

2020

# Miner County Courthouse Facilities Study



**PUETZ**  
DESIGN+BUILD

06/10/2020

Date: June 16, 2020

Miner County Courthouse

Survey of Miner County Courthouse - Howard, SD

On January 30, 2020, Puetz Design + Build surveyed Miner County Courthouse. Present during the inspection were Herm Harms, Sienna Wegehaupt, Melanie Raap, and Jeremy Eitreim.

Subsequent architectural inspections were completed on February 19, 2020, and April 20, 2020.

This survey was done on a visual basis only; no walls or ceilings were opened up to expose any structure that was hidden nor were any samples taken from any part of the building.



*Figure 1 – Front Elevation of Miner County Courthouse*  
*Image Source: Flickr*



## Heat & HVAC

The boilers and piping are original. The fire marshal indicated that the boiler will not pass another annual inspection.

The boiler and associated piping will be sized for the existing building and replaced.

Some of the hot water piping might be wrapped in asbestos insulation. (See the “Asbestos” section for further information.)

A majority of the courthouse is currently conditioned by mini-split units. Many of the mini-splits are fairly new. There are approximately 6 units that are 10-15 years old.

Overall, the courthouse does not like the use of mini-splits for their heating and cooling. These units require penetrations through the exterior walls and unsightly piping on the exterior of the building on all four sides. Many units must be maintained at ground level.

There are approximately 6 mini-split units that are 10-15 years old.



*Figures 2 & 3 – Boiler and piping*

## Windows

The current windows are not original to the building. They were installed in the 1970s and will all need to be replaced. The glazing seals are starting to fail and are allowing moisture into the adjacent walls. New windows will be similar in look to the existing windows and will be Low-E double panel window systems.

There are existing window wells in the basement. These wells are covered with metal grates or a mixture of grates and mesh. If these existing grates are still intact and in good condition, they will be reused. Any grates that are not in good condition will be built to match the existing look and style.

Basement windows have been boarded up. These windows will be replaced with new insulated double pane window systems.



*Figure 4: exterior image of level 1 window*



*Figure 5: water damage at window, interior*



*Figure 6: window well and basement window*



*Figure 7: windows along stairwell*



## Doors

A majority of the building's doors and frames are in good shape and look to be original to the building. Interior doors are metal and have been custom painted to look like wood along with individualized names in certain areas of the building. These are generally in great shape with a few exceptions.

A few of the doors appear as though the paint has been worn or rubbed away with cleaning products. These doors will be repainted to match the originals. One door is having issues opening and closing. This door will be adjusted to alleviate this issue.

Some of the door hardware is in keeping with the style of the building. The closers as well as push plates are stylized to coordinate with grates and stair railings.

The exterior double door at the Northside of the building does not look true to the original design is not in great condition, and will be replaced. This is currently the most used community entrance.



*Figure 8: rusted door hinge at North door*



*Figure 9: custom painted doors that will be repainted to match existing*



*Figure 10: North set of exterior doors to be replaced*

## Exterior drainage

The county has relayed that the parking lot was completely redone 5 or 6 years ago. Before this, the roof drains were routed to an underground cistern. At the time of this renovation, the roof drains were routed to the surface on the Northside of the building which has caused ice issues.

Drains are currently daylighted to ground level and routed through PVC under sidewalk grates. The grates are rusted and the PVC pipes are frozen solid. This has become a maintenance issue and a safety hazard.

This element will require further design and investigation. The renovation summary includes an allowance amount for this element as a placeholder.



*Figure 11: ice build-up on the Northside of the building*

*Figure 12: close-up of roof drainage piping, sidewalk grate, and iced over PVC*



## Roof

The roof overall is in good shape. It is comprised of a rubber membrane over a cover board. This rubber membrane was installed over the previous rubber membrane which is on a metal deck structure. The attic is insulated, but the roof itself does not appear to have any rigid insulation.

At this time, the roof membrane does not need to be replaced. The roof membrane may need to be replaced in another 5-10 years. It could also be recoated if the membrane structure does not deteriorate.

At this time, the existing roof membrane will be extended to flash the membrane up the sides of the parapet and a new cap flashing will be installed.

To alleviate ponding, the roof drains will be notched at a lower elevation. The two ventilation turbines on the roof also need to be replaced. One is damaged and one is missing from its proper location.



