

VALLEY CITY PUBLIC SCHOOLS
FACILITY STUDY

OCTOBER 2021













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FACILITY ASSESSMENT OVERVIEW AND ACKNOWLEDGMENTS.

- JLG Architects and OBERNEL Engineering conducted on-site walk-thrus and assessment of the existing Valley City Public Schools facilities located in Valley City, ND in September of 2021. The facilities that are included in this report include:
    1. Jefferson Elementary (PreK - 3rd Grade)
    2. Washington Elementary (4th - 6th Grade)
    3. Valley City Junior and Senior High School
    4. Sheyenne Valley Area Career & Technology Center
- The assessment was conducted by:
    - JLG Architects:
        - Dan Miller, AIA, Principal
        - Lee Dobrinz, AIA, Project Manager
        - Mitchel Nystrom
        - Benjamin Djerf
    - OBERNEL Engineering:
        - Ross Young, PE, Mechanical Engineer
        - Hank Corneliussen, PE, Electrical Engineer
- While on site, observations and photos were taken throughout the entire facility in order to document the condition of architectural, mechanical and electrical systems for the facilities.
- While on site, JLG Architects and OBERNEL Engineering met with Superintendent Josh Johnson and Facilities Director Jordyn Heck to discuss the condition and functionality of the facilities.
- Previous and Current Capital Maintenance Planning has been provided by Consolidated Construction Company (CCC). JLG Architects has worked in conjunction with Mike Barsness of CCC to understand previous and current updates to the district's Capital Maintenance plan. CCC has taken into account this facility assessment's findings in the updated estimated costs for the district's Capital Maintenance Plan.
- Digital copies of the original drawings for the existing facilities were provided by Valley City Public Schools and JLG Architects obtained these drawing files from Consolidate Construction, Co. These documents have been used to build the background drawings for this assessment and will be used as project improvements are planned in the future.

METHODOLOGY

As part of the study JLG was tasked with looking at the area of 'Facility Assets and Utilization.' This includes observation and analysis of facility age, condition, current utilization, capacity, challenges, needs, existence of makeshift and short-term solutions to overcrowding (temporary modular buildings; rented space), and deferred maintenance issues.

JLG has divided our observation and analysis into two categories, a Facility Condition Assessment and an Educational Adequacy Assessment. The following outlines the methodologies JLG used to evaluate these two categories in the schools throughout Valley City.

Facility Condition Assessment

A facility condition assessment considers general building condition based on facility age, deferred maintenance issues, building systems and assemblies, appropriateness of finishes related to activity performed in the space, building code, issues of life safety, issues of safety and security, and issues of ADA compliance. An option for in-depth review of building mechanical and electrical systems was determined to not be included at this time. Analysis of the building systems was performed at a high level by JLG and is primarily based on high level observation during on-site visits and knowledge provided to JLG by district or building administration.

In order to meet the objectives of this study it is expected that each facility's condition represent the following general qualities, in order to be considered an exemplary building.

- The building should have no serious deficiencies when it comes to exterior systems such as parking, outdoor program space, and exterior building materials such as walls, windows, and roofs.
- The building should meet all current codes and comply with the Americans with Disabilities Act.
- The building should have no serious deficiencies when it comes to building mechanical, electrical, structural, or life safety systems.
- The interior finishes should be in good condition and should not be showing serious wear, the building should also be free of hazardous materials, including asbestos and lead.

Data was collected through three methods for this area of the study. Site visits were made to all buildings in September 2021 to tour and assess the current condition of the buildings included in the study. While on site, interviews were conducted with building and/or district administration to gain additional insight into building systems, current practices, and any concerns they may have with their building. Finally,the previous Capital Maintenance Plan was reviewed with the school district, CCC, and JLG and discussion was held to coordinate the findings of the current facility assessment with an update to the Capital Maintenance Plan. These methods of data collection allowed for third-party first-person observation of the building while also acknowledging that those who work in these buildings every day know them best and can provide valuable insight to the study.

The data collected for this portion of the study has been presented in two ways. Photographs of the interior and exterior were taken during building tours and have been included to represent the general conditions of the building or highlight specific areas of concern. Facility condition has also been analyzed as part of a facility condition matrix. Ten areas of the building were analyzed including: site, building envelope, learning environment, supporting education space, administration, public space, activities areas, food service, building systems, and code compliance. Additional comments were included alongside each category to call attention to any conditions of note and to provide additional context. These ten areas were evaluated on a scale of 1-5.

5 = System condition is new or near new condition
4 = System is generally suitable for intended use. Minor improvements could improve building performance and longevity.
3 = System is suitable, but requires specific upgrades to meet performance and operational objectives.
2 = System has serious deficiencies.
1 = System is unsuitable for intended use.

These methods of presentation were chosen to give quantitative and qualitative representation of the existing conditions at the schools in Williams County. Several buildings were undergoing additions at the time of our visit, it is assumed that the condition of these spaces will be new or in like-new condition upon their completion and are represented as such in our data.

Educational Adequacy Assessment

An educational adequacy assessment considers the room size for the prescribed programming, current utilization of space, capacity of the building, any challenges or needs in order to provide 21st century education, and the existence of makeshift/ short term solutions to overcrowding (temporary modular buildings; rented space). For the purposes of this study JLG focused primarily on the size and capacity of a space to house a full class size. There may be spaces that are unaccounted for that may be appropriate for educational purposes.

In order to meet the objectives of this study it is expected that the facilities represent the following general qualities in order to be considered an exemplary performing building.

- Rooms should be appropriately sized based on the space program and age of students occupying the space, as well as be able to accommodate an appropriately sized number of students without feeling crowded or being unsafe.

- The building should be able to provide appropriate amenities based on the age level of students in the building; this includes attached restrooms at the elementary level, space for special education programs, gymnasium space, performing arts space, outdoor program space, music rooms, and any other specialty elective classes such as STEM (Science Technology and Engineering and Math) and CTE (Career and Technology Education) spaces.

- The campus should not include any temporary modular buildings, as these are not ideal learning environments and should not be considered long term space solutions. Temporary modular buildings are often used by districts in need of quick, inexpensive solutions to keep up with growing enrollment. While such buildings can be adequate when new, they are not long-term solutions and historically age faster than conventional construction. If not maintained properly they can potentially become inadequate or unsafe learning environments over time.

- The building should provide a positive environment for 21st century education to take place.

Expectations on what a 21st century education space looks like can vary between districts and it is not the intention of this study to evaluate what that means to a district or the appropriateness of current trends for the district. However, there are elements of a 21st century educational space that are widely accepted and acknowledged which have been included in this study. For example, access to natural light has shown to increase student performance and experience in the classroom and should be provided when possible. Need for collaborative spaces and flexible furniture has increased in recent years as a shift towards more personalized learning has occurred and the importance of soft skills has increased. Safety and security have been high-profile topics in recent years. While the levels of threat, and the types of threat, vary district to district the first line of defense is controlling access to the building. This is mainly done through a secure camera and buzzer system to gain entry to the building in addition to secure entry vestibules attached to a reception check in area before entering the remainder of the building.

Data for this area of the study is presented in three ways: a floor plan showing the degree of appropriateness the size of the room is to the programing of the space, an educational adequacy matrix, and a capacity calculation (the full chart can be found in Appendix 1.2.)

WASHINGTON ELEMENTARY SCHOOL



FIGURE 1. Washington Elementrary School

Address: 510 8th Ave SW, Valley City, ND 58072

Year Built: 1956

Additions/Remodels: 1984

Last Facility Study or Master Plan: 2017

Square Footage: 35,165 sq. ft.

Grades Served: 4-6

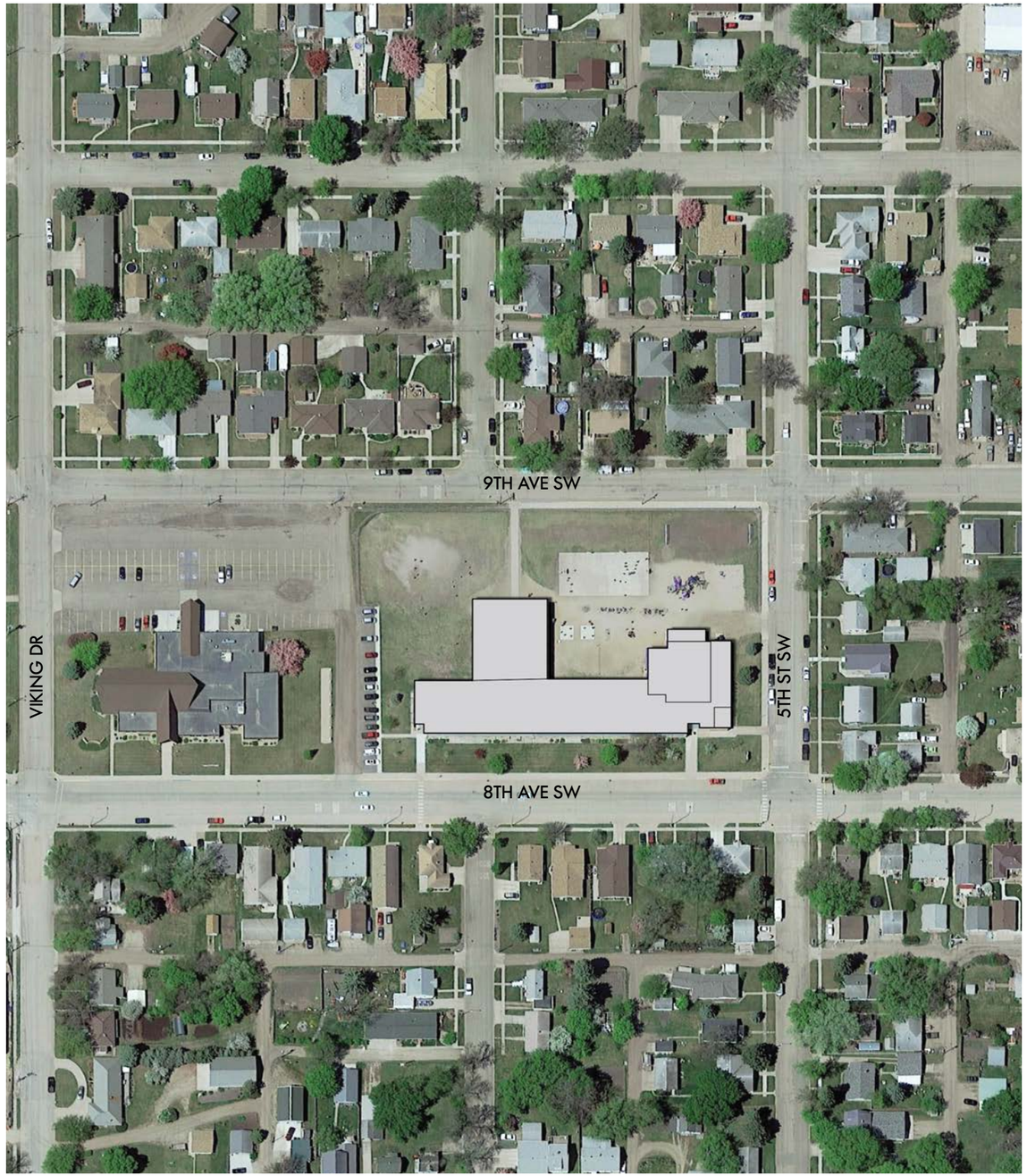


FIGURE 2: Site Plan

FLOOR PLAN BY SPACE USE

COLOR KEY

- LEARNING ENVIRONMENT
- SPECIALS
- ADMINISTRATION
- SPED
- SUPPORT
- ATHLETICS



FIGURE 3: Floor Plans

0 ft 10 20 50 100

BUILDING PHOTOGRAPHS



NOTE: North entry(5th Grade Entry)



NOTE: Kitchen entry



NOTE: East Wall



NOTE: Bricked up window

BUILDING PHOTOGRAPHS



NOTE: Corridor



NOTE: Kitchen



NOTE: Corridor



NOTE: South Entry(6th Grade) interior

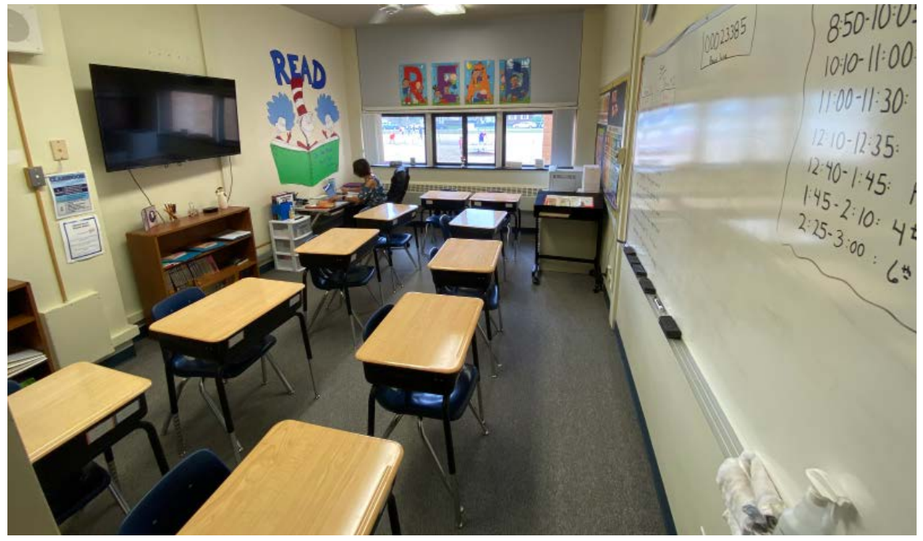
BUILDING PHOTOGRAPHS



NOTE: Library



NOTE: Stairs



NOTE: Classroom



NOTE: Classroom

FACILITY CONDITION ASSESSMENT

RATING LEGEND

5 System condition is in new or near new condition.
4 System is generally suitable for intended use. Minor improvements could improve building performance & longevity.
3 System is suitable, but requires specific upgrades to meet performance and operational objectives.
2 System has serious deficiencies.
1 System is unsuitable for intended use.

