

MEMO



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TO: Paul Borowick, PKA Architects

FROM: Erik Miller-Klein, SSA Acoustics

DATE: December 1, 2015

SUBJECT: VA White City – Building 201B: Chiller & Dry Cooler Environmental Noise Mitigation

This memorandum is a summary of our acoustic recommendations to mitigate the environmental noise from the Chiller (CH-1) and Dry Cooler (DC-1) to the outdoor seating areas and windows of Building 213.

Option 1: Equipment Treatments

This noise reduction plan would provide the same improvement to outdoor areas as well as the exterior envelope of Building 213. Estimated noise reduction of 6 to 8 dBA, for a predicted level for outdoor seating of 59 dBA with both systems operating at 100%, which is clearly audible, but quiet enough to have a phone conversation.

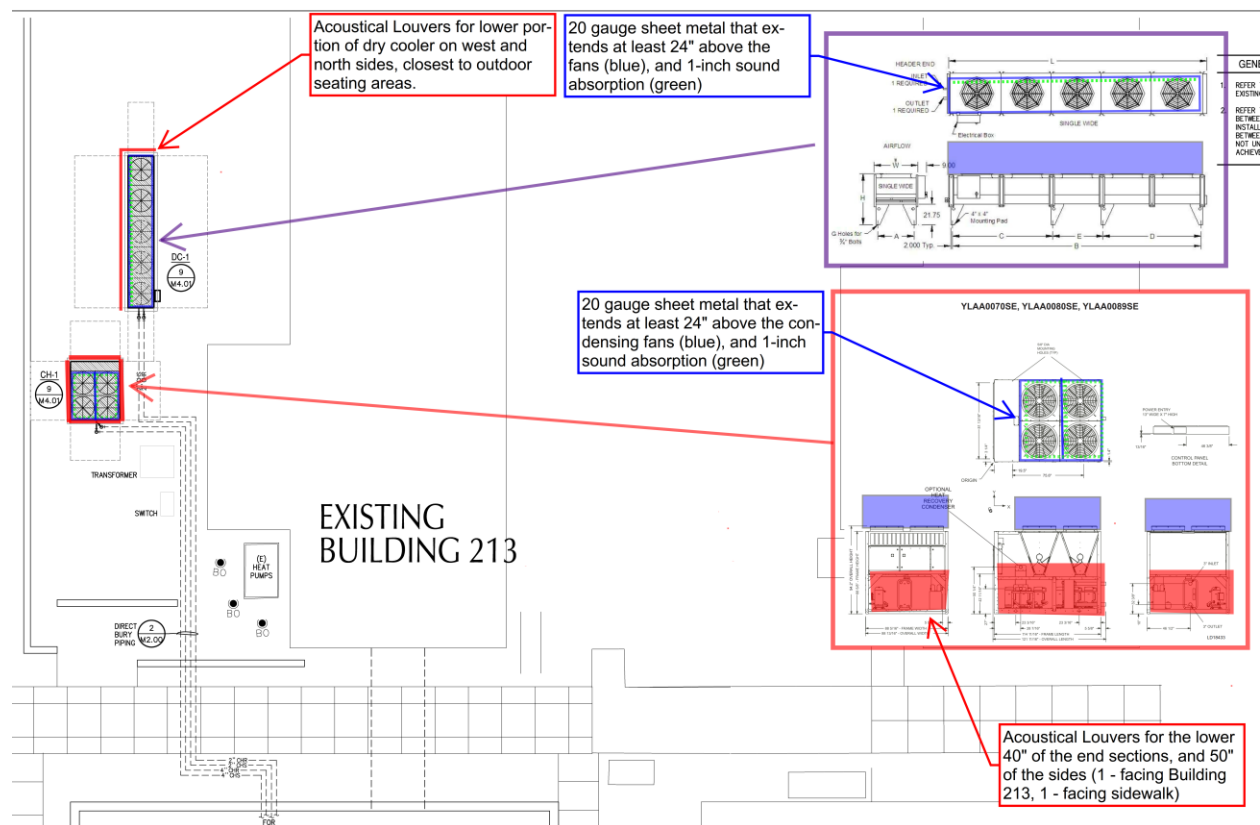


Figure 1: Option 1 - Noise Mitigation Plan

Recommendations

1. Install 6-inch deep acoustical louvers for the bottom 40-inches for the ends of the chiller, bottom 50-inches for sides of chiller, and bottom of plan north and west sides of Dry Cooler, highlighted red on Figure 1.
 - a. Products: [Pottorff](#) EAA-645, [Greenheck](#) AFJ, [Vibro-Acoustics](#) ALA-HV-6
2. Install 20-gauge sheet metal that extends 24-inches above the condensing fans (shown in blue on Figure 1. Install sound absorptive liner to the inside face of the sheet metal to reduce reflected sound.
 - a. Sound Absorption options:
 - i. 1-inch thick [Sealed Air Stratocell Whisper](#)
 - ii. 1-inch thick [Armacell Armaflex AP](#)
 - iii. 1-inch thick Polyester ([F-Sorb](#)) on ½" thick vertical hat channel

Option 2: Noise Barrier with Landscaping

This noise reduction plan would provide improvement to the outdoor areas and little reduction to Building 213. Estimated noise for outdoor seating is 55 dBA with both systems operating at 100%, which is clearly audible, but is quiet enough to have a phone conversation.

