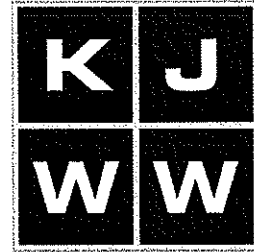




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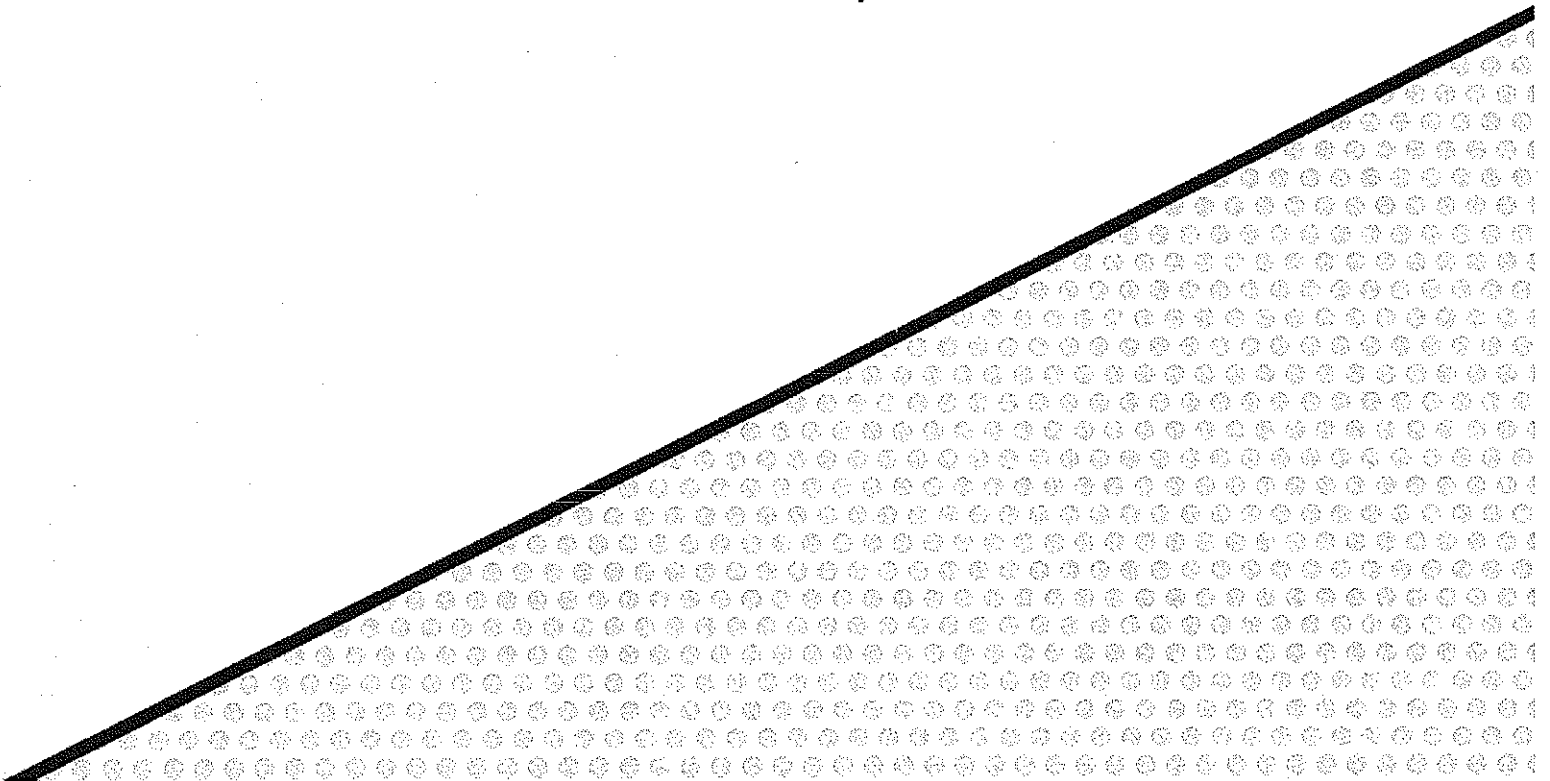
# **River Ridge School District**