*Figure 13: roof overall*



*Figure 14: current drains, minor ponding*



*Figure 15: missing vent turbine*



*Figure 16: damaged vent turbine*



**Elevator**

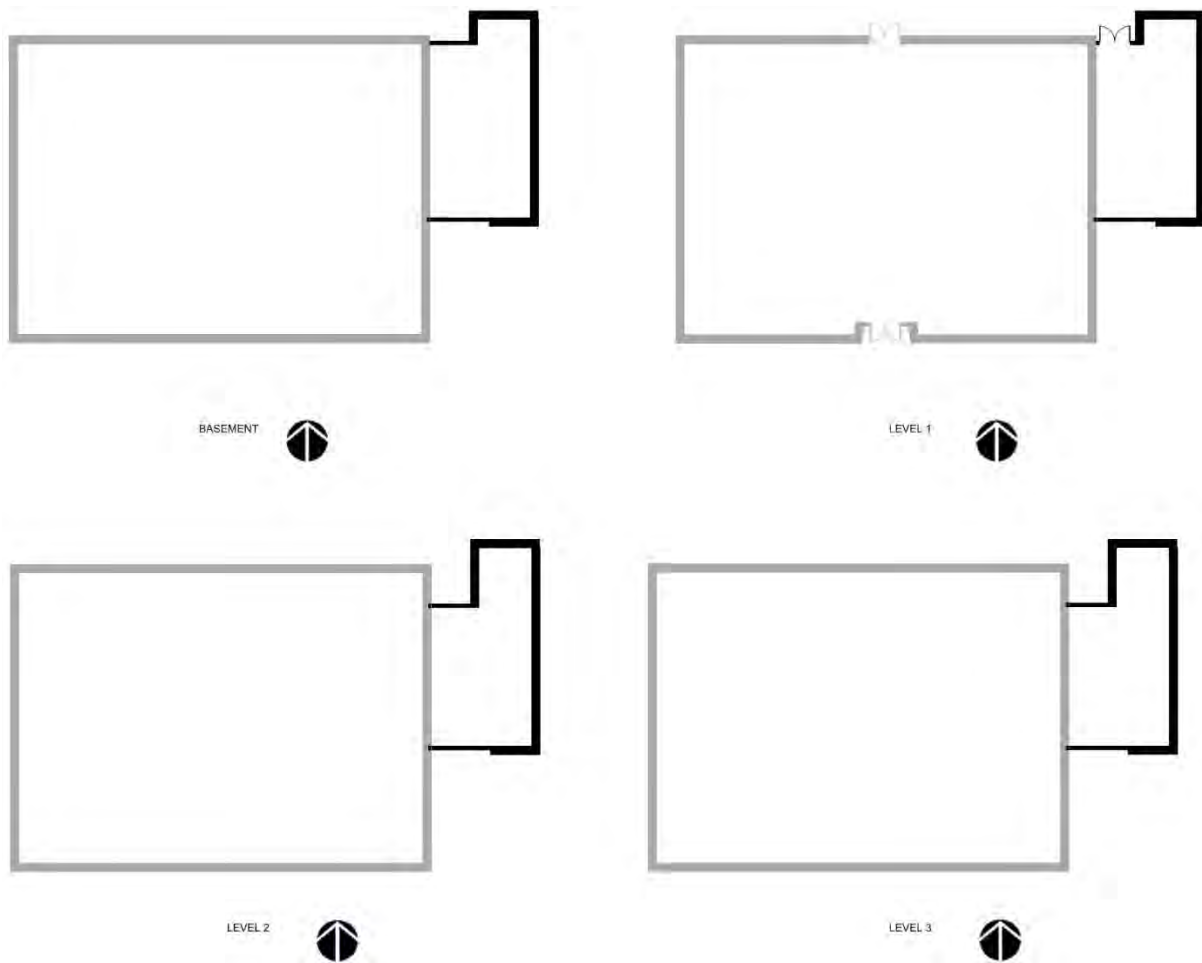
The courthouse does not currently have an elevator and is not ADA accessible to all levels. The courtroom is on the 3<sup>rd</sup> floor which does not make it possible for all employees and citizens of the county to access it.

The public restrooms are not accessible and have a step-up to the facility level.

The county community room is in the basement and is also not accessible to all.

Puetz Design + Build has reviewed the existing floor plan along with the proposed elevator addition. Through these explorations, we have identified a possible location for an elevator shaft to serve all levels of the building. The following schematic massing plans demonstrate a possible location of an elevator addition.

With this addition, some renovation and remodeling will need to occur. Further structural requirements will need to be explored concerning this addition. An exterior entrance and additional restrooms are accommodated within this addition.



*Figure 17: schematic elevator addition plans*

### Courtroom seating and access

The jury chairs look to be in good shape. The jury audience area is accessible. The seating looks to be in good condition overall.

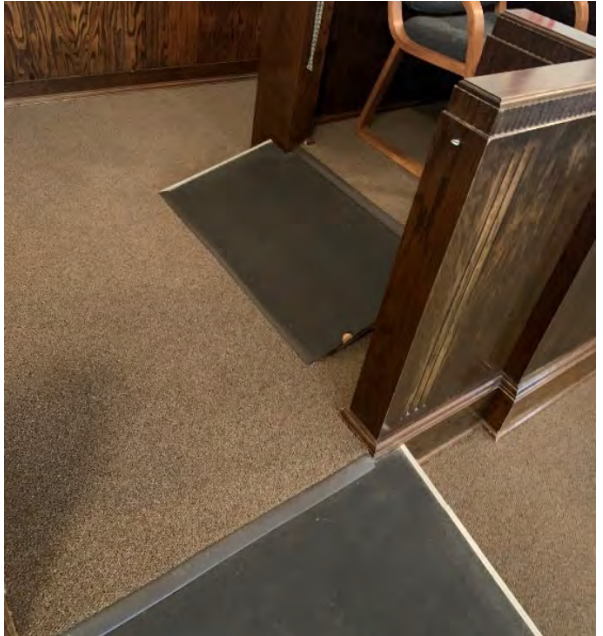
There are ramps up to the jury and witness areas as well as the judge and court reporter areas. The ramps at these locations look to be ADA compliant. There is a secondary ramp up to the witness area.



*Figure 18: seating for Jury*



*Figure 19: Access to the witness stand*



*Figure 20: Access to the witness stand*



*Figure 21: audience seating*



## ADA restrooms

The building's restrooms are located on the basement level, first level, and third level. The restrooms are not currently accessible due to the lack of an elevator. The restrooms also have steps up to them.

The stalls and fixtures are not mounted to be in ADA compliance.

All restrooms will be renovated. Demolition and reconstruction of these areas and possibly adjacent areas may need to be completed to allow for dedicated turning spaces and ADA stalls. A fixture count will be completed to comply with the plumbing code.



*Figure 22: Step-up into 3<sup>rd</sup> floor restroom*



*Figure 23: Fixtures and finishes in the basement restroom*

### Lack of space & function

The county has indicated that the Equalization Department is short on space as well as the Dispatch area. The commissioner room is currently used as a vote counting room. There are large counting machines that need space and storage. Three of the machines were updated to express counting machines and are smaller.

The IT equipment is in a temporary space and will be moved.

The door to what is currently functioning as an IT/server room (County Judge Private) does not close and the door rubs on the frame at the top. This will be adjusted.



Figure 24: Current IT space



Figure 25: Door issue



## Exterior

The exterior of the building appears to be in good shape overall. From a visual inspection only, there does not appear to be any obvious structural issues. There is slight cracking at the Northwest corner. Some tuckpointing has been completed.

