



Hearings Board AGENDA

Thursday, July 30, 2020

4:00 p.m.

This meeting will be conducted remotely.

At 4:00 p.m., join the meeting from your computer, tablet, or smartphone,
by clicking the link below:

<https://global.gotomeeting.com/join/766287781>

You can use your microphone or dial in using your phone.

Phone: 1 (571) 317-3122 (Long distance charges may apply)

Access code/Meeting Id: 766-287-781

1. CALL TO ORDER & PLEDGE OF ALLEGIANCE
2. ROLL CALL
3. APPROVAL OF MINUTES
4. SCHEDULED BUSINESS
 - a. Business from the Public

Persons wanting to address the commission during public hearings have two options:

1. Mail or email your comments to the planner in charge of the project, Melissa Anderson, 333 Broadalbin Street SE, Albany, OR 97321 or melissa.anderson@cityofalbany.net. Please include your name, address, and subject of the public hearing. Comments must be received before 2:00 p.m. on the day of the meeting in order to be considered by the commission.
2. To appear virtually during the public hearing, register by emailing cdaa@cityofalbany.net before 2:00 p.m. on the day of the meeting. Provide your name, address, and if you are for, against, or neutral. During the public testimony, the chair will call upon those who have registered to speak.
 - CU-03-19: Conditional Use Review to expand the existing PacifiCorp substation facility; Tentative Replat Review to combine six lots into one lot (RL 01 20); Site Plan Review for Tree Felling (SP-09-20); and Variance applications for 1) installing an eight-foot tall fence within the front yard setback, 2) including barbed wire on top of the fence in a residential zone, and 3) not including landscaping around the perimeter setbacks (VR-01-20); 1920, 1930, 1940, and 1950 17th Avenue SW and 1917 Queen Avenue SW, Albany. (Project Planner Melissa Anderson at melissa.anderson@cityofalbany.net).

b. Business from the Commission

5. NEXT MEETING DATE: TBD
6. ADJOURNMENT

Due to Governor Brown's Executive Order No. 20-12, prohibiting public gatherings during the COVID-19 pandemic, this meeting is accessible to the public only via phone and video connection. Remote access information is listed at the top of this agenda.

cityofalbany.net





CITY OF ALBANY
HEARINGS BOARD

MINUTES

Thursday, June 11, 2020

Approved: DRAFT

CALL TO ORDER

4:06 p.m.

ROLL CALL

Board Members Present

Cordell Post; Dala Rouse; Ann Ketter

Board Members Absent

None

Staff Present

Melissa Anderson, Planner III; David Martineau, Planning Manager; Jennifer Sullivan, Administrative Assistant

Others Present

Ann Craig, Jackson Street Youth Shelter (JSYS)

APPROVAL OF MINUTES

4:06 p.m.

Commissioner Post moved to approve the February 6, 2020, Hearings Board minutes as presented. Ketter seconded the motion, and it passed 3-0.

SCHEDULED BUSINESS

4:06 p.m.

Business from the public

4:07 p.m.

None

CALL TO ORDER

4:07 p.m.

Chair Rouse called the hearing to order at 4:07 p.m.

Quasi-Judicial Public Hearing

4:07 p.m.

Land Use File CU-01-20; Jackson Street Youth Shelter; 1240 Seventh Avenue SE

- *CU-01-20*: Quasi-Judicial Public Hearing for Conditional Use Review to expand the existing Jackson Street Youth Shelter's (JSYS) building with an additional bedroom, office, and restrooms.

Declarations from the Board

4:07 p.m.

None

Planning Manager David Martineau reviewed the hearing procedures.

4:08 p.m.

Staff Report

4:10 p.m.

Planner Melissa Anderson provided a verbal summary of the application for file CU-01-20, reviewed the staff report, and delivered a PowerPoint presentation (see handouts). The request is for Conditional Use Review to expand the existing Jackson Street Youth Shelter's (JSYS) building, which includes an additional bedroom, office, and restrooms. Anderson referenced the staff report and said the proposal would add 446 square feet to the back of the existing house, construct a rear yard covered patio and a covered porch over the front entrance and bike racks, and modify one of the existing on-site parking spaces to meet ADA accessible parking space standards. Anderson said the proposed addition could accommodate up to six more youth and one additional staff person, the proposed addition would be located at the back of the existing house, JSYS would continue its current operations with increased capacity from 10 beds and 2 staff to a maximum of 16 beds for teens and 3 staff.

Questions from the Commission

4:19 p.m.

None

Testimony from the Applicant

4:20 p.m.

Ann Craig, Executive Director with the JSYS, 13615 SE Coon Road, Milwaukee, OR 97222 provided a verbal overview of the project and explained that the youth at the shelter are unaccompanied homeless youth. Craig explained that JSYS is at capacity most nights, that it serves as the home for the youth residing there and operates like a large family.

Staff Response

4:26 p.m.

None.

Motion

4:26 p.m.

Commissioner Post moved to approve the expansion of the JSYS as conditioned under planning file CU-01-20. Chair Ketter seconded and the motion passed 3-0.

NEXT MEETING DATE

4:28 p.m.

To be determined.

ADJOURNMENT

4:28 p.m.

There being no other business, the meeting was adjourned, and the hearing closed at 4:28.

Reviewed by,

David Martineau
Planning Manager



COMMUNITY DEVELOPMENT

333 Broadalbin Street SW, PO Box 490, Albany, Oregon 97321-0144 | BUILDING 541-917-7553 | PLANNING 541-917-7550

Staff Report

Conditional Use Review, Site Plan Review for Tree Felling Variance Applications and Tentative Replat Review

CU-03-19, RL-01-20, SP-09-20 & VR-01-20

July 20, 2020

HEARING BODY:	Hearings Board (Type III process)
HEARING DATE:	Thursday, July 30, 2020
HEARING TIME:	4:00 p.m.
HEARING LOCATION:	Due to Governor Brown's Executive Orders limiting public gatherings during the COVID-19 pandemic, this meeting is accessible to the public via phone and video connection. Join the meeting from your computer, tablet, or smartphone by entering the link below: https://global.gotomeeting.com/join/766287781 You can use your microphone or dial in using your phone: Phone: 571-317-3122 Access Code: 766-287-781

Summary

The proposed development is for construction of a new 115 kilovolt (kV) ring bus at the existing Hazelwood Substation, which distributes power to the immediate neighborhood and surrounding area. The existing substation has operated continuously since the initial construction of the facility in the early 1950s. The site consists of five tax lots on a total of 2.17 acres, in a Single-family Residential (RS-6.5) zoning district. Associated addresses for the site are 1920, 1930, 1940, and 1950 17th Avenue SW and 1917 Queen Avenue SW. A location map is included as Attachment A.

The applicant states that while not a residential use, utility facilities such as distribution substations are necessary to provide power and other services to single-family homes. The proposed "ring bus" is necessary to ensure reliable power distribution to the immediate neighborhood and larger vicinity. Further, this would expand an existing substation instead of constructing a new one, which will minimize the impact on the existing neighborhood. The proposed ring bus does not produce any noise and will generate no new traffic.

The project proposes demolition of an existing residential dwelling, removal of 13 regulated trees, grading as required to prepare the site for new substation equipment, and a new access at 17th Avenue. Substation equipment consists mainly of open air "bus" work, which is conductive metal piping that carries the electricity

from the transmission system through the electrical equipment (transformers, breakers, etc.) and lets it flow out onto the distribution system which brings power to the local community. The project is necessary to increase reliability for customers and address identified transmission planning deficiencies.

The Hazelwood Substation is defined as a “Basic Utility” under the list of land use categories in Article 22 of the Albany Development Code (ADC). Under the “Schedule of Permitted Uses” set forth in ADC 3.050, a “Basic Utility” land use in the RS-6.5 residential zoning district may be allowed with Conditional Use Review approval by the Planning Commission or Hearings Board through a Type III review process. Thus, the proposal is for a Conditional Use Review application to expand the existing Hazelwood substation facility (file CU-03-19).

This land use review includes concurrent applications for Tentative Replat Review to combine six parcels into one lot (file RL-01-20), Site Plan Review for Tree Felling (file SP-09-20), and Variance applications (file VR-01-20). The variance applications include variances from the following standards: a) installation of an eight-foot tall fence within the front yard setback (ADC 9.380(1)), b) installing barbed wire on top of the fence in a residential zone (ADC 9.370(1)), and c) for not installing landscaping around the perimeter setbacks for the substation expansion areas (ADC 9.140(2)). The applicable review criteria for each of these concurrent applications is addressed in this report.

Conditional Use Review criteria under ADC 2.250, Tentative Plat Review criteria under ADC 11.180, Tree Felling criteria in Article 9 (ADC 9.208(2)), and Variance Review Criteria under ADC 2.690 are addressed in this report. These criteria must be satisfied to grant approval for this application

Application Information

Proposal:	Conditional Use Review to expand the existing PacifiCorp substation facility (CU-03-19); Tentative Replat Review to combine six lots into one lot (RL-01-20); Site Plan Review for Tree Felling (SP-09-20); and Variance applications for a) installing an eight-foot tall fence within the front yard setback, b) including barbed wire on top of the fence in a residential zone, and c) for not installing landscaping around the perimeter setbacks (VR-01-20).
Staff Report Prepared By:	Melissa Anderson, Project Planner
Property Owner / Applicant:	Pacific Power and Light Attention: John Aniello, Project Manager 825 NE Multnomah Boulevard Portland, OR 97232
Applicant’s Attorney:	Garrett Stephenson Schwabe Williamson & Wyatt 1211 SW 5th Portland, OR 97204
Address/Location:	1920, 1930, 1940, and 1950 17th Avenue SW and 1917 Queen Avenue SW
Map/Tax Lot:	Linn County Tax Assessor’s Map No. 11S-04W-13BA Tax Lot 400; and 11S-04W-12CB Tax Lot 7500, 7401, 7400 & 7300
Zoning District:	R-6.5 (Single Family Residential)
Total Land Area	94,445 Square Feet (2.168 acres)

Existing Land Use:	Pacific Power and Light (PacifiCorp) Electrical Substation
Neighborhood:	Broadway
Surrounding Zoning:	North: R-6.5 (Single Family Residential) South: R-6.5 East: RM (Residential Medium Density) West: R-6.5
Surrounding Uses:	North: Residential South: Residential East: Residential West: Public Park and Bonneville Power Substation
Prior History:	<u>CU-03-16</u> : Conditional Use Review for a new communications facility serving the existing PacifiCorp substation facility. The proposal included a new 150-foot tall lattice tower and a new equipment building adjacent to the new tower. No other previous land use cases found on file. The facility was constructed in the early 1950s

Notice Information

A Notice of Public Hearing was mailed to property owners located within 300 feet of the subject property on July 9, 2020. The Notice of Public Hearing was posted on the subject property by July 23, 2020. The staff report was posted on the City's website July 23, 2020. At the time this staff report was completed, no comments had been received.

Appeals

Within five days of the Hearings Board's final decision on this application, the Community Development Director will provide written notice of decision to the applicant and any other parties entitled to notice. Any person who submitted written comments during a comment period or testified at the public hearing has standing to appeal the Type III decision of the Hearings Board to the City Council by filing a Notice of Appeal and associated filing fee within ten days from the date the City mails the Notice of Decision.

Staff Analysis

The Albany Development Code (ADC) includes the following review criteria for a conditional use review, which must be met for the applications to be approved. Code criteria are written in ***bold italics*** and are followed by findings and conclusions.

Conditional Use Review Criteria (ADC 2.250)

Criterion 1

The proposed use is consistent with the intended character of the base zone and the operating characteristics of the neighborhood.

Findings of Fact

1.1 Proposed Use. The proposed use is an expansion to the existing Hazelwood Substation, which is owned and operated by Pacific Power and Light (PacifiCorp). The site has operated continuously since the initial construction of the facility in the early 1950s. The existing electrical substation is located in the RS-6.5 - Residential Single-Family zoning district. Associated addresses for the site are 1920, 1930, 1940, and 1950 17th Avenue SW and 1917 Queen Avenue SW, Albany. A location with zoning map is included as Attachment A.

1.2 Conditional Uses. According to Albany Development Code (ADC) 2.230, “*Certain uses are conditional uses instead of being allowed outright, although they may have beneficial effects and serve important public interests. They are subject to the conditional use regulations because they may have significant adverse effects on the environment, overburden public services, change the desired character of an area, or create major nuisances. A review of these proposed uses is necessary due to the potential individual or cumulative impacts they may have on the surrounding area or neighborhood. The conditional use process provides an opportunity to allow the use when there are minimal impacts, to allow the use but impose conditions to address identified concerns, or to deny the use if the concerns cannot be resolved.*”

The Hazelwood Substation is defined a “Basic Utility” under the land use categories of Article 22 of the ADC. The definition for Basic Utility under ADC 22.180 is as follows:

“(1) *Basic Utilities uses provide community infrastructure, including water and sewer systems, telephone exchanges, power substations and transit. Utility uses generally do not have regular employees at the site. Services may be public or privately provided.*

(2) *Use Examples. Types of uses include, but are not limited to: water and sewer pump stations; sewage disposal and conveyance systems; electrical substations; water towers and reservoirs; water quality and flow control facilities; water conveyance systems; stormwater facilities and conveyance systems; telephone exchanges; mass transit stops, transit centers, park-and-ride facilities for mass transit; and emergency communication broadcast facilities.”*

ADC 3.050, Table 1, Schedule of Permitted Uses, lists “Basic Utilities” as allowed through Conditional Use Review approval in all residential zones. Satisfaction of the Conditional Use Review criteria ensures the proposed use will be consistent with the intended character of the RS-6.5 zoning district.

1.3 Intended Character of the Base Zoning District. The property is zoned RS-6.5, Residential Single-Family District. The intent of the RS-6.5 zoning district is described under ADC 3.020(3): “*The RS-6.5 District is intended primarily for low-density urban single-family residential development. The average minimum lot size is 6,500 square feet.*” As illustrated on the zoning map (Attachment A), the site and the properties to the north, south, and west are zoned RS-6.5; the properties to the east are zoned RM (Residential Medium Density).

1.4 Operating Characteristics of the Neighborhood. The existing substation has been a part of the existing neighborhood for several decades. The site is located within a residential area with single-family residential uses to the north, south, and east. To the west of the site are the City of Albany Hazelwood Park and a Bonneville Power Administration/U.S. Department of Energy power substation. The aerial map below shows the site in relation to the surrounding land uses.



1.5 Operating Characteristics of the Proposed Development. The site consists of five tax lots on a total of 2.17 acres. These include Linn Tax Assessor’s Map No. 11S-04W-13BA Tax Lot 400 and 11S-04W-12CB Tax Lots 7500, 7401, 7400 & 7300. Tax lots 400 and 7500 are developed with existing substation equipment. Tax lots 7400, 7401 and 7300 are developed with a vacant single-family home. A small grove of trees is located behind the existing dwelling. The remainder of the Property is undeveloped.

The existing substation has operated continuously since the initial construction of the facility in the early 1950s. The proposal would expand the existing Hazelwood Substation instead of constructing a new one, which will minimize the impact on the existing neighborhood. The proposed ring bus does not produce any noise and will generate no new traffic. The project plan set is included as Attachment H. An aerial photo of the properties is provided below.



The applicant describes the facility and the need for the project as follows: “The proposed development is for construction of a new 115 kilovolt (kV) ring bus at the Hazelwood Substation, which distributes power from a 115,000 volt transmission line to the immediate neighborhood and surrounding area. In the ring bus configuration, as the name implies, circuit breakers are connected to form a ring, with isolators on both sides of each breaker. Circuits terminate between the breakers and each circuit is fed from both sides.

The Project requires demolition of an existing residential dwelling, removal of 13 regulated trees, and grading as required to prepare the site for new substation equipment. Substation equipment consists mainly of open air "bus" work, which is conductive metal piping that carries the electricity from the transmission system through the electrical equipment (transformers, breakers, etc.) and lets it flow out onto the distribution system which brings power to the local community. Three new electrical breakers are also going to be installed.

This project is necessary to increase reliability for customers and address identified transmission planning deficiencies. The existing substation’s 115 kV configuration could potentially lose 34,250 customers due to a single failure. In addition, Bonneville Power Administration’s Albany to Hazelwood and Hazelwood to Fry 115 kV transmission lines can overload well above the summer and winter emergency ratings due to various North American Electric Reliability Corporation (NERC) planning category contingency events (i.e. transformer failure).

The Project will mitigate four planning requirements for an outage on the transformers at the associated Fry Substation, line outage combinations between Pacific Power and Bonneville Power Administration, and will reduce load loss exposure in summer and winter from the other potential grid system issues.”

Conclusions

- 1.1 The existing Hazelwood Substation has operated continuously since the initial construction of the facility in the early 1950s. The site consists of five tax lots on a total of 2.17 acres.
- 1.2 The site is in a RS-5 zone that allows basic utilities, such as the proposed project, through conditional use approval.
- 1.3 Although the proposal to expand the Hazelwood Substation is not a residential use, utility facilities such as distribution substations are necessary to provide power and other services to single-family homes. The proposed ring bus is, in fact, necessary to ensure reliable power distribution to the immediate neighborhood and larger vicinity. The proposal would expand an existing substation instead of constructing a new one, which will minimize the impact on the existing neighborhood. The proposed ring bus does not produce any noise and will generate no new traffic.
- 1.4 The conditional use process provides an opportunity to review projects for potential impacts and impose conditions to address any identified concerns. No operating characteristics of the proposed expansion of the existing use have been identified that would warrant mitigation by conditions.
- 1.5 The proposal will not have an impact on the operating characteristics of the neighborhood because the primary use of the property has been a part of the existing neighborhood for several decades.
- 1.6 As proposed, the use is consistent with the intended character of the base zones and the operating characteristics of the neighborhood. This criterion is met without conditions.

Criterion 2

The proposed use will be compatible with existing or anticipated uses in terms of size, building scale and style, intensity, setbacks, and landscaping or the proposal calls for mitigation of differences in appearance or scale through such means as setbacks, screening, landscaping or other design features.

Findings of Fact

- 2.1 Definition of Compatible. “Compatible” does not mean “the same.” *Merriam Webster’s Collegiate Dictionary*, Eleventh Edition, defines “compatible” as “(1) capable of existing together in harmony.”
- 2.2 Proposed Use. The proposed use is described under Conditional Use Review Criterion One, Findings 1.1 and 1.5 above; those findings are included here by reference.
- 2.3 Existing and Anticipated Uses. The operating characteristics of the surrounding neighborhood are described under Conditional Use Review Criterion One, Findings 1.3 and 1.4 above; those findings are included here by reference. Staff is not aware of any anticipated uses on abutting properties.
- 2.4 RS-6.5 Zoning District Development Standards. ADC 3.190, Table 1, establishes development standards in the RS-6.5 zoning district. As shown on the Site Plans (Attachment H), the proposed addition to the existing building meet the required development standards, as described below:

Height: The maximum height limit for buildings in the RS-6.5 zone is 30 feet; however, ADC 3.340(1) provides exceptions to the height limit for structures such as towers, antennas, and similar structures. The proposed ring bus is not a building, and the height exception under ADC 3.340(1) applies to proposed structure. Although the height limit is not applicable, the height of the proposed new ring bus will be 10-15 feet in height.

Setbacks: In the RS-6.5 zone, the minimum front setback is 15 feet, and the minimum interior setback is 5 feet. As shown on the Site Plan (Attachment H.6), the proposed ring bus and its associated equipment shall be located more than 20 feet from the front lot line and 15 feet from the nearest interior lot line.

Lot Coverage: Maximum lot coverage in the RS-6.5 zone is 60 percent. The Stormwater Management Plan (Attachment H.9) shows the total site area is 94,445 square feet in area, and the total lot coverage after development is 22 percent of the site. Existing conditions show an impervious area of 22,861 square feet (24 percent lot coverage) and pervious area of 71,584 square feet. Development conditions after development show an impervious area of 21,109 square feet (22 percent lot coverage) and pervious area of 73,336 square feet. The reason there is less impervious surfaces after development is because an existing house, foundations, slabs, and compacted road surfaces are being replace by yard finish rock.

Article 22 of the development code defines Lot Coverage as “*That portion of a lot which, when viewed directly from above, would be covered by a building, or structure, pavement, or any area not vegetated or in a naturally permeable state. Lot coverage for single-family detached development shall only include the area of the lot covered by buildings or structures;*” however, the term “naturally permeable state” is not defined in the city code.

As proposed, pervious areas include grass lawns, swale, and substation yard rock. The yard finish rock is designed to be naturally permeable because the purpose of the rock is to drain water away from the electrical equipment. The applicant states: “The runoff from all gravel road surfaces will sheet flow into a 4” deep yard rock area, which contains washed rock much like drain rock and has 40% voids. The yard rock is 4” in depth and will have voids long term for touch potential of nearby equipment.

The native soil under the yard rock consists of granular material that has an infiltration rate of 0.28 inches per hour. All surfaces that are not covered with finish rock (road and yard rock) will be native ground.”

Based on the plan to use washed drain rock, the Albany Public Works Department concurs with the applicant that the yard rock will function to be naturally permeable, as intended by the definition of lot coverage under Article 22 of the ADC. Therefore, based on the proposed design, the lot coverage standard is met.

- 2.5 Vehicle Parking. The proposed project is not expected to increase vehicle trips beyond those needed for occasional maintenance activities. The applicant states that the facility is unmanned and therefore no additional parking is needed.
- 2.6 Screening of Refuse Containers. ADC 4.300 addresses standards for refuse containers; however, no refuse containers are proposed or required.
- 2.7 Buffering and Screening. ADC 9.210 requires buffering and screening in order to reduce the impacts on adjacent uses which are of a different type. Staff finds no additional screening or buffering is required in this instance given that the proposed use is not included in the matrix under ADC 9.210.
- 2.8 Landscaping and Fencing. The applicant is applying for a variance from the fence and landscaping regulations. The variance criteria are addressed later in this report. Those findings are included here by reference.

Conclusions

- 2.1 The proposed substation expansion meets the development standards for setbacks, height, and lot coverage.
- 2.2 The facility is unmanned; no new parking is proposed or required.
- 2.3 No refuse containers are proposed or required.
- 2.4 The buffering and screening standards are not applicable because the proposed use is not included in the matrix under ADC 9.210.
- 2.5 The applicant is applying for a variance from the fence and landscaping regulations. The variance criteria are addressed later in this report. Those conclusions are included here by reference.
- 2.6 As proposed and conditioned under the variance criteria (later in this report), the use will be compatible with existing or anticipated uses. This criterion is met.

Criterion 3

The transportation system is capable of supporting the proposed use in addition to the existing uses in the area. Evaluation factors include street capacity and level of service, on-street parking impacts, access requirements, neighborhood impacts, and pedestrian safety.

Findings of Fact

- 3.1 The proposed development will expand an existing electric substation facility operated by PacifiCorp. The facility is located on the north side of the street at 1917 Queen Avenue. A portion of the expansion will occur on the north side of the facility and incorporate three existing lots along the south side of 17th Avenue.

- 3.2 Queen Avenue is classified as a minor arterial street and is constructed to City standards. Improvements include: curb, gutter, and sidewalk along both sides of the road; a travel lane in each direction; a two-way center left turn lane; and on street bike lanes.
- 3.3 17th Avenue is classified as a local street and is, with the exception of sidewalk, constructed to City standards. The curb to curb width is 32 feet and provides for two-way vehicle traffic and on street parking along sides of the road.
- 3.4 The project will generate new vehicle trips to and from the site during its construction. When completed the proposed project is not expected to generate regular traffic or vehicle trips beyond those needed for occasional maintenance activities.
- 3.5 ADC 12.100(1) requires that all driveway approaches to public streets be paved in accordance engineering design standards. Those standards require the first 20 feet of all driveways be paved to avoid having traffic deposit rock and gravel tracked onto the street system.
- 3.6 ADC 12.290 requires that all new development provide for sidewalk along their frontages on public streets.
- 3.7 The existing substation has driveway connections to both Queen Avenue and 17th Avenue with gravel surfaces. The parcels that will be added to the substation facility with this project have existing curb cuts that will not be used to access to the expanded facility. A new driveway connection is proposed to 17th Avenue to provide access into the site.
- 3.8 Albany's Transportation System Plan (TSP) does not identify any level of service or safety problems along the frontage of the site.

Conclusions

- 3.1 The public street frontage along the site is constructed to City standards.
- 3.2 The development is not expected to result in an increase in the number of average weekday vehicle trips generated by the site.
- 3.3 Albany's TSP does not identify any level of service or safety problems along the frontage of the site.
- 3.4 Existing driveway access to the site are gravel and do not have the first 20 feet paved in accordance with City standards. The site plan proposes construction of a new driveway from 17th Avenue into the site. Several existing curb cuts along 17th Avenue will not be used to access to the site.
- 3.5 In order to comply with ADC 12.290 public sidewalk will need to be installed along the site's frontage on 17th Avenue. Construction of that sidewalk will require the removal of unused curb cuts and replacing those areas with standard curb and gutter.
- 3.6 In order to comply with ADC 12.100(1) the first 20 feet of all driveways to the site, both existing and proposed, must be paved.
- 3.7 This criterion can be met with the following condition.

Condition

- Condition 1 Prior to beginning construction activity on the proposed substation expansion, the applicant shall construct or financially assure construction of the following:
- a. Removal of all unused curb cuts along the site's frontage on 17th Avenue and replacement with curb and gutter to city standards.

- b. The construction of 20 feet of pavement at all driveways into the site from Queen Avenue and 17th Avenue.
- c. The construction of public sidewalk to City standards along the site's frontage on 17th Avenue.

Criterion 4

Public services for water, sanitary and storm sewer, water management and for fire and police protection are capable of servicing the proposed use.

Findings of Fact

Sanitary Sewer

- 4.1 City utility maps show an 8-inch public sanitary sewer main in 17th Avenue. The proposed expansion to the existing substation will not require sanitary sewer service, so there will be no impact on the public sewer system.

Water

- 4.2 City utility maps show an 8-inch public water main in 17th Avenue. The proposed expansion to the existing substation will not require water service, so there will be no impact on the public water system.

Storm Drainage

- 4.3 City utility maps show an 18-inch public storm drainage main along the west boundary of the southern section of the substation site and a drainage ditch along the west boundary of the northern section of the substation site.
- 4.4 As shown on the Stormwater Management Plan (Attachment H.9, Sheet 012020.001), the only impervious areas being added to the site is the proposed "road finish rock" area, which is denoted by the cross hatched "New Subcatchment Area."
- 4.5 An estimate calculated from the submitted plan shows approximately 8,051 square feet of new and/or replacement impervious area ("road finish rock") associated with the proposed expansion.
- 4.6 The proposed development will require that the applicant provide for collection, detention, and appropriate discharge of on-site stormwater according to City codes.
- 4.7 It is the property owner's responsibility to ensure that any proposed grading, fill, excavation, or other site work does not negatively impact drainage patterns to, or from, adjacent properties. In some situations, the applicant may propose private drainage systems to address potential negative impacts to surrounding properties. Private drainage systems that include piping will require the applicant to obtain a plumbing permit from the Building Division prior to construction. Private drainage systems crossing multiple lots will require reciprocal use and maintenance easements and must be shown on the final plat. In addition, any proposed drainage systems must be shown on the construction drawings. The type of private drainage system, as well as the location and method of connection to the public system must be reviewed and approved by the City of Albany's Engineering Division.
- 4.8 The applicant is required to submit a drainage plan, including support calculations, as defined in the City's Engineering Standards. The applicant is responsible for making provisions to control and/or convey storm drainage runoff originating from, and/or draining to, any proposed development in accordance with all City standards and policies as described in the City's Engineering Standards.

Stormwater Quality

- 4.9 AMC 12.45.030 requires a post-construction stormwater quality permit for all new development and/or redevelopment projects on a parcel(s) equal to or greater than one acre, including all phases of the development. (Ord. 5841 § 3, 2014).
- 4.10 AMC 12.45.040(1)(b) states that a development is exempt from AMC 12.45.030 when the development creates and/or replaces less than 8,100 square feet of impervious surface, cumulatively.
- 4.11 The area of proposed impervious surfaces with this project will not exceed 8,100 square feet; therefore, a stormwater quality permit will not be required for this project.

Police Protection

- 4.12 The substation is located in an area served by the Albany Police Department. The applicant states that the substation is unmanned and protected by security fencing; therefore, there is no reason to believe that it will reduce the City's ability to provide public safety services.
- 4.13 No comments or concerns were provided by the Albany Police Department.

Fire Safety

- 4.14 The substation is located in an area served by the Albany Fire Department. The applicant states that Station 12 is located less than two miles away, and a fire hydrant is located directly in front of the Property. The ring bus is not flammable, and no new oil-cooled transformers are proposed. Therefore, the project has ample water and fire service available to it and will have a negligible impact on the City's ability to continue to provide those services.
- 4.15 No comments or concerns were provided by the Albany Fire Department.

Conclusions

- 4.1 Public utilities (sanitary sewer, water, and storm drainage) are adequate to serve the proposed use.
- 4.2 The applicant's submittal indicates that there will be less than 8,100 square feet of new and/or replacement impervious surface associated with this proposal. Therefore, stormwater quality facilities are not required to treat the stormwater collected on the site.
- 4.3 Police and fire services are available to serve the development.
- 4.4 The applicant must obtain final approval from the Albany Public Works Department for stormwater collection and detention facilities.
- 4.5 This criterion can be met with the following condition.

Condition

- Condition 2 Before a final approval of the encroachment permit will be granted for the project, the applicant must complete the stormwater collection and detention facilities and obtain final approval of the facilities by the Public Works Department.