CATEGORY	SYSTEMS	RATINGS					COMMENTS
		EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR	
SITE	SIDE WALKS	5	4	3	**2**	1	- The arrangement of multiple building entrances in relation to where staff and visitors park and where students get dropped off creates security issues. drop off is directly off of busy street, minimal parking for staff - The southeast entry is not accessible - Sidewalks and stoops have areas that are in need of repair or replacement - The planters provide landscaping opportunity but some are in need of repair. - Playground equipment needs minor updates. The playground rock ground cover should be replaced with mulch.
	PARKING	5	4	3	2	**1**	
	DRAINAGE	5	4	**3**	2	1	
	SIGNAGE	5	4	3	**2**	1	
	LIGHTING	5	4	**3**	2	1	
	LANDSCAPING	5	4	3	**2**	1	
	OUTDOOR PROGRAM SPACE	5	4	**3**	2	1	
BUILDING ENVELOPE	GENERAL CONDITION	5	4	3	**2**	1	- New windows required throughout. Replacement and repair of some doors. - Masonry tuckpointing needed in small areas throughout and along base of entire east wall. Cracked and stained brick in locations. - Stone sills need cleaning and head joints sealed/filled. - Provide pavement at gravel approach by dumpsters and fence to separate from playground.
	ROOF	5	4	**3**	2	1	
	DOORS/WINDOWS	5	4	3	2	**1**	
	TRIM	5	4	3	**2**	1	
	EXTERIOR WALLS	5	4	3	**2**	1	
LEARNING ENVIRONMENT	FLOORS	5	4	**3**	2	1	- ACT in poor condition or original plaster ceilings. Replace or add acoustic ceilings. - Carpet is newer but updates needed in some areas. - Some classroom casework has been updated. Update all casework. - Doors and windows need replacement. At and near end of usable life.
	WALLS	5	4	3	**2**	1	
	CEILINGS	5	4	3	**2**	1	
	CASEWORK	5	4	**3**	2	1	
	DOORS/WINDOWS	5	4	3	**2**	1	
	ACCESSIBILITY	5	4	**3**	2	1	
SUPPORTING EDUCATIONAL SPACE *(LIBRARY, MUSIC AND ART)*	FLOORS	5	4	**3**	2	1	- See notes in previous category for similar conditions at floors, ceilings, casework and doors/windows.
	WALLS	5	4	**3**	2	1	
	CEILINGS	5	4	3	**2**	1	
	CASEWORK	5	4	3	**2**	1	
	DOORS/WINDOWS	5	4	3	**2**	1	
	ACCESSIBILITY	5	4	**3**	2	1	
ADMINISTRATION	FLOORS	5	4	**3**	2	1	- See notes in previous category for similar conditions at floors, ceilings, casework and doors/windows.
	WALLS	5	4	**3**	2	1	
	CEILINGS	5	4	3	**2**	1	
	CASEWORK	5	4	3	**2**	1	
	DOORS/WINDOWS	5	4	3	**2**	1	
	ACCESSIBILITY	5	4	**3**	2	1	

CATEGORY	SYSTEMS	RATINGS					COMMENTS
		EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR	
PUBLIC SPACE *(HALLWAYS, COMMONS)*	FLOORS	5	4	3	2	**1**	- Hallway walls in original building have asbestos tile on walls. Abate and replace with durable wall finish. - Ceilings are in poor condition. - Update windows - Building does not have a main commons.
	WALLS	5	4	3	2	**1**	
	CEILINGS	5	4	3	**2**	1	
	CASEWORK	5	4	**3**	2	1	
	DOORS/WINDOWS	5	4	3	**2**	1	
	ACCESSIBILITY	5	4	3	**2**	1	
ACTIVITIES *(GYM, PERFORMING ARTS)*	FLOORS	5	**4**	3	2	1	- Gym floor is in good condition. - The commons is also the cafeteria and gym. - Doors and windows need replacement. - PT/OT must go through gym to access its space. - Bleachers and stage are in good condition
	WALLS	5	4	**3**	2	1	
	CEILINGS	5	4	**3**	2	1	
	EQUIPMENT	5	4	**3**	2	1	
	DOORS/WINDOWS	5	4	3	2	**1**	
	ACCESSIBILITY	5	4	**3**	2	1	
FOOD SERVICE	FLOORS	5	4	3	**2**	1	- Kitchen equipment is old and needs replacement. - Space is small and serving line passes through the kitchen. - Load-in is direct but has steep ramp with no railings and is directly off of the street. - Ceilings, floor and walls need updates.
	WALLS	5	4	3	**2**	1	
	CEILINGS	5	4	3	**2**	1	
	EQUIPMENT	5	4	3	2	**1**	
	DOORS/WINDOWS	5	4	3	2	**1**	
	ACCESSIBILITY	5	4	3	**2**	1	
CTE SHOPS	FLOORS	5	4	3	2	1	- Does not apply. There are not separate or defined CTE spaces in the building.
	WALLS	5	4	3	2	1	
	CEILINGS	5	4	3	2	1	
	EQUIPMENT	5	4	3	2	1	
	DOORS/WINDOWS	5	4	3	2	1	
	ACCESSIBILITY	5	4	3	2	1	
CODE COMPLIANCE	ENTRIES	5	4	3	**2**	1	- The southeast entry and stage is not accessible - Building is not fire sprinkled - Exterior door security is in place with locks and intercom but there is no secure entry vestibule or visibility from office to entry points. - knobs on some doors - restrooms: some accessibility issues at entry clearances
	DOOR HARDWARE	5	4	**3**	2	1	
	HANDRAILS/GUARDRAILS	5	4	3	**2**	1	
	RESTROOMS	5	4	3	**2**	1	

ADDITIONAL COMMENTS

FACILITY ASSESSMENT
MECHANICAL

DESIGN FOR LIFE

RATING LEGEND

5 System condition is in new or near new condition.
4 System is generally suitable for intended use. Minor improvements are needed to improve building performance & longevity.
3 System is suitable, but requires specific upgrades to meet performance and operational objectives.
2 System has serious deficiencies.
1 System is unsuitable for intended use.

		RATINGS					
	SYSTEMS	EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR	COMMENTS
SPACE REVIEWED Washington Elementary School	Heating		4	●		1	New (2019) steam water heater for original building. Hot water boiler original to 1984 addition
	Ventilation	5	4	3	●		Air handling equipment is original. Outside airflow rates not up to current codes.
	Air Conditioning	5	4	3	●		Original portion of the building does not have cooling/dehumidification. 1984 addition has equipment with cooling.
	Plumbing	5	●			1	Water heaters in good condition. San/HW/CW lines need to be examined and/or replaced in original building.
	Fire Protection	5	4	3	2	●	No sprinkler system is installed within the building.
	Temperature Controls	5	4		●		Low voltage standalone electric controls or pneumatic controls throughout building
	Fire Protection Systems	5	4	3	2	●	No sprinkler

OVERALL COMMENTS

Automatic fire suppression system should be added throughout the building for life safety.

Indoor Air Quality should be addressed for the entire building in order to meet ASHRAE 62.1 for controllable ventilation rates, and ASHREA Standard 55 for cooling and dehumidification. Air handling equipment is original to the building and does not have sufficient ventilation or control. The newer 1984 addition has cooling but equipment is at the end of useful life and should be replaced.

New steam boiler plant is in good condition but a steam to hot water heat exchanger should be installed for distribution through building. Building addition hot water boiler is at the end of its useful life and should be replaced or tied into original building system as part of larger remodel.

Air distribution zoning should be added through DDC controlled pressure independent VAV boxes to monitor actual cfm delivered to space and save energy at reduced load conditions.

Washington Elementary School – Mechanical Existing Systems Assessment

Date	October 8th, 2020
Project Name	Valley City Schools
Project Location	Valley City, ND
Description	Mechanical Existing Systems Assessment

1.1 EXECUTIVE SUMMARY

A. Automatic fire suppression system should be added throughout the building for life safety. Currently no fire suppression system installed.

B. Indoor Air Quality should be addressed for the entire building in order to meet ASHRAE 62.1 for controllable ventilation rates, and ASHREA Standard 55 for cooling and dehumidification. The 1984 addition has cooling and some ventilation, but equipment is original and the system does not meet current standards.

C. It is recommended to replace all original air handling units with new indoor air handling units having hot water heat, DX cooling, and ventilation monitoring based on occupancy to tightly maintain ASHRAE 62.1 standards for outside air and humidity levels. A DX cooling system with variable speed compressors will allow for part load dehumidification without requiring the use of reheat energy.

D. Heating system is separate for the original building and 1984 addition. Recommend combining systems to a single hot water heating system with multiple boilers, adding redundancy in case a component fails.

E. Air distribution zoning should be added through DDC controlled pressure independent VAV boxes to monitor actual cfm delivered to space and save energy at reduced load conditions.

1.2 OVERVIEW

A. The existing school is comprised of an original classroom structure built in 1957 with an addition built in 1984. The original building is served by multiple single zone indoor air handling units that are original to the building. The original building does not have any cooling, but the addition has DX cooling. The addition has a single air handling unit to serve all the classrooms. Heating is provided by gas fire boilers with the original building having a steam heating system and the addition having hot water heating.

B. Majority of the HVAC equipment throughout the building is original to the respective building/addition dates with no significant equipment replacements being done. The original 1957 steam boiler plant was replaced in 2019 but everything else is beyond its useful life.

C. Most of the building has the original pneumatic controls with limited capabilities. There are not proper controls or air flow monitoring to control ventilation rates based on occupancies or to verify ASHRAE 62.1 requirements for recommended outdoor air are being met.

1.3 FIRE PROTECTION SYSTEMS

A. The building does not have any fire protection system. Recommend adding fire suppression throughout the building to meet current code requirements.

1.4 HEATING

A. Heating is provided by two separate boiler plants serving the original and addition building separately. The original building has a single gas fired steam boiler installed in 2019 which is in good condition. The 1984 building has a single gas fire hot water boiler that is original to that addition. The hot water boiler and system is at the end of its useful life and should be replaced.

B. Equipment throughout the original 1957 building is still steam heated with steam and condensate piping ran throughout. The 1984 utilizes a hot water heating coil in the air handling unit and some supplemental hot water heat in classrooms.





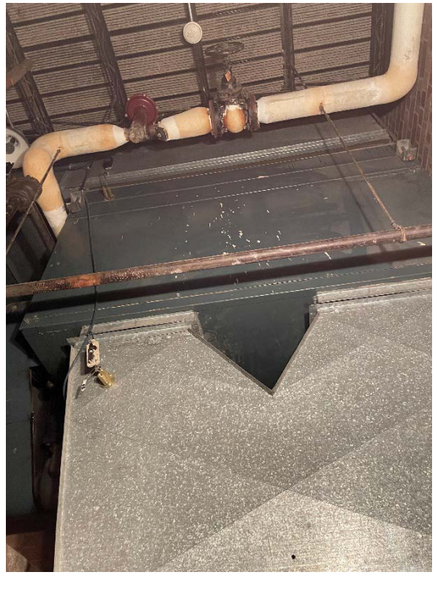
C. We recommend replacing the gas hot water boiler with a new high efficiency boiler and combining the two systems into one building wide heating system. A heat exchanger would be provided for the steam boiler plant to convert from steam to heating water. Combined boiler plant with two boilers would provide some redundancy in case a single boiler fails. The hot water heating system would be ran throughout the building to replace the existing steam system and supplement/expand the current hot water heating system. A pair of redundant circulating pumps would be installed to serve the entire building. New hot water supplemental heat would be provided throughout.



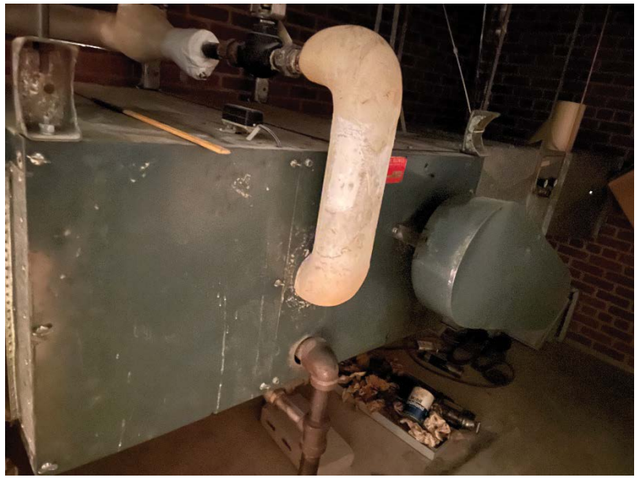


1.5 VENTILATION

A. The air handling equipment throughout the building is original to the respective 1957 and 1984 build dates. Indoor Air Quality should be addressed for all of the building in order to meet ASHRAE 62.1 for controllable ventilation rates. Units are typically constant volume single zone units in the original building and there is one single zone air handling unit serving the 1984 classroom addition. New indoor air handling units having hot water heat, DX cooling, and ventilation monitoring based on occupancy to tightly maintain ASHRAE 62.1 standards for outside air and humidity levels should be provided.







1.6 AIR CONDITIONING

A. The original 1957 building does not have any cooling or dehumidification. The 1984 does have a single zone AHU with DX cooling but equipment is at the end of its useful life. Since the system utilizes a single zone unit, there is not proper control for individual rooms resulting in overcooling some spaces.

B. Recommend adding DX cooling for new equipment throughout the building to meet the requirements of ASHRAE 62.1 for ventilation rates, and ASHREA Standard 55 for cooling and dehumidification.

1.7 PLUMBING

A. Domestic water piping found to be in good conditions. Much of the piping is concealed within construction/tunnels and will need further investigation. Piping and insulation are assumed to be original to the building.

B. Water heaters were recently replaced and are in good condition.

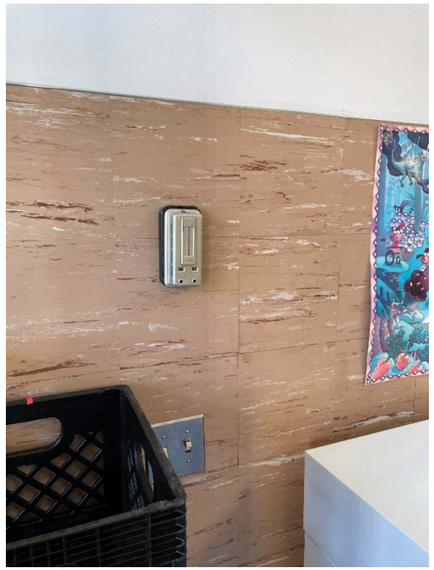




C. Plumbing fixtures are relatively new and have been replaced over the years as fixtures fail. Thermostatic mixing valves were observed on public restrooms and meet the code requirements.

1.8 CONTROLS

A. Controls throughout the building are original with limited capabilities. There are not proper controls or air flow monitoring to control ventilation rates based on occupancies or to verify ASHRAE 62.1 requirements for recommended outdoor air are being met.





B. Recommend installing DDC controls on any replacement equipment as well as replacing existing controls throughout the building with DDC. The DDC system should be tied together to a single BAS front end. The system would be integrated across the district to allow for single stop monitoring and controls of all buildings in the system.

Respectfully,
Obernel Engineering

Ross Young, PE
Mechanical Engineer

FACILITY ASSESSMENT
ELECTRICAL

DESIGN FOR LIFE

RATING LEGEND

5 System condition is in new or near new condition.
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		RATINGS					
	SYSTEMS	EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR	COMMENTS
SPACE REVIEWED Sheyenne Valley Career Center	Power Distribution	5	4	3	●	1	480/277 volt service entrance in place with spare capacity. Existing switchboard, panels and transformer by FPE. should be re
	Lighting Fixtures	5	●	3	2	1	Entire facility has been upgrade with LED fixtures or lamps.
	Lighting Control	5	4	3	●	1	Manual controls used in most areas with a few occupancy sensors in place.
	Technology Infrastructure	5	4	●	2	1	Exi.sting equipment in workroom and needs a cable management system. Seperate room is needed
	Technology Integration	5	4	●	2	1	Classrooms have been upgraded with technology.
	Security Infrastructure	5	●	3	2	1	CCTV camera's are in place and connected to district system
	Access Control	5	●	3	2	1	Card access system in place with spare capacity to add rooms. A-phone at main entance.

OVERALL COMMENTS

Electrical sytems in fain condition but the old FPE equipment should be replaced in near future. Fire system main panel is a Simplex 4006 and is in good condition. Additional audio/visual devices should be added for coverage. Would also recommend a master shut off switch added in shops for safety. Ceiling mounted power cord reels added in shops to remove the extension cords laying on floor.