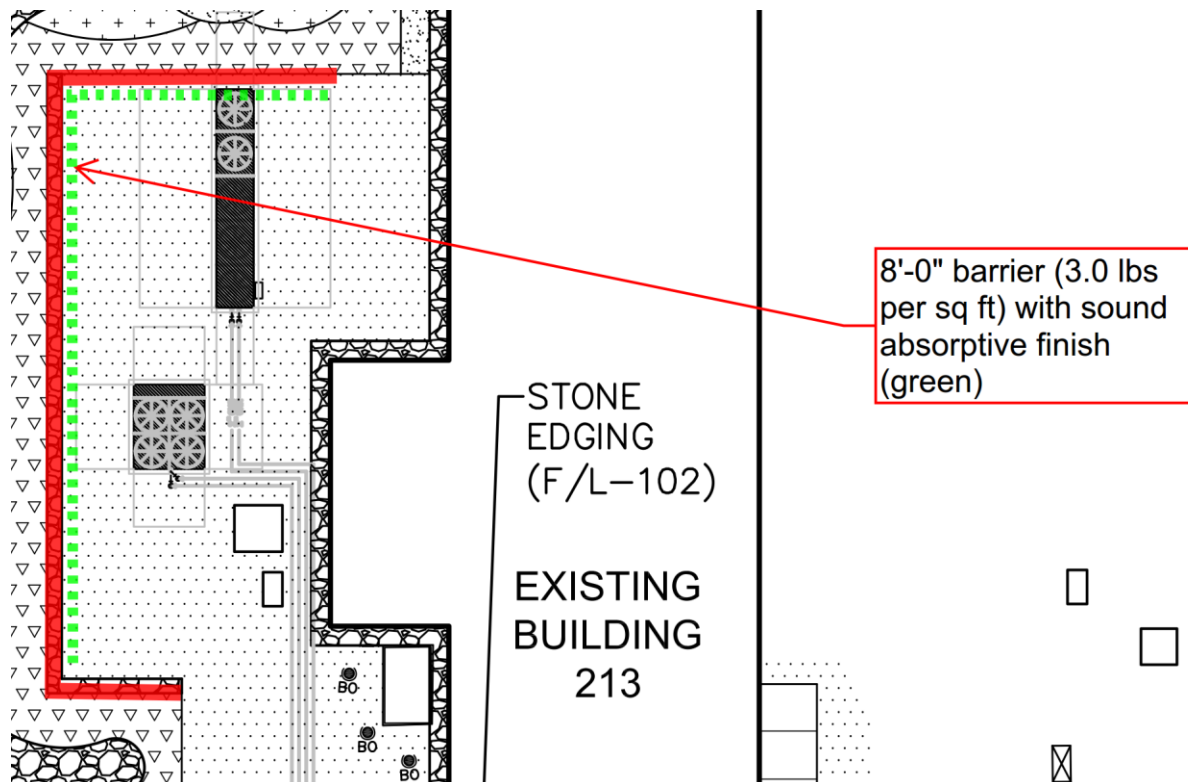


Figure 2: Option 2 – Noise Mitigation Plan

Recommendations

1. Install 8'-0" high barrier that has a minimum surface weight of 3.0-lbs per sq ft.
 - a. Material Options: 3/4-inch exterior grade plywood, 5/8-inch cement board or cement siding, 20 gauge sheet metal with 1-inch cementitious commercial fireproofing spray.
 - i. 1-inch fireproofing spray is sound absorptive (noted below), and ensures the metal panels meet surface weight requirements
2. Install sound absorption for the inside face of the west and north portion of the barrier from 2'-0" to 8'-0".
 - a. Sound Absorption options:
 - i. 1-inch thick low density fireproofing spray or Vermiculite and Portland Cement spray
 1. [Pyrok Acoustement40](#)
 2. [Cafco Sound-Shield 40](#)
 3. [Grace Monokote MK-6](#)
 - ii. Or one of the following materials on 1-inch vertical furring strips
 - a. [Sealed Air Stratocell Whisper](#)
 - b. [Armacell Armaflex AP](#)
 - c. [F-Sorb](#)

Option 3: All of the Above

If the noise mitigation option 1 and 2 were combined the estimated sound level at the outdoor areas would be less than 50 dB(A), which is quiet enough to hear the birds and wind. The chiller and dry cooler would sound like a car pass in the distance.

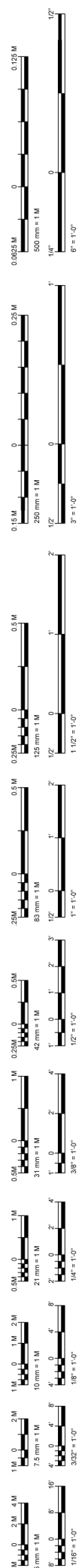
Please contact us with any questions or concerns.