The exterior brickwork on this building is detailed and contributes to the character of the building. The metal panels are original to the building and are consistent with the style of some of the interior elements such as the stair railing, the air registers, and the door hardware.

There is water staining on some of the stone pieces as seen in Figures 26 & 27 below.

Because of the current HVAC system, there is an exterior conduit running down the building at many locations.

The stone lintels are cracking at the North door. Moisture may be getting into walls in this area.

The severity of this cracking is unclear. It does not appear to be causing any major issues overall, however, the lintel should be replaced.

Areas with current mini-split piping will need to be patched. Caulking and patching will need to occur at these openings if mini-splits are replaced.



*Figure 26: Water issues at stone lintel*



*Figure 27: Mini-split piping and exterior HVAC units*





*Figure 28: Grates to the window well and exterior conduit*

*Figure 29: Exterior window and brick façade*



*Figure 30: exterior penetrations for existing mini-split units*

*Figure 31: previous repair work at stone lintel*

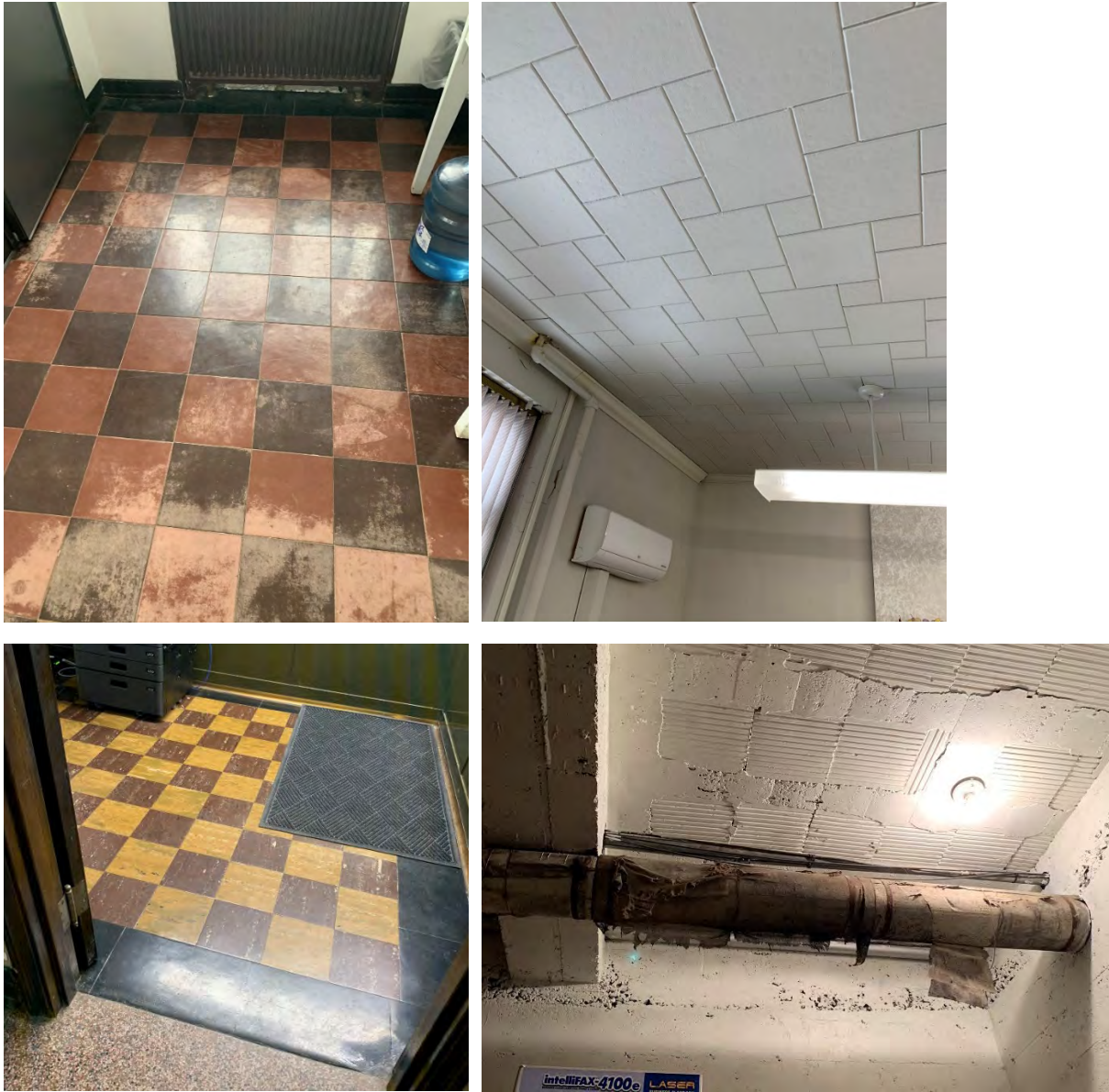


## Asbestos

The courthouse plans to have testing performed throughout the building for asbestos identification and abatement. At this time, there is an unknown amount of asbestos-containing finish materials. All identified asbestos will be removed before any construction, at the cost to the owner.

If all asbestos is to be removed by the choice of the county, Puetz Design + Build will have to provide an updated Estimate of Probable Cost after the asbestos report has been filed.

Upon visual inspection of the piping, flooring, and ceiling materials, it looks likely that there is asbestos in the building.



*Figure 32-35: Flooring, ceiling tiles, flooring, and pipe insulation: possible asbestos locations*

## **New Finishes**

New flooring will occur in areas disturbed during construction. New flooring will be installed in all areas beyond the common shared lobby spaces. The basement floor will remain as is unless otherwise directed.

Additionally, there will be an unknown amount of patch and repair work required when updating the mechanical and electrical systems.

Other finish improvements include new paint on some of the walls – especially exterior walls that have been damaged due to moisture near windows and openings. Window sills and window treatments will be replaced in coordination with window replacements.