Criterion 5

The proposal will not have significant adverse impacts on the livability of nearby residentially zoned lands due to: (a) Noise, glare, odor, litter, and hours of operation; (b) Privacy and safety issues.

Findings of Fact

- 5.1 Noise. Unlike a transformer, a ring bus produces no noise that can be heard from outside of the substation boundaries.
- 5.2 Glare. The applicant states that the substation is lit to ensure safety and security for the equipment and PacifiCorp employees. PacifiCorp uses “dark skies” lighting at its substations which fixtures are specifically designed to prevent light emissions from spilling onto surrounding properties.”
- 5.3 Odor. The substation emits no objectionable odor because it does not produce waste or other organics.
- 5.4 Litter. The substation produces no litter because it is unmanned.
- 5.5 Hours of Operation. The site has operated in perpetuity since initial construction in the early 1950s. The hours of operation are continuous; however, because it is unmanned, such hours do not affect surrounding properties.
- 5.6 Privacy and Safety. The applicant states that “As the substation is unmanned, there will be no ongoing presence of humans that could pose a privacy or safety issue to surrounding residents. PacifiCorp takes reasonable precautions to prevent access to the site, which principally consists of a metal chain-link fence and locked gates.”

Conclusion

- 5.1 As proposed, this criterion is met without conditions.

Criterion 6

Activities and developments within special purpose districts must comply with the regulations described in Articles 4 (Airport Approach), 6 (Natural Resources), and 7 (Historic), as applicable.

Findings of Fact

- 6.1 Airport Approach. Article 4 Airport Approach shows that the subject property is not located within or near the vicinity of the Airport Approach District.
- 6.2 Natural Resources. The subject property is not located within any Natural Resource areas. Article 6 Steep Slopes, Comprehensive Plan Plate 7, shows that there are no areas of steep slopes on the property. Article 6 Floodplains, Comprehensive Plan Plate 5, does not show the subject site in a 100-year floodplain. Article 6 Wetlands, Comprehensive Plan Plate 6, does not show any wetlands on the subject site; the National Wetlands Inventory also does not show any wetlands on the property.
- 6.3 Historic. Article 7 Historic Districts, Comprehensive Plan Plate 9: shows the subject property is not in any historic district. There are no known archaeological sites on the property.

Conclusions

- 6.1 There are no special purpose districts impacted or associated with the subject property.
- 6.2 This criterion is met without conditions.

Tentative Plat Review (Section 11.180).

Criterion 1

The proposal meets the development standards of the underlying zoning district and applicable lot and block standards of this section.

Findings of Fact

- 1.1 The subject site is located at 1920, 1930, 1940, and 1950 17th Avenue SW and 1917 Queen Avenue SW (Attachment A). These parcels are also identified as Linn County Tax Assessor's Map No. 11S-04W-13BA Tax Lot 400; and 11S-04W-12CB Tax Lot 7500, 7401, 7400 & 7300.
- 1.2 As presented on the Tentative Replat (Attachment H.4), the proposal will consolidate six parcels into one lot. The total lot area will be approximately 94,445 square feet (2.168 acres).
- 1.3 The subject properties are located in the RS-6.5 – Single-Family Residential zoning district. The development standards for the RS-6.5 zone are listed under ADC 3.190, Table 1. In the RS-6.5 zone, the minimum lot size is 6,500 square feet, and the minimum lot width and depth is 50 feet and 80 feet, respectively. The proposed replat will combine multiple parcels into one 94,445 square foot lot, that is approximately 250 feet wide and over 500 feet deep.
- 1.4 The lot and block standards under ADC 11.090 are not applicable for the proposed replat because the site is within an existing subdivision and the lot consolidation does not create any new lots or blocks.

Conclusions

- 1.1 The proposal will consolidate multiple parcels into one lot.
- 1.2 The proposal meets the applicable development standards of the RS-6.5 zone.
- 1.3 This criterion is met without conditions.

Criterion 2

Development of any remainder of property under the same ownership can be accomplished in accordance with this Code.

Findings of Fact

- 2.1 All of the properties are owned by Pacific Power and Light (PacifiCorp). There is no other remainder of property under the same ownership to consider with this application.
- 2.2 Any future development would be required to meet ADC standards at time of development.

Conclusions

- 2.1 There is no remainder of property to consider with the proposed replat.
- 2.2 This criterion is met without conditions.

Criterion 3

Adjoining land can be developed or is provided access that will allow its development in accordance with this Code.

Findings of Fact

- 3.1 This review criterion has been interpreted by the city council to require only that adjoining land either have access, or be provided access, to public streets.
- 3.2 ADC 12.060 requires that development must have frontage on or approved access to a public street currently open to traffic.
- 3.3 The post-replat configuration of the subject property will have access from either 17th Avenue SW or Queen Street SW.
- 3.4 Adjoining land fronting onto 17th Avenue SW has access to that public street; and adjoining land fronting onto Queen Avenue SW has access to that public street. The proposed replat will not impact adjoining land's access to those public streets.

Conclusions

- 3.1 All of the adjoining land has access to public streets.
- 3.2 This criterion is met without conditions.

Criterion 4

The proposed street plan affords the best economic, safe, and efficient circulation of traffic possible under the circumstances.

Findings of Fact & Conclusion

- 4.1 The subject properties are located within a developed area with frontage on both 17th Avenue SW and Queen Avenue SW. No new streets are proposed or needed with the proposed replat.
- 4.2 The findings and conclusions under Conditional Use Review Criterion 3 (above), address this criterion. Those findings and conclusions are included here by reference.
- 4.3 This review criterion is met with the conditions outlined under Conditional Use Review Criterion 3 (above).

Criterion 5

The location and design allow development to be conveniently served by various public utilities.

Findings of Fact & Conclusion

- 5.1 Public utilities (sanitary sewer, water, and storm drainage) are adequate to serve the proposed use.
- 5.2 The findings and conclusions under Conditional Use Review Criterion 4 (above), address this criterion. Those findings and conclusions are included here by reference.
- 5.3 This review criterion is met with the condition outlined under Conditional Use Review Criterion 4 (above).

Criterion 6

Activities and developments within special purpose districts must comply with the regulations described in Articles 4 (Airport Approach), 6 (Natural Resources), and 7 (Historic), as applicable.

Findings of Fact & Conclusion

- 6.1 The subject properties are not located in any special purpose overlay districts.
- 6.2 The findings and conclusions under Conditional Use Review Criterion 6 (above), address this criterion. Those findings and conclusions are included here by reference.
- 6.3 This criterion is met without conditions.

TREE FELLING CONCURRENT WITH CONDITIONAL USE REVIEW (ADC 9.208(2))

ADC 9.207 states that Site Plan Review approval is required for the felling of five or more trees larger than 25 inches in circumference (approximately eight inches in diameter) on a lot or property in contiguous, single ownership in excess of 20,000 square feet in any zone. According to ADC Section 9.208, Tree Felling criteria replace the Site Plan Review criteria found in Article 2 of the ADC for the purpose of reviewing tree felling.

The applicant proposes to remove 14 trees from the site that are greater than 25 inches in circumference. As illustrated on the Tree Removal Plan (Attachment F), the trees identified for removal are all located in areas where construction is proposed. The applicant submitted an application for tree felling concurrent with the conditional use review application. As such, the tree felling criteria under ADC 9.208(2)(a-c) are addressed below.

Criterion 2(a) It is necessary to fell tree(s) in order to construct proposed improvements in accordance with an approved site plan review or conditional use review, or to otherwise utilize the applicant’s property in a manner consistent with its zoning, this code, applicable plans adopted by the City Council, or a logging permit issued by the Oregon Department of Forestry.

Findings of Fact & Conclusion

- 2a.1 The applicant proposes to remove 13 trees from the site that are greater than 25 inches in circumference. The trees proposed for removal are presented below by the applicant:

No.	Species	Diameter
1	walnut	18”
2	walnut	18”
3	unknown deciduous	24”
4	clump, unknown deciduous	4” – 10”
5	oak	15”
6	unknown deciduous	18”
7	maple	14”

No.	Species	Diameter
8	apple	10”
9	lilac (clump)	8”-10”
10	unknown deciduous	16”
11	maple	14”
12	cottonwood	12”
13	cottonwood	8”

- 2a.2 As shown on the Tree Removal Plan and the Site Plan (Attachments F & H), the trees proposed for removal must be removed to accommodate the proposed ring bus and the equipment which surrounds it, as well as to ensure proper clearance between vegetation and energized substation equipment.

- 2a.3 It is necessary to fell 13 trees in order to construct proposed improvements in accordance with a conditional use review. This criterion is met.

Criterion 2(b) The proposed felling is consistent with State standards, City ordinances, and the proposed felling does not negatively impact the environmental quality of the area,

including but not limited to: the protection of nearby trees and windbreaks; wildlife; erosion; soil retention and stability; volume of surface runoff and water quality of streams; scenic quality, and geological sites.

Findings of Fact & Conclusion

2b.1 The applicant has provided the following findings: “The Property is located within a residential neighborhood. The project would include removal of a small, loose grove of poorly maintained deciduous trees. For this reason, the Hearings Board can find that removal of the trees will have no effect on soil erosion or soil retention and stability.

For the same reasons, the Hearings Board can find that the tree removal will have no significant effect on wildlife. The Property is not designated as sensitive habitat and its location within a developed neighborhood limits the trees’ potential habitat value. Moreover, the proximity of the existing substation likely deters wildlife from occupying the Property. It is more likely that nearby wildlife seek shelter in the woodland located west of the existing substation at Hazelwood Park, and removal of these trees will have no effect on that woodland.

Given that trees are relatively short and located along the south side of the property, there is no evidence that the trees provide any useful windbreak to surrounding properties from prevailing southerly winds.

For the same reasons, there is no evidence that the trees have any scenic value. The lack of slope prevents substantial vistas from in or around the property and the trees are short and unkempt. Their removal will actually increase vistas from 17th Avenue. For these reasons, the Hearings Board can find that the trees will not diminish scenic quality in the area and may actually improve it.

The property is more than 1,200 feet from the Calapooia River. There are no adjacent streams which could receive direct surface water influence from the property and the trees do not provide stream shade. Therefore, the Hearings Board can find that removal of the trees will have no significant effect on stream water quality.

There are no geologic sites on the Property protected by the trees.”

2b.2 Staff concurs with the applicant’s findings. This criterion is met.

Criterion 2(c) The uniqueness, size, maturity, structure, and historic value of the trees have been considered and all other options for tree preservation have been exhausted. The Director may require that trees determined to be unique in species, size, maturity, structure, or historic values are preserved.

Findings of Fact & Conclusion

2c.1 The applicant states that the oblique photo below and the photos in Attachment F show the trees proposed for removal are relatively short and are not fully mature. The trees have been poorly maintained and suffer substantial competition from underbrush. There is no evidence that they are unique or have any historic value. The Hearings Board can find that the trees proposed for removal do not have any intrinsic value warranting denial of the tree felling permit.

Trees to be Removed (*provided by applicant*)



Criterion 2(d) Tree felling in Significant Natural Resource Overlay Districts meets the applicable requirements in Article 6.

Findings of Fact & Conclusion

2d.1 The property is not located within a Significant Natural Resource Overlay District. This criterion does not apply.

Tree Felling Criteria Conclusion

For the reasons stated above, the request for Tree Felling concurrent with Conditional Use Review meets all applicable review criteria without conditions.

VARIANCE REVIEW CRITERIA (ADC 2.690)

A) Variance from ADC 9.380(1), which requires fences in front setbacks shall be no taller than four feet in required front setbacks. The variance application is to allow installation of an eight-foot tall fence within the front yard setback.

B) Variance from ADC 9.370(1), which only allows barbed wire on top of a six-foot-tall fence in commercial, industrial, and mixed-use zones except for HD, DMU, MUC, and MUR. The total height of the fence and barbed wire is limited to 8 feet. The variance application is to allow barbed wire on top of a seven-foot-tall fence in a residential zone.

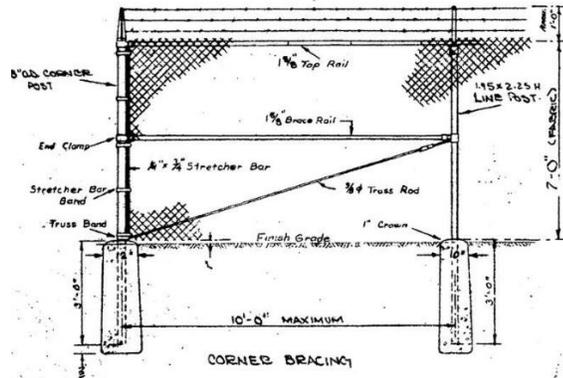
Criterion 1

The property has unique or peculiar physical circumstances or conditions such as, irregular shape, width, or depth; or exceptional natural or physical conditions such as topography, trees, native vegetation, wetlands, riparian areas, wildlife habitat, or drainage ways.

Findings of Fact

1.1 The application is for a Variance from ADC 9.380(1), which requires fences in front setbacks to be no taller than four feet in required front setbacks, and for a Variance from ADC 9.370(1), which only permits barbed wire in the commercial, industrial, and mixed use zones. An application for a variance from front yard landscaping is also included in this application; the variance criteria and findings for that request are included separately, later in this report.

- 1.2 The proposal is to install a new eight-foot tall perimeter chain-link fence with barbed wire on top within the required 15-foot front yard setback and on along the east side-yard of a residential zone. The new fence is proposed to be set back five feet from the front and east side yard property line. As illustrated below and shown on Attachment G, the proposed fence would include seven feet of chain-link fencing with one foot of barbed wire. A variance from fence height (ADC 9.380(1)) is required to allow the eight-foot tall fence, and a variance from ADC 9.370(1) is required to allow barbed wire in a residential zone.



- 1.3 The applicant states that the site has unique or peculiar physical circumstances or conditions such as, irregular shape, width, or depth for a number of reasons and these are described below:

With regard to the location of the fence, the applicant's narrative states: "The Ring Bus will be an essential component of the existing distribution equipment, which itself has been located close to the nearby BPA transmission substation. The ring bus is not a stand-alone substation that could be easily separated from the remaining equipment. To do so would likely involve purchasing a number of additional homes in the vicinity and construction of additional transmission infrastructure to connect the new site to the existing BPA substation, which itself would likely require condemnation of property and displacement of residents. Therefore, the Hearings Board can find that the Property is the only practicable location of the Project.

The existing configuration of the Property presents some unique challenges for the Project. The Property already hosts an existing substation, which equipment is placed south and west of the proposed expansion. The ring bus is a unified piece of electrical equipment that cannot be substantially reduced in size [as] a practical matter. Pursuant to PacifiCorp's construction standards, which are based on National Electric Safety Code (NESC standards) and PacifiCorp's own engineering best practice guidelines, minimum separations are required between the existing equipment and the new ring bus, and a vehicle access lane must be provided between them, as well.

We understand the main issue to be the need to place the fence close to the street and side lot lines. The primary reason that the fences need to be close to the property lines is to accommodate a vehicle travel lane between the proposed ring bus and the existing bus work located to the south and west, as well as between the new ring bus and the fence. In simple terms, the site plan must attempt to accommodate vehicle circulation between the existing substation equipment to the south and therefore, cannot be moved farther southward to accommodate a larger fence setback. Consequently, the fence, which is proposed with the minimum requirement for vehicle lane separation from energized substation equipment (24 feet), cannot be moved southward, either. The proposed fence is itself

subject to exclusion zones which prohibit permanent equipment and landscaping within certain distances.

As noted above, PacifiCorp's electrical separation standards require a minimum 24-foot separation between the ring bus and the fence because that area is needed for vehicle circulation (Attachment C). PacifiCorp does not treat this standard as optional and failure to meet it would lead to an unsafe substation design. An annotated site plan showing how these clearances manifest on the ground is included as Attachments H.7 & H.8. You will note that the vehicle circulation lane between the existing substation equipment and the ring bus is only 15.5 feet and cannot be safely reduced. Therefore, the size and shape of the property preclude a deeper fence setback than what is currently proposed."

- 1.4 With regard to the eight-foot tall security fencing with barbed wire, the applicant states that "the fence is necessary to prevent access to substation equipment. A fence suitably tall to prevent ingress to the substation is absolutely essential to safe and reliable electrical operation, as well as the safety of passersby and would-be trespassers. Prevention of such access is essential to ensure the security of the distribution system and prevent potential injury to those who might enter the site.

Use of barbed wire is a reasonable response to the periodic outbreaks of copper wire theft from substations that occur when the price of copper becomes sufficiently high. Examples of such theft are myriad and have been examined in detail by the Department of Energy (Attachment D).

It is essential that individuals are not able to access the substation for two reasons. First, any tampering with electrical equipment could compromise the integrity of the substation, leading to outages, damage to substation equipment, or fires. Second, such tampering is extremely dangerous to anyone engaging in it: copper thieves are routinely—and gruesomely—killed when trying to steal energized copper wire.

The Applicant must take every reasonable step, based on industry best practices, to ensure that energized electrical equipment is separated from abutting properties and rights of way by a secure fence, and that the fence cannot be easily scaled. Barbed wire is essential to ensure that the fence cannot be easily scaled and is a fundamental component of an adequate security strategy for electrical infrastructure."

- 1.5 Staff concurs with the applicant's findings. For the reasons stated above, staff finds that the site has unique physical circumstances and conditions to warrant the variance from ADC 9.380(1) and ADC 9.370(1).

Conclusions

- 1.1 The ring bus expansion must be located at the site of existing Hazelwood Substation; it is not possible to relocate the project to another site. The proposed security fence is essential for safe and reliable electrical operation of the facility, as well as the safety of passersby and would-be trespassers.
- 1.2 The existing property is limited in size and shape to accommodate the existing substation equipment along with the expansion for the ring bus; thus, to accommodate the new ring bus and meet minimum safety standards for access to the equipment, the eight-foot tall chain-link with barbed wire security fence must be located within five feet of the front and side property line, as shown on Attachments H.7 & H.8.
- 1.3 For the reasons stated above, staff concludes that the site has unique physical circumstances and conditions to warrant the variance from ADC 9.380(1) and ADC 9.370(1). This criterion is met.

Criterion 2

The proposal will be consistent with the purpose, overview, and description for the zone in which the property is located and with the purpose of the Significant Natural Resource Districts, if applicable; and

Findings of Fact

- 2.1 The proposed project is located in the RS-6.5 zone, which is “intended primarily for low- to moderate-density single-family development. The average minimum detached single-family lot size is 5,000 square feet (ADC 3.020(3)).” The Comprehensive Plan “Low Density Residential” designation “identifies areas predominantly suited or used for detached single-family development on lot sizes ranging from 5,000 to 10,000 square feet. Attached housing with smaller lot sizes is permitted in RS-5 and in planned or cluster developments in other zones.” The site is not located in any of the Significant Natural Resource Districts.
- 2.2 The applicant states: “PacifiCorp recognizes that single-family residential zones are not often conceptualized with utility facilities in mind or with consideration of the regulations specific to such facilities. PacifiCorp also presumes that the fencing standards were developed for single-family homes. However, the RS-6.5 zone conditionally allows substations and there is no essential characteristic of the RS-6.5 zone that is offended by an eight-foot fence height within a front yard setback for a substation. Substations are inherently different than single-family homes, and for safety and security reasons are not intended to be inviting to passersby. But they are necessary for the adequate and reliable provision of electrical power to Albany’s residents. And, this substation has been at this location for decades; therefore, it is fully integrated into the surrounding residential context. It is consistent with the purpose of the RS-6.5 zone because it provides services to dwellings within that zone.

Finally, the proposed fence provides an essential safety function by preventing damage to substation equipment and ensuring the safety of individuals by keeping them out of the substation. The Hearings Board should find that protecting the physical safety of RS-6.5 residents is also a priority for that zoning district, and is, on balance, more important than aesthetic priorities like front yard landscaping.”
- 2.3 Staff concurs with the applicant’s findings stated above.

Conclusions

- 2.1 The existing PacifiCorp substation has been operating at this location and residential zone since the 1950s. The RS-6.5 zoning district conditionally allows substations. Through this Conditional Use Review process, expansion of the existing substation may be allowed.
- 2.2 Preventing damage to substation equipment and ensuring the safety of individuals by keeping them out of the substation in this residential zone is an essential safety consideration for the proposed project.
- 2.3 For the reasons stated above, staff concludes that the proposal is consistent with the purpose, overview, and description for the zone in which the property is located. This criterion is met.

Criterion 3

If more than one variance is requested, the cumulative effect of the variances results in a project that is still consistent with the purpose, overview, and description of the zone; and

Findings of Fact

- 3.1 The existing PacifiCorp substation has been operating at this location and residential zone since the 1950s. The RS-6.5 zoning district conditionally allows substations. Through this Conditional Use Review process, expansion of the existing substation may be allowed.
- 3.2 The application include variance requests from a total of three standards: 1) installation of an eight-foot tall fence within the front yard setback (ADC 9.380(1)), 2) installing barbed wire on top of the fence in a residential zone (ADC 9.370(1)), and 3) for avoiding landscaping around the perimeter setbacks for the substation expansion areas (ADC 9.140(2)). The criteria for the variance from landscaping per ADC 9.140(2) is addressed later in this report.
- 3.3 The applicant states that “the variance requests relate to the same issue, which is the need to provide adequate and safe fencing around energized electrical equipment. As these variance requests are all related to front yard aesthetic requirements, which are not stated objectives of the RS-6.5 zone, there is no reason to believe that their cumulative effect will make the Application inconsistent with the purpose, overview, and description of that zone.”

Conclusions

- 3.1 Providing adequate and safe fencing around energized electrical equipment is an essential safety consideration for the proposed project and a priority for the RS-6.5 zoning district.
- 3.2 The cumulative effect of variances from the fence and landscape standards remains consistent with the RS-6.5 zone, because the fencing prevents damage to substation equipment and ensures the safety of individuals by keeping them out of the substation.
- 3.3 For the reasons stated above, staff concludes that the cumulative effect of the variances results in a project that is still consistent with the purpose, overview, and description of the zone. This criterion is met.

Criterion 4

The requested variance is the minimum necessary to address the peculiar or unusual conditions of the site; and

Findings of Fact

- 4.1 The applicant states: “As explained above, the site is not sufficiently large or adequately configured to allow PacifiCorp to meet the fence height limitation within front yard setbacks. The requested variance is the absolute minimum necessary to satisfy PacifiCorp separation and security standards.

Use of barbed wire is a reasonable response to the periodic outbreaks of copper wire theft from substations that occur when the price of copper becomes sufficiently high. Examples of such theft are myriad and have been examined in detail by the department of energy (Attachment D).

It is essential that individuals are not able to access the substation for two reasons. First, any tampering with electrical equipment could compromise the integrity of the substation, leading to outages, damage to substation equipment, or fires. Second, such tampering is extremely dangerous to anyone engaging in it: copper thieves are routinely—and gruesomely—killed when trying to steal energized copper wire.

The Applicant must take every reasonable step, based on industry best practices, to ensure that energized electrical equipment is separated from abutting properties and rights of way by a secure fence, and that the fence cannot be easily scaled. Barbed wire is essential to ensure that the fence cannot be easily scaled and is a fundamental component of an adequate security strategy for electrical infrastructure.

As explained above, the Property has limitations in its size and configuration, which makes necessary the placement of a fence meeting the Applicant's security needs within the required front and side-yard setbacks, which fence must reasonably include barbed wire. The requested variance is the absolute minimum necessary to allow the site to be used for the proposed substation expansion."

4.2 Staff concurs with the applicant's findings stated above.

Conclusion

4.1 The requested variance from ADC 9.380(1) and ADC 9.370(1) is the minimum necessary to address the peculiar or unusual conditions of the site. This criterion is met.

Criterion 5

Any impacts resulting from the variance are mitigated to the extent practical; or

Findings of Fact

5.1 The proposal includes multiple variance requests, all of which relate to security fencing and avoidance of landscaping. As proposed, an eight-foot tall chain-link fence with barbed wire on top, would be located within five feet of the front and side property line. Under variance criterion one above, the applicant has explained that the fence cannot be set back further from the property line due to a combination of factors such as the location of the existing facility, the minimum clearance standards necessary for the new ring-bus equipment, and the limited size of the site.

In addition, the applicant does not propose landscaping within the property's front setback because "a shallowly-buried copper grounding mesh is required underneath the entire substation area and five feet outside of the fence line. This grounding mesh is essential to prevent serious injury to persons who may touch the fence if the fence becomes energized due to a short circuit or other fault. Landscaping over the mesh is not an option because roots could damage or destroy the mesh, rendering it ineffective and creating a potentially hazardous condition within the substation and within five feet of the substation fence."

5.2 Given that the site is in a residential neighborhood and on property that is zoned for single-family residential use (RS-6.5), mitigation from the fence height, barbed wire materials and fence location would be appropriate. Screening and landscaped buffers would create a more compatible interface between the proposed security fencing and pedestrians along 17th Avenue, the abutting single-family dwelling, and the surrounding residential neighborhood.

5.3 Mitigation is typically employed through the use of setbacks, screening, and landscaping. These mitigation measures can be accomplished through the following measures:

Screening: Screening can be accomplished by installing a sight-obscuring fence or by using a slatted chain-link fencing rather than the open chain-link fencing as proposed by the applicant in Attachment G. This mitigation measure is included as a condition of approval.

Setbacks: The setback from 17th Avenue can be increased with curb-tight sidewalks. Conditional Use Review criterion three (ADC 2.250(3)), includes a condition of approval to construct of a public sidewalk along the site's frontage on 17th Avenue. Rather than designing a standard sidewalk with the park strip next to the curb, the setback from the security fence can be increased by installing the required sidewalk to the back of curb, and by locating the required park strip next to the site's front property line. A five-foot wide park strip next to the five-foot wide setback would effectively create a 10-foot wide setback between the proposed fence and the back of the sidewalk; a diagram of this design is presented in Attachment B. This mitigation measure is included as a condition of approval.

Landscaping: As described under Finding 5.1 above, the applicant states that the copper grounding mesh conflicts with landscaping (plant roots). As shown on Attachments H.5-H.9, landscaping was installed around the perimeter fence when the communication tower was installed under planning file CU-03-19; however, the applicant states that similar landscaping around the perimeter of the new fence cannot be installed because the copper grounding grid that is planned for the new area.

As described above, a five-foot wide park strip next to the five-foot wide front setback on 17th Avenue would effectively create a 10-foot wide setback between the proposed fence and the back of sidewalk. This 10-foot wide area could be landscaped with trees, shrubs, and ground cover, while respecting the copper grounding grid. This mitigation measure is included as a condition of approval.

Conclusions

- 5.1 As proposed, an eight-foot tall chain-link fence with barbed wire on top, would be located within five feet of the front and side property line. Screening and landscaped buffers would create a more compatible interface between the proposed security fencing and pedestrians along 17th Avenue, the abutting single-family dwelling, and the surrounding residential neighborhood.
- 5.2 The cumulative impacts resulting from the multiple variance requests can be mitigated by providing screening, setbacks, and landscaping. Screening can be accomplished with a sight-obscuring fence or slatted chain link fencing. The setback between the fence and back of sidewalk can be increased with a curb-tight sidewalk design, and this area is wide enough to be landscaped while avoiding conflicts with the wire grounding grid.
- 5.3 Impacts resulting from the variances can be mitigated with the following conditions.

Conditions

- | | |
|-------------|--|
| Condition 3 | The new fence shall provide screening with sight-obscuring fencing, such as slatted chain-link fencing. The total height of the fence shall be no higher than eight feet per code standards. Prior to issuance of a building permit, a detail of the fencing materials shall be submitted for review and approval by the Community Development Department. |
| Condition 4 | As required under Condition 1.c, the new sidewalk shall be designed with a curb-tight sidewalk and park strip next to the site's front property line. Prior to issuance of an encroachment permit, a detail of the sidewalk with front setback shall be submitted for review and approval by the Community Development Department and the Public Works Engineering Department. |
| Condition 5 | Landscaping shall be installed in the area between the new fence and the back of sidewalk along 17 th Avenue. The landscape materials shall meet the buffering standards of ADC 9.240. |

- a. The required landscaping must be provided with a piped underground water supply irrigation system unless a licensed landscape architect or certified nurseryman submits written verification that the proposed plant materials do not require irrigation
- b. Prior to issuance of an encroachment permit, a landscape and irrigation plan shall be submitted for review and approval by the Community Development Department.
- c. Prior to final approval of the encroachment permit, all landscaping and irrigation must be installed in accordance with the approved plan.

Condition 6 The property owner must maintain the required landscaped areas in an attractive manner free of weeds and noxious vegetation. The minimum amount of required living landscape materials must be maintained.

Criterion 6

Application of the regulation in question would preclude all reasonable economic use of the site.

Findings of Fact

- 6.1 The applicant states: “Application of the fence setback regulation and prohibition on the use of barbed wire would prevent adequate security measures for the substation and therefore likely prevent construction of the ring bus at this location. The inability to construct the ring bus would jeopardize electrical reliability in the neighborhood and surrounding area. While this is not solely an economic impact, it could have widespread public safety and service impacts on the neighborhood, City, and region.”
- 6.2 Staff concurs applicant’s findings above and notes that lack of electrical reliability would have significant economic impacts on the neighborhood, City, and region.

Conclusions

- 6.1 Application of the fence setback regulation and prohibition on the use of barbed wire would preclude all reasonable economic use of the site and prevent construction of the ring bus at this site.
- 6.2 This criterion is met.