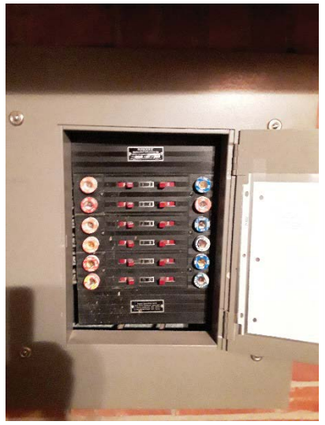
PART 3. WASHINGTON ELEMENTARY SCHOOL

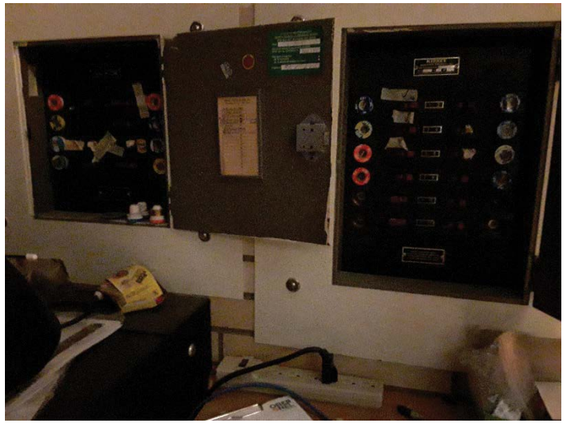
3.1 SERVICE ENTRANCE

A. Service is a 480/277 Volt 3 phase 4 wire (800 amp) with dry-type transformer for the 208/120 Volt 3 phase 4 wire loads. Old Kinney plug-fuse type panel is still in use and should be replaced

B. Classrooms could use additional receptacles and should be the child proof type. Extensive amount of surface wire ways in use where outlets have been added

C. Peak demand (1/26/2021) at 202 amps which will allow for future loads





3.2 LIGHTING

A. Fluorescent type lamps are utilized throughout the facility

B. Both recessed and suspended luminaires are used along with a few 8 inch round compact fluorescent down lights.

C. Manual controls are in the classrooms, office, and corridors. Restrooms have motion control devices

D. To meet current energy codes, occupancy controls should be installed for positive off when rooms are not in use

E. Battery type emergency lighting devices installed mostly in the corridors. These are quite old and need to be tested for working condition. Additional lighting units should be provided to meet required luminaires for egress paths. Exterior units at the exits should also be provided to allow paths away from the building as per codes



3.3 POWER WIRING

A. Classrooms need additional duplex receptacles and should be the child proof type. Surface raceways are in place for added devices. One simple add would be to remove single duplex receptacles and install surface two gang box with additional devices

3.4 FIRE ALARM SYSTEM

A. Existing panel is a Simplex 4007, addressable had wired system. This panel is current and additional devices can be added

3.5 IT SYSTEMS

A. Existing Equipment is new in work rooms with cables routed above the ceiling to the devices. As noted in the high school I would recommend developing a separate room for this equipment

B. Cabling upgrade is planned for the summer of 2022. This would be installing CAT 6 or better and removing the old CAT 5E. Classroom technology has been upgraded and in good condition. CCTV (IP) are in place with 21 DAY recording capacity. Card access is in place with spare capacity to allow for additional doors. A-phone devices are located at main entrance doors. Intercom systems have been upgraded and in good condition



COLOR KEY

- MEETS STANDARDS (12.3%)
- MARGINAL (28.2%)
- DOES NOT MEET STANDARDS (59.5%)
- TS TEACHING STATION

FIGURE 4: Educational Adequacy Plan

JEFFERSON ELEMENTARY SCHOOL



FIGURE 1. Jefferson Elementrary School

Address: 1150 Central Ave N, Valley City, ND 58072

Year Built: 1964

Additions/Remodels: 2009

Last Facility Study or Master Plan: 2017

Square Footage: 43,944 sq. ft

Grades Served: Pk-3

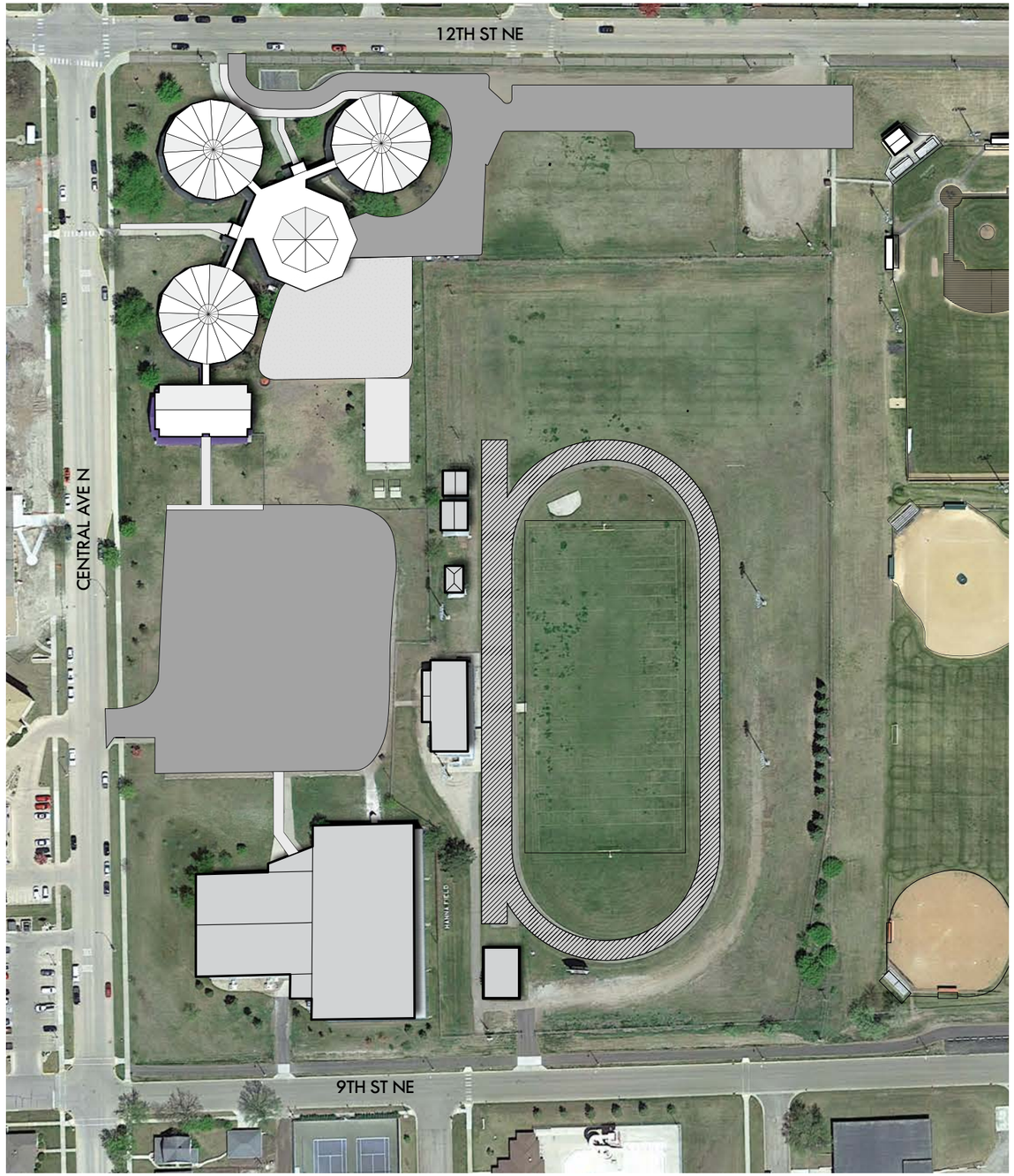


FIGURE 2: Site Plan

FLOOR PLAN BY SPACE USE

COLOR KEY

- LEARNING ENVIRONMENT
- SPECIALS
- ADMINISTRATION
- SPED
- SUPPORT
- ATHLETICS

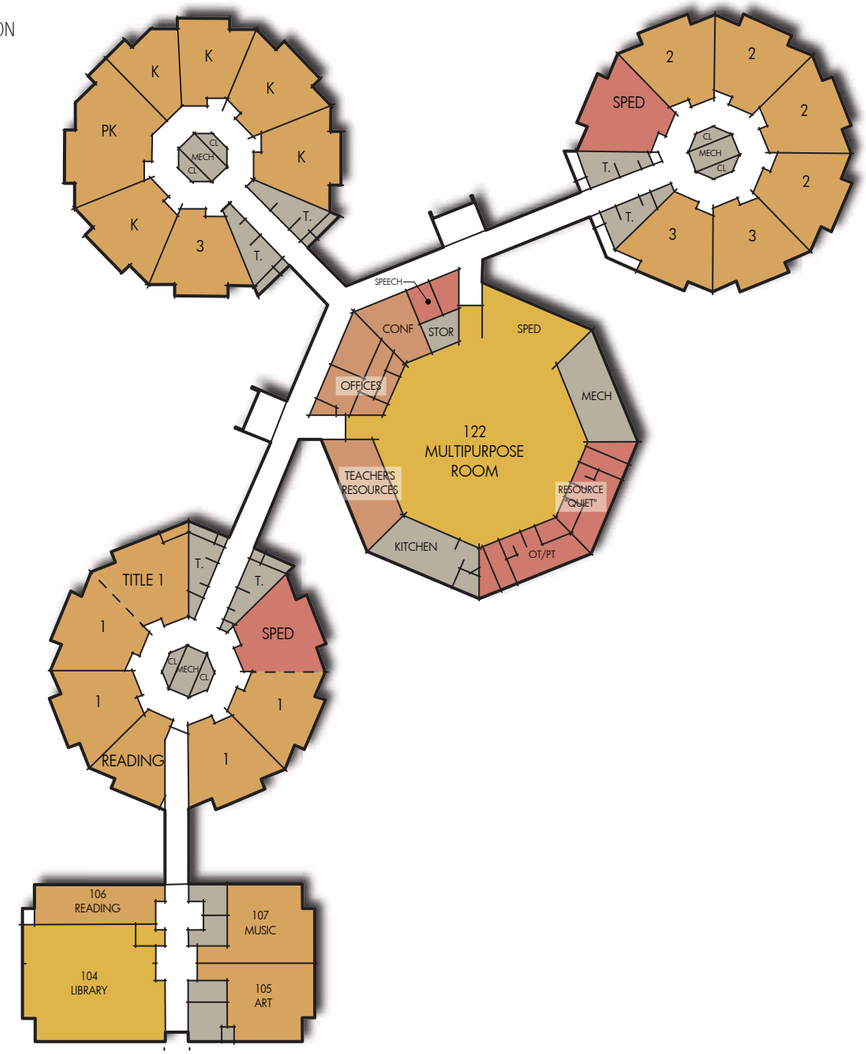


FIGURE 3: Floor Plans

BUILDING PHOTOGRAPHS



NOTE: South addition entry



NOTE: Roof soffit

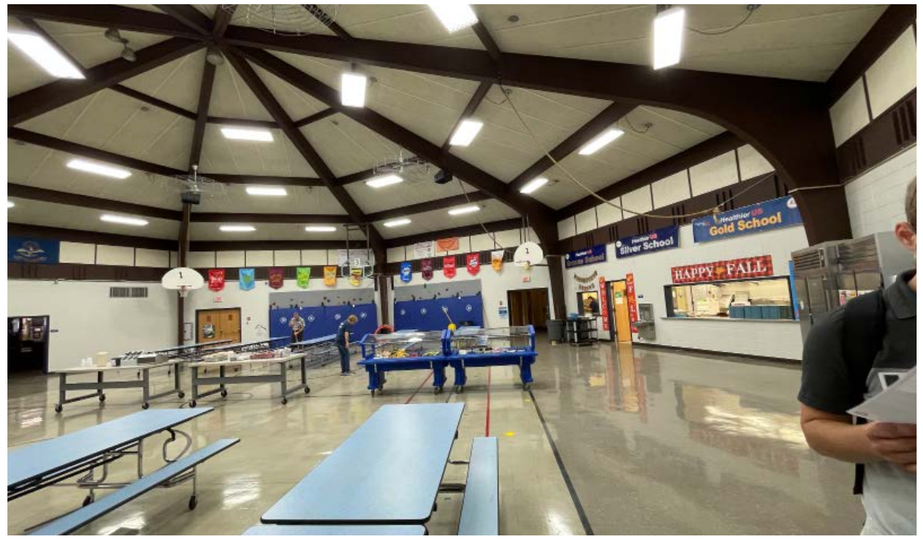


NOTE: Classroom emergency exits



NOTE: Flower bed

BUILDING PHOTOGRAPHS



NOTE: Gym/Cafeteria



NOTE: Classroom with raised teacher platform



NOTE: Classroom casework



NOTE: Classroom

BUILDING PHOTOGRAPHS



NOTE: Kitchen



NOTE: Corridor



NOTE: Office area



NOTE: Main entry

FACILITY CONDITION ASSESSMENT

RATING LEGEND

5 System condition is in new or near new condition.
4 System is generally suitable for intended use. Minor improvements could improve building performance & longevity.
3 System is suitable, but requires specific upgrades to meet performance and operational objectives.
2 System has serious deficiencies.
1 System is unsuitable for intended use.

CATEGORY	SYSTEMS	RATINGS					COMMENTS
		EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR	
SITE	SIDE WALKS	5	4	(3)	2	1	- The arrangement of multiple building entrances in relation to where staff and visitors park and where students get dropped off creates security issues. - Classroom exterior doors and stoops are not in good condition or have sidewalks that provide an accessible path. - The planters provide landscaping opportunity but some are in need of repair. - Playground equipment needs minor updates.
	PARKING	5	(4)	3	2	1	
	DRAINAGE	5	4	(3)	2	1	
	SIGNAGE	5	4	(3)	2	1	
	LIGHTING	5	4	(3)	2	1	
	LANDSCAPING	5	(4)	3	2	1	
	OUTDOOR PROGRAM SPACE	5	4	(3)	2	1	
BUILDING ENVELOPE	GENERAL CONDITION	5	4	3	(2)	1	- The exterior masonry is in good condition but the roof overhangs, windows, doors, and EIFS panels place the building in an overall below average condition. - Windows need replacement
	ROOF	5	4	(3)	2	1	
	DOORS/WINDOWS	5	4	3	(2)	1	
	TRIM	5	4	(3)	2	1	
	EXTERIOR WALLS	5	4	(3)	2	1	
LEARNING ENVIRONMENT	FLOORS	5	4	(3)	2	1	- The shape of the classrooms is not ideal for teaching. - While the rooms have higher ceiling heights/volumes, they are tectum panel and appearance is dark and lighting is poor. - Casework appears to be original and needs updating. - Doors and windows need updates or replacement.
	WALLS	5	4	(3)	2	1	
	CEILINGS	5	4	3	(2)	1	
	CASEWORK	5	4	3	(2)	1	
	DOORS/WINDOWS	5	4	3	2	(1)	
	ACCESSIBILITY	5	4	(3)	2	1	
SUPPORTING EDUCATIONAL SPACE *(LIBRARY, MUSIC AND ART)*	FLOORS	5	(4)	3	2	1	- The media center, art and music reside in the 2009 addition to the original building and the exterior and interior are in average to good condition.
	WALLS	5	(4)	3	2	1	
	CEILINGS	5	(4)	3	2	1	
	CASEWORK	5	4	(3)	2	1	
	DOORS/WINDOWS	5	4	(3)	2	1	
	ACCESSIBILITY	5	4	(3)	2	1	
ADMINISTRATION	FLOORS	5	4	(3)	2	1	- Lack of supervision and visibility to the building entries and ability to monitor halls. - Office is small, lacks adequate workroom and support space.
	WALLS	5	4	3	(2)	1	
	CEILINGS	5	4	(3)	2	1	
	CASEWORK	5	4	3	(2)	1	
	DOORS/WINDOWS	5	4	3	2	(1)	
	ACCESSIBILITY	5	4	3	(2)	1	

CATEGORY	SYSTEMS	RATINGS					COMMENTS
		EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR	
PUBLIC SPACE *(HALLWAYS, COMMONS)*	FLOORS	5	4	(3)	2	1	- The hallways at the pods are narrow. Lockers are in average condition. - Doors and windows need updates or replacement. - The layout of the pods and circulation can be confusing in terms of way-finding. - The commons is also the cafeteria and gym.
	WALLS	5	4	(3)	2	1	
	CEILINGS	5	4	3	(2)	1	
	CASEWORK	5	4	3	(2)	1	
	DOORS/WINDOWS	5	4	3	2	(1)	
	ACCESSIBILITY	5	4	(3)	2	1	
ACTIVITIES *(GYM, PERFORMING ARTS)*	FLOORS	5	4	3	(2)	1	- The commons is also the cafeteria and gym. Leads to space not working well for either function. - Lack of gym equipment in space - Doors and windows need updates or replacement - Lack of natural light - Floor is not ideal for use of space as a gym.
	WALLS	5	4	(3)	2	1	
	CEILINGS	5	4	(3)	2	1	
	EQUIPMENT	5	4	3	2	(1)	
	DOORS/WINDOWS	5	4	3	2	(1)	
	ACCESSIBILITY	5	4	(3)	2	1	
FOOD SERVICE	FLOORS	5	4	(3)	2	1	- Most kitchen equipment is relatively new and functional. The Freezer needs coolant recharging every year but size/capacity works. Dishwasher needs replacement. - Receiving and load-in takes place through door to East and materials/supplies has to pass through the commons to get to the kitchen. - Overall kitchen space seems small.
	WALLS	5	4	(3)	2	1	
	CEILINGS	5	4	(3)	2	1	
	EQUIPMENT	5	4	3	(2)	1	
	DOORS/WINDOWS	5	4	3	2	(1)	
	ACCESSIBILITY	5	4	3	(2)	1	
CTE SHOPS	FLOORS	5	4	3	2	1	- Does not apply. There are not separate or defied CTE spaces in the building.
	WALLS	5	4	3	2	1	
	CEILINGS	5	4	3	2	1	
	EQUIPMENT	5	4	3	2	1	
	DOORS/WINDOWS	5	4	3	2	1	
	ACCESSIBILITY	5	4	3	2	1	
CODE COMPLIANCE	ENTRIES	5	4	(3)	2	1	- Building is not fire sprinkled - Exterior door security is in place with locks and intercom but there is no secure entry vestibule or visibility from office to entry points. - classroom doors have levers, other doors do not - restrooms: some accessibility issues at entry clearances
	DOOR HARDWARE	5	4	(3)	2	1	
	HANDRAILS/GUARDRAILS	5	4	3	(2)	1	
	RESTROOMS	5	4	3	(2)	1	

ADDITIONAL COMMENTS

- classroom shape and layout of pods is a challenge to the educational adequacy of the space. Refer to the educational adequacy ratings.