The general lobby areas on each floor look to be in good condition and have been maintained well. The finish materials in these areas are of high quality and workmanship. These areas will be protected and maintained to their maximum extent. The stair railings are true to the original design and style of the building and will be maintained. The air vent grates and radiators look to be original to the building and are generally in good shape and have been repainted. Some radiators in the basement and on the third floor will need to be stripped and painted. The terrazzo flooring in public lobbies and along the stairwell is in great shape and is a high quality, durable material. It shows minimal cracking and wear. The wall paneling is original to the building and provides a durable wall protection surface in a material that would be cost-prohibitive by today's standards.

The lobby ceiling and crown details look to be in great condition. It appears as though these areas have been highly maintained and care has been given to keeping them intact and true to the original building design.

The lights in this building look to be original to the building's style and are in good condition overall.

The hard-lid ceiling and crown detailing in the courtroom appears in good shape. There is minor cracking along one corner.

The restrooms will receive new fixtures and entirely new finishes throughout.

The railing will be re-plated.





*Figure 36: radiator paint chipping*



*Figure 37: deteriorating finishes at the window in the evidence room, level 3*



*Figure 38: deteriorating walls in the evidence room, level 3*



*Figure 39: handrail finish has worn away*

**Site**

The county courthouse is rectangular in plan and is sited on-axis with Main Street in Howard, SD. For 2.5 blocks before the courthouse, the road is split and a landscaped median emphasizes the prominence of the courthouse. The courthouse has a long, tree-lined sidewalk approach to the South, the main entrance of the building. The Northside of the site has parking and a secondary, more pedestrian entrance.

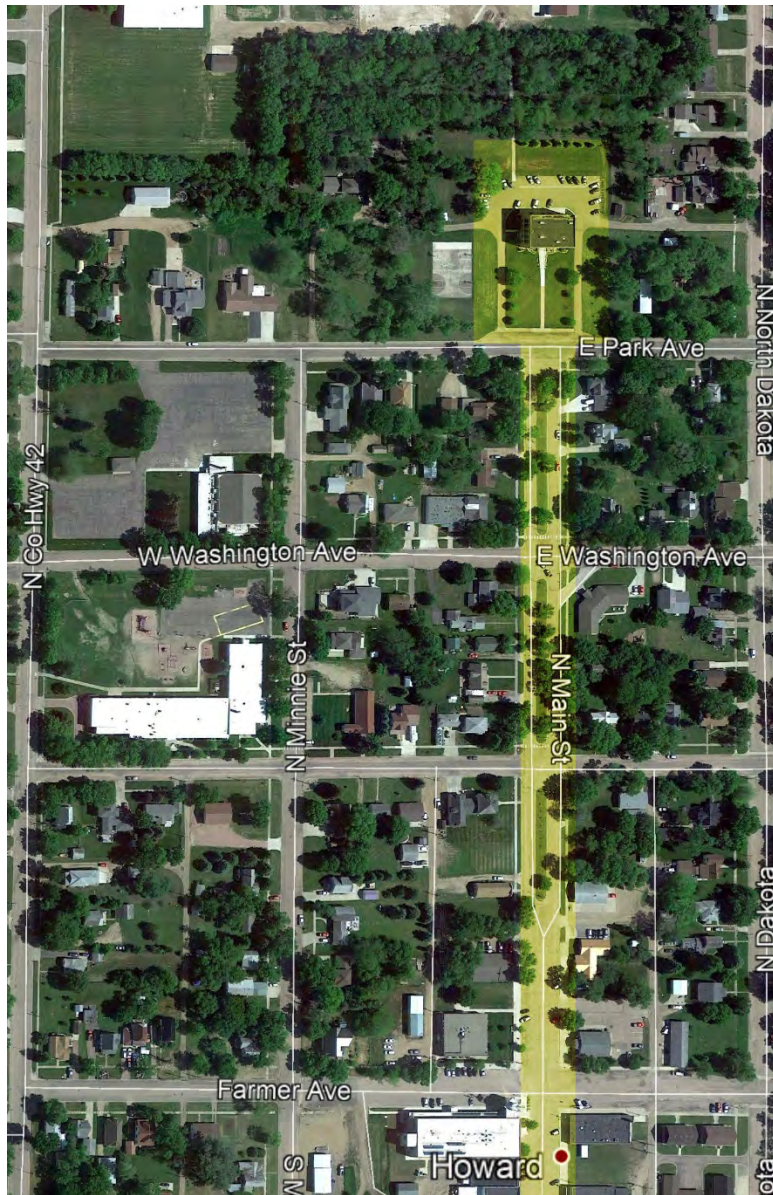


Figure 40: Google Maps site image



### Water issues in the basement

The community room in the basement is showing signs of water damage. The base of these walls is bubbling, cracking, chipping. The damage at these walls is significant but is currently contained to the lower 2-3 feet.

The floors in the basement look to be epoxy and do not currently show any significant signs of damage from water or otherwise.

The walls in the boiler room where the block is somewhat exposed look to have efflorescence from water saturation.

The floor in the boiler room is bare concrete and has significant standing water. Miner County has solicited a quote from Blackburn Basement Systems to repair the basement water issues. This estimated cost is included in the final EOPC summary.