All the best,
SSA ACOUSTICS, LLP

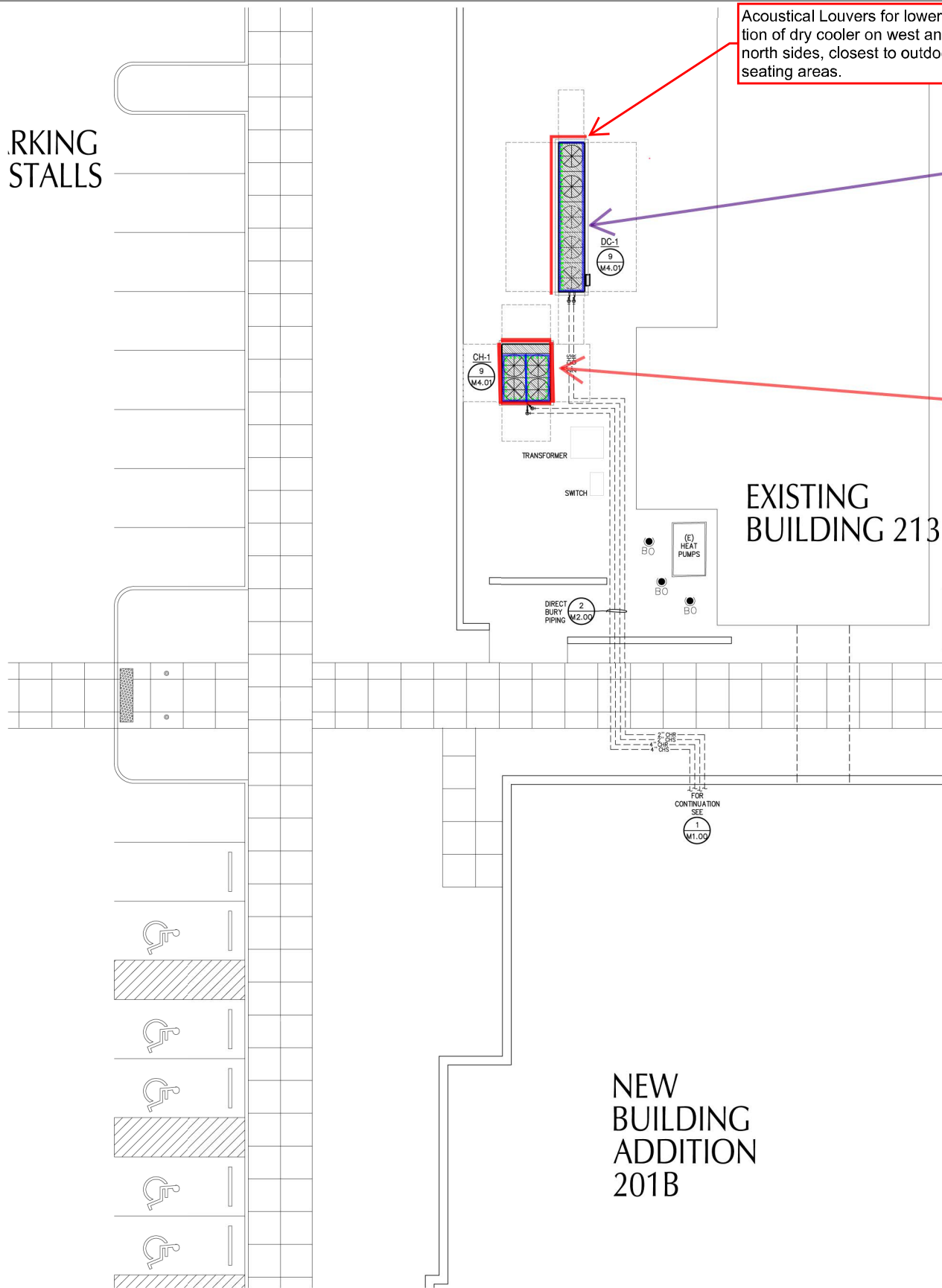


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WORKING STALLS

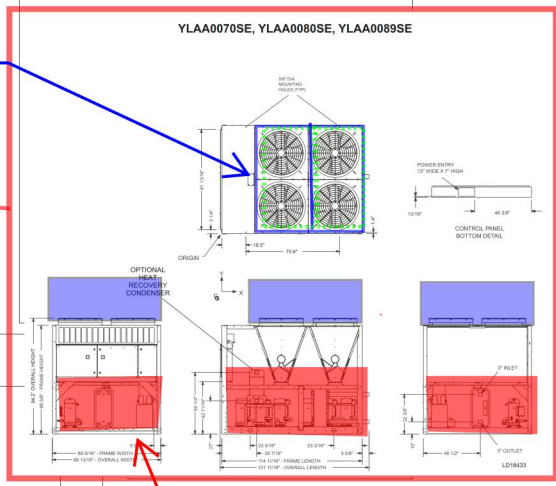
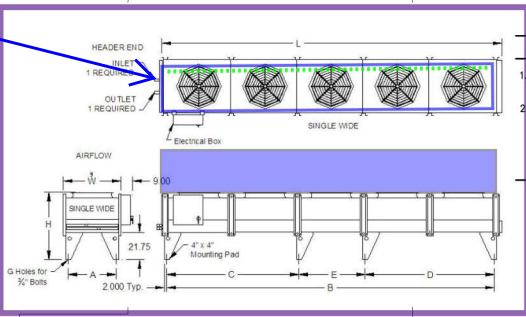


Acoustical Louvers for lower portion of dry cooler on west and north sides, closest to outdoor seating areas.

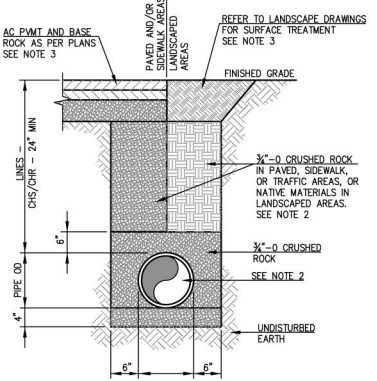
20 gauge sheet metal that extends at least 24" above the fans (blue), and 1-inch sound absorption (green)

20 gauge sheet metal that extends at least 24" above the condensing fans (blue), and 1-inch sound absorption (green)

Acoustical Louvers for the lower 40" of the end sections, and 50" of the sides (1 - facing Building 213, 1 - facing sidewalk)