FACILITY ASSESSMENT
MECHANICAL

DESIGN FOR LIFE

RATING LEGEND

5 System condition is in new or near new condition.
4 System is generally suitable for intended use. Minor improvements are needed to improve building performance & longevity.
3 System is suitable, but requires specific upgrades to meet performance and operational objectives.
2 System has serious deficiencies.
1 System is unsuitable for intended use.

		RATINGS					
	SYSTEMS	EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR	COMMENTS
SPACE REVIEWED Jefferson Elementary School	Heating		4	●		1	Direct resistance electric coils provided in AHUs and supplemental electric heat in spaces.
	Ventilation	5	4	3	●		Original building has original AHU's past their expected end of life. Newer addition has ERU for ventilation.
	Air Conditioning	5	4	3	●		Limited cooling/dehumidification within the building. 2009 addition has new equipment with cooling.
	Plumbing	5		●		1	Most water heaters are at their expected end of life. San/HW/CW lines need to be examined and/or replaced.
	Fire Protection	5	4	3	2	●	No sprinkler system is installed within the building.
	Temperature Controls	5	4	●			Low voltage standalone electric controls throughout building. No communication
	Fire Protection Systems	5	4	3	2	●	No sprinkler

OVERALL COMMENTS

Automatic fire suppression system should be added throughout the building for life safety.

Indoor Air Quality should be addressed for the original portion of the building, aside from the 2009 addition, in order to meet ASHRAE 62.1 for controllable ventilation rates, and ASHREA Standard 55 for cooling and dehumidification. The 2009 addition was provided with code compliant ventilation, cooling, and dehumidification. Original equipment is at the end of its useful life and should be replaced.

Heating system relies on direct resistance electric heat. Would recommend using a hot water heating system with gas fired boiler for lower utility costs and some additional control.

Air distribution zoning should be added through DDC controlled pressure independent VAV boxes to monitor actual cfm delivered to space and save energy at reduced load conditions.

Jefferson Elementary School – Mechanical Existing Systems Assessment

Date	October 8th, 2020
Project Name	Valley City Schools
Project Location	Valley City, ND
Description	Mechanical Existing Systems Assessment

1.1 EXECUTIVE SUMMARY

A. Automatic fire suppression system should be added throughout the building for life safety. Currently no fire suppression system installed.

B. Indoor Air Quality should be addressed for the original 1964 building in order to meet ASHRAE 62.1 for controllable ventilation rates, and ASHREA Standard 55 for cooling and dehumidification. The 2009 addition has cooling and ventilation provided.

C. It is recommended to replace all original air handling units, excluding those installed in the 2009 addition, with new indoor air handling units having hot water heat, DX cooling, and ventilation monitoring based on occupancy to tightly maintain ASHRAE 62.1 standards for outside air and humidity levels. A DX cooling system with variable speed compressors will allow for part load dehumidification without requiring the use of reheat energy.

D. Heating system relies on direct resistance electric heat. Would recommend using a hot water heating system with gas fired boiler for lower utility costs and some additional control capabilities.

E. Air distribution zoning should be added through DDC controlled pressure independent VAV boxes to monitor actual CFM delivered to space and save energy at reduced load conditions.

1.2 OVERVIEW

A. The existing school is comprised of an original classroom and gym/cafeteria pod structure built in 1964 with an addition built in 2009 housing the library, music, and art spaces. The original building is served by single zone indoor air handling units that are original to the building. The original building does not have any cooling, but the addition has DX cooling. Heating is provided through direct resistance electric heaters in air handling equipment and supplemental electric heat in rooms.

B. Majority of the HVAC equipment throughout the building is original to the respective building/addition dates with no significant equipment replacements being done. Aside from the 2009 equipment, everything is beyond its useful life.

C. Most of the controls of the building are low voltage standalone controls with limited capability. There are not proper controls or air flow monitoring to control ventilation rates based on occupancies or to verify ASHRAE 62.1 requirements for recommended outdoor air are being met.

1.3 FIRE PROTECTION SYSTEMS

A. The building does not have any fire protection system. Recommend adding fire suppression throughout the building to meet current code requirements.

1.4 HEATING

A. Heating is provided direct resistance electric heaters in air handling equipment and supplemental electric heat in rooms. Electric heat has higher utility costs than natural gas at current rates.





B. We recommend replacing the existing system with multiple new gas fired hot water boilers, sized to match the building heating load with some redundancy in case a single boiler fails. The hot water heating system would be ran throughout the building to replace the existing electric heating equipment. A pair of redundant circulating pumps would be installed to serve the entire building.

1.5 VENTILATION

A. The air handling equipment throughout the building is original, excluding the 2009 addition. Indoor Air Quality should be addressed for all of the original building in order to meet ASHRAE 62.1 for controllable ventilation rates. The original building has an existing ventilation system, but it does not meet current code requirements and equipment is at the end of its useful life. Units are typically constant volume single zone units.





B. Underground tunnels/ducts are used for air distribution in classroom areas. This can lead to some moisture or contaminants getting into the indoor air system. Recommend verifying the condition of those existing tunnels/ducts and running new ductwork throughout those spaces if condition is compromised.

1.6 AIR CONDITIONING

A. Classroom and gym spaces do not have air conditioning. The 2009 addition has air conditioning throughout. Units serving the classrooms are constant volume single zone units.

B. Recommend adding DX cooling for new equipment throughout the building to meet the requirements of ASHRAE 62.1 for ventilation rates, and ASHREA Standard 55 for cooling and dehumidification.

1.7 PLUMBING

A. Domestic water piping found to be in good conditions but piping and insulation are original to the building. Much of the piping is concealed within construction and will need further investigation.

B. Three water heaters are situated throughout the building. Two of the three are at the end of their useful life but the new unit in the addition is in good condition. Water heaters should continue to be replaced on an as needed basis when units fail.





C. Plumbing fixtures are relatively new and have been replaced over the years as fixtures fail. Some of the china fixtures are original and should be replaced. Thermostatic mixing valves should be added to public lavatories for scald protection.

1.8 CONTROLS

A. Controls throughout the building are original with limited capabilities. There are not proper controls or air flow monitoring to control ventilation rates based on occupancies or to verify ASHRAE 62.1 requirements for recommended outdoor air are being met.

B. Recommend installing DDC controls on any replacement equipment as well as replacing existing controls throughout the building with DDC. The DDC system should be tied together to a single BAS front end. The system would be integrated across the district to allow for single stop monitoring and controls of all buildings in the system.

Respectfully,
Obernel Engineering

Ross Young, PE
Mechanical Engineer

FACILITY ASSESSMENT
ELECTRICAL

DESIGN FOR LIFE

RATING LEGEND

5 System condition is in new or near new condition.
4 System is generally suitable for intended use. Minor improvements are needed to improve building performance & longevity.
3 System is suitable, but requires specific upgrades to meet performance and operational objectives.
2 System has serious deficiencies.
1 System is unsuitable for intended use.

		RATINGS					
	SYSTEMS	EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR	COMMENTS
SPACE REVIEWED Jefferson School	Power Distribution	5	4	●	2	1	Service and branch circuit panels in fair condition. Peak demand will allow for additional loads.
	Lighting Fixtures	5	4	●	2	1	Fluorscent lamps used thogh out facility. Battery Em. lights in place but additional units need to be added
	Lighting Control	5	4	3	●	1	Manual controls are being used with a few occupancy sensors in storage rooms.
	Technology Infrastructure	5	●	3	2	1	It systems are in good shape but need to have seperate room for equipment.
	Technology Integration	5	●	3	2	1	Classroms have been up graded with new technology.
	Security Infrastructure	5	●	3	2	1	CCTV are in place and in good working order.
	Access Control	5	●	3	2	1	Access control is in place along with A-phone at main entrance.

OVERALL COMMENTS

Electrical systems on good shape for both elementary schools. A new LED lighting replacement should be done along with controls in take advantage of utility rebate program. Fire alarm system has a Simplex 4007 panel and id a currentr model. Additiojnal audio/visual units shoulkd be added for better coverage. Battery Em. lights should be added with remote heads at exterior entrances.

PART 2. JEFFERSON ELEMENTARY SCHOOL

2.1 SERVICE ENTRANCE

A. 1200 Amp 480/277 Volt 3 phase 4 wire with one 200 KVA dry-type transformer for 208/120 Volt 3 phase 4 wire loads

B. All electric heat is at the 480 volts. Lighting and receptacle loads are on the 208/120 Volt system.

C. Branch circuit panels are Square D load center type with emergency circuits

D. Exit lights on 120/240 1 phase 3 wire panel. Spare circuits are available for added loads

E. Peak demand (2/16/2021) at 400 amps which allows for added loads



2.2 LIGHTING

A. Fluorescent type lamps are utilized throughout the facility

B. Both recessed and suspended luminaires are used along with a few 8 inch round compact fluorescent down lights

C. Manual controls are in the classrooms, office, and corridors. Restrooms have motion control devices

D. To meet current energy codes, occupancy controls should be installed for positive off when rooms are not in use

E. Battery type emergency lighting devices installed mostly in the corridors. These are quite old and need to be tested for working condition. Additional lighting units should be provided to meet required luminaires for egress paths. Exterior units at the exits should also be provided to allow paths away from the building as per codes.



2.3 POWER WIRING

A. Classrooms need additional duplex receptacles and should be the child proof type. Surface raceways are in place for added devices. One simple add would be to remove single duplex receptacles and install surface two gang box with additional devices

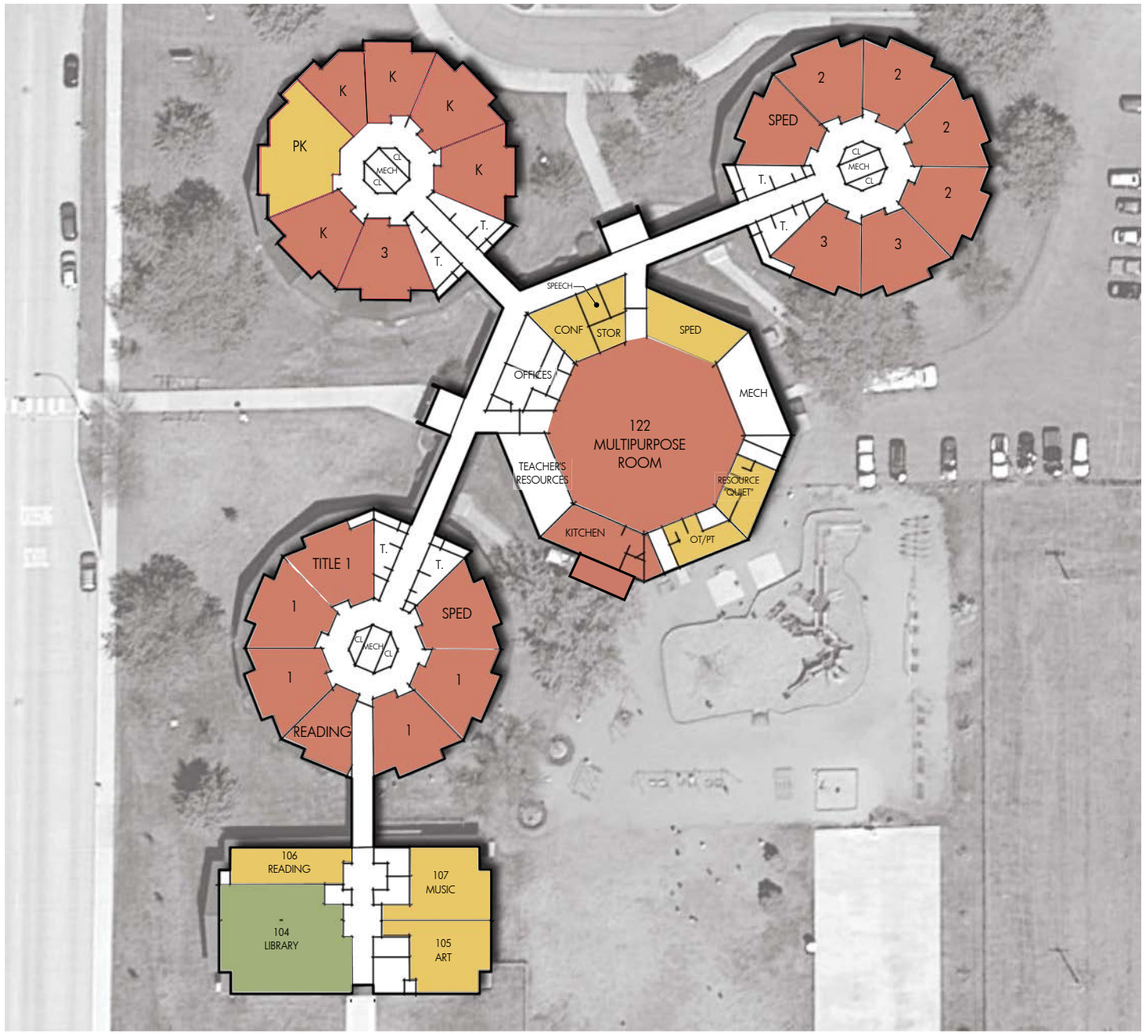
2.4 FIRE ALARM SYSTEMS

A. Existing panel is a Simplex 4007, addressable had wired system. This panel is current and additional devices can be added

2.5 IT SYSTEMS

A. Existing Equipment is new in work rooms with cables routed above the ceiling to the devices. As noted in the high school I would recommend developing a separate room for this equipment

B. Cabling upgrade is planned for the summer of 2022. This would be installing CAT 6 or better and removing the old CAT 5E. Classroom technology has been upgraded and in good condition. CCTV (IP) are in place with 21 DAY recording capacity. Card access is in place with pare capacity to allow for additional doors. A-phone devices are located at the main entrance doors. Intercom systems have been upgraded and in good condition.



COLOR KEY

- MEETS STANDARDS (7.3%)
- MARGINAL (20.6%)
- DOES NOT MEET STANDARDS (72.1%)
- TS TEACHING STATION

FIGURE 4: Educational Adequacy Plan

VALLEY CITY MIDDLE SCHOOL/ HIGH SCHOOL/ HI-LINER CENTER



FIGURE 1.Valley City MS/HS HI-Liner Center

Address: 493 Central Ave N, Valley City, ND 58072

Year Built: 1919

Additions/Remodels: 1948, 1958, 1971, 1992, and 2003

Last Facility Study or Master Plan: 2017

Square Footage: 184,424 sq. ft.