State Review Responses and  
Recommendations

ADG #12-081

KJWW #14.0582.01

December 17, 2014



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**State Review Responses and Recommendations  
for  
River Ridge School District  
Patch Grove, WI  
ADG # 12-081  
KJWW #14.0582.01  
December 17, 2014**

**A. Introduction**

1. The following responses and recommendations to the mechanical and electrical related items in the State of Wisconsin Department of Safety and Professional Services Notice of Violations and Orders were prepared by KJWW following a site walkthrough of the schools and numerous conversations with the State of Wisconsin, Architectural Design Group, and the River Ridge School District. The recommendations only address the code deficiencies noted in the Notice of Violations and Orders for the River Ridge Elementary / High School dated October 15, 2014 and the Notice of Violations and Orders for the River Ridge Middle School dated October 28, 2014. It has been discussed and is understood additional code deficiencies could be discovered in the future, and corresponding costs would not be included in the opinions of probable cost noted below.
2. ADG response will be in GREEN.
3. KJWW response will be in RED.

**B. River Ridge Elementary / High School Transaction No. 2465040**

1. Code Section Violated: 101.11 Employer's duty to furnish safe employment and place.

**101.11(1)** Every employer shall furnish employment which shall be safe for the employees therein and shall furnish a place of employment which shall be safe for employees therein and for frequenters thereof and shall furnish and use safety devices and safeguards, and shall adopt and use methods and processes reasonably adequate to render such employment and places of employment safe, and shall do every other thing reasonably necessary to protect the life, health, safety, and welfare of such employees and frequenters. Every employer and every owner of a place of employment or a public building now or hereafter constructed shall so construct, repair or maintain such place of employment or public building as to render the same safe.

**101.11(2)(a)** No employer shall require, permit or suffer any employee to go or be in any employment or place of employment which is not safe, and no such employer shall fail to furnish, provide and use safety devices and safeguards, or fail to adopt and use methods and processes reasonably adequate to render such employment and place of employment safe, and no such employer shall fail or neglect to do every other thing reasonably necessary to protect the life, health, safety or welfare of such employees and frequenters; and no employer or owner, or other person shall hereafter construct or occupy or maintain any place of employment, or public building, that is not safe, nor prepare plans which shall fail to provide for making the same safe.

**Conditions Found:** It is reasonable that the violation of code SPS 364.0313(1) as referenced in Regulated Objects Transaction No. 2466139 could contribute to the health symptoms described by some of the employees at the River Ridge Elementary and High School Buildings.

**ADG Response:** Currently the State of Wisconsin Department of Industry Services does not have a Code that directly relates to air quality with-in a given occupancy. It was stated by the State Inspector, contacted by ADG and KJWW, that the State is currently working on code language to address the topic; however, no rules are currently in-place. The District is only required to bring the existing facility up to the codes in place at the time of construction.

Violations of State of Wisconsin Electrical code SPS 316 as reported in Regulated Objects Transaction No. 2465407.

**Action Required:** Compliance with Regulated Objects Transaction No.'s 2466139 & 2465407 as listed below.

**ADG and KJWW Response:** Specific action items as noted in Object Transaction No.'s 2466139 & 2465407 will be completed as noted below.



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Transaction No. 2466139

**SPS 361.30(3)** – Building plans were not submitted for review and conditional approval by the Department prior to commencing construction on the special education and guidance offices as required. Submit four sets of building plans (or one plan and three additional index sheets), with one set of calculations and specifications, a completed SBD-118 form, a copy of orders as issued by a Dept. representative from the field, and fees to this Department for review and approval. If the building is over 50,000 cubic feet in total volume, all plans, calculations and specifications shall be properly stamped, signed and dated by a WI-registered architect or engineer.