- GENERAL NOTES:
- REFER TO CIVIL AND ELECTRICAL SHEETS FOR MORE INFORMATION ON THE EXISTING BURIED SERVICES IN THIS AREA
 - REFER TO DRAWINGS C-400 FOR CROSSINGS AND MINIMUM VERTICAL CLEARANCE BETWEEN SITE UTILITIES SHOWN HEREON AND CIVIL SITE UTILITIES. COORDINATE INSTALLATION AND SCHEDULE TO INSURE VERTICAL ALIGNMENT IS COORDINATED BETWEEN TRADES AND BEDDING AND BACKFILL INSTALLED BY OTHER TRADES IS NOT UNDERMINED. BACKFILL USING FLOWABLE FILL WHERE COMPACTION CANNOT BE ACHIEVED.

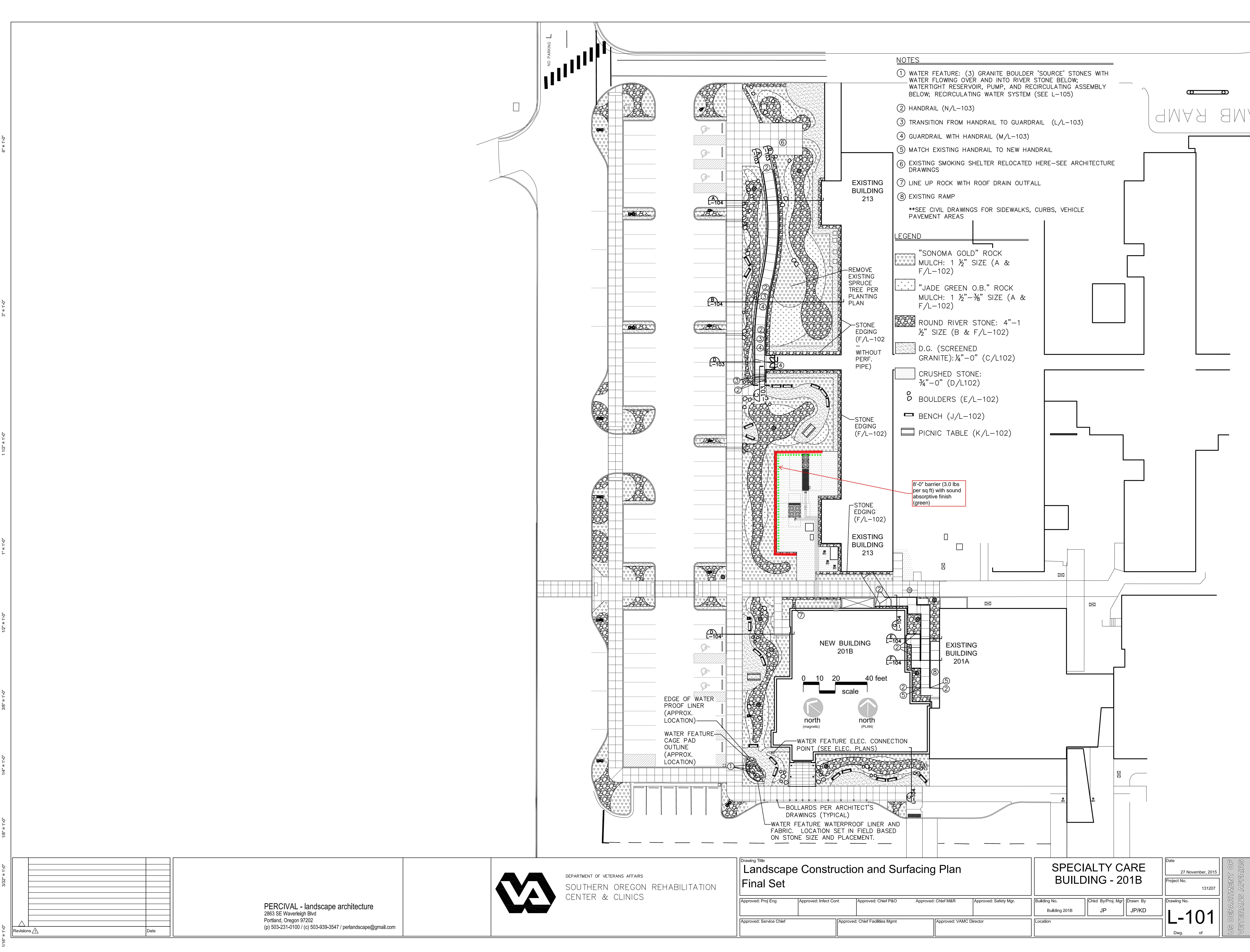


- NOTES
- WATER LINES THAT PARALLEL SANITARY SEWER LINES SHALL BE LOCATED A MINIMUM OF 12" ABOVE SEWER LINES, WHERE SERVICES ARE NOT HORIZONTALLY SEPARATED BY 10'.
 - WITHIN 5' OF A BUILDING STRUCTURE, BUILDING CODE APPROVED PIPE MATERIAL AND 3/4" CRUSHED ROCK BACKFILL SHALL BE USED.
 - SAWCUT, REMOVE AND REPAIR EXISTING SURFACES TO MATCH EXISTING ASPHALT, CONCRETE, OR LANDSCAPING IN AREAS WHICH DO NOT RECEIVE NEW IMPROVEMENTS. PROVIDE 4" MIN DEPTH ASPHALT PAVEMENT, 4" MIN DEPTH CONCRETE PAVEMENT, OR MATCH EXISTING PAVEMENT DEPTH, WHICHEVER IS GREATER.
 - WHERE MULTIPLE PIPES ARE SHOWN, MAINTAIN MINIMUM 6" SPACING BETWEEN PIPES.

1 SITE PLAN - MECHANICAL EQUIPMENT
SCALE: 1/8"=1'-0"

2 TYPICAL TRENCHING & BACKFILL SECTION
NO SCALE