Grades Served: 7-12

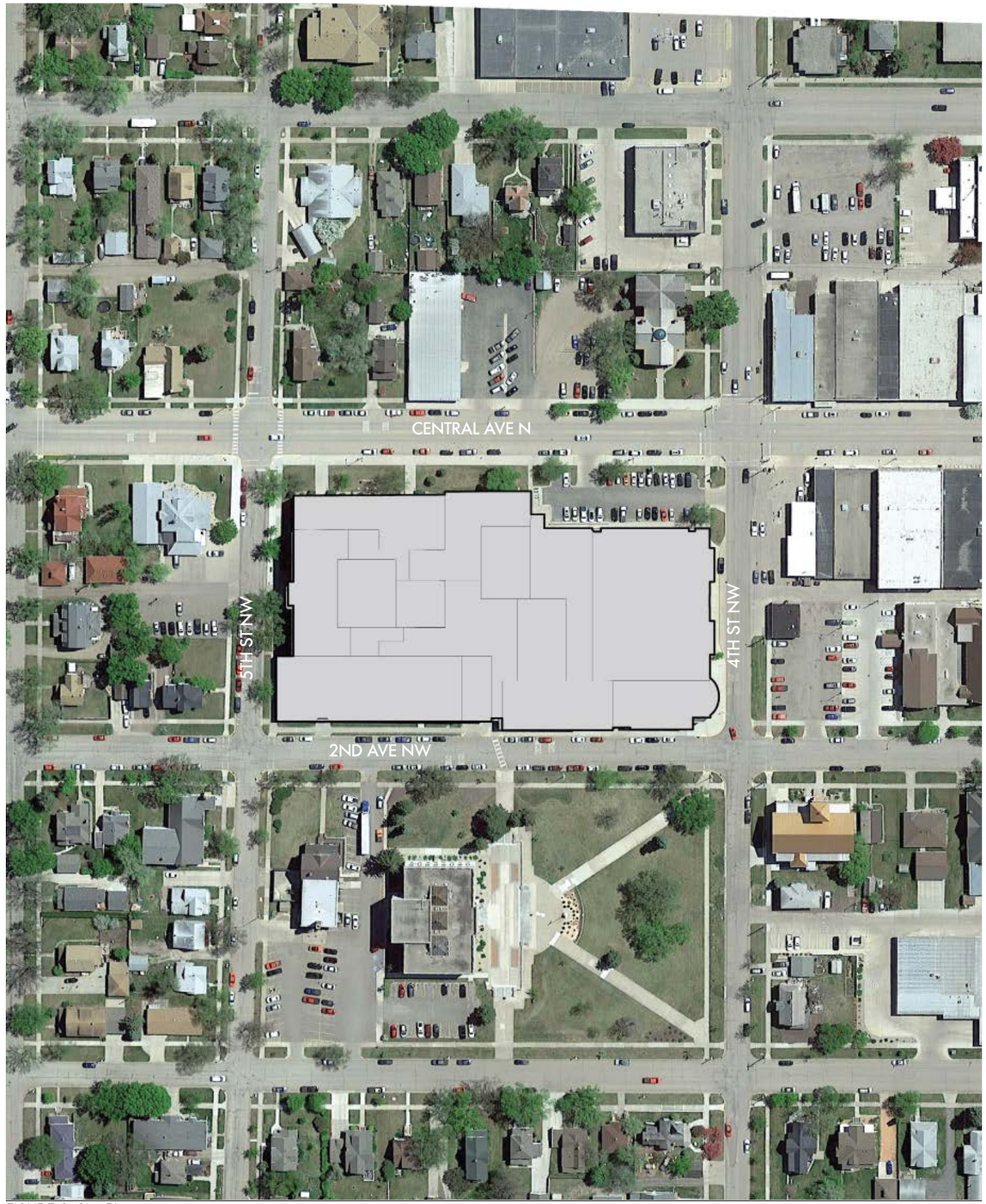
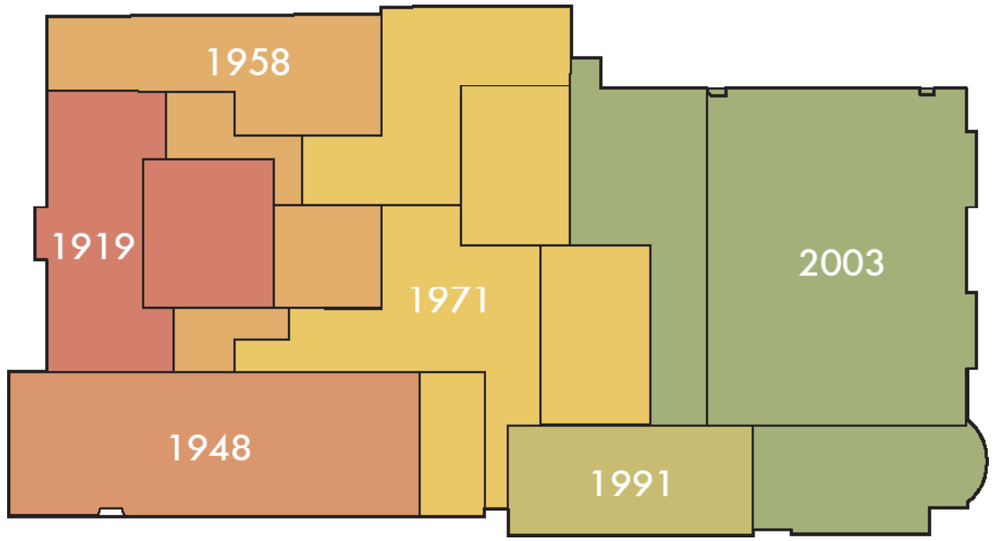


FIGURE 2: Site Plan

FLOOR PLANS BY SPACE USE



1919 - ORIGINAL HIGH SCHOOL

1948 - AUDITORIUM AND CLASSROOM ADDITION

1958 - CLASSROOM AND BAND ROOM ADDITION

1971 - JUNIOR HIGH ADDITION

1991 - FOOD SERVICE ADDITION

2003 HI-LINER ALTHLETIC COMPLEX ADDTION

FIGURE 3: Age of Building

FLOOR PLANS BY SPACE USE

COLOR KEY

- LEARNING ENVIRONMENT
- SPECIALS
- ADMINISTRATION
- SPED
- SUPPORT
- ATHLETICS



FIGURE 4.1: Ground Floor Plan



FIGURE 4.2: First Floor Plan



FIGURE 4.3: Second Floor Plan

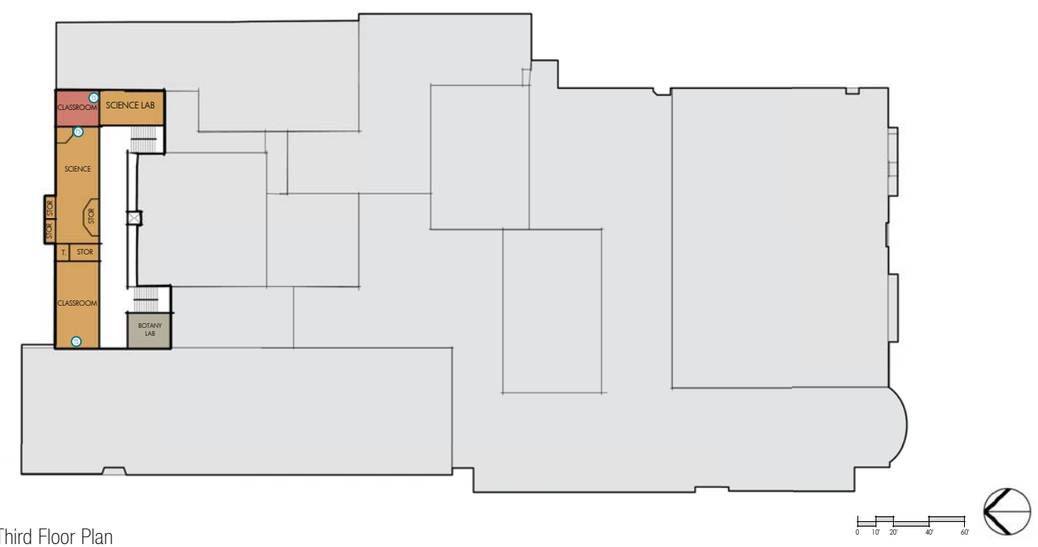


FIGURE 4.4: Third Floor Plan

BUILDING PHOTOGRAPHS



NOTE: North facade



NOTE: Locker room emergency exit



NOTE: Exterior of 1948 addition

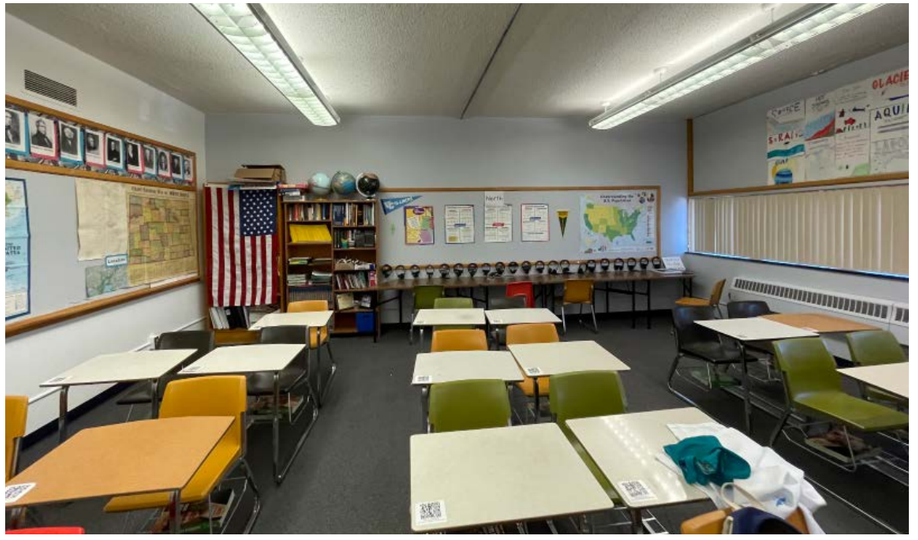


NOTE: Roof masonry

BUILDING PHOTOGRAPHS



NOTE:Third floor science lab



NOTE: Classroom



NOTE: Stairway between additions



NOTE: Auditorium ceilling

BUILDING PHOTOGRAPHS



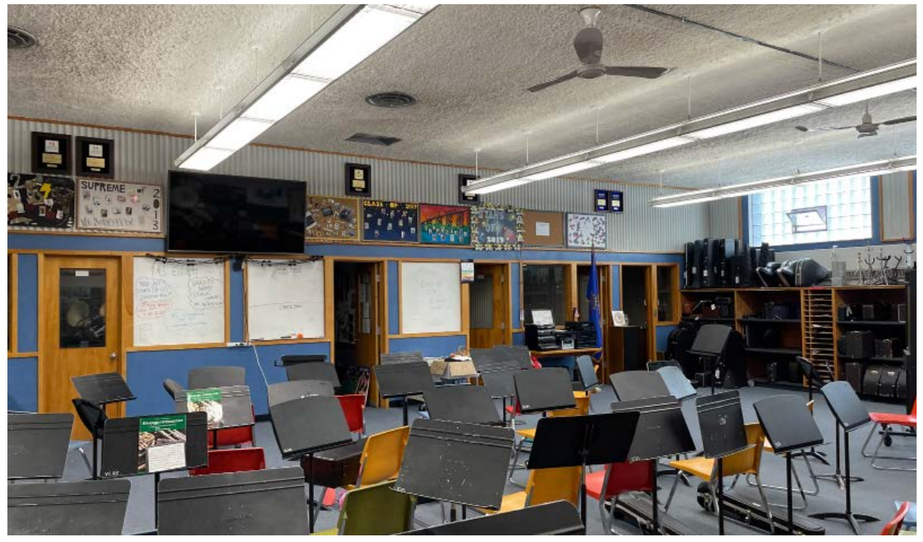
NOTE: Basement of 1919 building



NOTE: Classroom with raised teacher platform



NOTE: Staff lounge



NOTE: Band room

FACILITY CONDITION ASSESSMENT

RATING LEGEND

5 System condition is in new or near new condition.
4 System is generally suitable for intended use. Minor improvements could improve building performance & longevity.
3 System is suitable, but requires specific upgrades to meet performance and operational objectives.
2 System has serious deficiencies.
1 System is unsuitable for intended use.

CATEGORY	SYSTEMS	RATINGS					COMMENTS
		EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR	
SITE	SIDE WALKS	5	4	3	(2)	1	- There is very minimal off-street parking available to staff and students. There are on-street curb-side drop off zones but no off street drop-off areas. - Limited load-in areas that are not from the street. - There is no exterior educational program space - Minimal green space and landscaping limited to street plantings at East and North side of building. - Way-finding is limited as to locations for entry, parking and office access. Sidewalks along the North and West side of the building have areas that are deteriorating and cracking
	PARKING	5	4	3	2	(1)	
	DRAINAGE	5	4	(3)	2	1	
	SIGNAGE	5	4	3	(2)	1	
	LIGHTING	5	4	(3)	2	1	
	LANDSCAPING	5	4	3	(2)	1	
	OUTDOOR PROGRAM SPACE	5	4	3	2	(1)	
BUILDING ENVELOPE	GENERAL CONDITION	5	4	3	(2)	1	- While the school district has done a good job of maintaining the building, due to the age of the Jr/Sr High structure there are areas where major renovation and replacement of systems is needed including brick repair, masonry repair/replacement, and roof restoration. - The roofing report notes that only 37% of the roof is in good condition. 40% is in need of restoration immediately.
	ROOF	5	4	3	(2)	1	
	DOORS/WINDOWS	5	4	3	2	(1)	
	TRIM	5	4	3	(2)	1	
	EXTERIOR WALLS	5	4	3	(2)	1	
LEARNING ENVIRONMENT	FLOORS	5	4	(3)	2	1	- The condition of flooring varies throughout the building ranging from poor to above average condition. - The ACT ceilings are generally in poor condition due to age, sagging panels, chipped edges, or discoloration. - The age and condition of doors varies throughout. Some doors have had hardware replaced but many have not and many doors are original to the building and in poor condition or don't meet current codes. - Walls that do not go to the deck and allow sound transfer. Varying age and condition of walls
	WALLS	5	4	3	(2)	1	
	CEILINGS	5	4	3	2	(1)	
	CASEWORK	5	4	3	(2)	1	
	DOORS/WINDOWS	5	4	3	(2)	1	
	ACCESSIBILITY	5	4	(3)	2	1	
SUPPORTING EDUCATIONAL SPACE *(LIBRARY, MUSIC AND ART)*	FLOORS	5	4	(3)	2	1	- Much of the casework is outdated and needs repair or needs added storage capacity. - See previous notes regarding condition of ceilings, walls and flooring.
	WALLS	5	4	3	(2)	1	
	CEILINGS	5	4	3	(2)	1	
	CASEWORK	5	4	3	(2)	1	
	DOORS/WINDOWS	5	4	3	2	(1)	
	ACCESSIBILITY	5	4	3	(2)	1	
ADMINISTRATION	FLOORS	5	4	(3)	2	1	- Much of the casework is outdated and needs repair or needs added storage capacity. - See previous notes regarding condition of ceilings, walls and flooring.
	WALLS	5	4	3	(2)	1	
	CEILINGS	5	4	3	(2)	1	
	CASEWORK	5	4	3	(2)	1	
	DOORS/WINDOWS	5	4	3	2	(1)	
	ACCESSIBILITY	5	4	(3)	2	1	

CATEGORY	SYSTEMS	RATINGS					COMMENTS
		EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR	
PUBLIC SPACE *(HALLWAYS, COMMONS)*	FLOORS	5	4	3	2	(1)	- The carpet at the 1919 main hallways is in especially poor condition. - See previous notes regarding condition of ceilings and walls.
	WALLS	5	4	3	(2)	1	
	CEILINGS	5	4	3	2	(1)	
	CASEWORK	5	4	3	(2)	1	
	DOORS/WINDOWS	5	4	3	2	(1)	
	ACCESSIBILITY	5	4	3	(2)	1	
ACTIVITIES *(GYM, PERFORMING ARTS)*	FLOORS	5	4	(3)	2	1	- Assessment for the H.A.C. is located on a separate section of the report. This rating applies to the north P.E. gymnasiums. - Theatre has good historic character and the seating area is in relatively good condition however seating and stage size is drastically undersized to suit current needs. Orchestra pit and technical space is lacking. - P.E. gym floors are in relatively good condition. - North gym and weights/cardio are not provided accessible access.
	WALLS	5	4	3	(2)	1	
	CEILINGS	5	4	3	(2)	1	
	EQUIPMENT	5	4	3	(2)	1	
	DOORS/WINDOWS	5	4	3	2	(1)	
	ACCESSIBILITY	5	4	3	2	(1)	
FOOD SERVICE	FLOORS	5	4	(3)	2	1	.
	WALLS	5	4	(3)	2	1	
	CEILINGS	5	4	(3)	2	1	
	EQUIPMENT	5	4	(3)	2	1	
	DOORS/WINDOWS	5	4	3	(2)	1	
	ACCESSIBILITY	5	4	(3)	2	1	
CTE SHOPS	FLOORS	5	4	3	(2)	1	- Equipment appears to be in working order and condition - Ceilings, walls and flooring are outdated or need refinishing. - Storage casework is lacking or in poor condition. Work benches are in poor condition.
	WALLS	5	4	3	(2)	1	
	CEILINGS	5	4	3	(2)	1	
	EQUIPMENT	5	4	(3)	2	1	
	DOORS/WINDOWS	5	4	3	2	(1)	
	ACCESSIBILITY	5	4	3	(2)	1	
CODE COMPLIANCE	ENTRIES	5	4	3	(2)	1	- The multiple level changes within circulation systems and circuitous access to the elevators and lifts that exist creates accessibility challenges. - Building is not fully sprinklered - Many doors, door approaches, hardware, railings, stair and ramp rise/run appear to be non code compliant
	DOOR HARDWARE	5	4	3	2	(1)	
	HANDRAILS/GUARDRAILS	5	4	3	(2)	1	
	RESTROOMS	5	4	(3)	2	1	

ADDITIONAL COMMENTS

FACILITY ASSESSMENT
MECHANICAL

DESIGN FOR LIFE

RATING LEGEND

5 System condition is in new or near new condition.
4 System is generally suitable for intended use. Minor improvements are needed to improve building performance & longevity.
3 System is suitable, but requires specific upgrades to meet performance and operational objectives.
2 System has serious deficiencies.
1 System is unsuitable for intended use.