*Figure 41-42: Water issues at the basement wall base: bubbling, cracking*



Original features in common areas



Figure 43: stairwell with original handrail



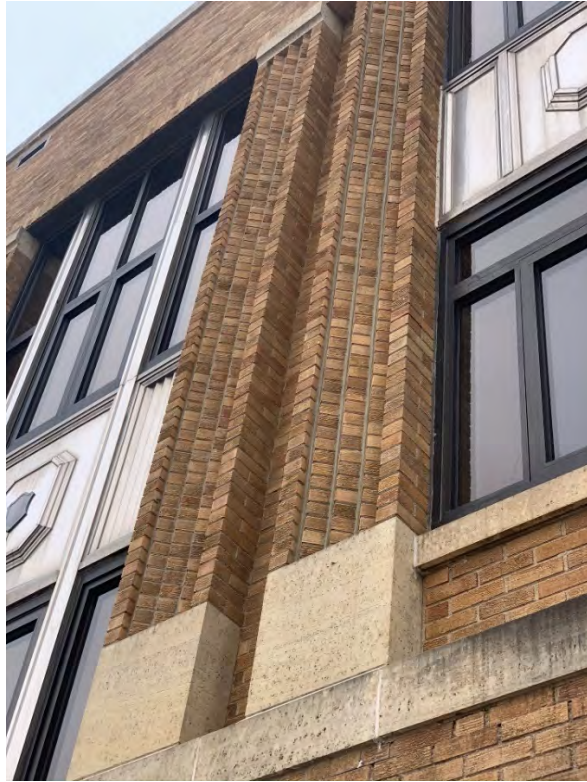
Figure 44: lobby terrazzo floor and ceiling crown details



Figure 45: a historic image of county courthouse after construction in 1934-35



Figure 46: lobby area with original lighting and finishes



*Figure 47: original light fixtures, throughout*  
*Figure 48: detailed, intact brickwork at the exterior*



*Figure 49: original air vent grates/grilles – in style with stair handrail*  
*Figure 50: custom painted doors with lettering*



**Estimates of Probable Cost**

Miner County Courthouse constructed in 1934-35  
5,000 sf each: Basement Level + Level 1, 2, & 3 = 20,000 sf

**Exterior Upgrades** **\$144,000**

- Site drainage
  - EOPC assumes that site drainage can be connected to the city storm sewer.
- Landscaping
- Tuck pointing/ repairs
- Entry doors
- Window lintels
- Roof repair/roof hatch/vents
- Precast entry beam

**Interior Renovation** **\$434,000**

- Demolition
- Stair railing
- Window sills
- Basement water collection system
- Repairs around new windows
- Misc. repairs for M&E renovation
- Floor covering
- Painting
- Toilet partitions and bathroom accessories
- Window treatments

**Window Replacement** **\$150,000**

- Remove old windows
- Install new windows

**Elevator Installation & Addition** **\$1,284,000**

- 860 sf per floor, 3,440 sf total

**Mechanical/Electrical** **\$1,575,000**

- Plumbing
- HVAC
- Electrical

**Total Estimated Probable Cost** **\$3,587,000**

Exclusions:  
Hazardous Material Reporting and Abatement



These numbers are rough estimates of probable cost and should be considered with an error factor of 15%. Renovation and remodeling projects are very hard to estimate because of the unknown conditions that may exist but are hidden by walls, floors, ceilings, pavement, etc. Further investigation by Puetz Design + Build along with structural, mechanical, electrical, and plumbing engineers would be needed to provide more detailed and accurate costs. While the structure was not showing any sign of visible structural instability at the time of the inspection, no costs for items such as unforeseen hidden structural defects were included in this study. This concludes this facility study of the Miner County Courthouse building.

Respectfully,

Herm Harms  
Principal Architect  
AIA, LEED AP, NCARB

Sienna Wegehaupt  
Architect, AIA, NCARB

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Appendix  
Mechanical/Electric/Plumbing Report By  
MAP Engineering



March 26, 2020

7708 W. Marlis St  
Sioux Falls, SD 57106  
Elec 605-941-2805  
Mech 605-201-3112

Re: Minor County Courthouse Study  
Howard, SD  
MAP #M20005

This report is to document the findings of the existing conditions at the Minor County Courthouse in Howard, SD. A site initial walk through on January 30<sup>th</sup>, and more thorough investigation/survey of the existing Mechanical and Electrical conditions was conducted on February 21, 2020. The report is separated into 2 major parts: Plumbing and Mechanical Systems, and Electrical Systems. Each part includes existing conditions, recommendations, and cost estimates of the recommendations.

This report also includes MEP cost estimates for an expansion to the existing courthouse.

#### Utility Evaluation:

The existing building uses natural gas for heating. Electricity is used for cooling, powering equipment and lighting. Below is an approximate summary of the utility costs per million BTU units. Powering equipment = outlets, computers, printers, sump pumps, etc.

Natural Gas: \$5.50 per million BTUs

Based on standard 80% efficient boiler and current utility bills. The average cost per Therm over the past year is approximately \$0.55. 10 Therms equals a million BTUs.

Electric: \$26.37 per million BTUs

Based on electric resistance heating, electric heating is 100% efficient. The cost per kW-hr is \$0.09 with no additional demand charge.

Electric Geothermal Heat Pump VRF System (GSHPVRF):

\$13.18 per million BTUs (COP of 2), \$8.79 per million BTUs (COP of 3)

Based on a geothermal heat pump VRF System with a COP up to 3.3. The cost per kW-hr is \$0.09 with no additional demand charge. COP means for every 2-3 units of heat used by the building from the GSHPVRF only 1 unit of electricity had to be purchased. COPs range from 1 to 4 for heating.



# Plumbing and Mechanical Systems

## FIRE SPRINKLER PROTECTION

Building does not currently have a fire sprinkler system and does not require one to be installed per Architectural code review.

## PLUMBING

The existing domestic water service is 2-inch with a dual check back flow preventer, water meter and ball valves. The meter and valves appear to be in good working order. The dual check back flow preventer is covered with mineral deposits, it is recommended to service and clean the dual check system or replace if found faulty. There is also an irrigation system near the meter and appears to be in good working order. The irrigation vacuum breaker is located outside above the window well grating.

The domestic hot water is served by an electric Marathon water heater. The marathon water heater is in excellent condition. It is recommended that the water heater be installed on a 4-inch concrete pad to lift it off the boiler room floor and out of any water that might be on the floor. There appears to be no hot water recirculation system and therefore hot water at remote sinks is nonexistent or takes many minutes to get there.