VARIANCE REVIEW CRITERIA (ADC 2.690)

Variance from ADC 9.140(2), which requires non-residential land uses to install landscaping in all required front and interior setbacks (exclusive of accessways and other permitted intrusions) before an occupancy permit will be issued. The variance would allow the applicant to avoiding installation of landscaping around the perimeter setbacks for the new expansion areas of the substation.

Criterion 1

The property has unique or peculiar physical circumstances or conditions such as, irregular shape, width, or depth; or exceptional natural or physical conditions such as topography, trees, native vegetation, wetlands, riparian areas, wildlife habitat, or drainage ways.

Findings of Fact

- 1.1 The request is a variance from the requirement to install landscaping in the front and interior setbacks around the new substation expansion areas per ADC 9.140(2).

- 1.2 The applicant's narrative states: "the Application does not propose any landscaping within the property's front setback because a shallowly-buried copper grounding mesh is required underneath the entire substation area and five feet outside of the fence line. This grounding mesh is essential to prevent serious injury to persons who may touch the fence if the fence becomes energized due to a short circuit or other fault. Landscaping over the mesh is not an option because roots could damage or destroy the mesh, rendering it ineffective and creating a potentially hazardous condition within the substation and within five feet of the substation fence.

PacifiCorp incorporates herein its response to this criterion in the fence setback variance request above. The variance is necessary because the site's configuration and existing electrical infrastructure prevent the ring bus from being set back farther from the property line, thereby requiring the grounding mesh to extend into the required front yard setback. As explained above, the site's configuration is directly driven by required clearance zones between circulation areas and energized electrical equipment (Attachments C, H.7 & H.8)."

- 1.3 The findings under variance criterion 1 (above), for the fencing also address the unique physical circumstances and conditions of the site and project. Those findings are included here by reference.

Conclusions

- 1.1 Due to the unique constraints of the property, and the need for security fencing in combination with the grounding grid, there is little room to provide landscaping in the setbacks.
- 1.2 For the reasons stated above, staff concludes that the site has unique physical circumstances and conditions to warrant the variance from ADC 9.140(2). This criterion is met.

Criterion 2

The proposal will be consistent with the purpose, overview, and description for the zone in which the property is located, and with the purpose of the Significant Natural Resource Districts, if applicable; and

Findings of Fact

- 2.1 The proposed project is located in the RS-6.5 zone, which is "intended primarily for low- to moderate-density single-family development. The average minimum detached single-family lot size is 6,500 square feet (ADC 3.020(3))." The Comprehensive Plan "Low Density Residential" designation "identifies areas predominantly suited or used for detached single-family development on lot sizes ranging from 5,000 to 10,000 square feet. Attached housing with smaller lot sizes is permitted in RS-5 and in planned or cluster developments in other zones." The site is not located in any of the Significant Natural Resource Districts.
- 2.2 The RS-6.5 zoning district conditionally allows substations. The existing PacifiCorp substation has been operating at this location and residential zone since the 1950s. Through this Conditional Use Review process, expansion of the existing substation may be allowed.
- 2.3 The applicant's narrative states: "PacifiCorp incorporates herein its response to this criterion as stated in the fence setback variance request above. In summary, the Hearings Board can find that this criterion is not applicable because there is nothing in the RS-6.5 purpose statement or zone description that emphasizes or requires particular front landscaping standards. While front yard landscaping may be aesthetically desirable in these zones, the ADC does not designate it as something that serves to protect

residential properties from conflicting uses. In this instance, the front yard of the substation will be buffered from properties by an existing road.

In the alternative, the Hearings Board can find that this criterion is met for the following reasons:

PacifiCorp recognizes that single-family residential zones are not often conceptualized with utility facilities in mind or with consideration of the regulations specific to such facilities. PacifiCorp also presumes that the landscaping standards were developed for single-family homes.

However, the RS-6.5 zone conditionally allows substations and there is no essential characteristic of the RS-6.5 zone that is offended by the lack of front yard landscaping for a substation. Substations are inherently different than single-family homes, and for safety and security reasons are not intended to be inviting to passersby. But they are necessary for the adequate and reliable provision of electrical power to Albany's residents. And, this substation has been at this location for decades; therefore, it is fully integrated into the surrounding residential context. It is consistent with the purpose of the RS-6.5 zone because it provides services to dwellings within that zone.

Finally, the tension between the proposed front yard design and the ADC's landscaping requirement is caused by a safety issue (i.e. the need to protect those who might touch the fence from electrocution). The Hearings Board should find that protecting the physical safety of RS- 6.5 residents is also a priority for that zoning district, and is, on balance, more important than aesthetic priorities like front yard landscaping.”

Conclusions

- 2.1 Preventing damage to substation equipment and ensuring the safety of individuals by keeping them out of the substation in this residential zone is an essential safety consideration for the proposed project. The need for security fencing in combination with the grounding grid, there is little room to provide landscaping in the setbacks.
- 2.2 For the reasons stated above, staff concludes that the proposal is consistent with the purpose, overview, and description for the zone in which the property is located. This criterion is met.

Criterion 3

If more than one variance is requested, the cumulative effect of the variances results in a project that is still consistent with the purpose, overview, and description of the zone; and

Findings of Fact

- 3.1 The existing PacifiCorp substation has been operating at this location and residential zone since the 1950s. The RS-6.5 zoning district conditionally allows substations. Through this Conditional Use Review process, expansion of the existing substation may be allowed.
- 3.2 The application include variance requests from a total of three standards: 1) installation of an eight-foot tall fence within the front yard setback (ADC 9.380(1)), 2) installing barbed wire on top of the fence in a residential zone (ADC 9.370(1)), and 3) for avoiding landscaping around the perimeter setbacks for the substation expansion areas (ADC 9.140(2)).
- 3.3 The applicant states that the “variance requests relate to the same issue addressed in this variance request: the need to provide adequate and safe fencing around energized electrical equipment. As these variance requests are related to front yard aesthetic requirements, which are not stated objectives of

the RS-6.5 zone, there is no reason to believe that their cumulative effect will make the Application inconsistent with the purpose, overview, and description of that zone.”

Conclusions

- 3.1 Providing adequate and safe fencing around energized electrical equipment is an essential safety consideration for the proposed project and a priority for the RS-6.5 zoning district.
- 3.2 The cumulative effect of variances from the fence and landscape standards remains consistent with the RS-5 zone because the fencing prevents damage to substation equipment and ensures the safety of individuals by keeping them out of the substation.
- 3.3 For the reasons stated above, staff concludes that the cumulative effect of the variances results in a project that is still consistent with the purpose, overview, and description of the zone. This criterion is met.

Criterion 4

The requested variance is the minimum necessary to address the peculiar or unusual conditions of the site; and

Findings of Fact

- 4.1 The applicant states: “As explained above, the site is not sufficiently large or adequately configured to allow PacifiCorp to meet the front yard landscaping requirements. The requested variance is the absolute minimum necessary to satisfy PacifiCorp separation and security standards.”

Conclusions

- 4.1 The requested variance from ADC 9.140(2) is the minimum necessary to address the peculiar or unusual conditions of the site. This criterion is met.
- 4.2 This criterion is met without conditions.

Criterion 5

Any impacts resulting from the variance are mitigated to the extent practical; or

Findings of Fact

- 5.1 There is no evidence that relaxing the front yard landscaping requirement for this project will have an adverse impact on surrounding properties or neighborhood livability. And, on balance, any aesthetic impacts are substantially outweighed by the need to ensure the physical safety of passersby and PacifiCorp employees.
- 5.2 The findings under variance criterion 5 (above), address how the impacts resulting from the variance can be mitigated. Those findings are included here by reference.

Conclusions

- 5.1 The cumulative impacts resulting from the multiple variance requests can be mitigated by providing screening, setbacks, and landscaping. Screening can be accomplished with a sight-obscuring fence or slatted chain link fencing. The setback between the fence and back of sidewalk can be increased with

a curb-tight sidewalk design, and this area is wide enough to be landscaped while avoiding conflicts with the wire grounding grid.

- 5.2 Impacts resulting from the variance can be mitigated with the conditions included under variance criterion 5 (above). Those conditions are included here by reference. This criterion is met.

Criterion 6

Application of the regulation in question would preclude all reasonable economic use of the site.

Findings of Fact

- 6.1 The applicant states: “Application of the front yard landscaping requirements would preclude construction of the ring bus, which would jeopardize electrical reliability in the neighborhood and surrounding area. While this is not solely an economic impact, it could have widespread public safety and service impacts on the neighborhood, City, and region.”
- 6.2 Under variance criterion 5 above, the findings show how the setback between the fence and back of sidewalk can be increased with a curb-tight sidewalk design, and this area is wide enough to be landscaped while avoiding conflicts with the wire grounding grid.

Conclusions

- 6.1 Strict application of the landscape standards would preclude construction of the project; however, the conditions included under variance criterion 5 (above) allow for landscaping between the front yard fence and the back of sidewalk. Those conditions are included here by reference.
- 6.2 This criterion is met.

Overall Conclusion

As proposed and conditioned, the application for Conditional Use Review to expand the existing Hazelwood Substation, with Tentative Replat Review, Tree Felling and Variances satisfy all applicable review criteria as outlined in this report.

Conditions of Approval

Transportation

- Condition 1 Prior to beginning construction activity on the proposed substation expansion, the applicant shall construct or financially assure construction of the following:
- a. Removal of all unused curb cuts along the site’s frontage on 17th Avenue and replacement with curb and gutter to City standards.
 - b. The construction of 20 feet of pavement at all driveways into the site from Queen Avenue and 17th Avenue.
 - c. The construction of public sidewalk to City standards along the site’s frontage on 17th Avenue.

Utilities

- Condition 2 Before a final approval of the encroachment permit will be granted for the project, the applicant must complete the stormwater collection and detention facilities and obtain final approval of the facilities by the Public Works Department.

Variance Mitigation Measures

- Condition 3 The new fence shall provide screening with sight-obscuring fencing, such as slatted chain-link fencing. The total height of the fence shall be no higher than eight feet per code standards. Prior to issuance of a building permit, a detail of the fencing materials shall be submitted for review and approval by the Community Development Department.
- Condition 4 As required under Condition 1.c, the new sidewalk shall be designed with a curb-tight sidewalk and park strip next to the site's front property line. Prior to issuance of an encroachment permit, a detail of the sidewalk with front setback shall be submitted for review and approval by the Community Development Department and the Public Works Engineering Department.
- Condition 5 Landscaping shall be installed in the area between the new fence and the back of sidewalk along 17th Avenue. The landscape materials shall meet the buffering standards of ADC 9.240.
- The required landscaping must be provided with a piped underground water supply irrigation system unless a licensed landscape architect or certified nurseryman submits written verification that the proposed plant materials do not require irrigation.
 - Prior to issuance of an encroachment permit, a landscape and irrigation plan shall be submitted for review and approval by the Community Development Department.
 - Prior to final approval of the encroachment permit, all landscaping and irrigation must be installed in accordance with the approved plan.
- Condition 6 The property owner must maintain the required landscaped areas in an attractive manner free of weeds and noxious vegetation. The minimum amount of required living landscape materials must be maintained.

Options for the Hearings Board

The Hearings Board has three options with respect to the proposed development:

- Option 1: Approve the request as proposed and conditioned; or
- Option 2: Approve the request with amendments; or
- Option 3: Deny the request.

Staff Recommendation

Based on the analysis provided in this report, staff recommends the Hearings Board pursue Option 1 and approve the proposed expansion of the Hazelwood Substation.

If the Hearing Board follows this recommendation, the following motion is suggested:

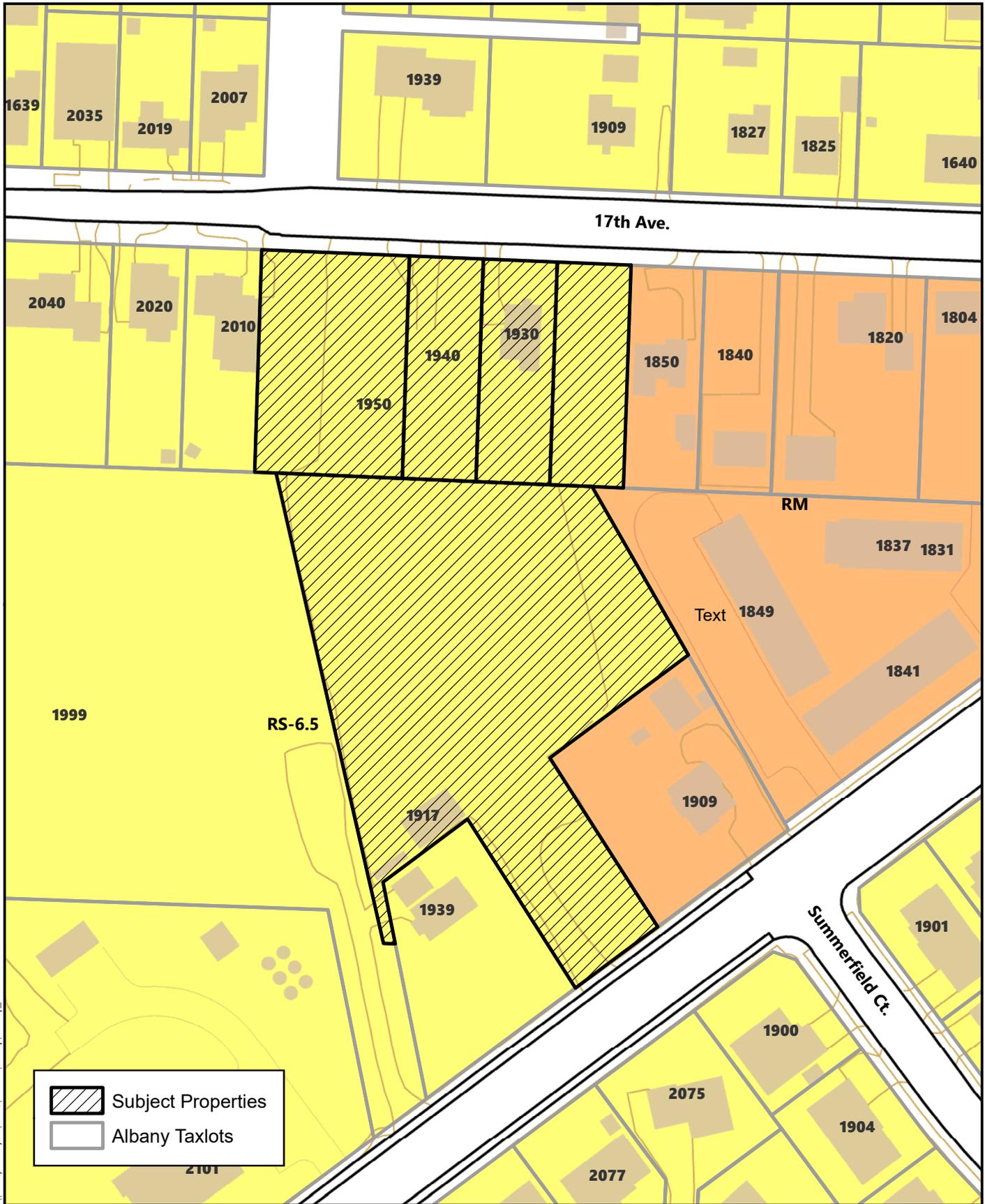
I move to approve the proposed expansion of the Hazelwood Substation as conditioned under planning files CU-03-19, RL-01-20, SP-09-20 & VR-01-20. This motion is based on the findings and conclusions in the staff report, and the findings in support of the application made by the Hearings Board during deliberations on this matter.

Attachments

- A. Location / Zoning Map
- B. Illustration of Curb-Tight Sidewalk Design

Applicant's Submittal:

- C. Applicant's Finding Narrative
- D. PacifiCorp Separation Requirements
- E. Copper Theft Study
- F. Tree Removal Plan & Photos of Trees
- G. Fence Details
- H. Civil Plan Set
 - H.1 Existing Conditions Plan w/Aerial
 - H.2 Existing Conditions Plan
 - H.3 Replat Plan w/Aerial
 - H.4 Replat Plan
 - H.5 Site Plan w/Aerial
 - H.6 Site Plan
 - H.7 Variance Plan w/Aerial
 - H.8 Variance Plan
 - H.9 Stormwater Management Plan



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012.525 50 Feet

Date: 12/6/2019 Map Source: City of Albany

1950 17th Avenue SW Properties

Site Area Vicinity Map



Proposed Substation Expansion

BEFORE THE HEARINGS BOARD OF THE CITY OF ALBANY, OREGON

In the matter of applications for a Conditional Use Permit, a Replat, three Variances, and a Tree Felling Permit by PacifiCorp, for property located at 1940 and 1950 17th Avenue SW.

APPLICANT’S NARRATIVE IN SUPPORT OF THE APPLICATION

[REVISED]

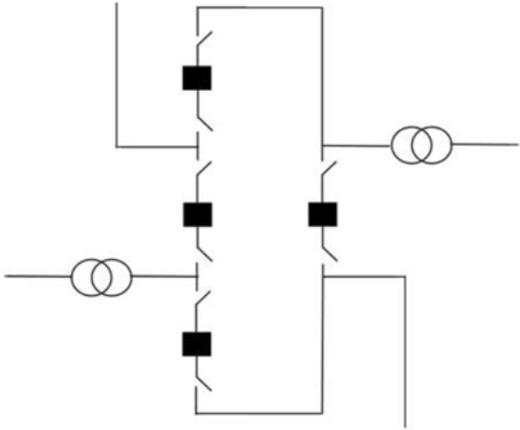
1. INTRODUCTION AND OVERVIEW

PacifiCorp (*dba* Pacific Power) (the “Applicant”) requests approval of six concurrent land use applications: a Conditional Use Permit, three Variances, a Replat, and a Tree Felling Permit (together, the “Application”).

a. Project Proposal

The proposed development (the “Project”) is for construction of a new 115 kilovolt (kV) ring bus at the Hazelwood Substation, which distributes power from a 115,000 volt transmission line to the immediate neighborhood and surrounding area.¹ In the ring bus configuration, as the name implies, circuit breakers are connected to form a ring, with isolators on both sides of each breaker. Circuits terminate between the breakers and each circuit is fed from both sides.²

Figure 1. Simplified Ring Bus Configuration



The Project requires demolition of an existing residential dwelling, removal of 13 regulated trees, and grading as required to prepare the site for new substation equipment. Substation equipment consists mainly of open air "bus" work, which is conductive metal piping that carries the electricity from the transmission system through the electrical equipment (transformers, breakers, etc.) and lets it flow out onto the distribution system which brings power to the local community. Three new electrical breakers are also going to be installed.

This project is necessary to increase reliability for customers and address identified transmission planning deficiencies. The existing substation’s 115 kV configuration could potentially lose 34,250 customers due to a single failure. In addition, Bonneville Power Administration’s Albany to Hazelwood and Hazelwood to Fry 115 kV transmission lines can overload well above the

¹ The Hazelwood Substation serves, among other things, as a “distribution substation.” These facilities step power from transmissions lines (usually 115 kV or higher) down to retail voltages that can be sent to residential load transformers and, ultimately, retail end-user connections.

² See <https://testguy.net/content/256-electrical-substation-bus-schemes-explained>.

summer and winter emergency ratings due to various North American Electric Reliability Corporation (NERC) planning category contingency events (i.e. transformer failure).

The Project will mitigate four planning requirements for an outage on the transformers at the associated Fry Substation, line outage combinations between Pacific Power and Bonneville Power Administration, and will reduce load loss exposure in summer and winter from the other potential grid system issues.

b. Property Description

The subject property (the “Property”) is addressed as 1940 and 1950 17th Ave SW. It consists of three tax lots: 114W12CB 7500, 7400, 7401, and 7300 (respectively, tax lots “7500”, “7400/01,” and “7300”), and 114W13BA 400 (tax lot “400”). **Exhibits 1 and 2.** Tax lot 400 consists of approximately 1.42 acres (approx. 61,860 sq. ft.), tax lot 7500 consists of approximately 15,000 sq. ft., and tax lots 7400, 7401, and 7300 each consist of approximately 7500 sq. ft. An aerial photo of the Property is provided below:

Figure 2 – Subject Property



Tax lots 400 and 7500 are developed with existing substation equipment. Tax lots 7400/01 and 7300 are developed with a vacant single-family home. A small grove of trees is located behind the existing dwelling. The remainder of the Property is undeveloped.

The entirety of the Property is zoned RS-6.5 (Residential Single Family, 6-8 units per acre). Lots directly west of the Property are also zoned RS-6.5. Hazelwood Park is located west of tax lot 400. Lots directly east of the Property are zoned RMA (Residential Medium Density, Attached). There are no natural resource hazards or Significant Natural Resource Overlay Zones identified on the Property.

c. Procedural History

The Application was submitted on December 4, 2019. Planning staff deemed the Application incomplete on December 31, 2019, requesting a number of additional applications, maps, plans, and findings regarding applicable criteria. The Applicant responded to the incompleteness items with a revised submittal on March 19. On April 7, Planning staff issued a new incompleteness determination identifying new issues. This revised Application wholly replaces the prior application and is expanded to address the new issues identified in staff's April 7, 2020 incompleteness determination.

2. APPLICATION PROCEDURE

Under the "Schedule of Permitted Uses" set forth in ADC 3.050, a Conditional Use for a "basic utility" use in the RS-6.5 zone is a Type III Application, requiring a public hearing before the Hearings Board. The other applications, including the proposed variances, are Type II or Type I. However, pursuant to ADC 1.200(3) "concurrent applications [...] shall be processed simultaneously with the highest numbered procedure specified." Therefore, the Application should be placed before the Hearings Board and responses to the applicable criteria shall be addressed to the Hearings Board.

3. APPLICANT'S RESPONSES TO APPLICABLE CRITERIA

The applicable criteria for each land use permit are addressed below.

a. CONDITIONAL USE PERMIT APPLICATION

The Project is for a "basic utility" use in the RS-6.5 zone. Pursuant to ADC 22.180, relevant use definitions are as follows:

"(1) Basic Utilities uses provide community infrastructure, including water and sewer systems, telephone exchanges, **power substations** and transit. Utility uses generally do not have regular employees at the site. Services may be public or privately provided.

(2) Use Examples. Types of uses include, but are not limited to: water and sewer pump stations; sewage disposal and conveyance systems; **electrical substations**; water towers and reservoirs; water quality and flow control facilities; water conveyance systems; stormwater facilities and conveyance systems; telephone exchanges; mass transit stops, transit centers, park-and-ride facilities for mass transit; and emergency communication broadcast facilities."

"Basic utilities" are considered conditional uses in all residential zones. ADC 3.050. The following criteria apply to conditional uses in the RS-6.5 zone.

(1) The proposed use is consistent with the intended character of the base zone and the operating characteristics of the neighborhood.

RESPONSE: The RS-6.5 District is intended primarily for low-density urban single-family residential development. ADC 3.020. Substations are specifically identified as a “basic utility” allowed in residential zones. The existing substation has been a part of the existing neighborhood for several decades.

Although the proposal is not for a single-family home, utility facilities such as distribution substations are necessary to provide power and other services to single-family homes. The proposed ring bus is, in fact, necessary to ensure reliable power distribution to the immediate neighborhood and larger vicinity. The proposal would expand an existing substation instead of construct a new one, which will minimize the impact on the existing neighborhood. The proposed ring bus does not produce any noise and will generate no new traffic.

For the above reasons, the Hearings Board can find that this criterion is met.

(2) The proposed use will be compatible with existing or anticipated uses in terms of size, building scale and style, intensity, setbacks, and landscaping or the proposal mitigates difference in appearance or scale through such means as setbacks, screening, landscaping or other design features.

RESPONSE: The proposed ring bus is a piece of electrical equipment; therefore, considerations of building size or intensity are irrelevant. There is no screening requirement applicable to utility facilities. The proposed fence is subject to a variance application addressed later in the Application.

For the above reasons, the Hearings Board can find that this criterion is met.

(3) The transportation system can support the proposed use in addition to the existing uses in the area. Evaluation factors include street capacity and level of service, on-street parking impacts, access requirements, neighborhood impacts and pedestrian safety.

RESPONSE: The Project will not increase impacts on the transportation system because the substation is unmanned. The Hearings Board can find that this criterion is met.

(4) Public services for water, sanitary and storm sewer, water management, and for fire and police protection, can serve the proposed use.

RESPONSE: The Project will not increase demand for public services, or for water or sanitary services because it is unmanned.

The Project will have little or no impact on the City’s stormwater services. The entire area beneath the proposed ring bus will consist of a rainwater detention system. The following excerpt from the Stormwater Management Plan (**Exhibit 3**) explains how the Project will prevent any stormwater discharge to surrounding properties, including the public storm drainage system:

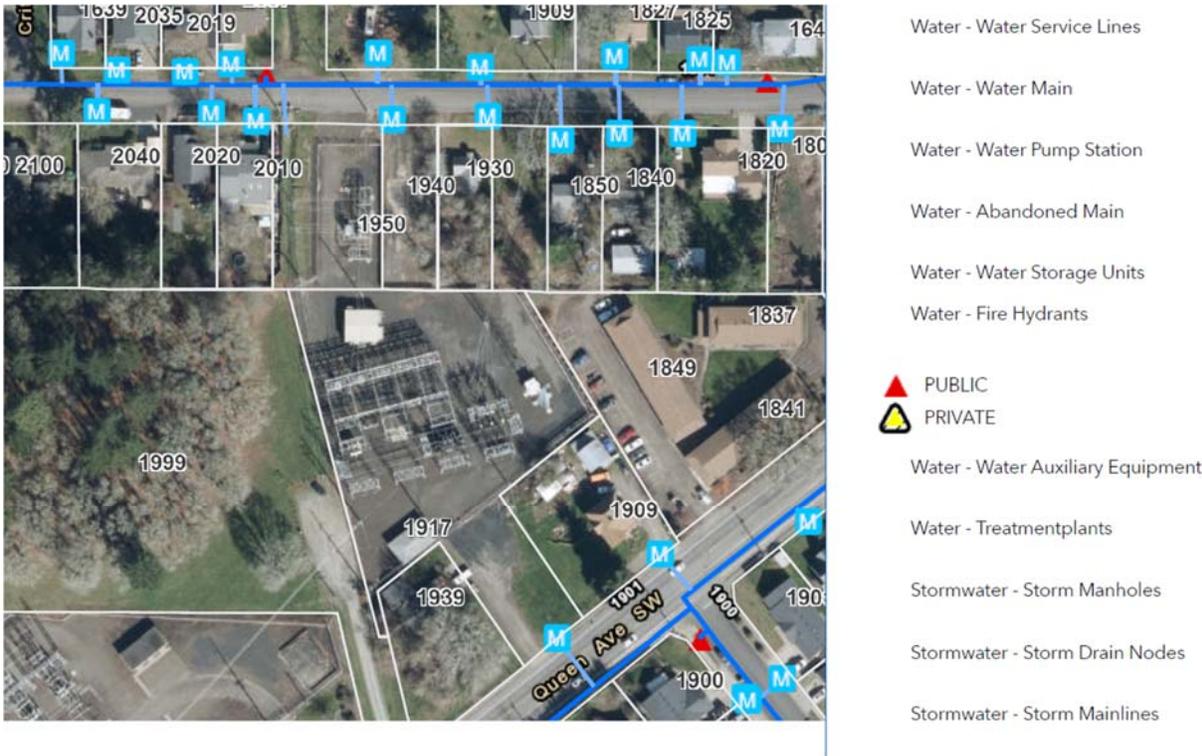
“The runoff from all gravel road surfaces will sheet flow into a 4” deep yard rock area, which contains washed rock much like drain rock and has 40% voids. The yard rock is 4” in depth and will have voids long term for touch potential of

nearby equipment. The native soil under the yard rock consists of granular material that has an infiltration rate of 0.28 inches per hour. All surfaces that are not covered with finish rock (road and yard rock) will be native ground. [...] Our hydrology report demonstrates that the yard rock areas will infiltrate all the runoff from the gravel road areas during a 25-year, 24-hour storm even, without any discharge, and the areas that are to remain native ground will absorb all precipitation that falls on those areas similar to predevelopment conditions. There will be essentially no stormwater runoff discharged from the site after construction.”

The stormwater plan demonstrates that any sheet flow on the site will be directed to a vegetated stormwater swale along the west side of the Property. An overflow intake is present within the swale to discharge water into the public stormwater system during extreme rainfall events.

Fire protection service is provided by the Albany Fire Department. According to Google Earth, Station 12 is located less than two miles away. A fire hydrant is located directly in front of the Property as demonstrated by the following utility map:

Figure 3 - Water Assets



The ring bus is not flammable and no new oil-cooled transformers are proposed. Therefore, the Hearings Board can find that the Project has ample water and fire service available to it, and will have a negligible impact on the City’s ability to continue to provide those services.

Public safety services are provided by the City of Albany Police department. As the substation is unmanned and protected by security fencing, there is no reason to believe that it will reduce the

City's ability to provide public safety services.

For the above reasons, the Hearings Board can find that this criterion is met.

(5) The proposal will not have significant adverse impacts on the livability of nearby residentially zoned lands due to:

(a) Noise, glare, odor, litter, or hours of operation.

RESPONSE: Unlike a transformer, a ring bus produces no noise that can be heard from outside of the substation boundaries. The substation emits no objectionable odor because it does not produce waste or other organics. The substation produces no litter because it is unmanned. The hours of operation are continuous; however, because it is unmanned, such hours do not affect surrounding properties.