		RATINGS					
	SYSTEMS	EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR	COMMENTS
SPACE REVIEWED Valley City High School	Heating		4		●	1	Steam boilers are aged to the end of their useful life. Pumps are leaking and should be examined/replaced.
	Ventilation	5	4	3		●	1919 has no air handling equipment. The other portions have original AHU's past their expected end of life
	Air Conditioning	5	4	3	●		Limited cooling within the building. Most of the existing DX condensing units serving the indoor AHUs are at end of useful life
	Plumbing	5		●		1	Some water heaters are at their expected end of life. San/HW/CW lines need to be examined and/or replaced.
	Fire Protection	5	4	3	2	●	No sprinkler system is installed within the majority of the building.
	Temperature Controls	5	4	3	●		Pneumatic controls are outdated and offer minimal control. Pneumatic tubing is leaking.
	Fire Protection Systems	5	4	3	2	●	No sprinkler

OVERALL COMMENTS

Automatic fire suppression system should be added throughout the building for life safety. Currently only the 2003 addition (Hi-Liners Activity Center and Activities Lobby) has fire suppression installed.

Indoor Air Quality should be addressed for the majority of Classrooms, the older Gym, Multipurpose Spaces, Special Ed Rooms, Locker Rooms, Music Rooms, and corridors throughout the building in order to meet ASHRAE 62.1 for controllable ventilation rates, and ASHREA Standard 55 for cooling and dehumidification. HAC and activities lobby added in 2003 were provided with code compliant ventilation, cooling, and dehumidification. A few other areas in the school including the kitchen, auditorium, junior high classrooms, library, administration suite and choir rooms have cooling but limited control for dehumidification and cooling equipment is aged.

Air distribution zoning should be added through DDC controlled pressure independent VAV boxes to monitor actual cfm delivered to space and save energy at reduced load conditions.

Valley City High School – Mechanical Existing Systems Assessment

Date	October 8th, 2020
Project Name	Valley City Schools
Project Location	Valley City, ND
Description	Mechanical Existing Systems Assessment

1.1 EXECUTIVE SUMMARY

A. Automatic fire suppression system should be added throughout the building for life safety. Currently only the 2003 addition (Hi-Liners Activity Center and Activities Lobby) has fire suppression installed.

B. Indoor Air Quality should be addressed for the large majority of Classrooms, the older Gym, Multipurpose Spaces, Special Ed Rooms, Locker Rooms, Music Rooms, and corridors throughout the building in order to meet ASHRAE 62.1 for controllable ventilation rates, and ASHREA Standard 55 for cooling and dehumidification. Activities center and activities lobby added in 2003 were provided with code compliant ventilation, cooling, and dehumidification. A few other areas in the school including the kitchen, auditorium, junior high classrooms, library, administration suite and choir rooms have cooling but limited control for dehumidification.

C. It is recommended to replace all existing air handling units, excluding those installed in the 2003 addition, with new indoor air handling units having hot water heat, chilled water cooling, and ventilation monitoring based on occupancy to tightly maintain ASHRAE 62.1 standards for outside air and humidity levels. A chilled water cooling system with variable speed pumps and modulating controls will allow for part load dehumidification minimizing the use of reheat energy.

D. Air distribution zoning should be added through DDC controlled pressure independent VAV boxes to monitor actual cfm delivered to space and save energy at reduced load conditions.

1.2 OVERVIEW

A. The existing school is comprised of an original 3-story building built in 1919 with multiple additions added over the years (1949, 1959, 1974, 1992, 2003) to the south of the original building. The original air handling equipment serving the 1919 building were removed and some point and not replaced. The 1919 building has heating only and no cooling/dehumidification or ventilation. The rest of the building is served by indoor air handling units for ventilation and air movement. An air-cooled chiller provides cooling for the 2003 addition and various DX condensing units provide cooling to a few other AHUs. Heating is provided by two gas fired boiler generating steam. Steam to hot water heat exchangers produce heating water for newer additions with older parts of the building use direct steam heat.

B. Majority of the HVAC equipment throughout the building is original to the respective building/addition dates with no significant equipment replacements being done. Aside from the 2003 equipment, all the HVAC equipment is beyond its useful life and should be replaced.

C. The 2003 addition was provided with digital controls tied into a BAS system with electronic sensors and actuators. The rest of the building has the original pneumatic controls with limited capabilities. There are not proper controls or air flow monitoring to control ventilation rates based on occupancies or to verify ASHRAE 62.1 requirements for recommended outdoor air are being met.

1.3 FIRE PROTECTION SYSTEMS

A. The Hi-Liners Activity Center and adjacent lobby (2003 addition) has a wet sprinkler fire suppression system throughout. The system is in good condition and is adequate to meet code requirements for life safety.

B. The rest of the building has no fire protection system. Recommend adding fire suppression throughout the building to meet current code requirements.

1.4 HEATING

A. Heating for the building comes from two (2) 265 HP steam boilers. Steam is distributed directly for heating to older portions of the building and a steam to hot water heat exchangers provides heating water for newer portions of the building. Inline pumps are used for hot water distribution and have started to fail. Boilers were originally installed in the 1970's and are at the end of their useful life but have had regular maintenance to keep them operational.

B. In older portions of the building, steam radiators are installed along perimeter walls and steam coils are installed in air handling equipment. Piping is original to those areas and is at the end of its useful life. The original steam equipment has poor control and is affecting occupant comfort.

C. New portions of the building have hot water finned tube for supplemental heat and hot water coils in air handling units provide heating for the ventilation system.

D. We recommend replacing the existing boiler system with multiple new gas fired hot water boilers, sized to match the building heating load with some redundancy in case a single boiler fails. The hot water heating system would be expanded and ran to throughout the building to replace the existing steam heating system. A pair of redundant circulating pumps would be installed to serve heating water throughout the entire building.





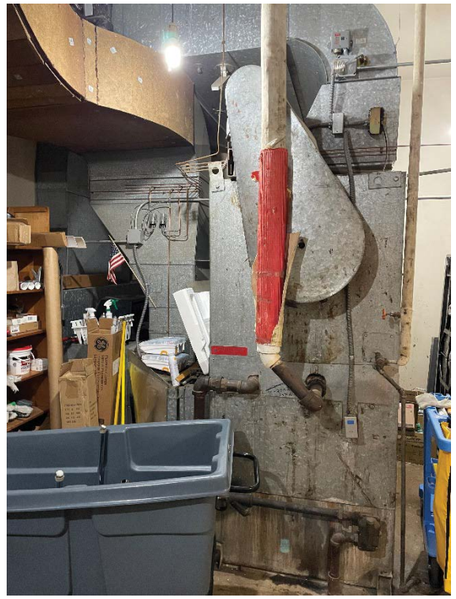
1.5 VENTILATION

A. The air handling equipment throughout the building is original. Indoor Air Quality should be addressed for the majority of Classrooms, the older Gym, Multipurpose Spaces, Special Ed Rooms, Locker Rooms, Music Rooms, and corridors throughout the building in order to meet ASHRAE 62.1 for controllable ventilation rates. Activities center spaces added in 2003 were provided with code compliant ventilation, cooling, and dehumidification. The original 1919 does not have any ventilation system currently installed. Other areas have ventilation systems, but they do not meet current code requirements and equipment is at the end of its useful life. Units are typically constant volume single zone units.

B. Ductwork throughout the older portions of the building is at the end of its useful life and will have excessive leakage. Any areas of the building where cooling is proposed will need to have all supply ductwork insulated to meet energy code and limit condensation formation.

C. Existing wood shop does not have a dust collection system. The space relies on a standard air handling unit with filters to remove dust from the space. This AHU also serves adjacent classroom and would any uncaptured dust to that space.

D. FACS room does not proper exhaust system for the potential cooking applications. Ranges/ovens to not have capture hoods or fire suppression.









1.6 AIR CONDITIONING

A. Air conditioning is sparse throughout the school with cooling limited to the Hi-Liners Activity Center and Activities Lobby (2003), Junior high library, choir and admin suite (1974), kitchen and cafeteria (1992). Most of the units serving these spaces are original to the building and past their useful life. They are multizone air handling unit which utilize constant volume air which minimize controllability and limit the ability to properly dehumidify without overcooling. The classrooms throughout the building do not have cooling. There is not currently a dedicated IT/data room in the building but where the main servers are does not have cooling.

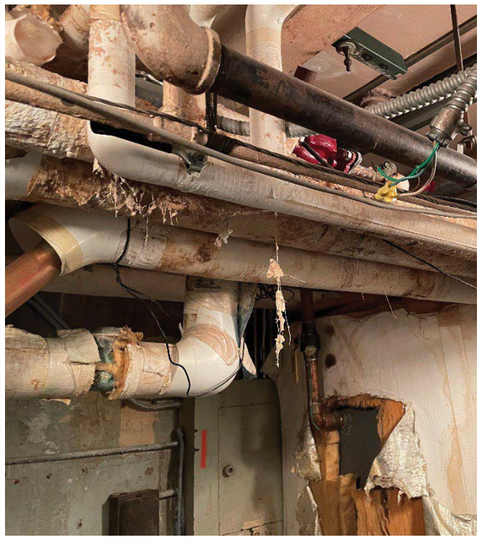
B. Air conditioning for the 2003 addition comes from an air-cooled chiller. DX air cooled condensing units are utilized for all other spaces with cooling. Recommend installing a centralized chilled water cooling plant to serve the entire building with base mounted circulation pump and chilled water piping ran to all air handling units to meet the requirements of ASHRAE 62.1 for ventilation rates, and ASHREA Standard 55 for cooling and dehumidification.

C. Without ventilation air being provided to much of the building, high humidity has not been a primary issue. If outside air is provided to the building at the code required rates, there will be high humidity in the shoulder months. A chilled water cooling system will allow for temperature control during hot weather days as well as dehumidification during spring/fall when temperatures are lower but relative humidity is high.

1.7 PLUMBING

A. The building is served by multiple water services throughout the building. Meters are all relatively new and in good condition with the piping around the meters having been recently replaced as well.





B. Domestic water piping found to be leaking in some areas in mechanical and back of house areas. Plumbing ran through tunnels was not investigating but likely in similar conditions. Some piping insulation has been replaced as existing insulation deteriorates or asbestos is abated but remaining insulation is in poor condition.

C. Water heaters are situated throughout the building with new water heating being positioned where they appear to serve each different building addition. Build dates for water heaters range with the oldest being 1998 and the newest being 2020. Water heaters are in operable condition, but the older units are showing signs of deterioration. Water heaters should continue to be replaced on an as needed basis when units fail.

D. Plumbing fixtures are relatively new and have been replaced over the years as fixtures fail. Thermostatic mixing valves should be added to public lavatories for scald protection.

1.8 CONTROLS

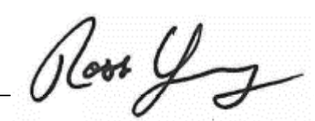
A. Controls throughout the building are original. The newer 2003 addition has digital controls tied into a BAS system with electronic sensors and actuators. The rest of the building has the original pneumatic controls with limited capabilities. There are not proper controls or air flow monitoring to control ventilation rates based on occupancies or to verify ASHRAE 62.1 requirements for recommended outdoor air are being met. Air compressor run regularly which indicate leaks within the pneumatic tubing system.





B. Recommend installing DDC controls on any replacement equipment as well as replacing existing pneumatic controls throughout the building with DDC. The DDC system should be tied together to a single BAS front end. The system would be integrated across the district to allow for single stop monitoring and controls of all buildings in the system.

Respectfully,
Obernel Engineering



Ross Young, PE
Mechanical Engineer

FACILITY ASSESSMENT
ELECTRICAL

DESIGN FOR LIFE

RATING LEGEND

5 System condition is in new or near new condition.
4 System is generally suitable for intended use. Minor improvements are needed to improve building performance & longevity.
3 System is suitable, but requires specific upgrades to meet performance and operational objectives.
2 System has serious deficiencies.
1 System is unsuitable for intended use.

		RATINGS					
	SYSTEMS	EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR	COMMENTS
SPACE REVIEWED Jefferson School	Power Distribution	5	4	●	2	1	Service and branch circuit panels in fair condition. Peak demand will allow for additional loads.
	Lighting Fixtures	5	4	●	2	1	Fluorscent lamps used thogh out facility. Battery Em. lights in place but additional units need to be added
	Lighting Control	5	4	3	●	1	Manual controls are being used with a few occupancy sensors in storage rooms.
	Technology Infrastructure	5	●	3	2	1	It systems are in good shape but need to have seperate room for equipment.
	Technology Integration	5	●	3	2	1	Classroms have been up graded with new technology.
	Security Infrastructure	5	●	3	2	1	CCTV are in place and in good working order.
	Access Control	5	●	3	2	1	Access control is in place along with A-phone at main entrance.

OVERALL COMMENTS

Electrical systems on good shape for both elementary schools. A new LED lighting replacement should be done along with controls in take advantage of utility rebate program. Fire alarm system has a Simplex 4007 panel and id a currentr model. Additiojnal audio/visual units shoulkd be added for better coverage. Battery Em. lights should be added with remote heads at exterior entrances.

EXISTING ELECTRICAL CONDITIONS ASSESSMENT

Date	10/8/21
Project Name	Valley City Schools
Project Location	Valley City, ND
Description	Existing Electrical Conditions Assessment

PART 1. HIGH SCHOOL

1.1 POWER (TWO SERVICE ENTRANCES)

A. GE Main Switchboard

B. 1200 Amp 208/120 Volt 3 Phase 4 Wire

C. Switch/Fuse Distribution

D. Square D

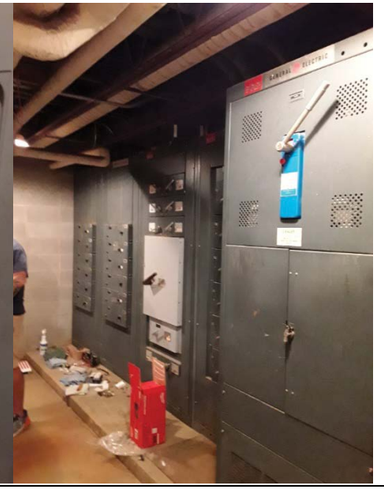
E. 2000 Amp 208/120 Volt 3 Phase 4 Wire

F. Should have a diagram at each service equipment noting both locations

G. Branch circuit panels have both upgraded to Square D NQOD with some spare breakers and space available

H. Peak demand (1/11/2021) at 246 amps and 235 amps which allows for added loads





1.2 LIGHTING

A. Majority of areas have fluorescent light source, both recessed and suspended. A few luminaires have been upgraded to LED Types

B. Good levels in classrooms, corridors, cafeteria, and gym. Need additional lights in mechanical and electrical rooms. Also, in basement storage areas and boiler rooms

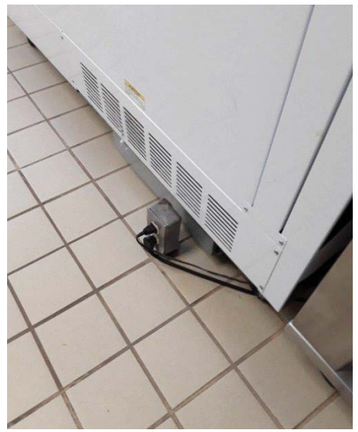
C. Emergency egress lighting is with battery units. These are located in the corridors. Missing units in stairwells, boiler rooms, cafeteria, and main vestibule. Exterior entrances also need emergency lights as per codes.