<p>Revisions</p> <table><tr><td>1</td><td>DATE</td></tr></table>	1	DATE	<p>pka ARCHITECTS</p> <p>PETERSEN KOLBERG & ASSOCIATES ARCHITECTS/PLANNERS 6969 SW Hampton Street Portland, OR 97223 phone: 503-968-6800 fax: 503-968-6860 www.pkaarchitects.com</p>	<p>BALZHISER & HUBBARD ENGINEERS INC.</p> <p>340 WILLAMETTE ST. SUITE 300 EUGENE, OR 97401 P: 541-686-8678 F: 541-245-5303 3003 SW 5TH AVENUE SUITE 1000 - OFFICE 55 PORTLAND, OR 97204 P: 503-961-6440</p> <p>2100-028-14m2.00.dwg</p>	<p>REGISTERED PROFESSIONAL DIGITAL SIGNATURE STEPHEN B. SMITH EXPIRES 6/30/16</p>	<p>DEPARTMENT OF VETERANS AFFAIRS SOUTHERN OREGON REHABILITATION CENTER & CLINICS Project Address</p>	<p>Drawing Title SITE PLAN - MECHANICAL EQUIPMENT FINAL SET</p> <table><tr><td>Approved: Proj Eng</td><td>Approved: Infect Cont</td><td>Approved: Chief P&O</td><td>Approved: Chief M&R</td><td>Approved: Safety Mgr.</td></tr><tr><td>Approved: Service Chief</td><td>Approved: Chief Facilities Mgmt</td><td>Approved: VAMC Director</td><td></td><td></td></tr></table>	Approved: Proj Eng	Approved: Infect Cont	Approved: Chief P&O	Approved: Chief M&R	Approved: Safety Mgr.	Approved: Service Chief	Approved: Chief Facilities Mgmt	Approved: VAMC Director			<p>SPECIALTY CARE BUILDING - 201B</p> <table><tr><td>Building No.</td><td>Chkd By/Proj. Mgr</td><td>Drawn By</td></tr><tr><td>Building 201B</td><td>SBS</td><td>CAS</td></tr></table> <p>Location WHITE CITY, OREGON</p>	Building No.	Chkd By/Proj. Mgr	Drawn By	Building 201B	SBS	CAS	<p>Date 11/27/2015</p> <p>Project No. 131207</p> <p>Drawing No. M2.00</p> <p>Dwg. of</p>	<p>U.S. DEPARTMENT OF VETERANS AFFAIRS</p>
1	DATE																									
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