The substation is lit to ensure safety and security for the equipment and PacifiCorp employees. PacifiCorp uses "dark skies" lighting at its substations which fixtures are specifically designed to prevent light emissions from spilling onto surrounding properties. For the above reasons, the Hearings Board can find that the Project is consistent with this factor.

(b) Privacy and safety issues.

RESPONSE: As the substation is unmanned, there will be no ongoing presence of humans that could pose a privacy or safety issue to surrounding residents. PacifiCorp takes reasonable precautions to prevent access to the site, which principally consists of a metal chain-link fence and locked gates.

For the above reasons, the Hearings Board can find that the Project is consistent with this factor.

(6) Activities and developments within special purpose districts must comply with the regulations described in Articles 4 (Airport Approach), 6 (Natural Resources), and 7 (Historic), as applicable.

RESPONSE: The above articles do not apply to the Project because the Property is not within an airport approach zone, is not subject to identified natural resource values, and is not a historic resource or within a historic district.

b. VARIANCE APPLICATION – FENCE SETBACK

Fences within front setbacks are required to be no taller than four feet. ADC 9.380(1). The Project includes a new eight-foot tall perimeter chain-link fence, the details for which are enclosed as **Exhibit 4**. The fence is proposed to be set back five feet from the front and side yard property lines. Therefore, a fence height variance from ADC 9.380(1) is required to allow these setbacks.

This fence is necessary to prevent access to substation equipment. A fence suitably tall to prevent ingress to the substation is absolutely essential to safe and reliable electrical operation, as well as the safety of passersby and would-be trespassers.³ Prevention of such access is essential to ensure the security of the distribution system and prevent potential injury to those who might enter the site.

The variance criteria are below, followed by an explanation of how they are met.

(1) The property has unique or peculiar physical circumstances or conditions such as, irregular shape, width or depth; or exceptional natural or physical conditions such as topography, trees, native vegetation, wetlands, riparian areas, wildlife habitat, or drainage ways.

RESPONSE: The Hearings Board can find that the Property “has unique or peculiar physical circumstances or conditions such as, irregular shape, width or depth” for a number of reasons, which are explained below.

As an initial matter, the Hearings Board is advised that the ring bus expansion must be located at this existing substation for the reasons explained in the introduction. The Ring Bus will be an essential component of the existing distribution equipment, which itself has been located close to the nearby BPA transmission substation. The ring bus is not a stand-alone substation that could be easily separated from the remaining equipment. To do so would likely involve purchasing a number of additional homes in the vicinity and construction of additional transmission infrastructure to connect the new site to the existing BPA substation, which itself would likely require condemnation of property and displacement of residents. Therefore, the Hearings Board can find that the Property is the only practicable location of the Project.

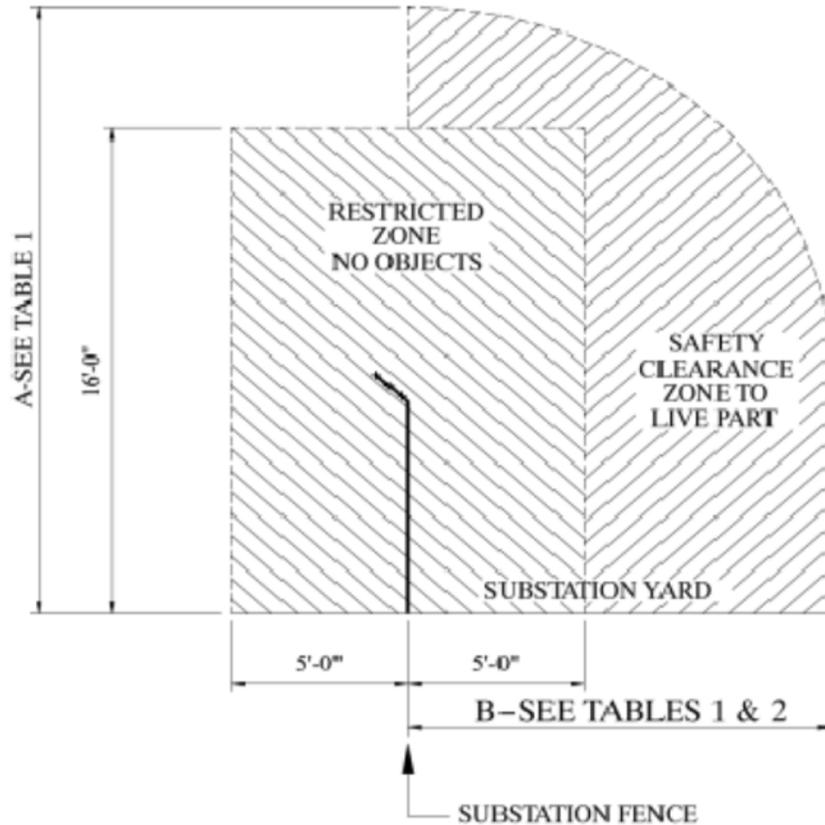
The existing configuration of the Property presents some unique challenges for the Project. The Property already hosts an existing substation, which equipment is placed south and west of the proposed expansion. The ring bus is a unified piece of electrical equipment that cannot be substantially reduced in size a practical matter. Pursuant to PacifiCorp’s construction standards, which are based on National Electric Safety Code (NESC standards) and PacifiCorp’s own engineering best practice guidelines, minimum separations are required between the existing equipment and the new ring bus, and a vehicle access lane must be provided between them, as well.

We understand the main issue to be the need to place the fence close to the street and side lot lines. The primary reason that the fences need to be close to the property lines is to accommodate a vehicle travel lane between the proposed ring bus and the existing bus work located to the south and west, as well as between the new ring bus and the fence. In simple terms, the site plan must attempt to accommodate vehicle circulation between the existing substation equipment to the south and therefore, cannot be moved farther southward to accommodate a larger fence setbacks. Consequently, the fence, which is proposed with the

³ Examples of substation copper theft have been very common over the last 15 years. The following article by the Columbia River PUD summarizes the issue. <https://www.crpud.net/stay-safe/metal-theft-is-dangerous-and-costly/>. For a specific example, see the following Oregonian report regarding a substation break-in in Forest Grove: https://www.oregonlive.com/washingtoncounty/2011/09/copper_thieves_hit_bonneville.html.

minimum requirement for vehicle lane separation from energized substation equipment (24 feet), cannot be moved southward, either.

The proposed fence is itself subject to exclusion zones which prohibit permanent equipment and landscaping within certain distances. A graphic of these zones is shown below:



As noted above, PacifiCorp’s electrical separation standards require a minimum 24-foot separation between the ring bus and the fence because that area is needed for vehicle circulation. **Exhibit 5.** PacifiCorp does not treat this standard as optional and failure to meet it would lead to an unsafe substation design. An annotated site plan showing how these clearances manifest on the ground is included as **Exhibit 6.** You will note that the vehicle circulation lane between the existing substation equipment and the ring bus is only 15.5 feet and cannot be safely reduced. Therefore, the size and shape of the property preclude a deeper fence setback than what is currently proposed.

For these reasons, the Hearings Board can find that this criterion is met.

(2) The proposal will be consistent with the purpose, overview, and description for the zone in which the property is located, and with the purpose of the Significant Natural Resource Districts, if applicable; and

RESPONSE: The RS-6.5 District is intended primarily for low-density urban single-family residential development. The average minimum lot size is 6,500 square feet. The

Comprehensive Plan “Low Density Residential” designation “identifies areas predominantly suited or used for detached single-family development on lot sizes ranging from 5,000 to 10,000 square feet. Attached housing with smaller lot sizes is permitted in RS-5 and in planned or cluster developments in other zones.”

There is nothing in the above purpose statement or zone description that emphasizes particular requirements for fence setbacks. For this reason, the Hearings Board can find this criterion does not apply.

In the alternative, the Hearings Board can find that this criterion is met for the following reasons:

PacifiCorp recognizes that single-family residential zones are not often conceptualized with utility facilities in mind or with consideration of the regulations specific to such facilities. PacifiCorp also presumes that the fencing standards were developed for single-family homes.

However, the RS-6.5 zone conditionally allows substations and there is no essential characteristic of the RS-6.5 zone that is offended by an eight-foot fence height within a front yard setback for a substation. Substations are inherently different than single-family homes, and for safety and security reasons are not intended to be inviting to passersby. But they are necessary for the adequate and reliable provision of electrical power to Albany’s residents. And, this substation has been at this location for decades; therefore, it is fully integrated into the surrounding residential context. It is consistent with the purpose of the RS-6.5 zone because it provides services to dwellings within that zone.

Finally, the proposed fence provides an essential safety function by preventing damage to substation equipment and ensuring the safety of individuals by keeping them out of the substation. The Hearings Board should find that protecting the physical safety of RS-6.5 residents is also a priority for that zoning district, and is, on balance, more important than aesthetic priorities like front yard landscaping.

(3) If more than one variance is requested, the cumulative effect of the variances results in a project that is still consistent with the purpose, overview and description of the zone; and

RESPONSE: Two additional variances are requested below: a variance to the prohibition on barbed wire in ADC 9.370 and a variance to required setback landscaping in ADC 9.140(1). Those variance requests relate to the same issue addressed in this variance request: the need to provide adequate and safe fencing around energized electrical equipment. As these variance requests are all related to front yard aesthetic requirements, which are not stated objectives of the RS-6.5 zone, there is no reason to believe that their cumulative effect will make the Application inconsistent with the purpose, overview, and description of that zone.

For this reason, Hearings Board can find that this criterion is met.

(4) The requested variance is the minimum necessary to address the peculiar or unusual conditions of the site; and

RESPONSE: As explained above, the site is not sufficiently large or adequately configured to allow PacifiCorp to meet the fence height limitation within front yard setbacks. The requested

variance is the absolute minimum necessary to satisfy PacifiCorp separation and security standards.

For the above reasons, the Hearings Board can find that this criterion is met.

(5) Any impacts resulting from the variance are mitigated to the extent practical; or

RESPONSE: There is no evidence that allowing the reduced front-yard fence setback will have an adverse impact on surrounding properties or neighborhood livability. The Hearings Board can find that no mitigation is required.

(6) Application of the regulation in question would preclude all reasonable economic use of the site.

RESPONSE: Application of the fence setback regulation would preclude construction of the ring bus, which would jeopardize electrical reliability in the neighborhood and surrounding area. While this is not solely an economic impact, it could have widespread public safety and service impacts on the neighborhood, City, and region.

For these reasons, the Hearings Board can find that this criterion is met.

c. VARIANCE APPLICATION – BARBED WIRE

Pursuant to ADC 9.370, barbed wire is only permitted in the commercial, industrial, and mixed-use zones. The proposed fence includes barbed wire, therefore a variance application is necessary.

The variance criteria are below, followed by an explanation of how they are met.

(1) The property has unique or peculiar physical circumstances or conditions such as, irregular shape, width or depth; or exceptional natural or physical conditions such as topography, trees, native vegetation, wetlands, riparian areas, wildlife habitat, or drainage ways.

RESPONSE: The Hearings Board can find that this criterion is met for the same reasons that the fence must be located within a required setback, explained in section c, above. In summary, the fence must be in its proposed location in order to ensure safe and reliable electrical service to Albany and its surrounding communities.

(2) The proposal will be consistent with the purpose, overview, and description for the zone in which the property is located, and with the purpose of the Significant Natural Resource Districts, if applicable; and

RESPONSE: PacifiCorp incorporates herein its response to this criterion stated in section b, above. In summary, the Hearings Board can find that this criterion is not applicable because there is nothing in the RS-6.5 purpose statement or zone description that emphasizes or requires particular front landscaping standards. While a prohibition on barbed wire may be aesthetically desirable in these zones, the ADC does not designate it as something that serves to protect

residential properties from conflicting uses. In this instance, the front yard of the substation will be buffered from properties by an existing road.

(3) If more than one variance is requested, the cumulative effect of the variances results in a project that is still consistent with the purpose, overview and description of the zone; and

RESPONSE: A variance to the front yard fence height maximum set forth in ADC 9.380(1) is also necessary and is requested above, as is a variance to front yard landscaping required ADC 9.140(1), below. All variance requests relate to the same issue addressed in this variance request: the need to provide adequate and safe fencing around energized electrical equipment. As these two variance requests are both related to front yard aesthetic requirements, which are not stated objectives of the RS-6.5 zone, there is no reason to believe that their cumulative effect will make the Application inconsistent with the purpose, overview, and description of that zone.

For this reason, Hearings Board can find that this criterion is met.

(4) The requested variance is the minimum necessary to address the peculiar or unusual conditions of the site; and

RESPONSE: Use of barbed wire is a reasonable response to the periodic outbreaks of copper wire theft from substations that occur when the price of copper becomes sufficiently high. Examples of such theft are myriad and have been examined in detail by the department of energy.⁴ **Exhibit 7.**

It is essential that individuals are not able to access the substation for two reasons. First, any tampering with electrical equipment could compromise the integrity of the substation, leading to outages, damage to substation equipment, or fires. Second, such tampering is extremely dangerous to anyone engaging in it: copper thieves are routinely—and gruesomely—killed when trying to steal energized copper wire.

The Applicant must take every reasonable step, based on industry best practices, to ensure that energized electrical equipment is separated from abutting properties and rights of way by a secure fence, and that the fence cannot be easily scaled. Barbed wire is essential to ensure that the fence cannot be easily scaled and is a fundamental component of an adequate security strategy for electrical infrastructure.

As explained above, the Property has limitations in its size and configuration, which makes necessary the placement of a fence meeting the Applicant's security needs within the required front and side-yard setbacks, which fence must reasonably include barbed wire. The requested variance is the absolute minimum necessary to allow the site to be used for the proposed substation expansion.

For the above reasons, the Hearings Board can find that this criterion is met.

⁴ See, e.g. "Copper theft 'like an epidemic' sweeping US," Mark Koba, CNBC (July 30, 2013), *available at* <https://www.cnbc.com/id/100917758>

(5) Any impacts resulting from the variance are mitigated to the extent practical; or

RESPONSE: There is no evidence that allowing barbed wire on the proposed fence project will have an adverse impact on surrounding properties or neighborhood livability. There is already a fence with barbed wire in the front yard of the Property; the proposed fence will not amount to a significant change in the neighborhood. And, on balance, any aesthetic impacts are substantially outweighed by the need to ensure the integrity of the City's power supply, the safety of PacifiCorp's employees and nearby residents, and the safety of would-be trespassers.

The Hearings Board can find that no mitigation is required.

(6) Application of the regulation in question would preclude all reasonable economic use of the site.

RESPONSE: Prohibition on the use of barbed wire would prevent adequate security measures for the substation and therefore likely prevent construction of the ring bus at this location. The inability to construct the ring bus would jeopardize electrical reliability in the neighborhood and surrounding area. While this is not solely an economic impact, it could have widespread public safety and service impacts on the neighborhood, City, and region.

For these reasons, the Hearings Board can find that this criterion is met.

d. VARIANCE APPLICATION – REQUIRED LANDSCAPING IN SETBACKS

ADC 9.140(1) sets forth front setback landscaping requirements for all residential zones. This section requires landscaping to be installed "before an occupancy permit is issued or final building permit approved." The Application does not propose any landscaping within the Property's front setback because a shallowly-buried copper grounding mesh is required underneath the entire substation area and five feet outside of the fence line. This grounding mesh is essential to prevent serious injury to persons who may touch the fence if the fence becomes energized due to a short circuit or other fault. Landscaping over the mesh is not an option because roots could damage or destroy the mesh, rendering it ineffective and creating a potentially hazardous condition within the substation and within five feet of the substation fence.

The variance criteria are below, followed by an explanation of how they are met.

(1) The property has unique or peculiar physical circumstances or conditions such as, irregular shape, width or depth; or exceptional natural or physical conditions such as topography, trees, native vegetation, wetlands, riparian areas, wildlife habitat, or drainage ways.

RESPONSE: PacifiCorp incorporates herein its response to this criterion in the fence setback variance request above. The variance is necessary because the site's configuration and existing electrical infrastructure prevent the ring bus from being set back farther from the property line, thereby requiring the grounding mesh to extend into the required front yard setback. As explained above, the site's configuration is directly driven by required clearance zones between circulation areas and energized electrical equipment. **Exhibits 5 and 6.**

For these reasons, the Hearings Board can find that this criterion is met.

(2) The proposal will be consistent with the purpose, overview, and description for the zone in which the property is located, and with the purpose of the Significant Natural Resource Districts, if applicable; and

RESPONSE: PacifiCorp incorporates herein its response to this criterion as stated in the fence setback variance request above. In summary, the Hearings Board can find that this criterion is not applicable because there is nothing in the RS-6.5 purpose statement or zone description that emphasizes or requires particular front landscaping standards. While front yard landscaping may be aesthetically desirable in these zones, the ADC does not designate it as something that serves to protect residential properties from conflicting uses. In this instance, the front yard of the substation will be buffered from properties by an existing road.

In the alternative, the Hearings Board can find that this criterion is met for the following reasons:

PacifiCorp recognizes that single-family residential zones are not often conceptualized with utility facilities in mind or with consideration of the regulations specific to such facilities. PacifiCorp also presumes that the landscaping standards were developed for single-family homes.

However, the RS-6.5 zone conditionally allows substations and there is no essential characteristic of the RS-6.5 zone that is offended by the lack of front yard landscaping for a substation. Substations are inherently different than single-family homes, and for safety and security reasons are not intended to be inviting to passersby. But they are necessary for the adequate and reliable provision of electrical power to Albany's residents. And, this substation has been at this location for decades; therefore, it is fully integrated into the surrounding residential context. It is consistent with the purpose of the RS-6.5 zone because it provides services to dwellings within that zone.

Finally, the tension between the proposed front yard design and the ADC's landscaping requirement is caused by a safety issue (i.e. the need to protect those who might touch the fence from electrocution). The Hearings Board should find that protecting the physical safety of RS-6.5 residents is also a priority for that zoning district, and is, on balance, more important than aesthetic priorities like front yard landscaping.

(3) If more than one variance is requested, the cumulative effect of the variances results in a project that is still consistent with the purpose, overview and description of the zone; and

RESPONSE: Two additional variances are requested above: a variance to the prohibition on barbed wire in ADC 9.370 and a variance to the fence height limitation within required front yard setbacks in ADC 9.380(1). These variance requests relate to the same issue addressed in this variance request: the need to provide adequate and safe fencing around energized electrical equipment. As these variance requests are related to front yard aesthetic requirements, which are not stated objectives of the RS-6.5 zone, there is no reason to believe that their cumulative effect will make the Application inconsistent with the purpose, overview, and description of that zone.

For this reason, Hearings Board can find that this criterion is met.

(4) The requested variance is the minimum necessary to address the peculiar or unusual conditions of the site; and

RESPONSE: As explained above, the site is not sufficiently large or adequately configured to allow PacifiCorp to meet the front yard landscaping requirements. The requested variance is the absolute minimum necessary to satisfy PacifiCorp separation and security standards.

For the above reasons, the Hearings Board can find that this criterion is met.

(5) Any impacts resulting from the variance are mitigated to the extent practical; or

RESPONSE: There is no evidence that relaxing the front yard landscaping requirement for this project will have an adverse impact on surrounding properties or neighborhood livability. And, on balance, any aesthetic impacts are substantially outweighed by the need to ensure the physical safety of passersby and PacifiCorp employees.

The Hearings Board can find that no mitigation is required.

(6) Application of the regulation in question would preclude all reasonable economic use of the site.

RESPONSE: Application of the front yard landscaping requirements would preclude construction of the ring bus, which would jeopardize electrical reliability in the neighborhood and surrounding area. While this is not solely an economic impact, it could have widespread public safety and service impacts on the neighborhood, City, and region.

For these reasons, the Hearings Board can find that this criterion is met.

a. REPLAT APPLICATION

Pursuant to ADC 22.400, to “replat” is defined the “act of platting the lots, parcels, and easements in a recorded subdivision or partition plat to achieve a reconfiguration of the existing subdivision or partition plat.” The Application proposes consolidation of tax lots 400, 7500, 7400, 7401, and 7300 into a single platted lot. This will have the effect of adding tax lot 400 to the “Hazelwood Addition” subdivision. The total lot area will be approximately 99,360 sq. ft.

The replat criteria require consideration of a future redevelopment of the Property. Given that the substation is at the terminus of a critical transmission line and provides distribution for the surrounding area, it is highly unlikely that the Property will redevelop for residential uses in the future. However, the property will maintain a configuration that would accommodate redevelopment.

The applicable replat criteria and an explanation of how the criteria are met are provided below.

(1) The proposal meets the development standards of the underlying zoning district, and applicable lot and block standards of this Section.

RESPONSE: The applicable dimensional standards applicable in the RS-6.5, per ADC 3.190, Table 1, are shown below followed by an explanation of how they are satisfied.

- Minimum Lot Size: 6500 sq. ft.

Combining tax lots 400, 7500, 7400, 7401, and 7300 would result in a total lot size of approximately 99,360 sq. ft., which substantially exceeds the minimum lot size.

- Minimum Lot Width: 50 ft.

The width of the resulting lot will be 250 feet.

- Minimum Lot Depth: 80 ft.

The depth of the resulting lot will be over 500 feet.

- Minimum Front Setback: 15 ft.

The proposed ring bus and its associated equipment shall be located more than 20 feet from the front lot line, as demonstrated on **Exhibit 8**.

- Minimum Interior Yard Setback: 5 ft.

The proposed ring bus and its associated equipment shall be located more than 15 feet from the nearest interior lot line, as demonstrated on **Exhibit 8**.

- Maximum Lot Coverage: 60%

The only impervious area being added to the site is the road finish area denoted by the dot shaded section of the site plan (**Exhibit 3**). The total roadway area covers 38% of the expansion site, for a 38% overall lot coverage. The remaining hashed sections are going to be non-compacted yard finish rock which consists of 40% voids over the native soils.

- Block Length: 600 feet.

The Property is located within the “Hazelwood Addition.” The existing block is between Bonney Street to the west and Lincoln Street to the east, and measures in excess of 1200 feet. However, the Application does not change that block length and even if it could do so, the alignment of Queen Avenue and intervening property ownerships make it impossible to reduce the existing block length. Therefore, the Hearings Board can find that this standard is met because, in this instance, “adjacent layout and physical conditions justify a greater length.” Moreover, the existing block length is a legally nonconforming condition and the Application does not increase the degree of nonconformity.

(2) Development of any remainder of property under the same ownership can be accomplished in accordance with this Code.

RESPONSE: As the replat is composed primarily of platted lots, these can be later divided back into residential lots similar to their existing configuration. Incorporating tax lot 400 within the larger replatted lot will not reduce its suitability for redevelopment.

For the above reasons, the Hearings Board can find that this criterion is met.

(3) Adjoining land can be developed or is provided access that will allow its development in accordance with this Code.

RESPONSE: The post-replat configuration of the Property is a double frontage lot that can be accessed from either 17th Avenue or Queen Street. Future redevelopment of the site would likely include internal streets to allow lots to access both frontages. If such a redevelopment were to occur, this street system could be extended east and west to connect the adjacent apartment complex with Hazelwood Park.

For the above reasons, the Hearings Board can find that this criterion is met.

(4) The proposed street plan affords the best economic, safe, and efficient circulation of traffic possible under the circumstances.

RESPONSE: The project does not include any new internal streets. This criterion does not apply.

(5) The location and design allow development to be conveniently served by various public utilities.

RESPONSE: The Property is already fully served by adequate public services. The Hearings Board can find that this criterion does not apply or, in the alternative, that it is met.

(6) Activities and developments within special purpose districts must comply with the regulations described in Articles 4 (Airport Approach), 6 (Natural Resources), and 7 (Historic), as applicable

RESPONSE: The above articles do not apply to the Project because the Property is not within an airport approach zone, is not subject to identified natural resource values, and is not a historic resource.

b. TREE FELLING PERMIT APPLICATION

The Application proposes removal of fourteen existing trees. These are listed below and shown on the existing conditions plan (**Exhibit 9**), indexed by number:

No.	Species	Diameter
1	walnut	18"
2	walnut	18"
3	unknown deciduous	24"
4	clump, unknown deciduous	4" – 10"
5	oak	15"
6	unknown deciduous	18"
7	maple	14"

No.	Species	Diameter
8	apple	10"
9	lilac (clump)	8"-10"
10	unknown deciduous	16"
11	maple	14"
12	cottonwood	12"
13	cottonwood	8"

(2) For property where a site plan review, conditional use or land division application has been approved or is currently under review, the Community Development Director, City Forester, or his/her designee shall approve site plan review when the applicant demonstrates that all of the following review criteria are met:

(a) It is necessary to fell tree(s) in order to construct proposed improvements in accordance with an approved site plan review or conditional use review, or to otherwise utilize the applicant’s property in a manner consistent with its zoning, this code, applicable plans adopted by the City Council, or a logging permit issued by the Oregon Department of Forestry.

RESPONSE: As demonstrated on the enclosed tree removal plan and site plan, the trees proposed for removal must be removed to accommodate the proposed ring bus and the equipment which surrounds it, as well as to ensure proper clearance between vegetation and energized substation equipment. For these reasons, the Hearings Board can find that the Application meets this criterion.

(b) The proposed felling is consistent with State standards, City ordinances, and the proposed felling does not negatively impact the environmental quality of the area, including but not limited to: the protection of nearby trees and windbreaks; wildlife; erosion; soil retention and stability; volume of surface runoff and water quality of streams; scenic quality, and geological sites.

RESPONSE: The Property is located within a residential neighborhood. The project would include removal of a small, loose grove of poorly maintained deciduous trees. For this reason, the Hearings Board can find that removal of the trees will have no affect on soil erosion or soil retention and stability.

For the same reasons, the Hearings Board can find that the tree removal will have no significant affect on wildlife. The Property is not designated as sensitive habitat and its location within a

developed neighborhood limits the trees' potential habitat value. Moreover, the proximity of the existing substation likely deters wildlife from occupying the Property. It is more likely that nearby wildlife seek shelter in the woodland located west of the existing substation at Hazelwood Park, and removal of these trees will have no effect on that woodland.

Given that trees are relatively short and located along the south side of the property, there is no evidence that the trees provide any useful windbreak to surrounding properties from prevailing southerly winds.

For the same reasons, there is no evidence that the trees have any scenic value. The lack of slope prevents substantial vistas from in or around the property and the trees are short and unkempt. Their removal will actually increase vistas from 17th Avenue. For these reasons, the Hearings Board can find that the trees will not diminish scenic quality in the area and may actually improve it.

The property is more than 1200 feet from the Calapooia River. There are no adjacent streams which could receive direct surface water influence from the property and the trees do not provide stream shade. Therefore, the Hearings Board can find that removal of the trees will have no significant effect on stream water quality.

There are no geologic sites on the Property protected by the trees.

For the above reasons, the Hearings Board can find that this criterion is met.

(c) The uniqueness, size, maturity, structure, and historic value of the trees have been considered and all other options for tree preservation have been exhausted. The Director may require that trees determined to be unique in species, size, maturity, structure, or historic values are preserved.

RESPONSE: As is evident in the oblique photo below, the trees proposed for removal are relatively short and are not fully mature.

Figure 4-Trees to be Removed



Additional photos of the trees are enclosed as **Exhibit 10**. As demonstrated therein, they have been poorly maintained and suffer substantial competition from underbrush. There is no evidence that they are unique or have any historic value. The Hearings Board can find that the trees proposed for removal do not have any intrinsic value warranting denial of the tree felling permit.

(d) Tree felling in Significant Natural Resource Overlay Districts meets the applicable requirements in Article 6.

RESPONSE: The Property is not located within a Significant Natural Resource Overlay Zone. This criterion does not apply.

4. CONCLUSION

For the above reasons, the Hearings Board can find that all applicable criteria have been met and should approve the Application.



6B.10—Minimum Clearances for Substation Electrical Conductors

1 Scope

This standard gives the minimum and recommended clearances for use in designing substations. In all cases, the minimum clearances given are equal to the ones specified by IEEE and NESC clearance standards.

2 General

Recommended clearances shown shall apply to new construction or major reconstruction projects. Existing installations failing to meet these clearances shall be modified only if an infraction or hazardous condition exists.