**ADG Response: Building plans will be created and provided for the Special Education and Guidance Offices (should Option 1 be pursued).**

**Option 1: Create and submit plans as required for State approval. Assist the District in contracting for corrective construction work accordingly.**

- **Our opinion of probable cost for this item is: \$26,000**

**Option 2: Demolish modifications completed without approved plans and return to original condition.**

- **Our opinion of probable cost for this item is: \$14,000**

**SPS 361.30 (3)** – Submit four (4) sets of Heating, ventilating and air conditioning plans for the special education and guidance offices, with one set of calculations all of which are to be properly stamped, signed and dated, a completed SBD-118 form and fees to this Department for review and approval.

**KJWW Response: Heating, ventilating and air conditioning plans will be created and provided for the special education and guidance offices. The plans, along with calculations and SBD-118 will be properly stamped, signed, and dated for review and approval.**

**Option 1: Create and submit plans to correct conditions. This applies to high school and elementary school guidance and special education office areas.**

- **Our opinion of probable cost: \$29,000**

**Option 2: Demolish modifications completed without approved plans to return area back to original configuration.**

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**ICC/ANSI A117.1 Sec. 702.1** – Visual alarms shall be provided per IBC 907.9.1.1 in all public and common use areas of any building equipped with an alarm system including, but not limited to corridors, meeting and conference rooms, classrooms, toilet and bathrooms, lobbies, dressing and locker rooms, cafeterias, treatment and examination rooms, file rooms and any other common use area that a person is likely to be working alone. Visual alarms shall be installed in accordance with NFPA 72 per the requirements of Section 702.1.

**KJWW Response: Install devices in the areas that were recently renovated. This would not apply to all common spaces throughout the building, unless the overall work required would force full building compliance.**

- **Our opinion of probable cost for this item is: \$5,000 limited to only the two small renovated areas.**

**IBC 2603.4** – Provide an approved 15 minute thermal barrier between foam plastic and interior of the buildings. A ½" gypsum board or equivalent shall be used, unless an exception can be met.

- Building & HVAC plans shall be submitted to this department for review and approval for the construction of the special education/guidance offices. Offices and conference areas were constructed without obtaining plan review approval. These rooms lack required ventilation and have exposed foam insulation above the ceiling.

**ADG and KJWW Response: As noted in Items SPS 361.30(3) above.**

**IMC/SPS 364.0313(1)** – Every heating, ventilating and air-conditioning system shall be balanced upon installation. The person or agency responsible for balancing of the ventilating system shall document in writing the amount of outdoor air being provided and distributed for the building occupants, exhausts, and any other specialty ventilation. The document shall be retained at the site and shall be made available to the department upon request. **Several areas of the building appear to lack ventilation, and damage to the ductwork was observed in the mechanical rooms. Repairs shall be made to the ductwork and a balance and test report shall be provided for the areas served.**

**KJWW Response: This Owner related item will be addressed by the River Ridge School District. A certified Test and Balance contractor will be hired by the River Ridge School District to provide balancing of the outdoor air being provided to the building occupants, exhausts and specialty ventilation.**

- **Our opinion of probable cost for this item is: \$70,000**

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**IMC 603.4/Comm 64.34(1)** – All metallic ducts shall be constructed as specified in the SMACNA HVAC Duct Construction Standards-Metal & Flexible. The flex duct coming off the air conditioner in the attic shall be tight (or as short as possible) for proper airflow.

**KJWW Response: All flexible ductwork located within the attic space will be replaced with insulated, metal ductwork per SMACNA HVAC Duct Construction Standards-Metal & Flexible.**

- **Our opinion of probable cost for this item is: \$24,000**

**IFC 315.2.2** – Combustible material shall not be stored in boiler rooms, mechanical rooms, or electrical rooms. Storage shall be removed from all of the mechanical rooms.