The piping system for hot and cold water appears to be all copper piping. There is minimal insulation on the piping throughout the building. It is recommended that all the domestic supply piping be insulated. Insulation will provide protection from the cold water piping creating condensate and help keep the heat in the hot water piping.

The sanitary waste system is gravity drain to the city sewer system. Cast iron waste pipe is used in the building. The vent system is cast iron and/or galvanized pipe. The piping is approximately 75 years old and if/when repairs are made it is recommended to us PVC piping for either waste or vent system.

The existing plumbing fixtures in the facility appear to be functioning. The fixtures also appear to be original to the building. Few if any of the fixtures meet ADA requirements. Many of the fixtures have exposed supply piping. It is recommended to provide new fixtures and piping if/when a restroom remodel occurs.

The building has two roof drains at the north edge of the roof. Overflow scuppers are installed near the roof drain. The roof drains discharge to PVC pipes that route the water under a grate in the sidewalk to the parking lot.

The building has two sump pumps, one in the records room and one in the boiler room. Both pumps discharge to the sanitary waste system. The sump pump discharges shall be revised to

discharge to grade.

### HVAC (Heating Ventilating and Air Conditioning)

The existing heating system is a natural gas steam boiler, Kewanee model M75 steam boiler of 750 MBH/22.4 BHP. The boiler creates steam that is distributed throughout the building to steam radiators located at each window. It was reported that the existing boiler will not pass the next inspection. The boiler has a lot of rust at the base and needs replacement. The existing steam piping in the basement appears to have asbestos insulation. This insulation shall be abated. The existing condensate return pump appears to be in good working order.

The basement level has no cooling. The main core area for first, second, and third floor has no cooling. The first and second floor has multiple mini-split systems to serve the exterior rooms. The indoor units are mounted on the exterior walls and its associated outdoor unit is ground mounted. The refrigerant piping between the indoor and outdoor unit is ran exposed on the exterior wall. The indoor unit condensate drain is routed out thru the exterior wall and down to the ground. The third floor cooling is done by four roof-top units. Two units serve the court room, one unit serves the judge's chambers and one serves the jury chambers. All duct work is in the attic space. One supply/return duct is disconnected from the main and should be reconnected. The cooling units' condenser fins should be combed straight to increase equipment efficiency, possibly install hail guards for fin protection.

The attic is ventilated by two whirlybird vents. The southwest whirlybird needs to be replaced over the roof opening.

The basement restroom has no exhaust system. The first floor restroom has no exhaust system. The third floor restrooms have no exhaust systems.

#### Existing HVAC System Description:

A single, natural gas fired, steam boiler provides steam to the steam convectors at nearly all windows in the entire building. The basement has no cooling. First and Second floors have wall mounted mini-split units that provide cooling to the exterior rooms. Third floor is served by four roof top cooling units. The restrooms have no exhaust. The building has no mechanical outdoor ventilation system, the building does have operable windows for natural ventilation.

#### Proposed HVAC System Upgrades:

The existing steam boiler and associated controls, accessories, and piping shall be removed for either option listed below. The existing roof-top units and associated controls, ductwork, diffusers, grilles and registers shall be removed for either option listed below.

Conventional Boiler, Chiller, Fan Coil Unit System. Convert the existing steam to a hot water system (180°F) associated pumps and piping to provide hot water to the fan coil units. The



chiller and associated pumps and piping to provide chilled water to the fan coil units. Fan coil units are anticipated to be the vertical recess style with sloped top and located in the existing steam convactor cavities. The 2-pipe hot water and chilled water piping will follow the existing steam pipe routing. Provide exhaust systems to each restroom. Provide a dedicated outdoor air unit to deliver conditioned outdoor air to all rooms via a relatively small ductwork system. The dedicated outdoor air unit can be located on the roof or in the mechanical room. The chiller shall be located on the ground and piped to the mechanical room. Chiller pumps shall be located in the mechanical room. Boiler and associated pumps shall be located in the mechanical room.

Water cooled VRF (Variable Refrigerant Flow) tied into a geothermal loop, Fan Coil Unit System. The geothermal loop and associated pumps will provide the heating and cooling to the VRF system and the VRF will provide the heating and cooling to the fan coil units. Fan coils units are anticipated to be the vertical recess style with sloped top and located in the existing steam convactor cavities. The refrigerant piping is anticipated to follow the existing steam pipe routing. Provide exhaust systems to each restroom. Provide a dedicated outdoor air unit to deliver conditioned outdoor air to all rooms via a relatively small ductwork system. The dedicated outdoor air unit can be located on the roof or in the mechanical room. Geothermal well system to be located under the grass area and piped to the mechanical room. Geothermal well pumps shall be located in the mechanical room. VRF units shall be located in the mechanical room. This system has an initial high up front cost due to the well field.

The controls for either HVAC system above shall be a central controls system that would electronically and automatically operate the HVAC system. The controls system shall provide viewable, adjustable, and programmable occupied and unoccupied schedules, adjustable temperatures, fault alarms, etc. This controls system shall be accessible from any computer and/or device with internet access with password security.

#### Elevator Addition:

The addition of an elevator would require ventilation to the elevator equipment room and two sump pumps in the elevator pit. An exhaust fan shall provide the ventilation to the equipment room. One sump pump will be dedicated for ground water and the other sump pump will be dedicated the elevator pit.

Existing Building Estimate: Includes HVAC and plumbing fixture upgrades.  
Each floor is approximately 5,000 square feet, building total is approximately 20,000 square feet.

#### Demolition:

Boiler - \$2,000  
Steam Piping - \$12,000  
Radiators - \$6,000  
Air Conditioning units - \$3,000  
Plumbing Fixtures - \$3,000  
Water Piping - \$1,000

\*Note any piping that is to be removed shall have the insulation tested for asbestos and if positive that insulation shall be abated. Abatement of insulation is not included in these numbers.