Table 1—Minimum Electrical Clearances for Substations

Voltage - kV		8.3 kV	15 kV	25.8 kV	38 kV	48.3 kV	72.5 kV	121 kV
Basic Impulse Levels - BIL (Note 2)		95 kV	110 kV	150 kV	200 kV	250 kV	350 kV	550 kV
Live Part To Ground Rigid Conductors	Recommended (Note 1)	10"	10"	12"	1'-3"	1'-7"	2'-5"	3'-11"
	Minimum (C37.32/96, T5 col. 5)	6"	7"	10"	1'-1"	1'-5"	2'-1"	3'-6"
Phase To Phase - Metal To Metal Bus Supports	Recommended (Note 1)	1'-3"	1'-6"	1'-9"	2'-2"	2'-5"	3'-8"	6'-2"
	Minimum (C37.32/96, T5 col. 3)	7"	1'-0"	1'-3"	1'-6"	1'-9"	2'-7"	4'-5"
Live Part To Yard Grade For Personnel (Note 3)	Recommended (Note 1)	9'-4"	9'-4"	10'-0"	10'-0"	10'-2"	11'-0"	12'-6"
	Minimum (NESC Table 124-1 col.2)	8'-10"	9'-0"	9'-3"	9'-6"	9'-10"	10'-5"	11'-7"
Live Part To Yard Grade For Roadways	Recommended (Note 1)	20'-0"	20'-0"	22'-0"	22'-0"	22'-0"	23'-0"	25'-0"
	Minimum (NESC Table 232-1col5 & R231C1)	18'-6"	18'-6"	18'-6"	18'-6"	18'-9"	19'-2"	20'-2"
Live Part To Fence For Vehicles	Recommended (Note 1)	24'-0"	24'-0"	24'-0"	24'-0"	24'-0"	24'-0"	24'-0"
Live Part To Fence No Vehicles	Recommended (Note 1)	10'-6"	10'-6"	10'-6"	11'-0"	11'-0"	12'-0"	13'-0"
	Minimum (NESC Table 110-1)	10'	10'-2"	10'-4"	10'-8"	10'-11"	11'-8"	13'-0"
Horn Gap Switches & Expulsion Power Fuse Phase Spacing, Center Line To Center Line	Recommended (Note 1)	3'-0"	3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	10'-0"
	Minimum (C37.32/96, T5 col. 8)	3'-0"	3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	10'-0"
Disconnect Switches Three Pole-Horizontal Break Phase Spacing, Center Line To Center Line	Recommended (Note 1)	2'-6"	2'-6"	3'-0"	4'-0"	5'-0"	6'-0"	9'-0"
	Minimum (C37.32/96, T5 col. 7)	2'-6"	2'-6"	3'-0"	4'-0"	5'-0"	6'-0"	9'-0"
Vertical Break Disc. Switches, Bus Supports & Non-Expulsion Power Fuses Phase Spacing, Center Line To Center Line	Recommended (Note 1)	1'-6"	2'-0"	2'-6"	3'-0"	4'-0"	5'-0"	7'-0"
	Minimum (C37.32/96, T5 col. 6)	1'-6"	2'-0"	2'-6"	3'-0"	4'-0"	5'-0"	7'-0"

NOTES:

1. Recommended clearances are to be used for all new construction. The clearances given in the "Recommended" sections are good for elevations up to 7,000 feet. Minimum clearances should only be used for temporary installations at elevations of 3,000 feet and below. If the elevation at the temporary installation is higher than 3,000 feet, the minimum clearance shall be increased by 3 percent for each 1,000 feet above 3,000 feet in elevation.
2. Clearances are based on BIL, not voltage class.
3. Minimum vertical clearances above-grade to the ungrounded parts is 8'-6" as stated in NESC, Section 124.3.

Table 2—PacifiCorp Minimum Electrical Clearances

	Voltage - kV Basic Impulse Levels - BIL (Note 2)	145 kV	169 kV	242 kV	362 kV	550 kV	550 kV
		650 kV	750 kV	900 kV	1300 kV	1550 kV	1800 kV
Live Part To Ground Rigid Conductors	Recommended (Note 1)	4'-8"	5'-5"	6'-8"	9'-8"	11'-6"	13'-4"
	Minimum (C37.32/96, T5 col. 5)	4'-2"	4'-10"	5'-11"	8'-8"	10'-4"	12'-0"
Phase To Phase - Metal To Metal Bus Supports	Recommended (Note 1)	7'-0"	7'-8"	8'-11"	12'-0"	14'-0" †	15'-6" †
	Minimum (C37.32/96, T5 col. 3)	5'-3"	6'-0"	7'-5"	9'-11"	‡	‡
Live Part To Yard Grade For Personnel (Note 3)	Recommended (Note 1)	13'-2"	14'-0"	15'-0"	19'-2"	20'-0"	22'-0"
	Minimum (NESC Table 124-1 col.2)	12'-2"	12'-10"	13'-9"	17'-2"	18'-10"	20'-6"
Live Part To Yard Grade For Roadways	Recommended (Note 1)	25'-0"	26'-0"	27'-0"	32'-0"	35'-0"	35'-0"
	Minimum (NESC Table 232-1col5 & R231C1)	20'-7"	21'-1"	22'-6"	24'-9"	28'-5"	28'-5"
Live Part To Fence For Vehicles	Recommended (Note 1)	24'-0"	24'-0"	26'-0"	40'-0"	40'-0"	40'-0"
Live Part To Fence No Vehicles	Recommended (Note 1)	14'-0"	15'-0"	16'-0"	20'-0"	23'-0"	23'-0"
	Minimum (NESC Table 110-1)	13'-9"	14'-4"	15'-5"	18'-4"	19'-10"	21'-6"
Horn Gap Switches & Expulsion Power Fuse Phase Spacing, Center Line To Center Line	Recommended (Note 1)	12'-0"	14'-0"	16'-0"	20'-0"	25'-0"	27'-0"
	Minimum (C37.32/96, T5 col. 8)	12'-0"	14'-0"	16'-0"	20'-0"	25'-0"	27'-0"
Disconnect Switches Three Pole-Horizontal Break Phase Spacing, Center Line To Center Line	Recommended (Note 1)	■ 11'-0"	■ 13'-0"	16'-0"	■ 18'-0"	20'-0" †	■ 25'-0"
	Minimum (C37.32/96, T5 col. 7)	11'-0"	13'-0"	16'-0"	■ 18'-0"	‡	‡
Vertical Break Disc. Switches, Bus Supports & Non-Expulsion Power Fuses Phase Spacing, Center Line To Center Line	Recommended (Note 1)	8'-0"	9'-0"	11'-0"	16'-0"	20'-0"	■ 25'-0"
	Minimum (C37.32/96, T5 col. 6)	8'-0"	9'-0"	11'-0"	14'-6"	‡	■ 25'-0"

† Recommended values have been used by PacifiCorp and other utilities in the past.

‡ No values given by IEEE.

NOTES:

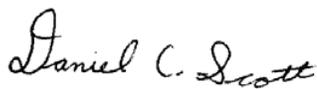
1. Recommended clearances are to be used for all new construction. The clearances given in the "Recommended" sections are good for elevations up to 7,000 feet. Minimum clearances should only be used for temporary installations at elevations of 3,000 feet and below. If the elevation at the temporary installation is higher than 3,000 feet, the minimum clearance shall be increased by 3 percent for each 1,000 feet above 3,000 feet in elevation.
2. Clearances are based on BIL, not voltage class.
3. Minimum vertical clearances above-grade to the ungrounded parts is 8'-6" as stated in NESC, Section 124.3.

3 Handbook Issuing Department

The engineering standards and technical services department of PacifiCorp published this document. Questions regarding editing, revision history and document output may be directed to the lead editor at (503) 813–5293. Technical questions and comments may be directed to Iuda Morar, substation standards engineering, (503) 813–6937.

This material specification shall be used and duplicated only in support of PacifiCorp projects. This document is considered a valid publication when the signature blocks below have been signed by the authoring engineer and standards manager.

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Substation Standards Engineering

An Assessment of Copper Wire Thefts from Electric Utilities



Copper Wire Spool



Copper Wire Windings on Transformers



Copper Wire Cut



Copper Wire Scrap

**Infrastructure Security and Energy Restoration
Office of Electricity Delivery and Energy Reliability
U.S. Department of Energy**



April 2007

For Further Information

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Sources of cover photos:

Copper Wire Spool: <http://www.ga.gov.au/education/minerals/copuse.html>

Copper Wire Windings on transformers: ELSCO Transformers,
<http://www.electricservice.com/dry-type-transformers.html>

Cut wire on pole -- WBIR, July 6, 2006, Jerry Owens, Photographer,
<http://www.wbir.com/printfullstory.aspx?storyid=35839>

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Executive Summary

Fueled by economic growth, worldwide demand for copper has risen over the past several years. Supply has been unable to keep pace, pushing prices dramatically upward, particularly from 2003 through 2006 when the price per pound of copper rose from around \$0.70 to as high as \$4.00 by mid-2006. The price then steadily declined until stabilizing at about \$2.60 per pound in early 2007. Copper appears to be on the way up again in March 2007, exceeding \$3.00 per pound by the middle of the month. Prices continued to climb in April 2007, averaging \$3.50 per pound. Tight supplies have led to an increase in copper recycling, which, in turn, has created a market for used copper and made the material a more attractive target for theft. In fact, thefts of copper wire have been on the rise across the United States, with no apparent geographic pattern and all sectors that use the material, including electric utilities, are being targeted.

Thefts of copper wire from utilities occur primarily at substation transformers, from utility poles, or from the back of service trucks. The thefts have several adverse consequences, including the obvious economic impact, service disruptions, and possibly personal injury or death for persons involved in the theft or subsequent recovery efforts. Utilities across the Nation are paying increasing attention to this growing problem and have begun to investigate and implement measures for deterring thefts, protecting facilities, and quickly recovering from any consequences.

There are a wide variety of countermeasures that can be taken by electric utilities, working closely with scrap metal dealers and law enforcement officials. Countermeasures include communication and coordination with law enforcement and between utilities; fencing, signs, warnings, lighting, patrolling, and intrusion detection for deterrence; wire and equipment protection to make thefts more difficult; alternate equipment and wire devaluation to make the material less attractive; and rewards, watch programs, and resale waiting periods to make the sale of potentially stolen copper easier to detect. In addition, scrap metal dealers have instituted a Scrap Theft Alert System and state legislators are actively drafting legislation addressing copper wire theft. During the first three months of 2007, 21 states have proposed bills raising the fines and penalties for stealing or dealing stolen copper as well as tightening the record-keeping and licensing requirements for scrap metal dealers. Reducing and ultimately eliminating copper wire theft requires a collaborative effort by electric utilities, scrap metal dealers, law enforcement officials, and state regulators and legislators.

Background

Since 2005, media coverage of copper wire thefts from utilities has increased. In mid-2006, members of the National Association of Regulatory Utility Commissioners (NARUC) notified the U.S. Department of Energy (DOE) that these thefts were becoming an issue of concern, and DOE's Office of Electricity Delivery and Energy Reliability (OE) initiated this effort to study the trend in more detail. NARUC Commissioners and individual utilities are also examining how to address the thefts.

The Office monitors energy events and problems of the U.S. energy infrastructure on a daily basis. OE staff prepare, for wide dissemination, a daily report that summarizes these changes to domestic energy infrastructure and the Internet source of the news in the *Energy Assurance Daily*. As part of this routine monitoring, OE staff noticed an increase in press reports of copper theft at electric utilities over the past couple of years. State energy officials confirmed that copper wire thefts have been increasing in many States.

In September 2006, OE staff performed an extensive search of open source references, identifying relevant 2006 news articles and press releases that served as the bibliographic basis for the analysis presented in the initial version of this study. Searches performed in April 2007 updated the information in this report through the end of March 2007. State legislative and attorney general activity and electric utility web sites and press releases provided additional references. OE staff also interviewed a few scrap dealers, law enforcement, and security professionals to obtain a first-hand understanding of the problem and the possible solutions.

This study investigates the causes and significance of the problem, focusing on copper prices, utility use of copper wire, crime patterns, public education, and regulatory and state legislative activities. The study also summarizes utility efforts to enact countermeasures to deter or prevent thefts and mitigate or eliminate the adverse consequences of copper wire theft.

The study makes no claim or attempt to be comprehensive in its coverage of all copper wire thefts at electric utility facilities. Its purpose is to call the problem to the attention of a variety of interested stakeholders and to identify solutions pursued by electric utilities, police departments, scrap metal dealers, and state regulators and legislators.

Worldwide Copper Demand is Increasing

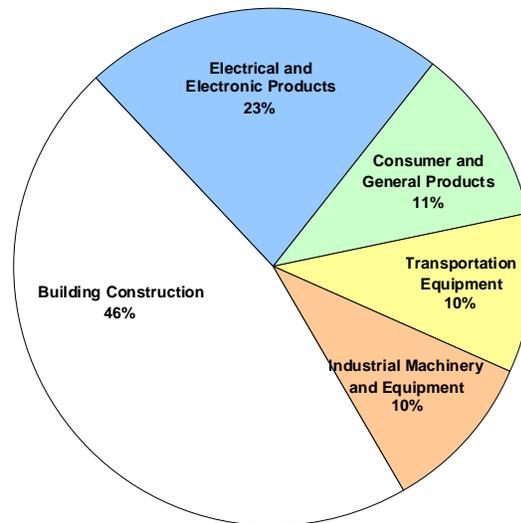
Rising demand is the primary driver for the marked increase in the cost of copper over the past several years. The metal is used primarily in manufacturing of consumer goods, and the construction, electric utility, and telecommunications industries. Worldwide economic growth, particularly in fast-growing China and the United States, requires copper. International copper-producing companies have not been able to increase production to meet demand, pushing prices higher. A market for used or recycled copper has blossomed, making theft of copper an increasingly attractive enterprise.

Electric Utilities are a Major Copper Consumer

Building construction is the largest end user of copper in the United States, followed by electrical and electronic products (see **Figure 1**). Much of the copper used in the building industry is for electrical wiring. According to the Copper Development Association, *“Electrical uses of copper, including power transmission and generation, wires for building purposes, telecommunication, and electrical and electronic products, account for about three quarters of total copper use...Because of its properties of high ductility, malleability, and electrical conductivity, it has become the benchmark for almost all types of wiring.”*¹

In addition to the above-mentioned qualities, copper is particularly attractive to the electric utility industry because it is an excellent conductor of electricity, it resists corrosion, and in spite of recent price increases, it is inexpensive relative to alternate metals over time. Tons of copper are used in each electric utility substation, mostly in transformers. A large (150-400 Megavolt) transformer can weigh 200 to 250 tons, with most of that weight being copper.² Utilities also maintain large concentrations of copper wire at utility construction sites and storage yards, in the back of utility trucks, and in transmission and distribution lines. An average single-family home contains about 440 pounds of copper,³ but most of that is not easily accessible except when the home is under construction.

Figure 1. U.S. Copper and Copper Alloy End Uses, 2002



Source: Copper Development Association, Inc.

Copper Wire Theft is on the Rise

Theft of copper is on the rise all over the world. While this report focuses on the theft of copper wire from electric utilities in the United States, copper is increasingly being stolen from everywhere that it is readily available: construction sites, telecommunications towers, and even individual homes are all being targeted. Lumber, copper pipe and wiring, and other materials left unsecured at building sites are all attractive targets and construction sites have been plagued by materials theft for years.⁴ Large concentrations of copper in one place make a lucrative target for theft.

A number of factors contribute to the increase in copper wire theft. Worldwide demand for copper has significantly increased over the past few years, driven in particular, by the

¹ http://www.copper.org/copperhome/Electrical/wiring_home.html.

² <http://www.copper.org>.

³ Ibid.

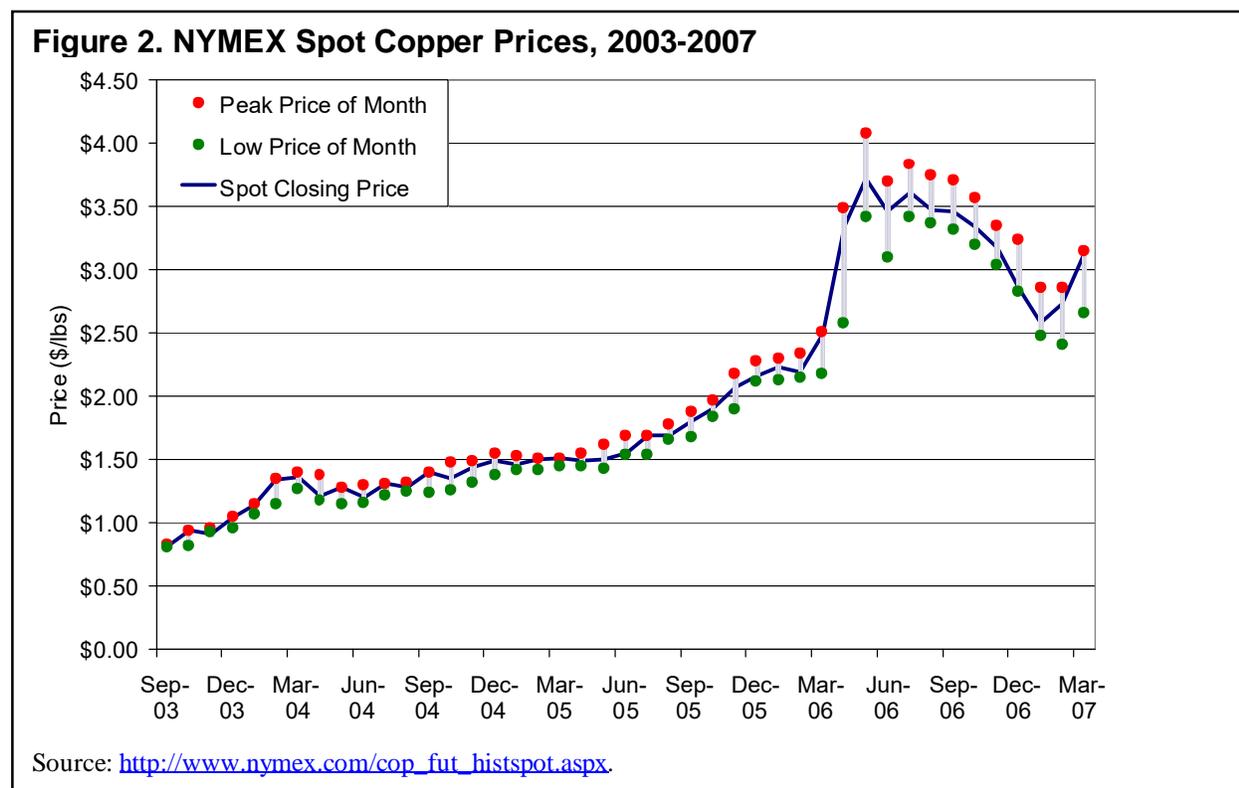
⁴ “Margins in Profit,” Construction Theft: A Lost Cause, by Sarah Loehndorf, <http://www.buildernewsmag.com/viewnews.pl?id=291>.

construction and telecommunications industries. Other factors contributing to the increase in copper wire theft include:

- Top dollar paid by scrap dealers for copper
- The ease by which copper can typically be stolen
- Likelihood that perpetrators will not be arrested
- Miniscule number of convictions for those arrested
- Relatively low fines and short prison stays for the few who are convicted

The Price of Copper Has Increased Dramatically

Dramatic increases in the price of a commodity, such as those experienced by copper particularly in the past three years (see **Figure 2**), make that commodity an increasingly attractive target for theft. The marker used by the copper industry to track price is the New York Mercantile Exchange (NYMEX) closing spot price, which reflects the end-of-day value of copper as determined by market trades on the Exchange.⁵



After remaining in the 60-75¢/pound range for years, the NYMEX spot price for copper broke the 80¢/pound barrier in July 2003, where it stayed until beginning its first spectacular price spike, climbing to \$1.34/pound by the end of February 2004. The price held relatively steady over the next year, increasing only to \$1.55/pound by June 2005. Copper then experienced its second price surge, increasing over 145% in one year, peaking above \$4.00/pound for a few days and ending May 2006 above the \$3.72/pound mark. The spot price eased back to and just dipped

⁵ NYMEX daily spot settlement price, http://www.nymex.com/cop_fut_spot.aspx.

below \$3.00/pound in December 2006, as reports of increased world copper production were being released.⁶ The price stabilized at about \$2.60 per pound in January and February 2007, but began to rise again in March. The average price of copper in April 2007 was \$3.50 per pound, the highest since August 2006.

The Number of Copper Thefts from Electric Utilities

The actual number of copper wire thefts from electric utilities cannot be calculated, as the sources are often anecdotal and include all varieties of scrap metal stolen from all sites (not just electric utilities) in their reports. Among electric utility site, substations are where most copper wire thefts are reported. Detroit Edison, for example, dealt with 100 copper thefts in one month (October 2006).⁷ One substation was broken into 38 times last year until new security systems were installed at the plant at a very high cost.⁸ Nevada Power reported that 43 of its substations were broken into during September-October 2006.⁹

Likewise, the value in damages and revenue losses suffered by electric utilities as a result of copper wire theft cannot be calculated. Pacific Gas and Electric *estimates* about \$1,000,000 in damages from copper theft.¹⁰ The Oklahoma Association of Electric Cooperatives *estimates* that its members lost about \$500,000 from damage due to copper theft in just three months last year.¹¹ **Table 1** summarizes the number of thefts and dollar value of losses reported to selected police departments. Note that this table presents information on thefts from construction sites, telecommunications facilities, and electric utilities for only ten of the over 5,000 police departments in the United States.

Based on Table 1, there has been approximately one copper theft per year for every 1,000 residents in an area. The value of the damage per incident varies, but the average seems to be about \$3,000 per incident. A conservative estimate of the total value of damages from copper wire theft across impacted industries in the United States would be \$900,000,000.¹² Electric utility losses are also in the hundreds of millions dollars per year range because damage to substations, utility poles, and transformers is usually valued significantly more than the average copper theft incident. Bonneville Power Authority, for example, estimates its \$1,000,000 in losses from 50 thefts at its facilities in 2006 to average \$20,000 in repair and materials costs.¹³

⁶ For example, the International Copper Study Group said on Dec. 18, 2006 that world copper production exceeded consumption by 81,000 tons in the first nine months of 2006. <http://www.dailyfutures.com/metals/>.

⁷ Laura Mandaro, "As Scrap Prices Rise, Copper Thefts Abound," MarketWatch, in *Charleston Gazette*, November 10, 2006.

⁸ http://www.csoonline.com/read/020107/fea_metal.html

⁹ <http://www.kvbc.com/global/story.asp?s=5627669&ClientType=Printable>

¹⁰ http://www.kcoy.com/news/local/story.aspx?content_id=c6d7934e-1fa1-4d61-b0df-b24f435288f1&rss=143

¹¹ Brian Sargent, "Attorney General's Office Targets Copper Thefts," *The Daily Oklahoman*, September 2, 2006.

¹² Calculated from 300,000,000 population divided by 1,000 population per theft, multiplied by \$3,000 per theft.

¹³ <http://www.appanet.org/newsletters/ppmagazinedetail.cfm?ItemNumber=18905&sn.ItemNumber=2108>

Table 1. Copper Thefts and Losses Reported to Selected Police Depts.

Police Dept.	Period	Product Stolen	# Thefts	Losses
Phoenix, AZ (Maricopa County),	12 months	Copper	207	\$871,151
Pinal County, AZ	12 months	Copper	21+	\$10,000,000
Ontario, CA	12 months	Copper	170	\$450,000
Polk County, FL	9 months	Copper Wire	268	
Wichita, KS	12 months	Metal		\$700,000
Greensboro, NC	12 months	Copper	100+	
Youngstown, OH	6 months	Copper	35 arrests	
Bryan, TX	2 months	Copper	27	
Dallas, TX	7.5 months	Metal	1,504	
Fort Worth, TX	1 month	Copper	78	
Yakima County, WA	12 months	Metal		\$50,000

Source: News reports and press releases, January 2006 – March 2007.

Copper Theft Rarely Results in Jail Time

The increase in thefts is related to the price of copper and the fact that stolen copper can easily be turned into cash. The fact that only a very small percentage of people who steal copper are caught also leads to continued copper theft. The Police Chief of Tempe, Arizona, for example, reported 207 copper thefts in the Phoenix area between January and June of 2006 and only one person was arrested as a suspect for any of these crimes.¹⁴ Of the few who are arrested for suspected copper theft, only a small percentage is convicted of the crime. The convicted are usually placed on probation and serve no jail time for the first offense. Since the crime is typically a misdemeanor, even those convicted pay very small fines and/or spend little time in jail. In Pinal County, Arizona, where \$10 million worth of damage was reported in 2006 due to copper wire theft, fewer than 20 cases of copper theft were referred to the Pinal County Attorney's Office, and most received probation.¹⁵

Efforts that lead to more arrests, more convictions, and stiffer penalties may reduce repeat offenders. However, these efforts will not reduce the crimes committed by methamphetamine addicts. Law enforcement officials believe that reducing the ability of these addicts to successfully steal and sell copper will probably be more effective than any additional deterrents put in place.

Stolen Copper is Easily Turned into Cash

More copper consumed in the United States is supplied by recycling than from domestic production,¹⁶ making copper recycling a major industry in the U.S. Significant demand for recycled copper means that any copper delivered to a scrap dealer will quickly be turned into cash. Depending on demand in the area, a scrap dealer may pay near-market prices for pure copper, i.e., copper wire stripped of all insulation. A dealer may pay up to 85% of the retail price for recycled or stolen copper wire.

¹⁴ <http://www.azcentral.com/community/pinal/articles/0308st-copper03.html>

¹⁵ Ibid.

¹⁶ Annual Data 2006: Copper, Brass, Bronze. Copper Supply and Consumption 1985-2005, Copper Development Association, Incorporated, http://www.copper.org/resources/market_data/pdfs/annual_data.pdf.

Many U.S. copper recycling firms receive large amounts of scrap copper from regular industrial and commercial customers operating legitimate businesses. The amount of copper wire delivered to a scrap dealer after a theft is typically much smaller than that delivered by regular customers. Sometimes it may be several hundred pounds, but often it is less than 100 pounds.

Some jurisdictions require scrap dealers to report purchases of a large amount of copper, but many do not. “Large amounts” are defined differently depending on the locality. Scrap dealers are not supposed to buy goods such as copper wire that they know or suspect is stolen. However, until scrap dealers are required to take measures to check on copper material and seller legitimacy (e.g., waiting periods, proof of ownership, verification of identity, filing reports, or entries in national databases), there are limited incentives to question persons offering suspicious copper wire for sale.

Patterns in U.S. Copper Theft

Two patterns of copper wire theft from electric utilities can be identified:

- It is a nationwide problem; and
- It has grown dramatically since the price broke \$2.00 a pound in late 2005.

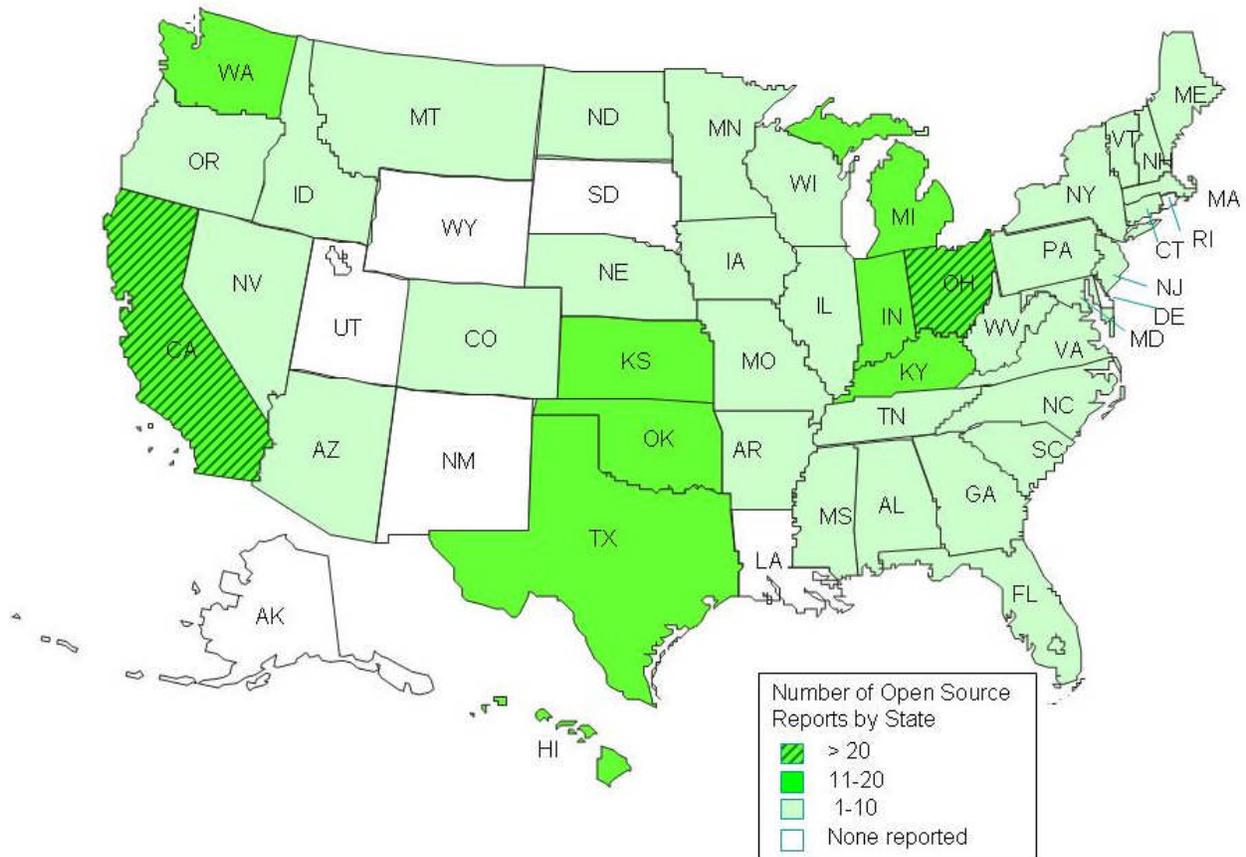
OE conducted an open source review of copper wire thefts across the country. According to open source press reports, copper wire thefts were reported in the press for 42 states between January 2006 and March 2007 (see **Figure 3** and **Table A1** in the Appendix). It is likely that every state has been affected; however, the vast majority of these crimes reported by police departments and utilities do not appear in the press. For example, in the aftermath of Hurricane Katrina, there were tons of scrap copper available from damaged facilities and power lines that simply vanished in Louisiana and other surrounding states. The press did not report on these potential crimes since they were more focused on other pressing issues.