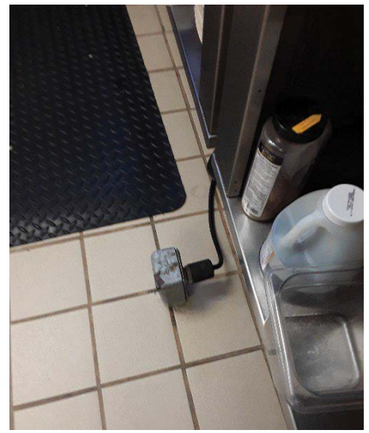


1.3 POWER WIRING

A. Additional receptacles are needed in classrooms, shops, and work areas

B. New GFI (Ground Fault Interrupter) devices are needed in the kitchen to meet current codes





C. Shops utilize a lot of extension cords for students to use power tools. I would recommend ceiling mounted cord reels with GFI receptacles

D. Emergency push buttons to shut off equipment in the shops for safety should be added

1.4 FIRE ALARM SYSTEMS

A. Existing Simplex 4020 addressable panel. This type of main panel is no longer used, which puts any upgrades or repairs in jeopardy

B. System Activation Devices (smoke and heat detectors) are in place. Additional devices are need in lower level for quick response to fire and smoke problems

C. Audio/visual devices are in place, but additional devices are needed to meet current codes

D. Required fan shut down (air handling equipment) needs to be provided to meet code

1.5 IT SYSTEMS

A. Separate IT rooms should be provided to allow for added cabling and equipment. One main room with other satellite rooms as needed. Main room would have new air systems to keep areas at recommended temperatures

B. IT systems are provided in classrooms, shops, and office areas. Additional panels and cables will be needed in the future for new products or equipment. Additional WAP (wireless access points) may need to be added for coverage

C. Cabling upgrade is planned for the summer of 2022. This would be installing CAT 6 or better and removing the old CAT 5E. Classroom technology has been upgraded and in good condition. CCTV (IP) are in place with 21 DAY recording capacity. Card access is in place with spare capacity to allow for additional doors. ~~A phone devices are located at main entrance doors. Intercom systems have been upgraded and in good~~ condition



FIGURE 4.1: Educational Adequacy Ground Floor Plan



FIGURE 4.1: Educational Adequacy Ground Floor Plan



FIGURE 4.1: Educational Adequacy Ground Floor Plan

COLOR KEY

- MEETS STANDARDS (6.9%)
- MARGINAL (42.5%)
- DOES NOT MEET STANDARDS (50.6%)
- TS TEACHING STATION

0 10 20 40 60

NORTH

SHEYENNE VALLEY AREA CAREER & TECHNOLOGY CENTER



FIGURE 1.Sheyenne Valley Area Career & Technology Center

Address: 801 9th Ave SE, Valley City, ND 58072

Year Built: 1967

Additions/Remodels: 2005

Last Facility Study or Master Plan: 2017

Square Footage: 28,935 sq. ft.

Grades Served: ?

BUILDING SUMMARY

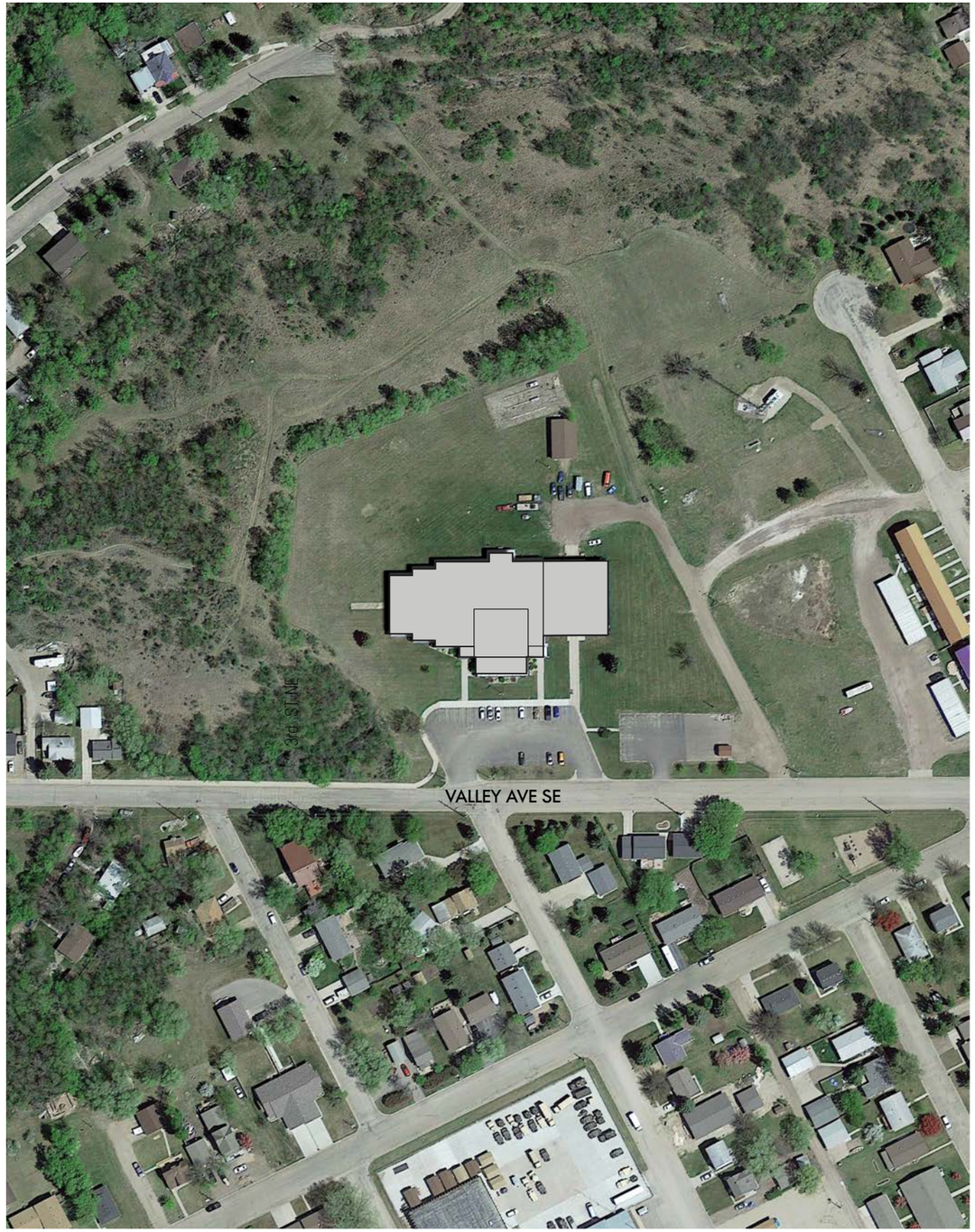


FIGURE 2: Site Plan

FLOOR PLANS BY SPACE USE

COLOR KEY

- LEARNING ENVIRONMENT
- SPECIALS
- ADMINISTRATION
- SPED
- SUPPORT
- ATHLETICS

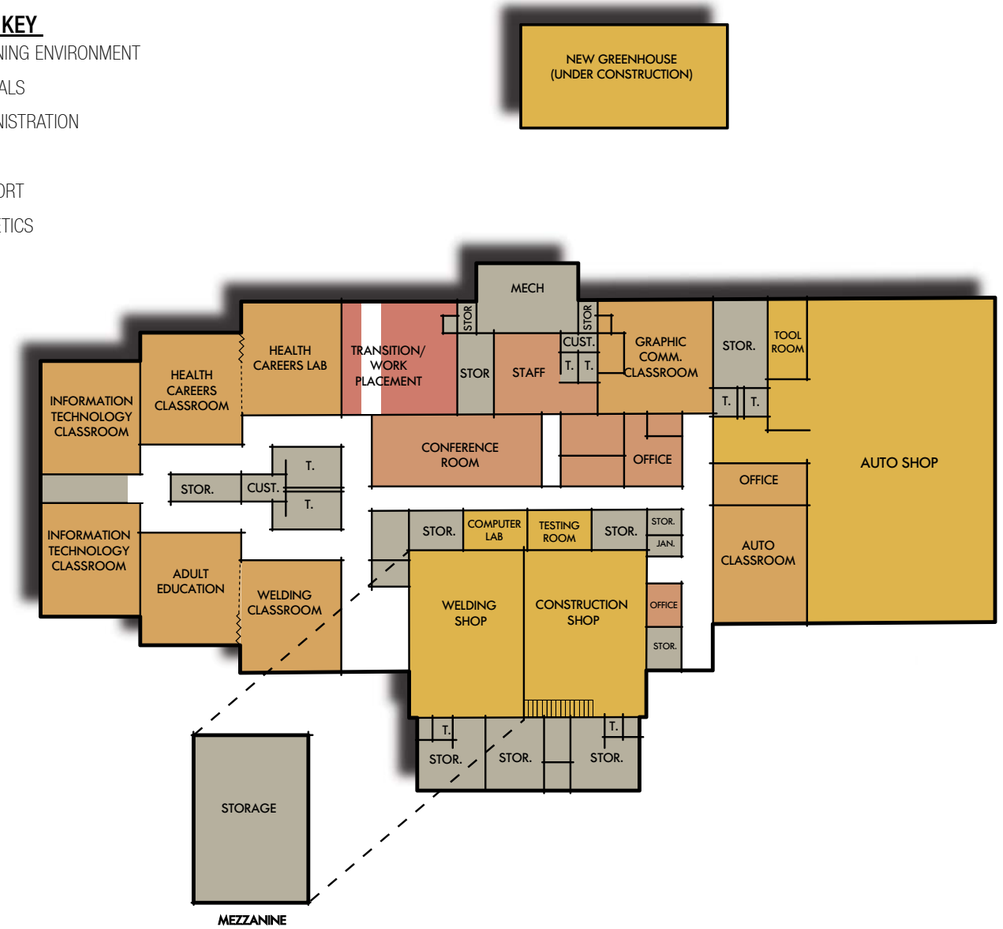


FIGURE 3: Floor Plans

0 10' 20' 40' 60'

BUILDING PHOTOGRAPHS



NOTE: Exterior view of mechanical room



NOTE: Broken windows

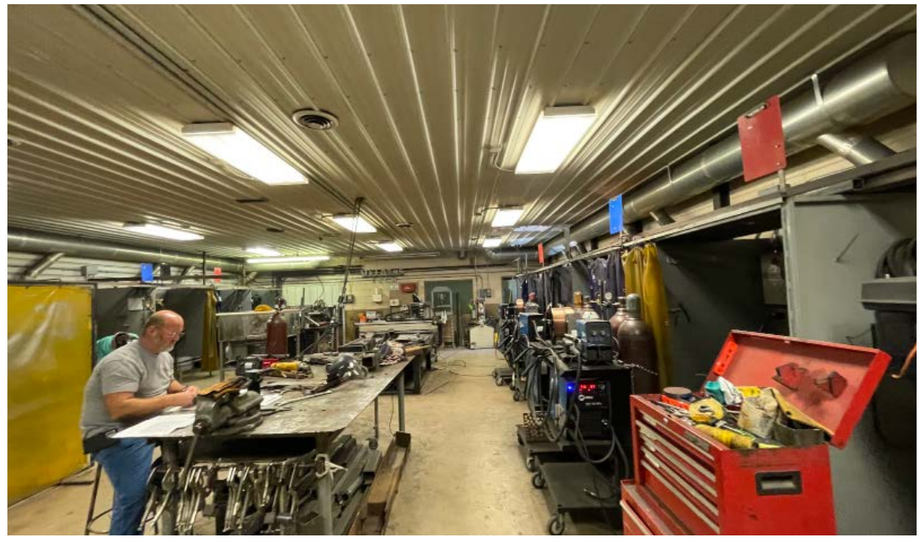


NOTE: Roof soffit



NOTE: Exterior view of locker room window

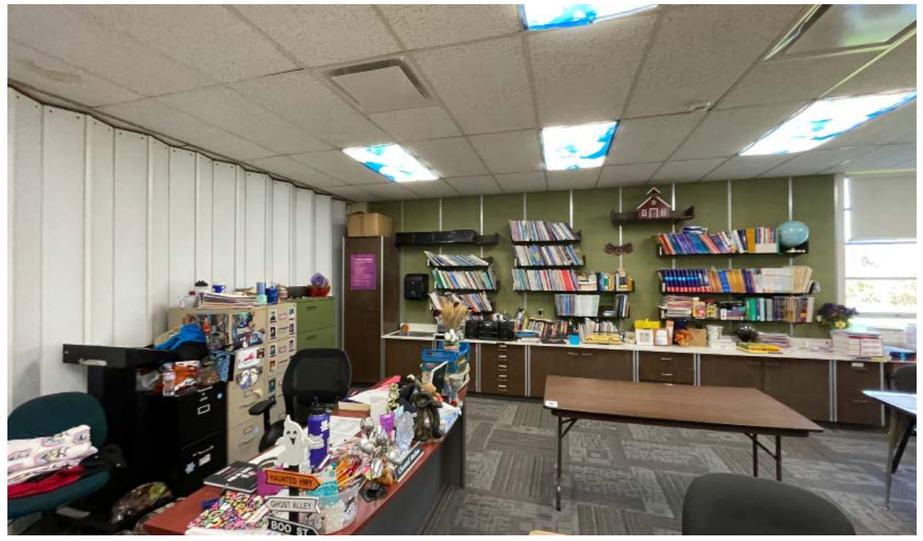
BUILDING PHOTOGRAPHS



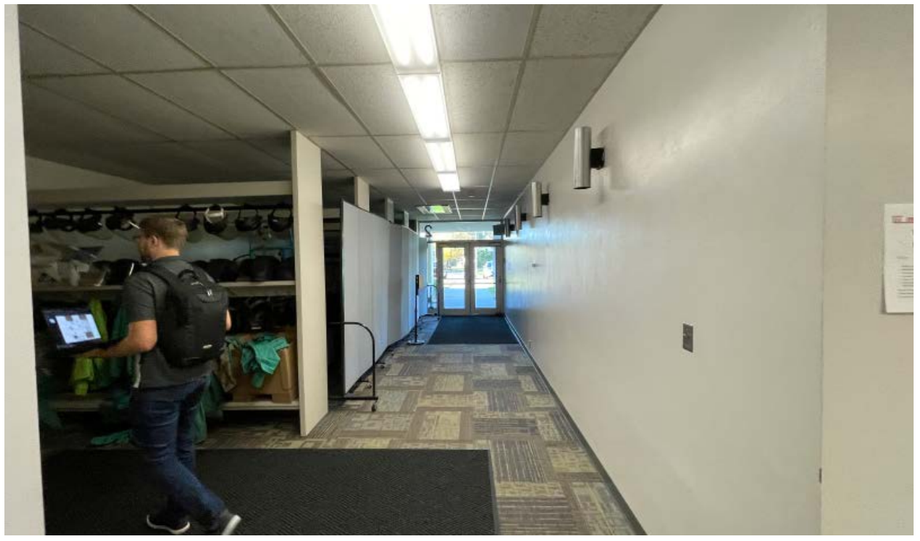
NOTE: Welding shop



NOTE: Construction shop



NOTE: Classroom with divider



NOTE: Hallway/storage



NOTE: Mechanical room



NOTE: Classroom with raised teacher platform



NOTE: Welding shop bathroom/former locker room



NOTE: Graphic comm. classroom

FACILITY CONDITION ASSESSMENT

RATING LEGEND

5 System condition is in new or near new condition.
4 System is generally suitable for intended use. Minor improvements could improve building performance & longevity.
3 System is suitable, but requires specific upgrades to meet performance and operational objectives.
2 System has serious deficiencies.
1 System is unsuitable for intended use.