Upgrades:

Plumbing - \$60,000

HVAC - \$650,000 (Conventional boiler, chiller, fan coil unit system)

HVAC - \$800,000 (Water cooled VRF with geothermal well field)

\*Note numbers assume normal working hours of 8-5, add approximately 15-20% for after hours work.

Mechanical Report prepared by:

MAP, Inc.

Jeremy Eitreim, PE

# Electrical Systems

## POWER

Existing Power to the building is fed from 1 - 240V, 1 phase, 400A service at the Electrical Utility Pole at the NE size of the site. The Meter and a c/t cabinet are also on the pole. The Main Disconnect is in the Generator shed near the pole. There is a 400A automatic transfer switch in the generator shed fed from the normal power, and the 100kW generator for emergency power. The Generator, Main Disconnect Switch, and the ATS appear to have been installed in 2006. We would recommend keeping all of these components as-is. The generator is maintained and exercised regularly and appears in good condition. The owner reports that they do occasionally get power outages and that Cummins comes out 2 times a year for inspections, and run it at full loads once a year. At 14 years old, the generator would be at about ½ it's life expectancy. It would likely need replaced in about 10 to 15 years.

The ATS then provides power to the courthouse building in the basement boiler room. There are 4 panelboards in the basement, and one on each 1<sup>st</sup> and 2<sup>nd</sup> floors. All existing panelboards are old or not commercial grade, and we would recommend replacing all of the existing panelboards. A new 400A MDP would be recommended to feed 2 new panelboards in the basement, and one on each 1<sup>st</sup> and 2<sup>nd</sup> floors. Larger loads for A/C equipment, etc. could be fed from the MDP. New Panelboards will utilize bolt-on circuit breakers. Load Centers will not be specified.

There are receptacles throughout the building. There are some areas that are lacking adequate number of receptacles. We would recommend replacing all existing receptacles and wiring back to the panel with new. Some existing raceways could be re-used where feasible. Some surface mounted raceway would likely be used to add additional devices where needed.

New specification grade, grounding type, 20A, 125V, convenience outlets will be installed in all locations. Tamper proof receptacles will be installed in all offices and public locations. Convenience outlets will be provided throughout the facility for flexibility and for specific equipment requirements. Exterior devices (if any) will be GFI protected with Weather Proof In-Use covers. GFCI receptacles will be provided in all wet areas, and near sinks. Surface mounted raceway would likely be required in many areas.

A complete grounding system shall be provided including an equipment grounding conductor in all raceways. The main service shall be grounded via a ground grid, and water/gas service. Conductors shall be copper, 75-deg C temperature rating and color coded per phase & voltage. Conduit shall be Electrical Metallic Tubing (EMT) for indoor applications, Rigid Metallic Conduit (RMC) for floor penetrations & service entrance, Rigid Non-Metallic Conduit (RNMC) for exterior underground and below slab applications, and Liquid Tight Flexible Conduit (LFC) for motor applications. MC cable may be used for light fixture whips.

Mechanical Equipment Connections. There appears to be existing disconnecting means, circuit breakers, and feeders to existing mechanical equipment. These were installed when the equipment was installed. See Mechanical narrative for details of equipment and condition.



Recommendations for electrical would be based on mechanical recommendations and if equipment is not replaced, at a minimum, the circuit breakers would be new in the new Panelboards.

There is no elevator in this facility. If architect recommends an elevator be added, additional electrical power would be needed from the MDP for the elevator, cab, equipment room, ventilation, and sump pumps. Existing generator load would need to be evaluated to ensure size of generator is adequate to add the new elevator load. Some controls may need to be added to shut down some items when the generator is running to allow the elevator to be added to the generator.

## LIGHTING

Existing lighting in the building consists of 2 lamp T8 fluorescent tubes with electronic ballasts pendant hung wraparound fixtures in the offices, Incandescent historic fixtures in the halls, Lobby, Stairs, and bathrooms that are utilizing spiral fluorescent A19 base lamps. The incandescent historic fixtures in the Courtroom still appear to have incandescent lamps in them. Switching is accomplished with local switches in each room. We would recommend replacing all light fixtures, switches, and wiring back to the panelboard with new. Some existing raceways could be utilized.

New lighting is anticipated to be primarily LED fixtures for their efficiency and dimming capabilities. Historic looking LED fixtures would be recommended for the Main Halls, Lobby, and Courtroom. This could be accomplished by creating new LED fixtures to match existing ones, or choosing new fixtures to match the period of the original building, but would not have to match exactly (likely less costly).

Exterior building and ground mounted lights are also recommended to be replaced with new LED fixtures, and new wiring.

Existing site poles are wood poles with a flood light on it. We would recommend replacing these with new aluminum poles with vibration dampers and LED heads on them.

Exit lighting is non-existent in the building. There are a few non-powered exit signs (may be photoluminescent?) marking the main exits. We would recommend adding several new LED exit signs to provide proper exit illumination per code. Surface mounted raceway would likely be required.

Existing egress lighting is covered by the existing generator, and would be adequate as it backs up the whole building.

## SPECIAL SYSTEMS

There is no existing Fire Alarm System in this building. Current codes would require this classification and occupancy type to have a system. We would recommend installing a fully addressable system that would include full coverage smoke detection, notification via horns and strobes, manual pull stations at the exit doors, and duct smoke detectors to shut down any units over 2000cfm. Surface mounted raceway would likely be required.

Existing data and telephone racks are on the 2<sup>nd</sup> floor on the NW side of the building. There are 2 floor mounted racks containing the facility's data, telecom, and camera systems. There are networks for the county's server & computer systems (south rack) and the state's 911 equipment (north rack) and each has its own telecom service. Behind the door to the room is telephone system for building. The Courthouse, Sherriff's Office, Community Health Nurse, and Clerk of Courts each have their own telephone services that enter the building in similar area, but don't route through the telephone board in the telecom room. SDN installed all the network wiring. Alliance communications provided the phone system. Networking is now serviced through Connecting Point in Watertown. There are UPS's on the networking equipment, and on each desktop.