No geographic pattern appears in the reported thefts, but there is a strong correlation between crystal methamphetamine drug abuse and reported metal thefts.¹⁷ Many different police departments have confirmed that the typical copper thief is a methamphetamine drug abuser who is stealing for drug money. The worst areas for methamphetamine abuse and copper theft are Hawaii, Arizona, California, Oregon, and increasingly the rural Midwest and South. OE’s analysis indicates that copper wire theft is probably less prevalent in areas without nearby scrap dealers. A petty thief is less likely to steal a small amount of copper wire if the nearest scrap dealer is relatively far away. As a result, copper wire theft is more likely to target utilities in cities or suburbs than rural areas.

¹⁷According to an extensive study sponsored by the Chief Security Officer web site (www.csoonline.org) – Scott Berinato, “Copper Theft: The Metal Theft Epidemic,” February 1, 2007, http://www.csoonline.com/read/020107/fea_metal.html.

Figure 3. Open Source Reports of Copper Thefts at Electric Utilities

January 2006 to March 2007



Source: News reports and press releases dated January 2006 to March 2007, summarized by state in Table A1.

The data collected for 2006 and early 2007 show that when copper wire theft occurs at electric utilities, the primary targets, in order of number of incidents reported in the press, are:

1. substations and their transformers;
2. utility lines and their transformers;
3. spools of wire in the back of utility trucks or at utility construction sites; and
4. spools of wire at utility storage yards.

There have also been reports of wind generators being stripped of wire.

The most dangerous places to steal copper wire are from substations and from utility poles. To steal a large amount of copper quickly and safely, spools on the back of trucks and storage yards would seem to be a more lucrative target. In fact, the larger hauls of copper wire theft have been from trucks, storage yards and from construction sites. Why then are most thefts occurring at substations and utility poles? It appears this is related to the large number of methamphetamine users who are stealing copper wire. Medical studies have shown that this drug reduces the ability of the brain to assess risk before taking action; hence users of this drug are not concerned about the risks involved in stealing wire from high voltage substations, utility wires, and

transformers. The people who risk their life to steal copper wire from a substation typically only receive a few hundred dollars from the sale of the stolen wire, sufficient for the next drug fix.. Thefts from storage sites and trucks are most likely done by professional criminals and not the drug abusers. Storage sites and trucks are also more difficult to break into than an unguarded substation or utility pole.

It is important to understand that Figure 3 does not show the number of reported copper wire thefts per State. There are too many incidents that are not reported to the press. This figure only shows the level of press coverage of these types of incidents by State. Each press report of a particular type of incident in a State is counted once, regardless of the number of incidents in the article. For example, if a press report states that utility Y had 40 incidents of copper wire theft at substations in State X, this counts as one press report. Press reports identifying the same incident were eliminated as duplicates.

The extent to which thefts of copper from electric utilities were increasing between 2005 and 2006 is evident in **Table 2**. The open source reports examined for this study indicated only a few copper thefts in the United States involving thousands of pounds of copper wire in one operation. The norm is a much smaller amount in each incident. In some warmer, urban locations such as Tampa, Florida and San Diego, California, law enforcement officials believe that most thefts of copper wire are small-scale and are perpetrated by transients without vehicles.

Table 2. Relative Growth in Electric Utility Copper Theft Since 2005

State	Entity Reporting	Change from 2005
AZ	Arizona Public Service	Increased
CA	San Bernardino County	Increased
GA	Georgia Electric Membership Coop	Increased
IA	Major Utilities	Increased
KY	Eastern Kentucky Power/Duke Energy	Increased; more than doubled
ME	Utilities	Increased
MI	Consumers Energy/Detroit Edison	Increased
MO	Kansas City Power & Light/Aquila	Increased
MS	Entergy	Increased
OH	AEP – Ohio	Increased
OK	AEP/Public Service of Oklahoma	Increased; tripled
TX	Dallas Police	Increased; more than doubled
VA	Lee County	Increased

Sources: Utility web sites and news reports and press releases, January 2006 – March 2007.

Consequences of Copper Wire Thefts from Utilities

Perhaps the most obvious consequence of copper wire theft from electric utilities is the economic impact. The targeted utility will need to replace any missing copper and repair any equipment damaged either during the theft itself or as a result of operating the system in the absence of stolen wires. Another consequence may be a power outage, which at best inconveniences customers but may result in economic losses to some customers and always results in loss of sales revenue to the utility. Overall grid reliability is also reduced by a power outage, which can lead the utility to increase expenditures on security, reliability or redundancy of their system. Customers, sensing a less reliable grid, may also invest in backup power generation. Physical injury or death is another possible consequence, not only for the perpetrator, but also for the

utility worker who must repair the damage. There are safety issues for children who may venture into a damaged facility from a broken lock or hole in a fence.

Valuing the Consequences

It is possible to put an economic value on the direct labor and material costs of a particular incident of copper theft from a utility, which tends to be thousands of dollars and at some utilities tens of thousands of dollars. It is much more difficult to quantify the consequence of a power outage or the loss of reliability, redundancy, security, or safety.

Cost in Labor and Materials. The first impact is the cost in labor and materials to replace the copper wire that has been stolen and to replace or repair any other parts of the facility that have been damaged as a result of the theft, including fences and locks that may have been cut. The facility must also be inspected ensure that all damage has been identified. Undetected and unrepaired damage can lead to further damage to the specific facility and the electric grid as a whole, as well as dangerous working conditions for utility employees. Simple thefts of \$100 in copper wire can cost the utility \$5,000 or more to repair.

Damage from a Power Outage. If the stolen copper wire is system critical and the in-place workarounds cannot compensate quickly, the theft can result in power outages and revenue losses. An unexpected power outage can also damage other equipment within the utility and at customer facilities (especially high-tech industries with sensitive loads). Officials with Georgia Power said if the thieves go after the wrong metal, they could shut-down power to the city of Atlanta.¹⁸

Power Outages and Reliability of the Electric Grid. If only ground wires are stolen and no active wires are cut, electricity may continue to be provided. When distribution or transmission lines are removed or when copper wire is removed from transformers on poles or at substations, however, these facilities often fail to operate. Such failure reduces the reliability and redundancy of the electric grid, even if power outages do not ensue from the damage. Unexpected loss of this infrastructure will usually cause at least a minor disruption in the delivery of electricity to customers.

Injury to Utility Workers or Citizens. Another adverse impact of copper wire theft from utility facilities, particularly substations, transformers, or from utility lines, is that utility workers can be injured or killed when touching wires or equipment energized due to the theft. If holes are cut in fences or gates, or if locks or utility lines are left down, curious citizens, particularly children, could be injured or killed if they access the site and encounter dangerous high-voltage wires or equipment. In 2006, for example, 21 suspected thieves died of electrocution while apparently attempting to steal copper wire from electric utilities.¹⁹ Fifteen people were found

¹⁸ <http://www.myfoxatlanta.com/myfox/pages/News/Detail/PrintFriendly?contentId=2625898&version=3&locale=EN-US&layoutCode=VSTY&pageId=3.2.1&siteParams=1012&print=true&detailAction=/News/Detail&portletLogoDisplayed=1>

¹⁹ Calculated from news stories published January 2006 – March 2007: 21 killed by electrocution in 2006 alone – Alabama (1), Colorado (1), Kentucky (3), Michigan (2), Nebraska (1), North Carolina (2), Ohio (3), South Carolina (1), Texas (2), Virginia (2), and West Virginia (3).

dead in substations and six were found dead beside utility poles. Countless others have been injured in an attempt to steal copper wire from electric utilities.²⁰

Recommended Countermeasures to Copper Theft

There are a wide variety of countermeasures that can be implemented by electric utilities, scrap metal dealers, law enforcement officials, state regulators and legislators to reduce and possibly eliminate copper wire theft. In designing copper theft countermeasures, it can be instructive to review how previous thefts have been avoided or prosecuted. Although some thefts are avoided or identified due to the death or injury of the perpetrator, most are identified as the result of alert citizens who notice and report suspicious activity around a utility site, scrap dealers who notice and report suspicious copper offered for sale, or utility employees who notice a suspicious change in operations such as a power surge or outage.

Electric Utility Countermeasures to Copper Theft

Electric utilities have undertaken a number of efforts to deter, prevent, and prosecute copper wire theft. A review of the web sites of the hundred largest utilities revealed 14 who were active in these efforts. Efforts ranged from issuing press releases to setting up toll-free hotlines and offering rewards for information leading to the arrests of perpetrators for specific crimes. The largest reward identified was up to \$25,000 from the Bonneville Power Administration for information leading to the arrest and conviction of any individuals burglarizing its facilities.²¹ The typical reward offered by utilities and cooperatives is up to \$1,000.²²

Appalachian Power offered rewards of up to \$2,500 in October 2006 to report thefts and vandalism. The AEP affiliate encourages anyone who sees suspicious activity near a utility pole, substation or other power company facility to call its Corporate toll-free telephone number dedicated to security issues 1-866-747-5845. In July 2006, Appalachian Power launched a special effort to curb copper wire thefts through:²³

- Launching a media and a radio advertising campaign;
- Teaching scrap dealers to identify metal that may have been stolen from electrical facilities;
- Building a closer relationship with law enforcement;
- Increasing security around company substations and other facilities; and
- Educating employees on identifying risk from tampered equipment.

²⁰ A study performed by a coroner's office in Alabama determined that most of the seven people that they examined who were electrocuted from 1981 to 2001 while trying to steal copper wire (and in one case electricity) were on drugs, alcohol, or both at the time of the fatal attempts.

²¹ <http://www.ruralite.org/news/story.php?ID=48>.

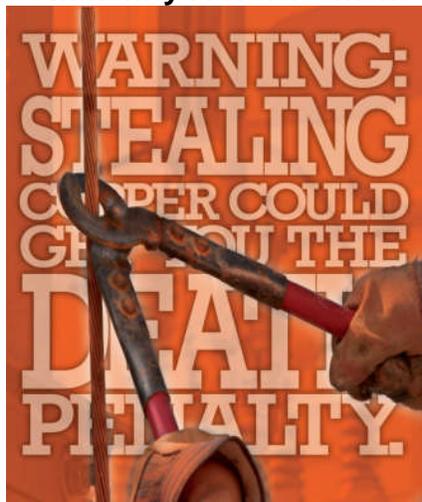
²² http://www.countrylines.com/rss/?rss_id=2; http://www.csoonline.com/read/020107/fea_metal-6.htm <http://www.consumersenergy.com/welcome.htm?./Newsroom/NewsArticle.asp?ID=1389;1> ; Consumers Energy and Detroit Edison are two cases in point.

²³ AEP Press Release, "Electrical Equipment Theft Increasing, Thieves Putting Safety and Reliability at Risk," 7/6/06, <http://www.appalachianpower.com/news/releases/print.asp?releaseID=303>.

Recently Appalachia Power and some other utilities have moved away from pure copper wire to copperweld, which is a much cheaper material with little value to thieves. Unfortunately thieves cannot tell it is copperweld when they steal it, so it may not deter crime in the short term.²⁴

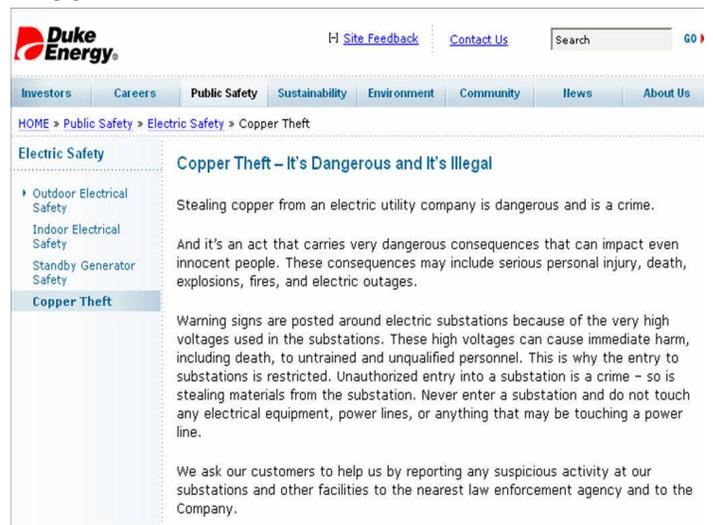
Another AEP affiliate, Public Service Oklahoma, started a public campaign in 2006, complete with links on the utility’s home page to community advertising warning against the dangers of stealing metals from substations, electric lines, or other electrical equipment (see **Figure 4**). Other AEP affiliates in Indiana, Michigan, Ohio, and Texas offer rewards, advertise the AEP Corporate toll-free number, and work with State legislators for tougher laws and harsher penalties.²⁵ Consumers Energy in Michigan and Entergy in Mississippi both advertise their toll-free numbers to the public while Detroit Edison advises likely informants to call their local security department. Duke Energy maintains a page on their web site dedicated to educating the public about copper theft (see **Figure 5**).

Figure 4. AEP Oklahoma’s Community Advertisement



http://www.psoklahoma.com/news/communityAds/pdfs/PSO_Theft.pdf

Figure 5. Duke Energy Web Page Dedicated to Copper Theft



Source: <http://www.duke-energy.com/safety/tips/copper/>.

Regularly targeted utilities have developed a number of countermeasures to prevent copper theft at their facilities. **Table 3** lists the most significant countermeasures recommended by four large investor-owned utilities. While further research is needed to quantify the cost of each countermeasure, many are relatively inexpensive to implement and there are obvious economies of scale in bundling complementary measures.

Actually defending “point” facilities at individual sites such as substations and storage yards is relatively easy, but at a significant security cost if preventing damage to the facility is the primary objective. Defending “line” targets such as power poles and lines is much more difficult

²⁴ <http://www.dailymail.com/story/News/+/2007032828/Company+foils+copper+th>

²⁵ <http://www.indianamichiganpower.com/news/theftDangers/default.asp>,
<http://www.aepohio.com/communities/community/default.asp>,
<http://www.aepohio.com/news/releases/print.asp?releaseID=297>,
<http://www.aeptexas.com/news/releases/print.asp?releaseID=374>.

because of the amount of real estate that must be covered. A company must determine, as part of its risk assessment and mitigation strategy, which measures to institute and which facilities need the most protection. Detroit Edison, for example, had a substation that was frequently vandalized. It spent four times what a normal fence would cost to install new fencing with barbed wire on top and added other security measures. The facility is no longer a “problem” facility requiring constant repairs; it remains an expensive facility to operate though, due to increased security costs.²⁶

Table 3. Electric Utility Countermeasures to Copper Thefts

Utility	Selected Countermeasures
Alliant Energy	<ul style="list-style-type: none"> • Redesign substation grounding straps, reducing exposure height/length or copper • Develop a new style locking hardware to replace old chain lock • Distribute and install new hardened padlocks • Review perimeter fencing and replace with cut-resistant fencing at substations • Secure equipment/material/keys from parked vehicles at night/weekends • Coordinate with local law enforcement • Install new or upgraded security systems (motion detection/cameras)
Baltimore Gas & Electric Co.	<ul style="list-style-type: none"> • Perform threat/risk analysis of 203 substations • Install new protection system at high risk substations to detect and assess intruders, with camera and infrared lighting (for night imaging) • Link 24/7 customer service center to surveillance sites with real-time generated observation, ability to control alarm, and communicate with interactive intercom
MidAmerican Energy Co.	<ul style="list-style-type: none"> • Add appropriate lighting • Install high security (cut resistant) fencing and security cameras • Require gates to remain closed to unauthorized personnel where appropriate • Add roving security patrols at larger service centers after business hours • Work with county law enforcement agencies • Implement effective state-wide regulations
TXU Electric Delivery's Dallas District	<ul style="list-style-type: none"> • Use angle iron guards and flexible steel conduit • Place protective guards at the station structures encapsulating the ground wires • Use contact GS (concrete) to cover wire connects to station-grounding wire • Use copper weld instead of copper cable as a ground conductor • Stamp identifying label or symbol on wire • Improve station lighting, perimeter fencing, intrusion alarms, security cameras, and vegetation management

Sources: “Copper/Material Thefts – Alliant Energy; Primary Focus – IP&L,” Internal IUB Report 9/21/06; BG&E: <http://www.securitymanagement.com/library/000487.html>; “MidAmerican Copper Thefts,” Internal IUB Report 9/21/06; TXU: http://tdworld.com/overhead_distribution/materials/power_wire_theft_impacts/.

From the public outreach efforts, protective measures undertaken by regularly targeted utilities, and industry discussions, **Table 4** is provided as a compendium of available countermeasures for electric utilities.

²⁶http://www.csoonline.com/read/020107/fea_metal.html

Table 4. Protective Measures Considered by Electric Utilities

Categories	Protective Measures
Communication & Coordination	Share ideas with other utilities Coordinate with law enforcement Communicate with State and county Attorney Generals
Signs & Warnings	Post signs Use recorded warnings over intercoms Use dogs at selected sites Intrusion Detection Systems
Lighting & Intrusion Detection	Install/enhance lighting Add infrared lighting Manage vegetation
Fencing	Install fencing around perimeter Install better fencing that is difficult to defeat Replace cheap locks and chains that can be cut Install an interior, electrified fence
Wire Protection	Add protective pole guards Protect ground wire
Wire Devaluation	Mark wire, perhaps with company logo, or an invisible identifier
Alternate Equipment	Deploy steel utility poles Replace copper wire with copperweld or copper-covered steel
Equipment Protection	Block valuable equipment (in yard, on truck) Leave no equipment or valuable materials unprotected at any time
Rewards	Issue rewards for information leading to arrests Encourage scrap dealers to identify potential stolen copper wire
Resale Waiting Periods	Legislate to require resale documentation and waiting periods
Suspicious Behavior & Stings	Alert Neighborhood Watch Programs about suspicious behavior Establish toll-free hotlines Run stings or stakeouts at substations and/or scrap dealers Report all crimes to police
Patrols & Guards	Train and post security guards Step up police patrols
Prosecute Crimes	Do not accept plea bargains which allow alleged criminals to strike again

Scrap Metal Dealer Countermeasures to Copper Theft

The Institute of Scrap Recycling Industry (ISRI) is assisting the scrap metal industry in identifying stolen material through its Scrap Theft Alert system.²⁷ Whenever ISRI learns of a major scrap theft, it sends an e-mail notice to scrap recyclers in the state where the theft occurred as well as in surrounding states. The alerts include a description of the stolen material, serial numbers and photos of the material (when available), and contact information for local and/or state law enforcement officials. ISRI has also established recommended practices and procedures for minimizing the risks of purchasing stolen scrap metal:²⁸

1. Outreach – Develop working relationships with local law enforcement, utility industry, and municipalities

²⁷ ISRI, “Combating Scrap Theft: Scrap Dealers Don’t Want It and They’re Doing Something About It,” Press Release 6/7/06, <http://www.isri.org/AM/Template.cfm?Section=Home&Template=/CM/ContentDisplay.cfm&ContentFileID=3521>; the Scrap Theft Alert System is at http://www.isri.org/AM/Template.cfm?Section=Scrap_Theft_Alert2&Template=/TaggedPage/TaggedPageDisplay.cfm&TPLID=127&ContentID=7671.

²⁸ ISRI, “Recommended Practices and Procedures for Minimizing the Risks of Purchasing Stolen Scrap Materials,” <http://www.isri.org/AM/Template.cfm?Section=Home1&TEMPLATE=/CM/ContentDisplay.cfm&CONTENTID=9603>.

2. Identify Sellers – Collect information on sellers, e.g., driver’s license or ID, vehicle license plate, unique identification number for each customer, and seller’s signature
3. Track Transactions (Financial) – Consider payment by check, ATM with vendor’s name, and receipts on cash transactions
4. Track Transactions (Video) – Add an additional camera at the scale or cashier
5. Prohibited Materials – Refuse purchasing certain types of materials without letter of authorization, e.g., high voltage cables or reported stolen materials
6. Training – Develop a program for scale operators and receiving personnel to identify suspicious materials

Legislative Countermeasures to Copper Theft

State legislatures and attorneys generals have been addressing the problem of copper wire theft. In 2006, bills were introduced (and on occasion signed into law) in six states that were aimed at reducing copper wire theft by making the penalties more stringent. Most of these bills were focused on scrap metal dealers and the perpetrators of the copper wire thefts. In early 2007, 21 State legislatures introduced 46 bills aimed at curbing copper theft (see **Figure 6** and **Table A2** in the Appendix). Virtually all of these bills contain provisions for increasing:

- Record keeping for buyers of scrap copper and/or
- Penalties for copper theft or for scrap dealers who disregard rules on purchasing such metal.

Most of the states have at least two bills proposed, as both the State Senate and House of Representatives are likely to propose companion bills. One state, Hawaii, is overwhelmingly focused on the issue, with four House bills and five Senate bills proposed in the first three months of 2007.

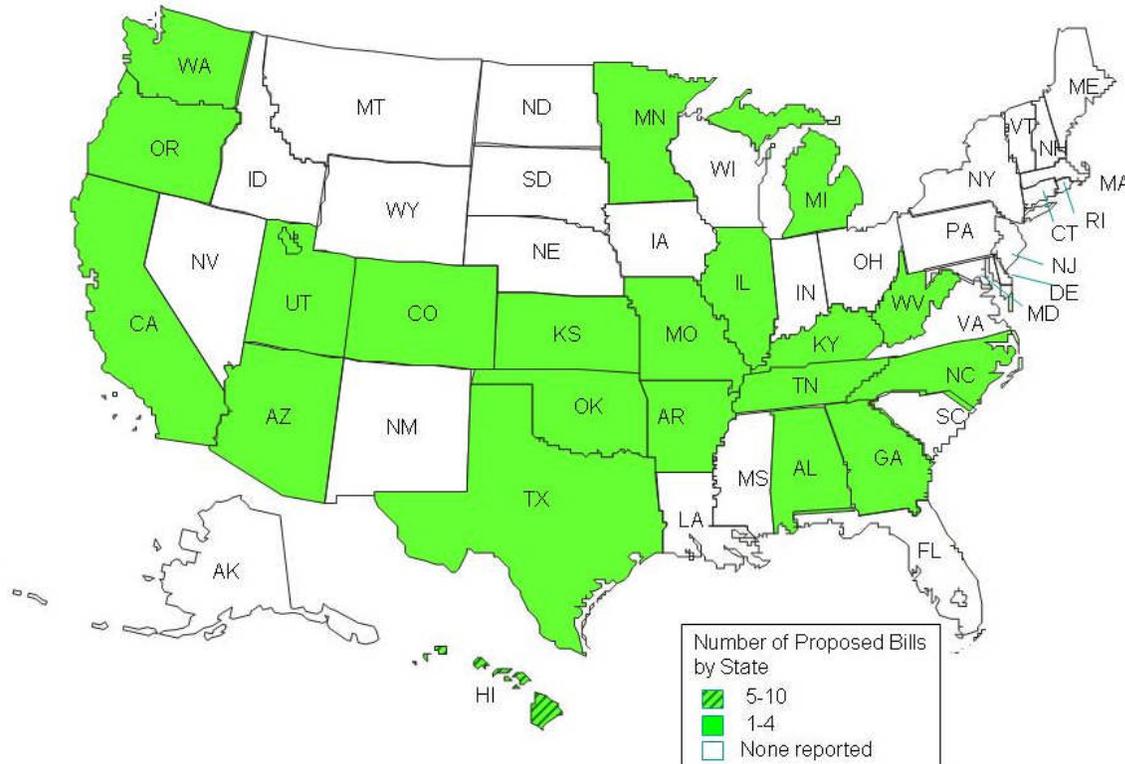
Few of these bills require any holding periods before payment is made, which is necessary for law enforcement to determine if the material offered for sale is stolen. The reason for lack of this type of legislation is strong opposition by scrap dealers who argue that holding periods would require larger storage yards and greatly reduce cash flow. None of the proposed legislation requires proof of ownership of copper offered for sale as scrap, which would make it extremely difficult to sell stolen copper. Scrap dealers are opposed to this type of legislation because it would virtually eliminate all small-scale recycling and result in business closings. Scrap dealers contend that most legitimate owners of scrap material would not be able to prove they own or have a right to possess such material.

Local governments have also passed legislation to curb copper theft. One successful measure that passed in Macon, Georgia, does not allow scrap dealers to buy from someone who has been convicted of theft. After the “Do Not Buy” legislation went into affect last year, copper thefts reported to the Macon Police Department dropped 42%.²⁹ Another successful piece of legislation passed in South Bend, Indiana, in mid-2006, required scrap yards to check and record proper identification of sellers of copper and to make a copy of their thumbprints. Copper theft in South Bend declined after this legislation went into effect.³⁰

²⁹ http://www.13wmaz.com/news/local_story.aspx?storyid=35303

³⁰ <http://www.southbendtribune.com/apps/pbcs.dll/article?AID=/20070112/News01/701120319>

Figure 6. New State Legislation Against Copper Theft
Introduced January – March 2007



Source: Lexis search and news reports summarized in Table A2.

Other Suggested Countermeasures to Copper Theft

Information sharing among stakeholders has been occurring over the past year. Working groups, committees and meetings have been held in various localities with government, industry (electric utilities, telecommunications, and construction), law enforcement, and scrap dealers. The National Crime Prevention Council, for example, is coordinating efforts by local law enforcement and activist neighborhoods to identify and combat scrap metal theft. New organizations have been formed as well to combat this problem, such as the Arizona Copper Theft Committee, which brings together local residents to work with local and state law enforcement officials.

Conclusion

Copper wire theft has become a growing problem for electric utilities over the past three years, particularly during periods of skyrocketing copper prices. More than a minor economic irritant, copper wire theft is an issue of electricity delivery, reliability, and safety. OE recommends that the electric utility industry work with law enforcement, security officials, and other industries such as scrap metal dealers, construction, and telecommunications, to better identify the extent of the problem and to develop a comprehensive list of security practices to protect against the

growing threat of copper wire theft. OE is willing to work with the electric utility industry to develop the tools to permit individual utilities to perform cost-benefit analyses to best determine which measures should be implemented and at which sites. The Office of Electricity Delivery and Energy Reliability will continue to monitor the situation and work with stakeholders to address this issue.

Appendix A Detailed Data

Table A1. Copper Thefts at Electric Utility Facilities, Open Source References by State and Target, January 2006 to March 2007

State	Sub-station	Truck/Storage	Pole	Work Site	Transformer	Wind Generator	Other	TOTALS
AK								0
AL	5		3	1				9
AR			4					4
AZ	2	2	2					6
CA	3	6	6	4	4	2		25
CO	3	1	1		1		3	9
CT			1					1
DE								0
DC								0
FL	5	1		2				8
GA	4							4
HI			4					4
IA	1	1	1	1			1	5
ID	1							1
IL	1		1					2
IN	6		2				2	10
KS	5	1	4					10
KY	4		9	1			2	16
LA								0
MA	2	1		1		1		5
MD	1							1
ME	3	1					3	7
MI	3	2	3				3	11
MN	1			1				2
MO	2	1						3
MS	4		1					5
MT	1							1
NC	1	2						3
ND	1							1
NE	2							2
NH		1						1
NJ	1	2						3
NM								0
NV	3							3

ATTACHMENT E.22

State	Sub-station	Truck/Storage	Pole	Work Site	Trans-former	Wind Generator	Other	TOTALS
NY	2	1	1					4
OH	13	2	4	1			2	22
OK	11	2						13
OR	4		1				1	6
PA	2		3					5
RI								0
SC	4		2	1				7
SD								0
TN	4	1						5
TX	7		5				3	15
UT								0
VA	2		2				1	5
VT	3							3
WA	5	2	3	1				11
WI	2	2	1	1				6
WV	3		2				1	6
WY								0
TOTAL	127	32	66	15	5	3	22	270

Sources: Open source news reports available on the Internet from January 2006 – March 2007 and electric utility press releases issued in 2006 and 2007. Duplicate articles were eliminated from the counts.