**KJWW Response: This Owner related item will be addressed by the River Ridge School District.**

**COMM 51.02(19)(a)** – The attic of this building is required to be divided into areas not greater than 3,200 square feet. Panels for access openings in compartment walls shall be equipped with self-closing devices and shall normally be kept closed. **COMM 51.02(18)(a)** Provide access to each compartment by means of 20 inch by 30 inch openings.

**ADG Response: Documentation of non-conforming conditions will be made available so as to provide construction details and locations to correct the deficiencies in the existing conditions.**

- **Our opinion of probable cost for this item is: \$32,000**

**IND 64.08(4)** – Exhaust vents shall be ducted to the exterior of the building. The exhaust fan in the kitchen shall discharge directly to the exterior.

- There is an additional duct in the attic – it is unknown what area this serves or if it's exhaust or supply. If it is exhaust, it shall be ducted to the exterior of the building. If it supplies air and is taking that air from the attic space, the attic space is considered a plenum and therefore, the attic would be required to be noncombustible. Please determine the use of the duct so proper code compliance can be achieved.

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**KJWW Response: The exhaust fan serving the kitchen will be rerouted and discharged to the exterior. The additional exhaust duct is purposed as make-up air serving the office areas. This duct will be capped and proper ventilation air will be provided to the offices.**

- **Our opinion of probable cost for this item is: \$21,000**

**ADG Response: The Superintendent reported to ADG that the custodial staff discovered another exhaust duct that was not ducted to the exterior. This exhaust duct will be routed to the exterior.**

- **Our opinion of probable cost for this item is: Included above.**

Transaction No. 2465407

**NEC 700.3 Tests and Maintenance:** Several battery back-up emergency lights are not in working order. A test shall be conducted for the emergency lighting and exit lights. All non-functional emergency lights, batteries and exit lights shall be promptly repaired. A written record of the emergency test shall be submitted to State Electrical Inspector Anthony Tadysak and kept on site of the facility.

**KJWW Response: This Owner related item will be addressed by the River Ridge School District. The school district will hire a licensed electrician to conduct the test. All non-functional emergency lights, batteries and exit lights will be repaired/replaced as required.**

- **Our opinion of probable cost for this item is: \$10,000 or less depending on the number of units that need to be replaced. Any replaced unit should include self-diagnostics so that all required routine testing is performed by the unit itself.**

**NEC 700.3 Tests and Maintenance:** A test of the emergency generator shall be conducted and witnessed by State of Wisconsin Electrical Inspector Anthony Tadysak. The generator test shall comply with NEC 700.12

**KJWW Response: The facility does not have a generator.**

- **Our opinion of probable cost for this item is: \$0**

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**NEC 240.24 & NEC 110.26(A)(3):** Electrical Panels not allowed in the attic of the school. All electrical panels installed in the attic shall be relocated to a readily accessible location with working clearances complying with NEC 110.26 & NEC 240.24

**KJWW Response: Panels will be relocated and distribution will be modified as required for relocation.**

- **Our opinion of probable cost for this item is: \$650,000 for multiple items due to their related nature.**

**SPS 316.110 & NEC 450.9, 450.13:** Electrical Transformers not allowed in the attic of the school. All Electrical Transformers installed in the attic shall be relocated and installed in accordance with the manufactures installation instructions.

**KJWW Response: Transformers will be relocated and distribution will be modified as required for relocation.**

- **Our opinion of probable cost for this item is: Included in the 240.24 line item.**

**NEC Article 334 Type NM Romex Cable:** All NM Romex cable installed in the school and school attic shall be reworked per NEC Article 334.

**KJWW Response: Additional support and protection shall be provided for cables that remain in place. Numerous cables will be replaced as part of the transformer and panel relocation, so those cables will be installed in a code compliant manner.**

- **Our opinion of probable cost for this item is: Included in the 240.24 line item.**

**NEC 400.8 Extension Cords:** Extension cords are being used in the attic of the school as a substitute for permanent wiring. It shall be necessary to remove all extension cords in the attic and replace with a recognized NEC chapter 3 wiring method.