Existing data cabling to most devices are Cat5e cables. Some of the more recent devices could be Cat 6 cabling. Existing headend equipment is functional. It is at least 10 years old and would be considered outdated. There are faster data solutions available now.

Existing IT equipment is in a temporary location and would require relocation to a more appropriate IT room. It is recommended to install all new Cat 6 data cables and devices from the new rack locations to all existing locations. All new data racks and patch panels with Cat 6 solutions should be provided. Some of the existing conduits may be able to be used to the existing locations. It is recommended that additional outlets be installed where needed, typically 2 Cat6 cables - one for data and one for phone line. A few new data outlets should be added for Wi-Fi connections throughout the space. New device locations will be a 4" x 4" junction box with 1" conduit to above accessible ceiling space, or conduit back to the patch panel for each. Surface mounted raceway would likely be required.

Existing cameras are installed throughout the building. Original system was installed in 2007, or earlier and included RG59 COAX cable and power pairs. In 2017, a new system was installed to include a new 30 day capacity tri-brid DVR (Digital Video Recorder) (can record using analog, IP, or HD over coax signals) and a new camera. The DVR has a 5 year warrantee and is still under that 5 years. 3 other cameras were replaced in October of 2019 that are HD over coax cameras. System appears to be functioning well. There are cameras in Sherriff's office, outdoor 4 cameras – north door, south door and each corner of north side. No cameras on 3<sup>rd</sup> now, none in courtroom, don't think there are any on 2<sup>nd</sup> floor either. Safe and Secure maintains the system. We would recommend adding some new additional camera locations as needed. For the new cameras, we would recommend IP based cameras and typically 1 Cat6 cable is run from the headend equipment to the camera location. This would also require a new POE (Power over Ethernet) switch for those cameras. No additional power at the camera would be needed. Surface mounted raceway would likely be required for the Cat6 cables.

Cable TV service is in the telecom room. Outlets are in Dispatch 911 office, in Emergency Management Directors office. Additional locations may be needed. Surface mounted raceway would likely be required.

Electrical Estimate:

Existing Building Estimate:

Each floor is approximately 5,000 square feet, building total is approximately 20,000 square feet.

Demolition:

Lighting - \$2,000

Fluorescent tubes shall be properly disposed of due to Mercury Content in lamps.

Power - \$5,000

This includes equipment connections.

Special Systems - \$3,000

Upgrades:

Lighting - \$100,000

Power - \$120,000

Special Systems

Fire Alarm System - \$80,000 due to surface mounted raceways, working in existing conditions, and the need for full coverage smoke/heat detection with no sprinkler system added.

Relocating IT closet to new location requiring new cables runs to everything. - \$40,000.

Additional Cat6 telecom and camera locations - \$10,000.

\*Note numbers assume normal working hours of 8-5.

Existing Building Total:       \$360,000.

Electrical Report prepared by:

MAP, Inc.

Melanie Raap, PE





Figure 1 Boiler



Figure 2 Condensate Return Unit



Figure 3 Water Heater



Figure 4 Water Meter



Figure 5 Steam Piping w/Asbestos Insulation

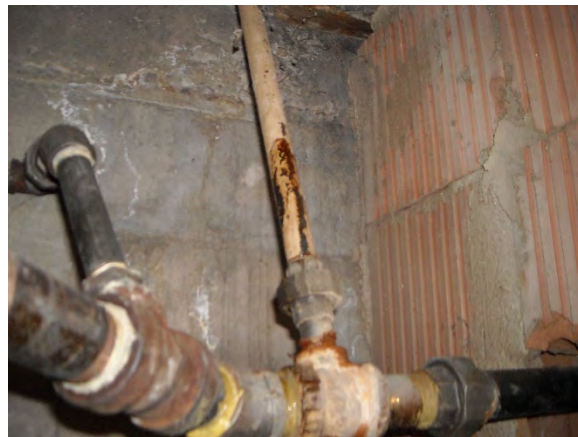


Figure 6 Leaking Steam Return Piping



Figures 6, 7, 8 Plumbing Fixtures

Figure 9 Cooling Rooftop Units



Figure 10 Ductwork in Attic Space

Figure 11 Roof drain





Figure 12 Indoor Wall Cooling Unit



Figure 13 Outdoor Cooling Unit



Figure 14 Existing Electrical Utility Transformer and C/T cabinet.



Figure 15 Generator Shed.



Figure 16 Generator



Figure 17 Main Electrical Gear



Figure 18 Typical Panel on 1<sup>st</sup> and 2<sup>nd</sup> floors.



Figure 19 Historic Lighting in Courtroom





Figure 20 Typical Historic Ltg - Office areas



Figure 21 Typical Historic Ltg - Main Halls.



Figure 22 Typical Historic Ltg - Main Halls.



Figure 23 Typical Historic Ltg - Stairwells.



Figure 24 IT/Telecom racks, equipment

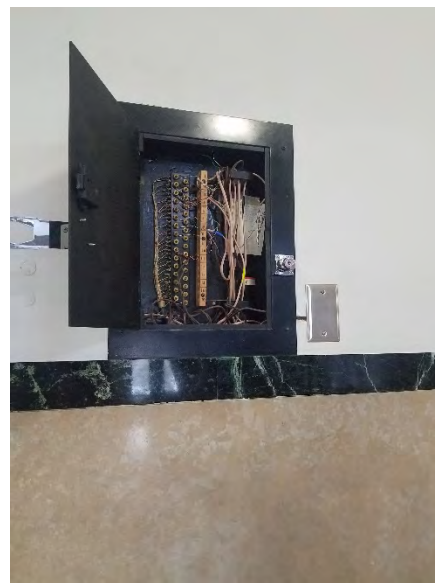


Figure 25 Old telephone wiring on main floors



Figure 26 Old telephone wiring on basement floor