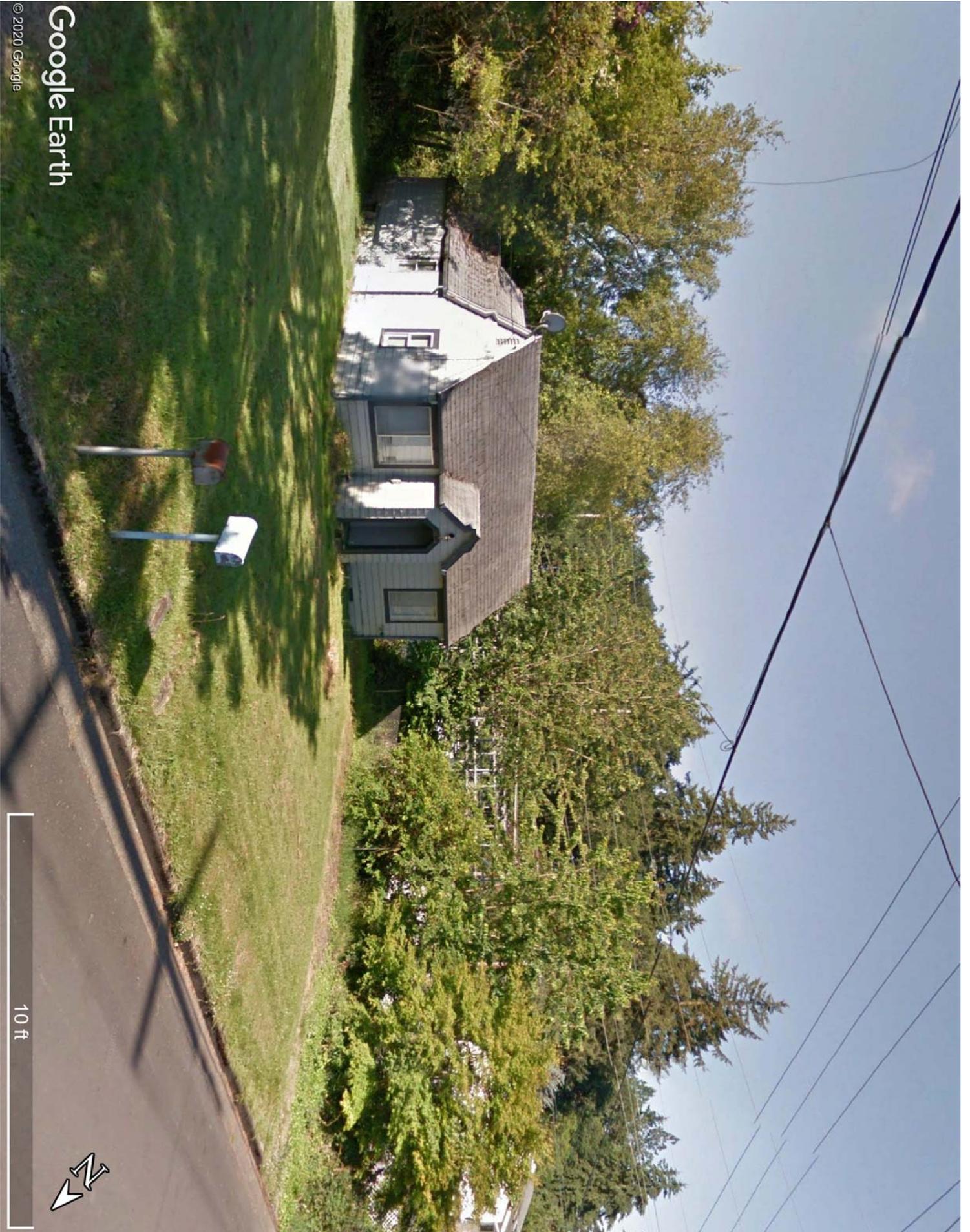
Table A2. New Anti-Theft State Legislation Introduced in First Quarter of 2007

State	Act	Description
AL	HB94	Requires secondary metal recyclers to maintain a record of purchases; provides a procedure by which records are maintained and inspected; authorizes a hold by law enforcement on certain sales of metals by secondary metal recyclers; provides exemptions; provides criminal penalties. (introduced 03/02/07)
AR	HB2337	Creates the offense of theft of scrap metal; requires scrap metal dealers to maintain records at business locations. (introduced 03/02/07)
	HB2443	Creates streamline and strengthen nonferrous scrap metal recordkeeping requirements and to assist law enforcement in investigating thefts. (introduced 03/05/07)
AZ	SB1530	Makes an appropriation in the amount of \$174,600 to the office of the attorney general for investigations of copper wire theft. (introduced 01/29/07)
	HB2314	Requires scrap metal dealers to maintain record of all transactions involving receipt of copper.
CA	AB1372	Adds theft of copper materials as a type of theft punishable as grand theft. (introduced 02/23/07)
	SB447	Requires scrap metal and junk dealers to report all receipts or purchases including seller identification to local sheriffs departments within one working day.
CO	HB1141	Imposes felony charges on scrap recyclers who buy more than 25 pounds without properly recording a seller's driver's license, other ID, vehicle plate or fingerprint.
GA	SB203	Provides for increased penalties for certain crimes involving public utility property; changes certain provisions relating to inspection by law enforcement officers and actions to recover property. (introduced 02/22/2007)
HI	HB1246; SB1332	Establishes the offense of theft of copper; adds special requirements for the purchase of copper by scrap dealers and to hold scrap dealers accountable for violations. (introduced 01/22/07 in House & Senate)
	HB1515	Establishes a preference under the Public Procurement Code for stamped copper wiring that is within the lowest 3 bids submitted where the price of the wiring exceeds a certain amount per foot (introduced 01/23/07)
	HB800	Increases the severity of the consequences to deter the theft of copper wires and other valuable resources. (introduced 01/18/07)
	HB373	Requires dealers to photograph the copper they take in. It also makes dealers verify the seller's ID. It requires sellers to have bill of sales for copper worth more than \$50. The dealer then needs to keep records up to three years. The bill would also increase fines for dealers who break the law, and repeat offenders could get their license taken away.
	SB34	Increases the reporting requirements for sales of scrap to scrap dealers; increases the criminal penalties for failing to comply with these requirements; relates to scrap dealers. (introduced 01/17/07)
	SB142	Established state-run copper recycling clearinghouses that will eradicate copper recycling as a quick, anonymous source of criminal income to deter copper theft. (introduced 01/19/07)
	SB998	Requires scrap dealers to retain a photocopy of the seller's valid identification and by prohibiting cash payments for used or salvaged copper. (introduced 01/19/07)
	SB1229	Requires scrap dealers to include a thumbprint in the required identification statement of all persons redeeming copper and to establish a copper redemption database. (introduced 01/22/07)
IL	SB 69	Requires scrap metal dealers and recyclers to get information from sellers before handing over cash. This would include a copy of the seller's driver's license, photos of their vehicle, license plate and the metal being sold. (introduced 01/31/07)
KS	HB2035	Amends K.S.A. 50-619 to 50-622 to change certain languages relating to the theft of certain metals; Requires that scrap dealers check seller's ID in transactions greater than \$50 and sales records be kept for two years. Metal for purchase must be held for 15-30 days before seller is paid. (introduced 01/09/07)

State	Act	Description
KY	HB82	Requires junkyards and other purchasers of used ferrous and nonferrous metals to keep a register of sellers and make the information available to law enforcement agencies. Also increases penalties for sellers and buyers of stolen metal. (introduced 01/02/07; 03/12/07 to Governor)
MI	HB6599	Requires licensure for scrap metal processors as secondhand or junk dealer; revises provisions governing record keeping by such licensees. (introduced 11/09/06; signed into law 01/08/07)
	HB6630	Enacts sentencing guidelines for crime of buying and selling stolen scrap metal, and the buying and selling of stolen scrap metal removed from a utility pole, telecommunications company property, government property, or utility property or jobsite. (introduced 11/14/06; signed into law 01/03/07)
MN	HB457	Expands an existing law enforcement tool regarding record keeping of purchases by scrap metal dealers; requires registration; provides penalties; appropriates money. (introduced 01/29/07)
	SB1955	Relates to public safety; increases penalties for metal theft. (introduced 03/19/07)
MO	HB490	Requires sellers of scrap metal to provide photo identification to purchasers of the scrap metal; requires purchasers to maintain records of all sales of scrap metal. (introduced 01/18/07)
	HB547	Provides for the registration of copper and aluminum from any person who obtains the copper or aluminum from a purchase or trade. Requires id on person and vehicle, thumbprint from seller, and tag and 15 day hold requirement for buyer before payment made. (introduced 01/23/07)
	SB683	Creates certain record-keeping requirements for purchasers of scrap metal. (introduced 03/01/07)
NC	HB 2748	Increases fines, threatens business licenses and imposes prison terms for repeat offenders when purchasers fail to heed its provisions. The bill requires scrap metal buyers to collect more details about sellers, their vehicles and the metal they're offering. Buyers must also demand a photo identification and then keep a copy for their records. (passed House 02/07)
OK	HB1440	Requires report on buy transactions; modifies reports of theft of precious metal; authorizes an administration and law enforcement to examine certain records of dealer; prescribes penalty for dealer that fails or refuses to comply with examination. (introduced 01/19/07)
	HB1568	Relates to crimes and punishments of copper theft; modifies Section 1727 by increasing penalties. (introduced 01/19/07)
	SB795	Increases penalties and record keeping requirements relating to copper theft. (introduced 01/22/07)
OR	HB2984	Creates crime of encouraging metal theft; punishes by maximum of one year's imprisonment, \$ 6,250 fine, or both. (introduced 03/05/07)
	HB3096	Modifies crime of failing to maintain metal purchase record; increases punishment to maximum of five years' imprisonment, \$ 125,000 fine, or both; imposes presumptive prison sentence under specified circumstances; expands theft in first degree to include theft of metals under certain circumstances. (introduced 03/05/07)
TN	HB902	Requires that scrap metal dealers be licensed by Commerce and Insurance and that seller must provide valid photo identification or give thumbprint prior to transaction. (introduced 02/08/07)
	SB1038	Rewrites law relative to scrap metal dealers to require that each dealer be licensed by commerce and insurance and that seller must provide valid photo identification or give thumbprint prior to transaction. (introduced 02/08/07)
TX	HB 1766	Adds copper wiring to the language in existing legislature related to the punishment for theft (introduced 02/21/07)
	SB642	Establishes statewide reporting system to track sale of regulated metal; requires registration from the secondhand metal dealer; requires identification from any persons attempting to sell regulated metals; provides penalties. (introduced 02/14/07)

State	Act	Description
UT	HB402	Requires that secondhand merchandise dealers comply with all transaction identification, recordkeeping, reporting, training, and other provisions that apply to pawnbrokers with the exception of regulation of pawn tickets; requires such dealers to provide data to the online database currently used by pawnbrokers. (introduced 01/29/07; signed by Governor 03/19/07)
UT	SB44	Modifies the Criminal Code and requires identification and related procedures for the sale of specified metals and imposes penalties for participating in transactions involving these metals without providing appropriate identification. (introduced 01/02/07; signed by Governor 03/15/07)
WA	HB1251	Adds new sections that address the issue of stolen metal property; removes current exemption of transactions involving “metal junk”; provides clarification in the interpretation and enforcement of the current laws governing pawnbrokers and secondhand dealers. Requires scrap dealers to maintain record of sale, including a photocopy of seller’s identification, and maintain the metal in original form for 30 days. (introduced 01/15/07)
	SB5312	Removes current exemption of transactions involving metal junk from the requirements of existing law; provides clarification for uniform interpretation and enforcement of the current laws governing pawnbrokers and secondhand dealers. Requires scrap dealers to maintain record of sale, including a photocopy of seller’s identification, and maintain the metal in original form for 30 days. (introduced 01/17/07)
	SB6098	Establishes provisions relating to protecting and recovering property owned by utilities, telecommunications companies, railroads, state agencies, political subdivisions of the state, construction firms, and other parties. Requires electric utilities to put identifying markings on their critical infrastructure (introduced 02/21/07)
	HB1986	Adds a year to standard theft sentences and ensures those convicted get prison time.
WV	HB2748; SB502	Establishes additional reporting and record retention requirements for certain purchasers of nonferrous metal or steel railroad track and track material; clarifies procedure re: law enforcement on stolen items made of such metals; provides for the inspection of records and materials by investigators employed by public utilities and railroads; and increases criminal penalties for violations. (introduced 01/30/07 in House; 02/08/07 in Senate)

Sources: LexisNexis, www.lexis.com, March 23, 2007.



Google Earth

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10 ft



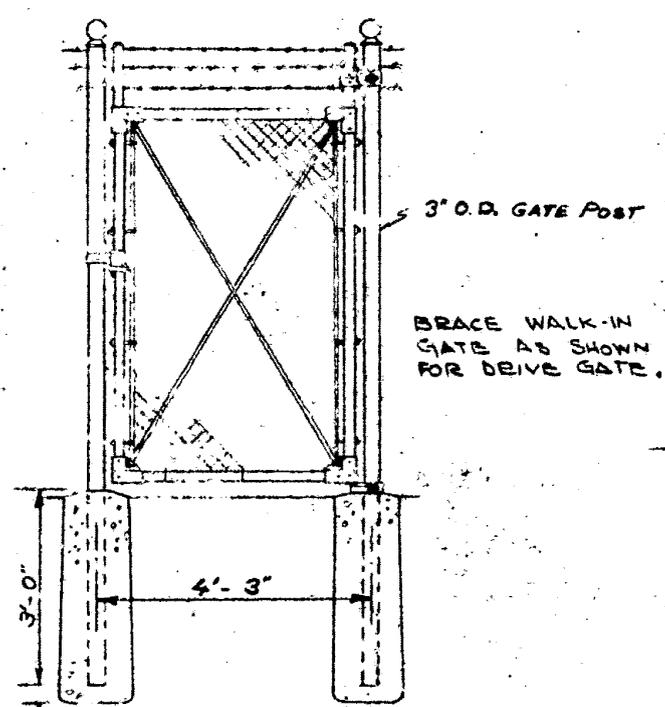
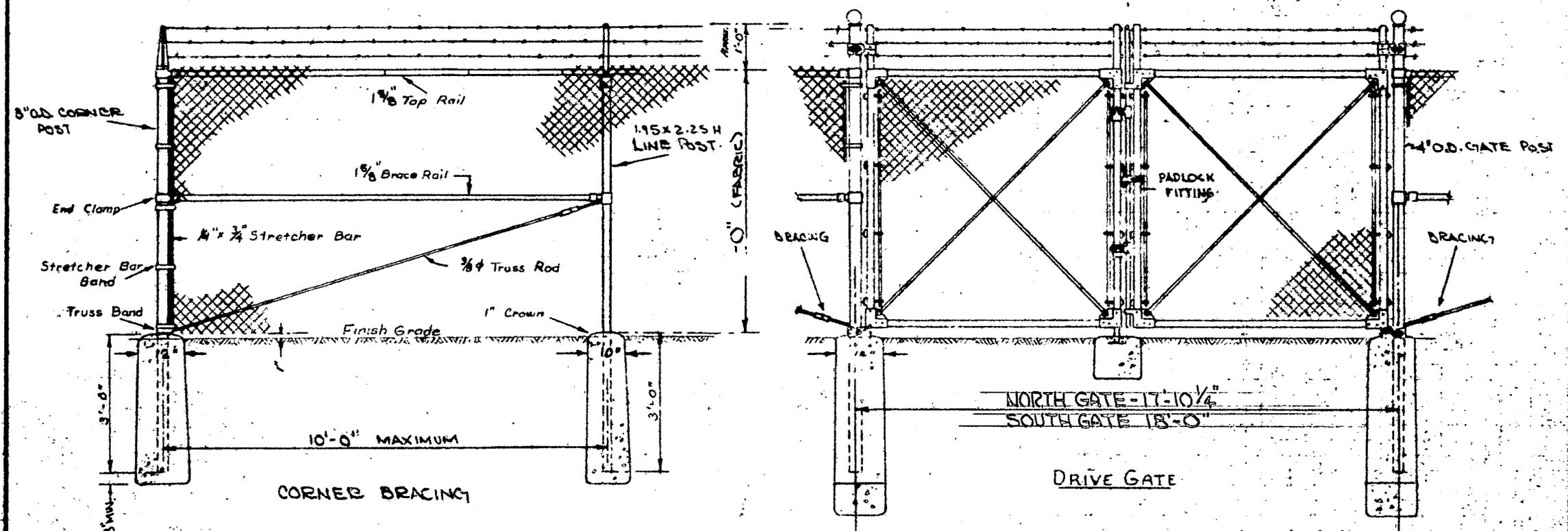


Google Earth

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8.46 ft





- NOTE
1. EACH CORNER SHALL BE BRACED IN BOTH DIRECTION
 2. WALK & DRIVE GATES SHALL BE BRACED ON EACH SIDE OF GATE. WALK GATES WITH A COMMON GATE & CORNER POST SHALL BE BRACED ON ONE SIDE ONLY.
 3. FOR MATERIAL SPECS. SEE PG. 2

CHAIN LINK FENCE DETAILS
AND SPECIFICATIONS
PACIFIC POWER & LIGHT COMPANY
PORTLAND, OREGON

APPROVED *Corbett McLean*

SCALE *None* PB-15329
SHT 1 OF 2

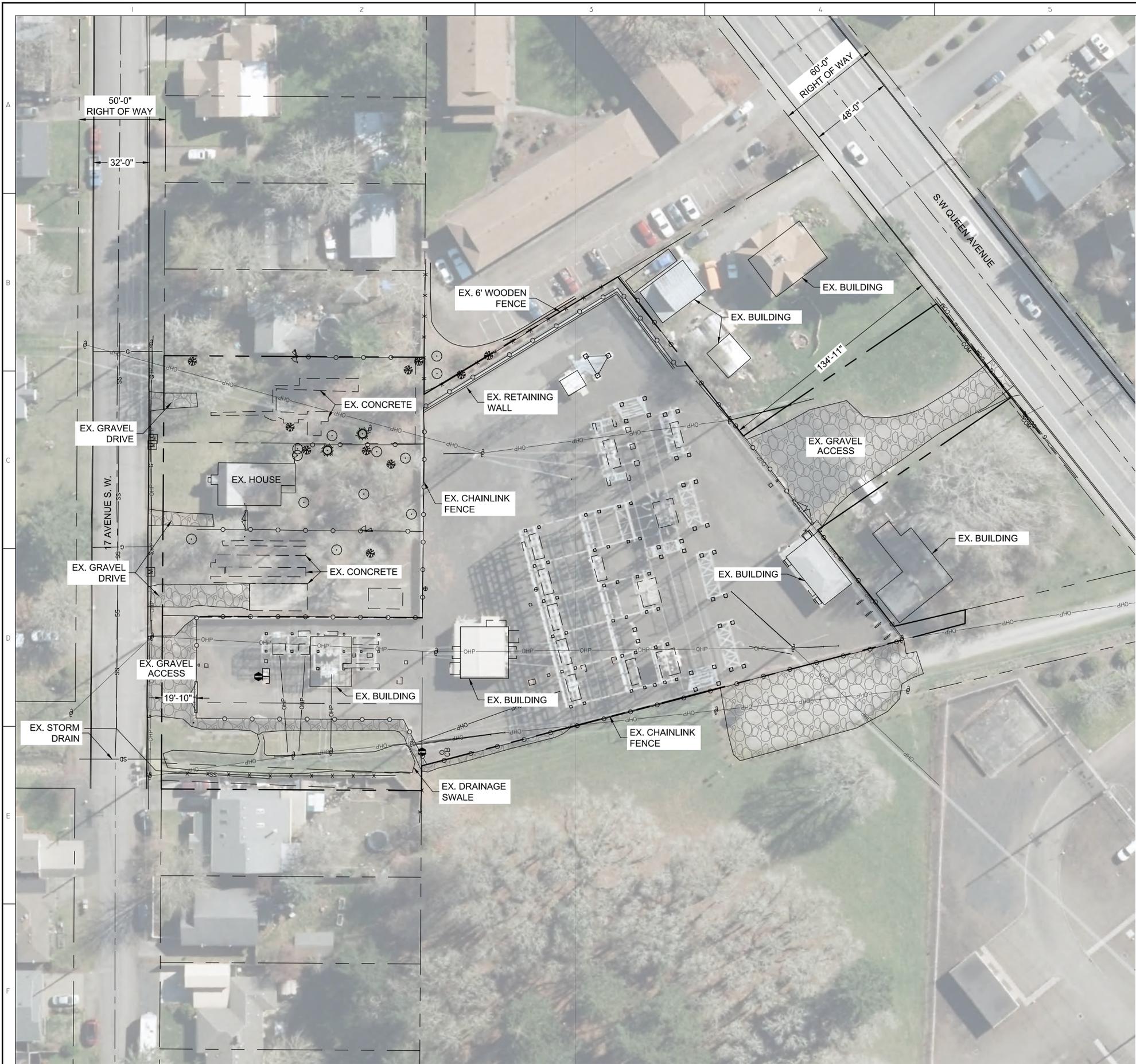
DRAWN	PSR, Goo	5-15-55
TRACED	TLE	5-16-55
CHECKED	HMP	5-26-55
APPROVED	<i>[Signature]</i>	10-23-55

ALTERED

WALK GATE

MICROFILMED

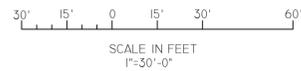
MICROFILMED



LONGITUDE: W 123° 07' 23"
 LATITUDE: N 44° 37' 23"
 ELEVATION: 213'

LEGEND

	POWER POLE
	BASELINE MONUMENT
	POWER PEDESTAL
	EXISTING TREE
	EXISTING MANHOLE
	PROPERTY LINE
	SUBSTATION PROPERTY LINE
	RIGHT OF WAY
	CURB
	ROAD CENTERLINE
	EXISTING FOUNDATION STRUCTURES
	EXISTING BUILDING
	EXISTING CHAIN LINK FENCE
	EXISTING WOODEN FENCE
	EXISTING OVERHEAD POWER
	EXISTING NATURAL GAS
	EXISTING COMMUNICATIONS
	EXISTING SANITARY SEWER
	EXISTING STORM DRAIN
	EXISTING GRAVEL AREAS



HAZELWOOD SUBSTATION
 ALBANY, OREGON
 EXISTING CONDITIONS PLAN

LOCATED IN THE SW 1/4 OF SECTION 12 AND THE NW 1/4 OF SECTION 13,
 TOWNSHIP 11 SOUTH, RANGE 4 WEST, WILLAMETTE MERIDIAN
 1950 17TH AVENUE, ALBANY, OREGON 97321

THIS DRAWING TAKEN IN PART FROM DWG. 13785A01, REV 7, 10/02/1997, & DWG 29866A02, REV 0, 07/26/73.

REVISED 08/18/07 D. HURLEY

APPROVED	
CHECKED	
DES/DR	
ENGINEER	
REVISIONS	
NO.	DATE
CIVIL DISCIPLINE ENG. S. WOOD/RMCD PROJECT ENG. J. LEE/RMCD DATE: 04/15/2020 ENG. DES. CR. SCALE: 1"=30'-0"	
HAZELWOOD SUBSTATION ALBANY, OREGON EXISTING CONDITIONS PLAN SHEET 1 OF 1 175897.101	
REVISION	

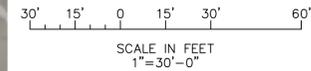


LEGEND

	PROPERTY LINE
	PROPERTY LINE
	SUBSTATION PROPERTY LINE
	PROPERTY EASEMENT

LONGITUDE: W 123° 07' 23"
 LATITUDE: N 44° 37' 23"
 ELEVATION: 213'

NOTE:
 1. LOT 1 THROUGH LOT 5 OF BLOCK 21 TO BE COMBINED INTO SINGLE PARCEL.

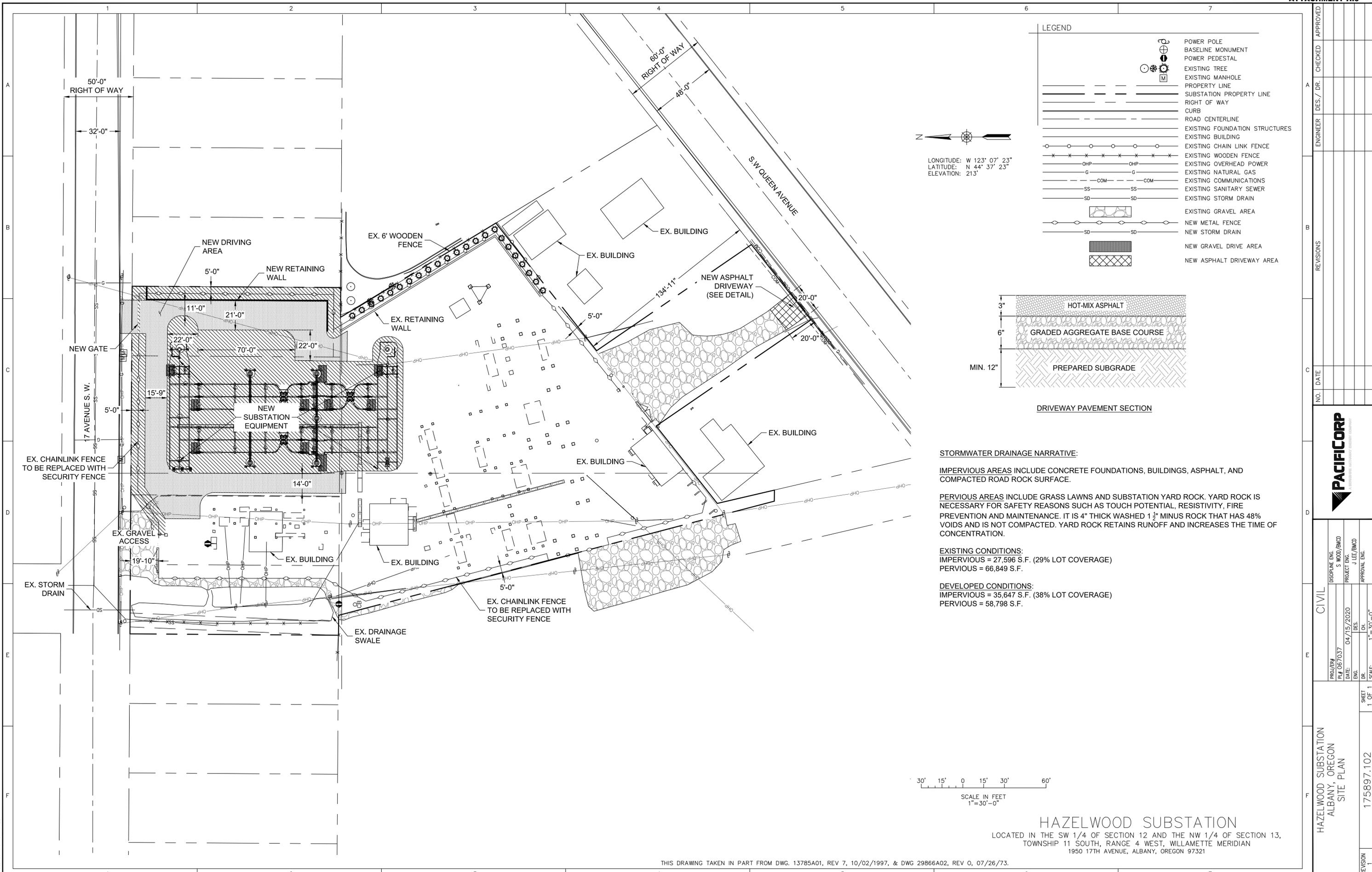


HAZELWOOD SUBSTATION
 ALBANY, OREGON
 REPEAT PLAN
 LOCATED IN THE SW 1/4 OF SECTION 12 AND THE NW 1/4 OF SECTION 13,
 TOWNSHIP 11 SOUTH, RANGE 4 WEST, WILLAMETTE MERIDIAN
 1950 17TH AVENUE, ALBANY, OREGON 97321

THIS DRAWING TAKEN IN PART FROM DWG. 13785A01, REV 7, 10/02/1997, & DWG 29866A02, REV 0, 07/26/73.

NO.	DATE	REVISIONS	ENGINEER	DES./ DR.	CHECKED	APPROVED
DISCIPLINE ENG.	S. WOOD/BMCD	PROJECT ENG.	J. LEE/BMCD	APPROVAL ENG.		
PROJ/REV	PL# 06/7037	DATE	04/15/2020	SHEET	1 OF 1	
SCALE	1"=30'-0"					
HAZELWOOD SUBSTATION ALBANY, OREGON REPEAT PLAN	175897.103					
REVISION	1					

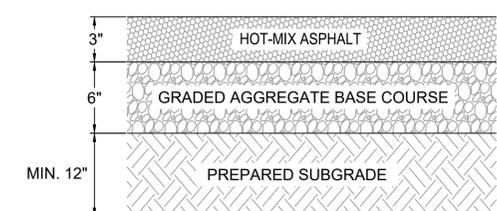
REVISED 08/18/07 BY D. HURLEY



LEGEND

- POWER POLE
- BASELINE MONUMENT
- POWER PEDESTAL
- EXISTING TREE
- EXISTING MANHOLE
- PROPERTY LINE
- SUBSTATION PROPERTY LINE
- RIGHT OF WAY
- CURB
- ROAD CENTERLINE
- EXISTING FOUNDATION STRUCTURES
- EXISTING BUILDING
- EXISTING CHAIN LINK FENCE
- EXISTING WOODEN FENCE
- EXISTING OVERHEAD POWER
- EXISTING NATURAL GAS
- EXISTING COMMUNICATIONS
- EXISTING SANITARY SEWER
- EXISTING STORM DRAIN
- EXISTING GRAVEL AREA
- NEW METAL FENCE
- NEW STORM DRAIN
- NEW GRAVEL DRIVE AREA
- NEW ASPHALT DRIVEWAY AREA

LONGITUDE: W 123° 07' 23"
 LATITUDE: N 44° 37' 23"
 ELEVATION: 213'



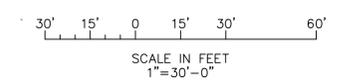
STORMWATER DRAINAGE NARRATIVE:

IMPERVIOUS AREAS INCLUDE CONCRETE FOUNDATIONS, BUILDINGS, ASPHALT, AND COMPACTED ROAD ROCK SURFACE.

PERVIOUS AREAS INCLUDE GRASS LAWNS AND SUBSTATION YARD ROCK. YARD ROCK IS NECESSARY FOR SAFETY REASONS SUCH AS TOUCH POTENTIAL, RESISTIVITY, FIRE PREVENTION AND MAINTENANCE. IT IS 4" THICK WASHED 1 1/2" MINUS ROCK THAT HAS 48% VOIDS AND IS NOT COMPACTED. YARD ROCK RETAINS RUNOFF AND INCREASES THE TIME OF CONCENTRATION.

EXISTING CONDITIONS:
 IMPERVIOUS = 27,596 S.F. (29% LOT COVERAGE)
 PERVIOUS = 66,849 S.F.