**KJWW Response: Extension cords will be replaced with a permanent wiring system.**

- **Our opinion of probable cost for this item is: Included in the 240.24 line item.**

**NEC Article 362 ENT:** All ENT installed in the school and school attic shall be reworked per NEC article 362.

**KJWW Response: ENT shall be modified as required for code compliance.**

- **Our opinion of probable cost for this item is: Included in the 240.24 line item.**

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**NEC Article 352 PVC:** All PVC installed in the school and school attic shall be reworked per NEC article 352.

**KJWW Response: PVC shall be modified as required for code compliance.**

- **Our opinion of probable cost for this item is: Included in the 240.24 line item.**

**NEC 300.22 Plenums:** All electrical wiring, data wiring and fire alarm wiring install in spaces for environmental air (Plenums) shall be plenum rated or comply with the allowable wiring methods in NEC 300.22(C)(1). It was noted on the inspection that several areas above the schools drop ceilings are being used as plenum and several wiring methods do not comply with code or are not plenum rated.

**KJWW Response: All exposed low voltage cabling shall be replaced with plenum rated cable.**

- **Our opinion of probable cost for this item is: \$450,000.**

**NEC 110.12 Unused openings:** All unused openings in electrical boxes and equipment shall be closed. All electrical boxes shall be installed with a cover to conceal the electrical wiring.

**KJWW Response: Covers shall be installed on all boxes and plugs on open knock-outs.**

- **Our opinion of probable cost for this item is: Included in the 240.24 line item.**

**NEC 408.4:** Every circuit and circuit modification shall be legibly identified as to its clear, evident, and specific purpose or use. It was noted on the inspection several electrical circuits are not identified in the electrical panels throughout the school.

**KJWW Response: This Owner related item will be addressed by the River Ridge School District. The school district shall update all panel schedules to indicate the use of each circuit. This may require tracing circuits if the existing plans are not sufficient for circuit identification.**

- **Our opinion of probable cost for this item is: \$3,000 if an outside electrician is hired to perform this work.**



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**NEC 400.8 Flexible cords, uses not permitted:** Flexible cords are not permitted in the suspended ceilings of the school. It was not noted on the inspection that projectors have been installed in the classrooms. The 120-volt cords for the projectors have been run through holes in the suspended ceiling and are located above the suspended ceiling.

**KJWW Response: Provide receptacles in the ceiling so items can be plugged in without the cord being routed through the ceiling.**

- **Our opinion of probable cost for this item is: Included in the 240.24 line item.**

**NEC 314.27(C) Electrical boxes for ceiling fans:** All electrical boxes used for ceiling fan support shall be listed and suitable for this purpose.

**KJWW Response: Provide fan rated boxes for ceiling fans.**

- **Our opinion of probable cost for this item is: Included in the 240.24 line item.**

**NEC 110.26 Spaces about electrical equipment:** Access and working space shall be provided and maintained about all electrical equipment to permit ready and safe operation and maintenance of such equipment. The working clearances for all electrical panels shall comply with NEC Table 110.26(A)(1)& (2).

**KJWW Response: The school district shall move all items that encroach on the required working space. New panels provided as part of other violation corrections shall be installed with the required clearances.**

- **Our opinion of probable cost for this item is: Included in the 240.24 line item for new panels.**

**NEC 250.30 Grounding of Transformers:** All Transformers in the school shall be grounded to code. It was observed on the inspection that some transformers are not grounded or are not properly grounded.

**KJWW Response: Provide grounding electrode conductor sized per the NEC for all transformers.**

- **Our opinion of probable cost for this item is: Included in the 240.24 line item.**

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**NEC 240.24 Circuit breaker height restrictions:** Circuit breakers shall be installed not more than 6'7" above the floor. In the Administration room of the school, an electrical panel was installed higher than 6'7". Rework to code.

