. Construction activity will occur Monday through Friday, 7:00 a.m. to 5:00 p.m. and as needed on Saturdays 7:00 a.m. to 5:00 p.m. During construction, dust controls will be utilized as needed. Additionally, measures will be taken to keep Winnebago Street clear of construction-related debris. Refuse, generated from the construction activity, will be removed from the site regularly during construction and completely after construction.

**Operation:** After the substation is placed in-service, the substation will be an unmanned facility. No permanent employees will be located or report to the substation on a daily basis. Employees may access the substation for routine maintenance (non-emergency), normally between the hours of 7:00 a.m. and 5:00 p.m. In addition, substation inspections are performed quarterly by a one or two person crew. In the unlikely event of an emergency, employees may report to the station as necessary. The employees performing maintenance and inspections of the substation typically drive light vans or pick-up trucks. The normal operation of the substation will not produce any future refuse or contaminants to the environment.

## Winnebago Street Substation Project Summary

### Project Description:

Construction of a new 34.5-12 kV electric distribution substation to replace the current Winnebago Substation and support voltage conversion of the surrounding line distribution area from 4kV to 12kV.

This is the next phase in a series of planned projects to fully convert the City of Appleton's aging 4kV system to operate at the modern 12kV standard.

### Project Drivers:

- The existing 4kV substation and equipment is nearing the end of its design life.
- The transformer and switchgear at the existing Winnebago SS is more than 50 years old.
- A large percentage of poles in the distribution area served by this substation are more than 40 years old, many of them more than 50 or even 60 years old.
- Converting the distribution system to 12kV operation will provide for the installation of modern technology that will allow remote substation control and monitoring, increase reliability, and increase capacity to provide for future growth.

### New Substation construction overview:

- Construction equipment and layout will be very similar to Northland Substation, constructed on Northland Avenue in 2015/2016.
- We Energies has purchased an approximate 0.75-acre land parcel just west of the existing Winnebago Substation.
- The land consists of a single parcel currently zoned M-2. This zoning is consistent with the City's 2010-2013 Comprehensive Plan, and We Energies does not anticipate a revision to the parcel zoning as part of this project.
- Buildings and other structures currently on the property will be demolished in preparation for substation construction.
- We plan to utilize the majority of the property for the new substation. Once the new substation is constructed, the old adjacent substation will be demolished, and that property (approximately 0.3 acres) would be available for future redevelopment.
- The substation will include installation of two 20MVA transformers, an enclosed power distribution center (PDC), and a lightning mast.
- The substation will occupy an area of approximately 175 feet east to west by 130 to 240 feet north to south and will be surrounded by a 7' 6" "no-cut" expanded metal fence with an additional 12" of barbed wire at the top.
- Modern substation design significantly limits the amount of above-ground construction compared to older substation designs, resulting in improved aesthetics. We Energies will also provide a detailed landscaping plan for this project to assist in this effort.
- Two drives will access the substation, both from Winnebago Street. The western-most drive will be the primary entrance.

**Associated line distribution work to be performed concurrently:**

- Poles, transformers, overhead conductors, and other service equipment in the surrounding area will also be replaced as part of the broader conversion project.
- This work is currently underway.

**Project Schedule:**

- We Energies will seek necessary approvals and permits in the spring and summer of 2017 and anticipates beginning construction in the fall of 2017.
- Construction would be complete by mid-2018, with demolition of the existing substation to follow, and be completed by the end of 2018.

**Communication Plan:**

- We Energies plans contacts with nearby residents that include door to door visits in the immediate vicinity of the planned station and directed mailings that include project contact information to those impacted by the related line work.

04/28/17

Proposed Winnebago Street Substation  
We Energies  
419 E Winnebago Street, Appleton WI  
Property Legal Description

All of Lots One (1), Two (2), Three (3), and Eight (8), in Block Eleven (11), HERMAN ERB'S 1ST WARD ADDITION, City of Appleton, Outagamie county, Wisconsin, according to recorded Assessor's Plat of said City AND that part of the Northwesternly 1/2 vacated alley lying Southeasterly of Lot 2 and 8, in said Block 11, All being located in the Northeast 1/4 of Section 26, township 21 North, Range 17 East, City of Appleton, Outagamie County, Wisconsin.



05/04/17

Proposed We Energies Winnebago Street Substation  
Calculated Noise Level<sup>1</sup> at Property Line in Decibels (dB)

| Reference Property Line | Two Transformer Configuration Noise Level (dB) |
|-------------------------|--|
| North                   | 50.12  |
| South                   | 47.28 <sup>2</sup>                             |
| East                    | 50.04  |
| West                    | 42.81  |
| Worst Case              | 50.12 <sup>3</sup>                             |

Notes:

- <sup>1</sup> – All calculations assume a 65 dB noise level from each transformer, the maximum acceptable noise limit per the manufacturer's performance specifications for this model of transformer.
- <sup>2</sup> – The property is bounded by railroad property to the south.
- <sup>3</sup> – Calculated noise level with both transformers operating at 65 dB (highest allowed noise level per specification) at north property line.