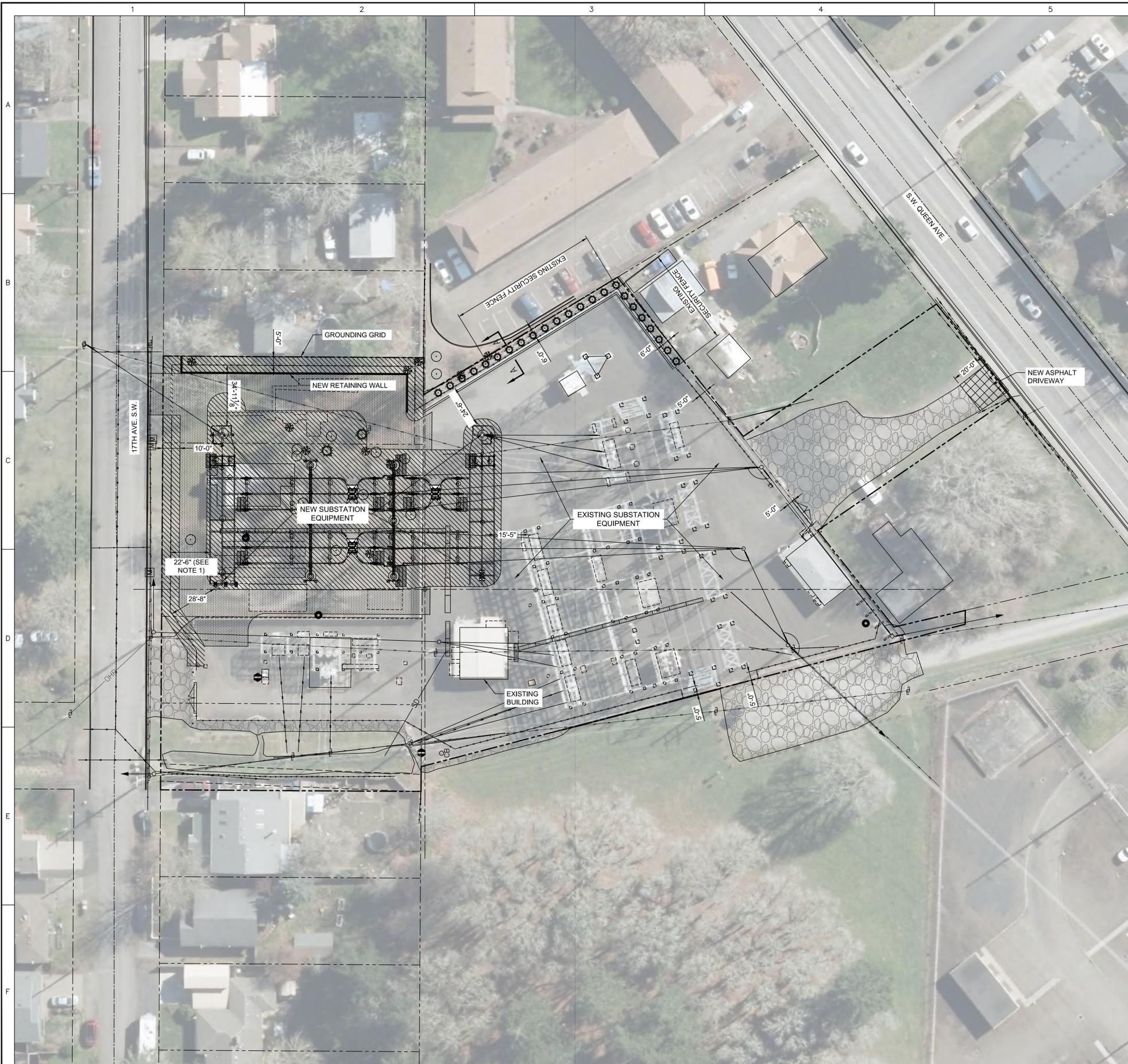
DEVELOPED CONDITIONS:
 IMPERVIOUS = 35,647 S.F. (38% LOT COVERAGE)
 PERVIOUS = 58,798 S.F.



HAZELWOOD SUBSTATION
 ALBANY, OREGON
 SITE PLAN
 LOCATED IN THE SW 1/4 OF SECTION 12 AND THE NW 1/4 OF SECTION 13,
 TOWNSHIP 11 SOUTH, RANGE 4 WEST, WILLAMETTE MERIDIAN
 1950 17TH AVENUE, ALBANY, OREGON 97321

THIS DRAWING TAKEN IN PART FROM DWG. 13785A01, REV 7, 10/02/1997, & DWG 29866A02, REV 0, 07/26/73.

APPROVED							
CHECKED							
DES./DR.							
ENGINEER							
REVISIONS							
NO.	DATE						
CIVIL							
PROJ/REV	DISCIPLINE ENG.	DATE	DATE	DATE	DATE	DATE	DATE
PL# 067037	S WOOD/BMCD	04/15/2020	04/15/2020	04/15/2020	04/15/2020	04/15/2020	04/15/2020
ENG.	DES.	CHK.	APP.	APP.	APP.	APP.	APP.
							SHEET 1 OF 1
							175897.102
							1

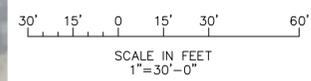


LEGEND

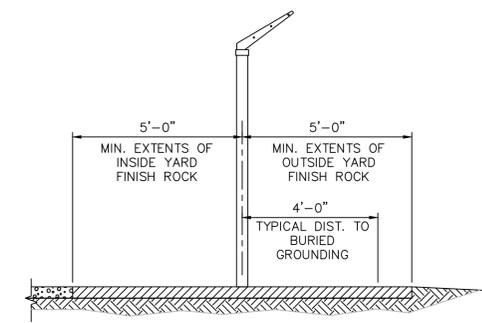
	POWER POLE
	BASELINE MONUMENT
	POWER PEDESTAL
	CONCRETE ELECTRICAL VAULT
	PROPERTY LINE
	SUBSTATION PROPERTY LINE
	EXISTING FOUNDATION STRUCTURES
	EXISTING BUILDING
	NEW FENCE
	EXISTING FENCE
	EXISTING NATURAL GAS LINE
	NEW RETAINING WALL
	NEW FENCE ISOLATION PANEL
	NEW ASPHALT DRIVEWAY AREA



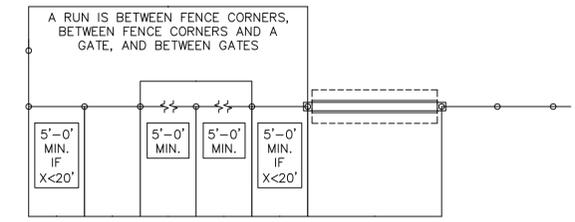
LONGITUDE: W 123° 07' 23"
 LATITUDE: N 44° 37' 23"
 ELEVATION: 213'



NOTES:
 1. MINIMUM DISTANCE FROM LIVE PARTS TO FENCE IS 24 FEET PER NESC GUIDANCE.



SECTION A-A
 SCALE: NONE



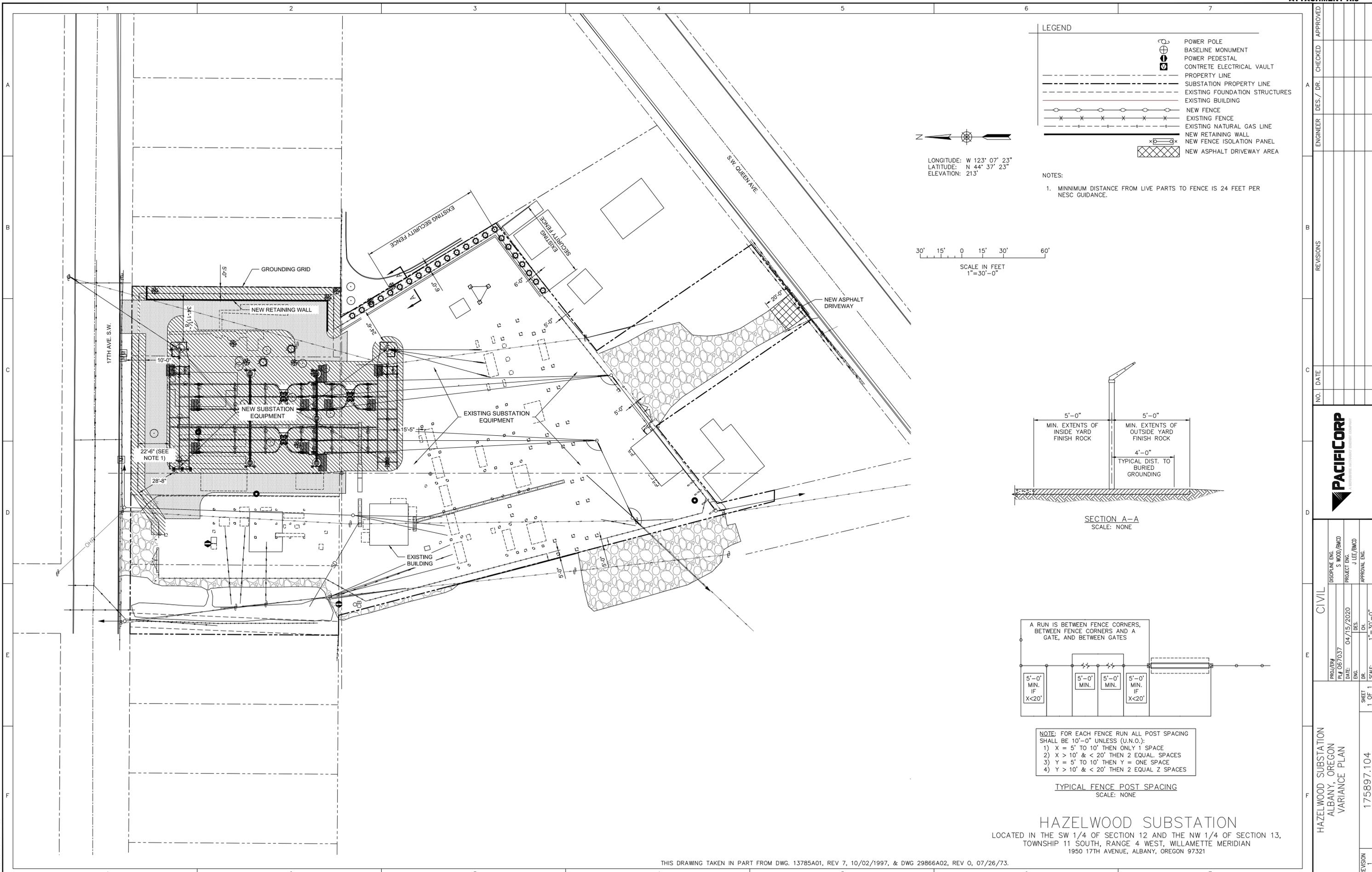
NOTE: FOR EACH FENCE RUN ALL POST SPACING SHALL BE 10'-0" UNLESS (U.N.O.):
 1) X = 5' TO 10' THEN ONLY 1 SPACE
 2) X > 10' & < 20' THEN 2 EQUAL SPACES
 3) Y = 5' TO 10' THEN Y = ONE SPACE
 4) Y > 10' & < 20' THEN 2 EQUAL 2 SPACES

TYPICAL FENCE POST SPACING
 SCALE: NONE

HAZELWOOD SUBSTATION
 ALBANY, OREGON
 VARIANCE PLAN
 LOCATED IN THE SW 1/4 OF SECTION 12 AND THE NW 1/4 OF SECTION 13,
 TOWNSHIP 11 SOUTH, RANGE 4 WEST, WILLAMETTE MERIDIAN
 1950 17TH AVENUE, ALBANY, OREGON 97321

APPROVED					
CHECKED					
DES./DR.					
ENGINEER					
NO. DATE					
REVISIONS					
PACIFIC CORP					
CIVIL	DISCIPLINE ENG.	S. WOOD/BMCD			
	PROJECT ENG.	J. LEE/BMCD			
	APPROVAL ENG.				
	PROJ/REV	PL# 06/7037			
	DATE	04/15/2020			
	ENG.	JES			
	DR.	CH			
	SHEET	1 OF 1			
	SCALE	1"=30'-0"			
	HAZELWOOD SUBSTATION				
	ALBANY, OREGON				
	VARIANCE PLAN				
	175897.104				
REVISION	1				

THIS DRAWING TAKEN IN PART FROM DWG. 13785A01, REV 7, 10/02/1997, & DWG 29866A02, REV 0, 07/26/73.

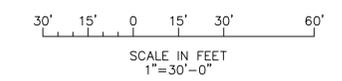


LEGEND

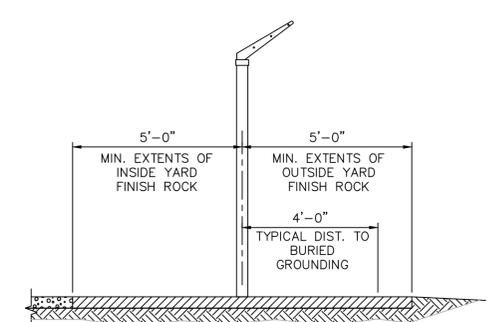
	POWER POLE
	BASELINE MONUMENT
	POWER PEDESTAL
	CONCRETE ELECTRICAL VAULT
	PROPERTY LINE
	SUBSTATION PROPERTY LINE
	EXISTING FOUNDATION STRUCTURES
	EXISTING BUILDING
	NEW FENCE
	EXISTING FENCE
	EXISTING NATURAL GAS LINE
	NEW RETAINING WALL
	NEW FENCE ISOLATION PANEL
	NEW ASPHALT DRIVEWAY AREA



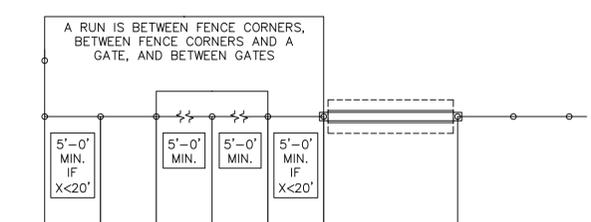
LONGITUDE: W 123° 07' 23"
 LATITUDE: N 44° 37' 23"
 ELEVATION: 213'



- NOTES:
- MINIMUM DISTANCE FROM LIVE PARTS TO FENCE IS 24 FEET PER NESC GUIDANCE.



SECTION A-A
SCALE: NONE



- NOTE: FOR EACH FENCE RUN ALL POST SPACING SHALL BE 10'-0" UNLESS (U.N.O.):
- X = 5' TO 10' THEN ONLY 1 SPACE
 - X > 10' & < 20' THEN 2 EQUAL SPACES
 - Y = 5' TO 10' THEN Y = ONE SPACE
 - Y > 10' & < 20' THEN 2 EQUAL 2 SPACES

TYPICAL FENCE POST SPACING
SCALE: NONE

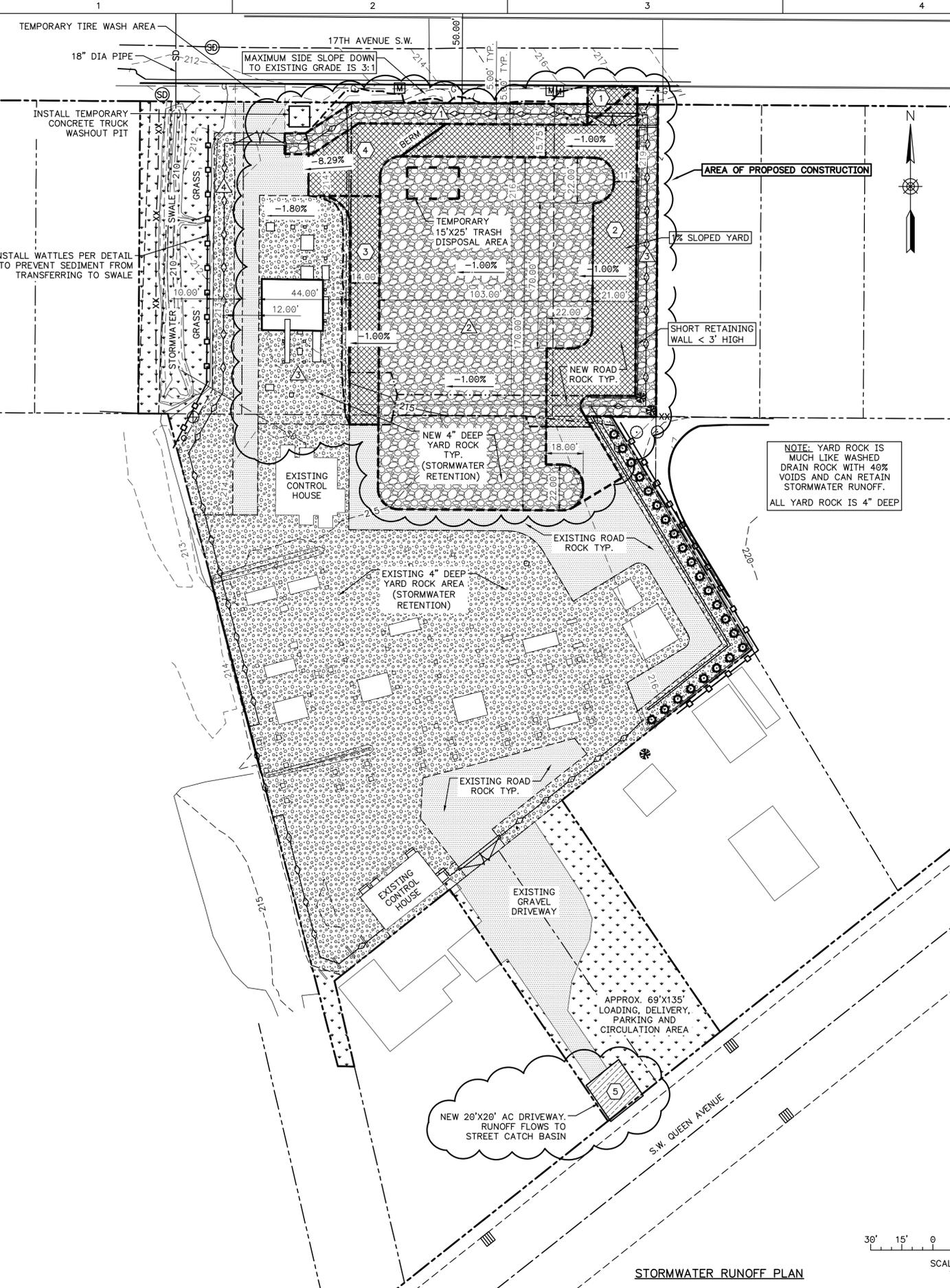
HAZELWOOD SUBSTATION
 ALBANY, OREGON
 VARIANCE PLAN

LOCATED IN THE SW 1/4 OF SECTION 12 AND THE NW 1/4 OF SECTION 13,
 TOWNSHIP 11 SOUTH, RANGE 4 WEST, WILLAMETTE MERIDIAN
 1950 17TH AVENUE, ALBANY, OREGON 97321

THIS DRAWING TAKEN IN PART FROM DWG. 13785A01, REV 7, 10/02/1997, & DWG 29866A02, REV 0, 07/26/73.

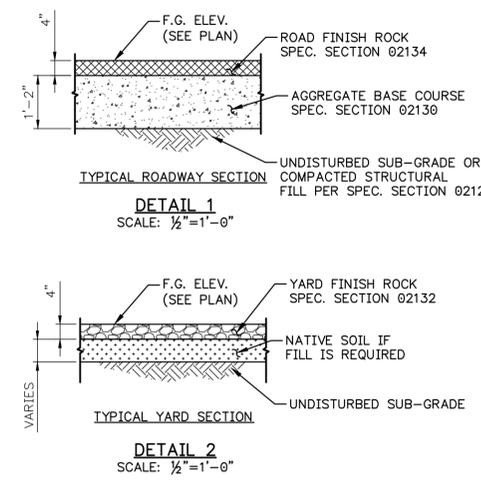
REVISED 09/18/07 D. HURLEY

APPROVED							
CHECKED							
DES./DR.							
ENGINEER							
REVISIONS							
NO.	DATE						
PACIFIC CORP							
DISCIPLINE ENG.		S. WOOD/RMCD		PROJECT ENG.		J. LEE/RMCD	
PROJ/ENR		PL# 06/7037		DATE		04/15/2020	
SHEET NO.		1 OF 1		SCALE		1"=30'-0"	
HAZELWOOD SUBSTATION ALBANY, OREGON VARIANCE PLAN							
175897.104							



HAZELWOOD SUBSTATION

LOCATED IN THE SW 1/4 OF SECTION 12 AND THE NW 1/4 OF SECTION 13,
TOWNSHIP 11 SOUTH, RANGE 4 WEST, WILLAMETTE MERIDIAN
1950 17TH AVENUE, ALBANY, OREGON 97321



STORMWATER DRAINAGE NARRATIVE:

IMPERVIOUS AREAS INCLUDE CONCRETE FOUNDATIONS, ASPHALT, SLABS, BUILDINGS AND COMPACTED ROAD ROCK SURFACE.

PERVIOUS AREAS INCLUDE GRASS LAWNS, SWALE AND SUBSTATION YARD ROCK (YARD ROCK IS NECESSARY FOR SAFETY REASONS SUCH AS TOUCH POTENTIAL, RESISTIVITY, FIRE PREVENTION AND MAINTENANCE. IT IS 4" THICK WASHED 1 1/2" MINUS ROCK THAT HAS 40% VOIDS AND IS NOT COMPACTED. YARD ROCK RETAINS RUNOFF AND INCREASES THE TIME OF CONCENTRATION).

TOTAL PROPERTY AREA: 94,445 S.F.

EXISTING CONDITIONS:
IMPERVIOUS = 22,861 S.F. (24% LOT COVERAGE)
PERVIOUS = 71,584 S.F.

DEVELOPED CONDITIONS (INCLUDES EXISTING SURFACES):
EXISTING IMPERVIOUS AREAS BEING REPLACED BY YARD FINISH ROCK = 5,176 S.F.
TOTAL IMPERVIOUS SURFACES = 21,199 S.F. (22% LOT COVERAGE)
TOTAL PERVIOUS SURFACES = 73,336 S.F.

NOTE: THE REASON THERE IS LESS IMPERVIOUS SURFACES AFTER DEVELOPMENT IS BECAUSE AN EXISTING HOUSE, FOUNDATIONS, SLABS AND COMPACTED ROAD SURFACES ARE BEING REPLACED BY YARD FINISH ROCK.

STORMWATER DISCHARGE:

THE RUNOFF FROM ALL GRAVEL ROAD SURFACES WILL SHEET FLOW INTO A 4" DEEP YARD ROCK AREA WHICH CONTAINS WASHED ROCK MUCH LIKE DRAIN ROCK AND HAS 40% VOIDS. THE YARD ROCK IS 4" IN DEPTH AND WILL HAVE VOIDS LONG TERM FOR TOUCH POTENTIAL OF NEARBY EQUIPMENT. THE NATIVE SOIL UNDER THE YARD ROCK CONSISTS OF GRANULAR MATERIAL THAT HAS AN INFILTRATION RATE OF 0.28 INCHES PER HOUR. ALL SURFACES THAT ARE NOT COVERED WITH FINISH ROCK (ROAD AND YARD ROCK) WILL BE NATIVE GROUND. THE STORMWATER PLAN SHOWS THE SUBCATCHMENT AREAS AND THEIR ADJACENT YARD ROCK AREAS THAT RECEIVES THE STORMWATER RUNOFF. THE KEY NOTES ON THE RIGHT SIDE OF THE SHEET DEFINE THE SUBCATCHMENT AREAS AND THE YARD ROCK AREAS THAT ARE CONSIDERED TO BE RETENTION/INFILTRATION PONDS. OUR HYDROLOGY REPORT DEMONSTRATES THAT THE YARD ROCK AREAS WILL INFILTRATE ALL THE RUNOFF FROM THE GRAVEL ROAD AREAS DURING A 25-YEAR, 24-HOUR STORM EVENT, WITHOUT ANY DISCHARGE, AND THAT THE AREAS THAT ARE TO REMAIN NATIVE GROUND WILL ABSORB ALL PRECIPITATION THAT FALLS ON THOSE AREAS SIMILAR TO PREDEVELOPMENT CONDITIONS. THERE WILL BE ESSENTIALLY NO STORMWATER RUNOFF DISCHARGING FROM THE SITE AFTER CONSTRUCTION.

TOTAL REDEVELOPED SURFACE AREAS:

- NEW GRAVEL ROAD AREAS (IMPERVIOUS) = 8,051 S.F.
- NEW DRAIN ROCK, RETENTION AREAS (PERVIOUS) = 24,011 S.F.

LEGEND	
(SEE DRAWING 17992A01 FOR EXISTING CONDITIONS AND LEGEND)	
	DITCH FLOW LINE
	LIMITS OF CONSTRUCTION
	PROPERTY LINE
	-5530 EXISTING MAJOR CONTOUR
	-5531 EXISTING MINOR CONTOUR
	5530 MAJOR CONTOUR
	5531 MINOR CONTOUR
	SECURITY FENCE W/ BARB
	EXISTING FENCE
	GRADE CHANGE
	EROSION CONTROL SILT FENCE
	EXISTING ARBORVITAE TREE
	NEW SUBCATCHMENT AREA
	EXISTING SUBCATCHMENT AREA
	NEW STORMWATER COLLECTION AREA
	EXISTING STORMWATER COLLECTION AREA
	EARTH
	NATIVE SOIL FILL
	AGGREGATE BASE COURSE
	NEW A/C PAVEMENT

DEVELOPED SUBSTATION HYDROLOGY REPORT:

RUNOFF METHOD = SCS TR-20
RAINFALL TYPE = 1A-24HR
2 YEAR, 24 HOUR STORM = 2.5"/24 HR
10 YEAR, 24 HOUR STORM = 3.5"/24 HR
25 YEAR, 24 HOUR STORM = 4.0"/24 HR
100 YEAR, 24 HOUR STORM = 4.5"/24 HR
Tc = DIRECT ENTRY OF 5 MIN.
THE 25 YEAR, 24 HOUR STORM EVENT IS USED TO DETERMINE IF RUNOFF CAN BE RETAINED ON SITE.

SUBCATCHMENTS 1-4 WILL DISCHARGE INTO AN AREA WITH 4" DEEP YARD ROCK, WHICH IS EQUIVALENT TO DRAIN ROCK WITH 40% VOIDS. NATIVE SOIL BENEATH THE YARD ROCK IS GRANULAR WITH AN INFILTRATION RATE OF 0.28 IN/HR.

- 1 TOTAL AREA = 222 S.F.
222 S.F. = NEW GRAVEL ROAD (CN=96)
RUNOFF = 0.00 CFS @ 7.86 HOURS. VOLUME = 0.002 AF, DEPTH> 3.54".
- 2 SURFACE AREA = 1,506 S.F.
CUMULATIVE STORAGE = 3 C.F. (AVAILABLE STORAGE = 199 C.F.)
INFLOW = 0.00 CFS @ 7.86 HOURS, OUTFLOW = 0.00 C.F. @ 8.02 HOURS.
PEAK ELEVATION = 0.00' @ 8.02 HOURS.
- 3 TOTAL AREA = 4,876 S.F.
4,876 S.F. = NEW GRAVEL ROAD (CN=96)
RUNOFF = 0.10 CFS @ 7.86 HOURS. VOLUME = 0.033 AF, DEPTH> 3.54".
- 4 SURFACE AREA = 16,260 S.F.
CUMULATIVE STORAGE = 59 C.F. (AVAILABLE STORAGE = 2,146 C.F.)
INFLOW = 0.10 CFS @ 7.86 HOURS, OUTFLOW = 0.10 C.F. @ 8.02 HOURS.
PEAK ELEVATION = 0.01' @ 8.02 HOURS.
- 5 TOTAL AREA = 1,588 S.F.
1,588 S.F. = NEW GRAVEL ROAD (CN=96)
RUNOFF = 0.03 CFS @ 7.86 HOURS. VOLUME = 0.011 AF, DEPTH> 3.54".
- 6 SURFACE AREA = 3,768 S.F.
CUMULATIVE STORAGE = 24 C.F. (AVAILABLE STORAGE = 497 C.F.)
INFLOW = 0.03 CFS @ 7.86 HOURS, OUTFLOW = 0.02 C.F. @ 7.80 HOURS.
PEAK ELEVATION = 0.02' @ 8.09 HOURS.
- 7 TOTAL AREA = 1,365 S.F.
1,365 S.F. = NEW GRAVEL ROAD (CN=96)
RUNOFF = 0.09 CFS @ 7.86 HOURS. VOLUME = 0.028 AF, DEPTH> 3.54".
- 8 SURFACE AREA = 2,477 S.F.
CUMULATIVE STORAGE = 272 C.F. (AVAILABLE STORAGE = 327 C.F.)
INFLOW = 0.09 CFS @ 7.86 HOURS, OUTFLOW = 0.02 C.F. @ 5.75 HOURS.
PEAK ELEVATION = 0.27' @ 11.26 HOURS.

NOTE: ZERO DISCHARGE DURING 25-YEAR, 24-HOUR STORM EVENT.

- 9 SURFACE AREA = 400 S.F.
DISCHARGES TO CATCH BASIN IN CITY STREET.

NO.	DATE	REVISIONS	ENGINEER	DES./DR.	CHECKED	APPROVED

PACIFICORP <small>A WASHINGTON ENERGY COMPANY</small>	DISCIPLINE ENG.	GARY HUNTING
	PROJECT ENG.	SEKHU HUYNH
	DES. G. HUNTING	CH. D. MORELL
	APPROVE. ENG.	DAN MORELL

PROJ/REV	10053718	CIVIL
PLI 067037	04/15/2020	
DATE	DES. G. HUNTING	
ENG. G. HUNTING	CH. D. MORELL	
SCALE	1" = 30'	

HAZELWOOD SUBSTATION ALBANY, OREGON STORMWATER MANAGEMENT PLAN HYDROLOGIC ANALYSIS	SHEET 1 OF 1	012020.001
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