**KJWW Response: Panel shall be lowered as required. School district equipment shall be moved to allow for the lowering of the panel. If the equipment cannot be moved, the panel shall be relocated.**

- **Our opinion of probable cost for this item is: \$2,000 to lower the panel in its current location.**

**Please note: State of Wisconsin Electrical code SPS 316.010: Any equipment or electrical installation known to be defective so as to endanger life or property shall be promptly repaired, permanently disconnected or isolated until repairs can be made.**

**The violations shall be corrected by State of Wisconsin Licensed Electricians and the corrections shall be supervised by a State of Wisconsin Master Electrician.**

C. River Ridge Middle School Transaction No. 2473432

1. Code Section Violated: 101.11 Employer's duty to furnish safe employment and place.

**101.11(1)** Every employer shall furnish employment which shall be safe for the employees therein and shall furnish a place of employment which shall be safe for employees therein and for frequenters thereof and shall furnish and use safety devices and safeguards, and shall adopt and use methods and processes reasonably adequate to render such employment and places of employment safe, and shall do every other thing reasonably necessary to protect the life, health, safety, and welfare of such employees and frequenters. Every employer and every owner of a place of employment or a public building now or hereafter constructed shall so construct, repair or maintain such place of employment or public building as to render the same safe.

**101.11(2)(a)** No employer shall require, permit or suffer any employee to go or be in any employment or place of employment which is not safe, and no such employer shall fail to furnish, provide and use safety devices and safeguards, or fail to adopt and use methods and processes reasonably adequate to render such employment and place of employment safe, and no such employer shall fail or neglect to do every other thing reasonably necessary to protect the life, health, safety or welfare of such employees and frequenters; and no employer or owner, or other person shall hereafter construct or

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occupy or maintain any place of employment, or public building, that is not safe, nor prepare plans which shall fail to provide for making the same safe.

**Conditions Found:** Multiple violations of State of Wisconsin Electrical code SPS 316 and the NEC as reported in Regulated Objects Transaction No. 2465414 and provided below. Violation of codes SPS 361, 364, 365; IMC 504 & 923 as referenced in regulated Objects Transaction No. 2474416 and provided herein.

**Action Required:** Compliance with Regulated Objects Transaction No.'s 2465414 & 2474416 as listed below.

**KJWW Response: Specific action items as noted in Object Transaction No.'s 2465414 & 2474416 will be completed as noted below.**

Transaction No. 2465414

NEC 700.3 Tests and Maintenance: Several battery back-up emergency lights are not in working order and appear to have no back-up power source in case of power failure. A test shall be conducted for the emergency lighting and exit lights. All nonfunctional emergency lights, batteries and exit lights shall be promptly repaired. A written record of the emergency test shall be submitted to State Electrical Inspector Anthony Tadysak and kept on site of the facility.

**KJWW Response: This Owner related item will be addressed by the River Ridge School District. The school district will hire a licensed electrician to conduct the test. All non-functional emergency lights, batteries and exit lights will be repaired/replaced as required.**

- **Our opinion of probable cost for this item is: \$7,000 or less depending on the number of units that need to be replaced. Any replaced unit should include self-diagnostics so that all required routine testing is performed by the unit itself.**

NEC 700.3 Tests and Maintenance: A test of the fire alarm system shall be conducted. The last test of the fire alarm system on record was 2006. A written record of the fire alarm test shall be submitted to State of Wisconsin Electrical Inspector Anthony Tadysak and kept on site of the facility.

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**KJWW Response: This Owner related item will be addressed by the River Ridge School District. The school district will hire a licensed electrician or fire alarm testing contractor to perform the test.**

- **Our opinion of probable cost for this item is: \$1,000.**

NEC Article 334 Type NM Romex Cable: The building is Type 2 construction. NM Romex is not allowed as a wiring method in the school. All NM Romex cable shall be removed and reworked with a code compliant wiring method.

**KJWW Response: Provide a raceway system with wiring in place of the NM cable system.**

- **Our opinion of probable cost for this item is: \$250,000 for multiple items due to their related nature.**

NEC 400.8 Extension Cords: Extension cords are being used in the school as a substitute for permanent wiring. It shall be necessary to remove all extension cords in the attic and replace with a recognized NEC chapter 3 wiring method.

**KJWW Response: Provide a permanent wiring system in place of extension cords.**

- **Our opinion of probable cost for this item is: Included in NEC 334 line item.**

NEC 110.12 Unused openings: All unused openings in electrical boxes and equipment shall be closed. All electrical boxes shall be installed with a cover to conceal the electrical wiring.

**KJWW Response: Covers shall be installed on all boxes and plugs on open knock-outs.**

- **Our opinion of probable cost for this item is: Included in the NEC 334 line item.**

NEC 408.4: Every circuit and circuit modification shall be legibly identified as to its clear, evident, and specific purpose or use. It was noted on the inspection several electrical circuits are not identified in the electrical panels throughout the school.

**KJWW Response: This Owner related item will be addressed by the River Ridge School District. The school district shall update all panel schedules to indicate the use of each circuit. This may require tracing circuits if the existing plans are not sufficient for circuit identification.**

- **Our opinion of probable cost for this item is: \$3,000 if an outside electrician is hired to perform this work.**

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NEC 400.8 Flexible cords, uses not permitted: Flexible cords are not permitted in the suspended ceilings of the school. It was not noted on the inspection that projectors have been installed in the classrooms. The 120-volt cords for the projectors have been run through holes in the suspended ceiling and are located above the suspended ceiling. Rework the installation and wiring method.

**KJWW Response: Provide receptacles in the ceiling so items can be plugged in without the cord being routed through the ceiling.**

- **Our opinion of probable cost for this item is: Included in the NEC 334 line item.**

NEC 314.27(C) Electrical boxes for ceiling fans: All electrical boxes used for ceiling fan support shall be listed and suitable for this purpose.

**KJWW Response: Provide fan rated boxes for ceiling fans.**

- **Our opinion of probable cost for this item is: Included in the NEC 334 line item.**

NEC 110.26 Spaces about electrical equipment: Access and working space shall be provided and maintained about all electrical equipment to permit ready and safe operation and maintenance of such equipment. The working clearances for all electrical panels shall comply with NEC Table 110.26(A)(1)& (2).

**KJWW Response: The school district shall move all items that encroach on the required working space.**

- **Our opinion of probable cost for this item is: \$0**

SPS 316.010: Remove abandoned cord drops in the Art Room and Old Agricultural Shop Room.

**KJWW Response: Remove abandoned items.**

- **Our opinion of probable cost for this item is: Included in the NEC 334 line item.**



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SPS 316.010: Rework/Repair the Boiler water pump electrical junction box. The box is adjacent to the boiler in the mechanical room.

**KJWW Response: Modify the junction box and pump installation.**

- **Our opinion of probable cost for this item is: Included in the NEC 334 line item.**

Rework the Water Heater Controller in the Mechanical Room. The Controller is wired by an extension cord.

**KJWW Response: Provide a permanent wiring system.**

- **Our opinion of probable cost for this item is: Included in the NEC 334 line item.**

Room 110A Data Service Room: Rework Exposed electrical wires by the electrical Panel.

**KJWW Response: Revise existing installation.**

- **Our opinion of probable cost for this item is: Included in the NEC 334 line item.**

NEC 760.24, 800.24, 725.24 Installation requirements for low voltage & Fire alarm Wiring. All Low Voltage and Fire Alarm Wiring shall be independently supported by straps, cable ties, or similar fittings designed and installed as not to damage the cable. The wiring shall not be laid on the ceiling grid or unsupported, or secured to conduits or other foreign systems. All low voltage wiring shall be fastened in accordance with state code requirements.

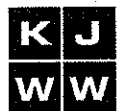
**KJWW Response: Provide support for all cable throughout the building.**

- **Our opinion of probable cost for this item is: \$40,000**

**Please note: State of Wisconsin Electrical code SPS 316.010: Any equipment or electrical installation known to be defective so as to endanger life or property shall be promptly repaired, permanently disconnected or isolated until repairs can be made.**

**The violations shall be corrected by State of Wisconsin Licensed Electricians and the corrections shall be supervised by a State of Wisconsin Master Electrician.**

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Transaction No. 2474416

**SPS 361.30(3)** – Submit four (4) sets of Heating, ventilating and air conditioning plans with one (1) set of calculations all of which are to be properly stamped, signed and dated, a completed SBD-118 application form and fees to this Department for review and approval. The submitted plans shall show how proper ventilation will be provided for the guidance room 166, room 164, the weight room, the office off the stage, and the custodial room. These rooms shall be unoccupied (i.e. used for storage) or proper ventilation shall be provided. The air conditioning unit supplied from the hallway into the IT closet located in the special education room shall also be addressed.

**KJWW Response: Heating, ventilating and air conditioning plans will be created and provided for guidance room 166, room 164, the weight room, the office off the stage, and the custodial room. The plans will also address the air conditioning unit supplied from the hallway into the IT closet located in the special education room. The plans, along with calculations and SBD-118 will be properly stamped, signed, and dated for review and approval.**

- **Our opinion of probable cost for this item is: \$42,000**

**IMC/SPS 364.0313(1)** – Every heating, ventilating and air-conditioning system shall be balanced upon installation. The person or agency responsible for balancing of the ventilating system shall document in writing the amount of outdoor air being provided and distributed for the building occupants, exhausts, and any other specialty ventilation. **Several areas of the building appear to lack ventilation (i.e. gym). A test and balance report measuring supply, return and outside air shall be provided for the entire building in order to properly identify those areas which need to be brought into compliance.**

**KJWW Response: This Owner related item will be addressed by the River Ridge School District. A certified Test and Balance contractor will be hired by the River Ridge School District to provide balancing of the outdoor air being provided to the building occupants, exhausts and specialty ventilation.**

- **Our opinion of probable cost for this item is: \$30,000**

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**IND 64.08 / IMC 504/IFGC 613** – Exhaust vents shall be ducted to the exterior of the building. Provide clothes dryer exhaust ducts such that they meet listed requirements which include, but are not limited to, vertical cleanouts, required metal ducts, limited duct lengths, required label or tag addressing equivalent length of the exhaust duct located within 6 ft of the duct connection, minimum duct size, shield plate installation, and prohibition of screws to connect duct sections. In addition, clothes dryer exhaust ducts shall be independent of all other systems and shall convey moisture and products of combustion outside the building. **The exhaust duct for the dryer located in the custodial room appears to be vented into the floor with no outlet found. This exhaust duct shall be installed per manufacturer's installation requirements and shall be ducted to the exterior of the building.**

**KJWW Response: The exhaust duct for the dryer located in the custodial room will be vented to the exterior. The duct and termination will be installed per the manufacturer's requirements.**

- **Our opinion of probable cost for this item is: \$6,500**

**IMC 923** – Kilns shall be installed in accordance with the manufacturer's installation instructions. **The exhaust fan for the kiln is labeled for 485 cfm. The exhaust rate during inspection appeared to be significantly less.**

**KJWW Response: The airflow from the exhaust fan serving the kiln will be confirmed during the test and balance procedure. If found inadequate, the fan will be re-sheaved or replaced to produce the proper airflow as required by the kiln manufacturer's installation instructions**

- **Our opinion of probable cost for this item is: \$8,000**

**SPS 365.0400** – All gas piping and gas piping installations shall comply with NFPA 54. **NFPA 54 7.9.2.4** – Each laboratory space containing two or more gas outlets installed on tables, benches, or in hoods in educational, research, commercial, and industrial occupancies shall have a single shutoff valve through which all such gas outlets are supplied. The shutoff valve shall be accessible, located within the laboratory or adjacent to the laboratory's egress door, and identified.

**KJWW Response: Shutoff valves will be provided in each laboratory space containing two or more gas outlets. The shutoff valve will be accessible, identified and adjacent to the laboratory's egress door.**

- **Our opinion of probable cost for this item is: \$13,000**

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