CATEGORY	SYSTEMS	RATINGS					COMMENTS
		EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR	
SITE	SIDE WALKS	5	4	3	2	(1)	- Deteriorated sidewalk and stoop at main entry - Sidewalk from Maine walk east to south side of building is deteriorated - Sidewalk at south east corner of building is deteriorated - Sidewalk at south east entrance is cracked - No stoop or sidewalk at East side of North bump out. - Some downspouts do not have splash blocks that get the water away from the building. Creating issues around north side of building next to bass of wall - West door does not have sidewalk leading from it
	PARKING	5	4	(3)	2	1	
	DRAINAGE	5	4	(3)	2	1	
	SIGNAGE	5	4	(3)	2	1	
	LIGHTING	5	4	(3)	2	1	
	LANDSCAPING	5	4	3	(2)	1	
	OUTDOOR PROGRAM SPACE	5	(4)	3	2	1	
BUILDING ENVELOPE	GENERAL CONDITION	5	4	3	(2)	1	- Windows are past their useful life expectancy. - Exterior brick staining, base of wall and foundation degradation. Plaster below and above windows is cracked or broken away especially at base of wall - Exterior soffits are unpainted and degrading. Exterior trim is in need of painting or replacement. - Exterior walls lack insulation - Roof report indicates majority of roof is in adequate condition with some areas of repair needed.
	ROOF	5	4	(3)	2	1	
	DOORS/WINDOWS	5	4	3	2	(1)	
	TRIM	5	4	3	(2)	1	
	EXTERIOR WALLS	5	4	3	(2)	1	
LEARNING ENVIRONMENT	FLOORS	5	4	3	(2)	1	- Cabinetry is original. Storage appears to be lacking. - Doors have unaccessible hardware. - Windows are past their useful life expectancy and do not appear to be energy efficient. - Some walls only go to the ceiling grid or are operable partitions which do not have good acoustic propertys. - Exterior walls lack insulation.
	WALLS	5	4	3	(2)	1	
	CEILINGS	5	4	3	2	(1)	
	CASEWORK	5	4	3	2	(1)	
	DOORS/WINDOWS	5	4	3	2	(1)	
	ACCESSIBILITY	5	4	3	(2)	1	
SUPPORTING EDUCATIONAL SPACE *(LIBRARY, MUSIC AND ART)*	FLOORS	5	4	3	(2)	1	- Media Center, Music, and Art do not exist in this facility. - Support spaces such as restrooms, staff areas, and meeting spaces have similar issues as the Learning Environment category. - Former locker rooms are acting as storage rooms. - Lack of storage - storage in hallways.
	WALLS	5	4	3	(2)	1	
	CEILINGS	5	4	3	2	(1)	
	CASEWORK	5	4	3	2	(1)	
	DOORS/WINDOWS	5	4	3	2	(1)	
	ACCESSIBILITY	5	4	3	(2)	1	
ADMINISTRATION	FLOORS	5	4	3	(2)	1	- Office Space is minimal and is located to interior of building. Lacks daylight. - Administration spaces are removed from the main entry and results in poor security for building entry/visitors. - Administration spaces have similar issues as the Learning Environment category.
	WALLS	5	4	3	(2)	1	
	CEILINGS	5	4	3	2	(1)	
	CASEWORK	5	4	3	2	(1)	
	DOORS/WINDOWS	5	4	3	2	(1)	
	ACCESSIBILITY	5	4	3	(2)	1	
PUBLIC SPACE *(HALLWAYS, COMMONS)*	FLOORS	5	4	(3)	2	1	- Carpet at main hallways appears newer in locations. - Ceilings are in need of replacement. - Storage areas with open shelving are located adjacent or as part of hallway spaces. - Doors lack accessible hardware.
	WALLS	5	4	(3)	2	1	
	CEILINGS	5	4	3	2	(1)	
	CASEWORK	5	4	3	(2)	1	
	DOORS/WINDOWS	5	4	3	2	(1)	
	ACCESSIBILITY	5	4	3	(2)	1	
ACTIVITIES *(GYM, PERFORMING ARTS)*	FLOORS	5	4	3	2	1	- Activities Category Does Not Apply - NO RATING GIVEN
	WALLS	5	4	3	2	1	
	CEILINGS	5	4	3	2	1	
	EQUIPMENT	5	4	3	2	1	
	DOORS/WINDOWS	5	4	3	2	1	
	ACCESSIBILITY	5	4	3	2	1	
FOOD SERVICE	FLOORS	5	4	3	2	1	- Food Service Category Does Not Apply - NO RATING GIVEN
	WALLS	5	4	3	2	1	
	CEILINGS	5	4	3	2	1	
	EQUIPMENT	5	4	3	2	1	
	DOORS/WINDOWS	5	4	3	2	1	
	ACCESSIBILITY	5	4	3	2	1	
CTE SHOPS	FLOORS	5	4	3	(2)	1	- Shop floor and walls are cracked and in need of repairs or cleaning. - Ceilings are low and are metal panel. - Equipment appears adequate and varies in age. - Accessibility appears lacking in work stations and at doors.
	WALLS	5	4	3	(2)	1	
	CEILINGS	5	4	3	2	(1)	
	EQUIPMENT	5	4	(3)	2	1	
	DOORS/WINDOWS	5	4	3	(2)	1	
	ACCESSIBILITY	5	4	3	(2)	1	
CODE COMPLIANCE	ENTRIES	5	4	(3)	2	1	- Building is not sprinkled - Doors lack accessible hardware. - Accessible work stations in shop areas lacking - Restrooms are in poor condition. Have an accessible sized stall with grab bars but room entry and other fixtures lack accessibility.
	DOOR HARDWARE	5	4	3	2	(1)	
	HANDRAILS/GUARDRAILS	5	4	(3)	2	1	
	RESTROOMS	5	4	3	(2)	1	

ADDITIONAL COMMENTS

- Detached Greenhouse is a hoop type that appears to be in progress of construction.

FACILITY ASSESSMENT
MECHANICAL

DESIGN FOR LIFE

RATING LEGEND

5 System condition is in new or near new condition.
4 System is generally suitable for intended use. Minor improvements are needed to improve building performance & longevity.
3 System is suitable, but requires specific upgrades to meet performance and operational objectives.
2 System has serious deficiencies.
1 System is unsuitable for intended use.

		RATINGS					
	SYSTEMS	EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR	COMMENTS
SPACE REVIEWED Valley City Career Center	Heating		●			1	Heating provided from unitary gas fired equipment. Units have been replaced and are in good condition.
	Ventilation	5		●			Energy recovery ventilation units provide OA for classroom spaces. Ventilation should be improved in metal & wood shop
	Air Conditioning	5	●	3			Classrooms spaces have relatively new cooling equipment. Shops do not have cooling.
	Plumbing	5	●			1	Water heaters is new in good condition. San/HW/CW throughout building is in good condition.
	Fire Protection	5	4	3	2	●	No sprinkler system is installed within the building.
	Temperature Controls	5	4	●			Standalone electric programmable thermostats throughout classroom areas
	Fire Protection Systems	5	4	3	2	●	No sprinkler

OVERALL COMMENTS

The overall mechanical system is in good conditions with a significant amount of equipment having been replaced in recent years (2012). The new furnace system was provided with multiple energy recovery ventilators to provide require outside air to classrooms. All furnaces have DX cooling for air conditioning and dehumidification.

Wood shop and welding shop do not have adequate exhaust systems. Dust collection system should be added for the wood shop. The welding shop has exhaust at each welding bay but a space circulation and filter unit would improve air quality.

Automatic fire suppression system should be added throughout the building for life safety. Currently the building does not have fire suppression installed.

Controls are through programmable standalone thermostats. There is limited remote adjustment and monitoring with these but they do well to control the furnace system.

Sheyenne Career Center – Mechanical Existing Systems Assessment

Date	October 8th, 2020
Project Name	Valley City Schools
Project Location	Valley City, ND
Description	Mechanical Existing Systems Assessment

1.1 EXECUTIVE SUMMARY

A. Automatic fire suppression system should be added throughout the building for life safety. Currently no fire suppression system installed.

B. Indoor Air Quality should be addressed for the wood shop and welding/metals shop. The classroom spaces throughout the building having code required ventilation and cooling/dehumidification to ASHRAE standards. The auto shop has an emergency ventilation system for vehicle exhaust and underground exhaust system for source capture.

C. Recommend adding a dust collection system for the wood shop to provide source capture and equipment and limit dust dispersed in the air. The welding shop has exhaust at each welding bay, but a space circulation and filter unit would improve air quality.

D. Heating system is separate gas fire unitary equipment for each space, typically furnaces for classrooms and unit heaters for larger shops. Units are in good condition and operational.

E. Controls throughout the building area standalone programmable thermostats. These provide good control for the furnace units but are limited for remote access and adjustments. If new DDC controls are provided district wide, this building could connect to the combined system with new DDC controls.

1.2 OVERVIEW

A. The existing school is comprised of an original classroom structure built in 1968 with an addition built in 2005 for the automotive wing. The original building is served by multiple gas fire furnaces with DX cooling and small energy recovery ventilators for outside air. The automotive addition has gas fired unit heaters and exhaust systems but no cooling.

B. Controls throughout the building area standalone programmable thermostats.

C. Wood shop and metals shop still have the original air handling equipment. Wood shop has an additional circulating filter unit, and the metal shop has a source capture exhaust system at the welding bays.

1.3 FIRE PROTECTION SYSTEMS

A. The building does not have any fire protection system. Recommend adding fire suppression throughout the building to meet current code requirements.

1.4 HEATING

A. Heating system throughout the building is separate gas fire unitary equipment for each space, typically furnaces for classrooms and unit heaters for larger shops.

B. Furnaces are in good condition and have been recently replaced. Having separate units serving each classroom does have some higher maintenance requirements than centralized equipment but given the age would not recommend replacement at this time. This system does provide redundancy however so if one unit fails the building overall can still maintain heat.

1.5 VENTILATION

A. The classroom spaces have small energy recovery ventilators (ERV) serving each of the furnaces. The ERVs continuously bring in the code required ventilation into the building and the furnaces distribute it throughout the building.



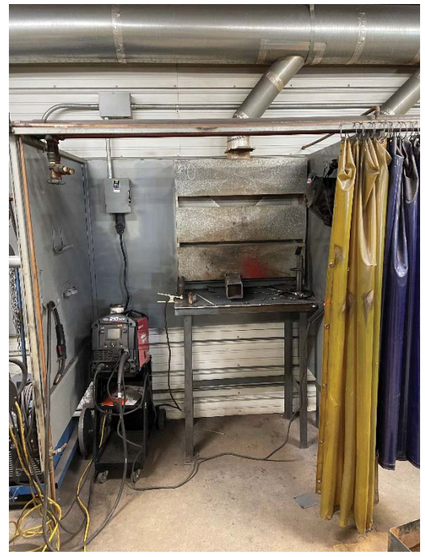


B. The auto shop has an emergency ventilation system for vehicle exhaust and underground exhaust system for source capture.

C. The wood shop has a circulating filter unit but most of the dust generated goes back to the space air handling unit and just gets recirculated. Recommend adding a dust collection system for source capture the generated dust.

D. The welding shop has exhaust at each welding bay. The air handling unit serving the space is original to the building. Recommend replacing the AHU with new unit for space conditioning and providing space circulating filter unit to improve air quality.





1.6 AIR CONDITIONING

A. The classroom spaces have DX cooling provided by the furnaces with split system condensing units.

B. The shop spaces generally do not have cooling but that is not unusual for the space use and the large amount of exhaust required. Would recommend adding cooling/dehumidification to the wood shop for better humidity control.

1.7 PLUMBING

A. Domestic water piping found to be in good conditions. Much of the piping is concealed within construction and will need further investigation. Piping and insulation are assumed to be original to the building.

B. Water heater was recently replaced and is in good condition.

C. Plumbing fixtures are relatively new and have been replaced over the years as fixtures fail.





1.8 CONTROLS

A. Controls throughout the building area standalone programmable thermostats. These provide good control for the furnace units but are limited for remote access and adjustments. If new DDC controls are provided district wide, this building could connect to the combined system with new DDC controls.

Respectfully,
Obernel Engineering

Ross Young, PE
Mechanical Engineer

FACILITY ASSESSMENT
ELECTRICAL

DESIGN FOR LIFE

RATING LEGEND

5 System condition is in new or near new condition.
4 System is generally suitable for intended use. Minor improvements are needed to improve building performance & longevity.
3 System is suitable, but requires specific upgrades to meet performance and operational objectives.
2 System has serious deficiencies.
1 System is unsuitable for intended use.

	SYSTEMS	RATINGS EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR	COMMENTS
SPACE REVIEWED Sheyenne Valley Career Center	Power Distribution	5	4	3	●	1	480/277 volt service entrance in place with spare capacity. Existing switchboard, panels and transformer by FPE. should be re
	Lighting Fixtures	5	●	3	2	1	Entire facility has been upgrade with LED fixtures or lamps.
	Lighting Control	5	4	3	●	1	Manual controls used in most areas with a few occupancy sensors in place.
	Technology Infrastructure	5	4	●	2	1	Exi.sting equipment in workroom and needs a cable management system. Seperate room is needed
	Technology Integration	5	4	●	2	1	Classrooms have been upgraded with technology.
	Security Infrastructure	5	●	3	2	1	CCTV camera's are in place and connected to district system
	Access Control	5	4	3	2	1	Card access system in place with spare capacity to add rooms. A-phone at main entance.

OVERALL COMMENTS

Electrical sytems in fain condition but the old FPE equipment should be replaced in near future. Fire system main panel is a Simplex 4006 and is in good condition. Additional audio/visual devices should be added for coverage. Would also recommend a master shut off switch added in shops for safety. Ceiling mounted power cord reels added in shops to remove the extension cords laying on floor.

PART 4. SHEYENNE VALLEY CAREER CENTER

4.1 ELECTRIC SERVICE

A. 1200 Amp 3 phase 4 wire 480/277 Volt FPE manufactured for MDH switch, distribution panels and branch circuit panels. 75 KVA and 45 KVA dry-type transformers also FPE. New Siemens panels and transformers have been added in a few areas. One 45 KVA transformer is very hot and should be replaced with the next size.

B. Peak demands (two services) one at 52 amps and one at 12.7 amps.



4.2 LIGHTING

A. Lighting has been upgraded with LED type lamps and new fixtures. Additional occupancy controls should be added to meet the new energy codes. Battery emergency lights are installed in the corridors. Additional units need to be added and also at exterior exits, shops and in the work rooms. A complete test of existing units should be done to assure they're working when required

4.3 POWER WIRING

A. Additional receptacles in areas to eliminate the use of extension cords and plug-in strips. Emergency shut off switches should be installed in the shops for safety. Ceiling mounted cord reels with GFI type receptacles added in the shops for use by the students

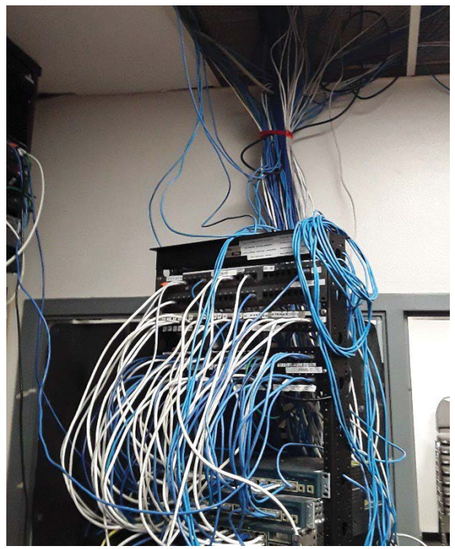
4.4 FIRE ALARM SYSTEMS

A. Existing Simplex 4006 fire alarm panel is in place and in good working order. Additional audio/video devices should be installed for improved coverage



4.5 IT SYSTEMS

A. IT Systems, cables, devices and equipment are in place. I would recommend a separate room be provided to all for improved cable management and for added equipment. An air system should be provided for maximum equipment efficiency



B. Cabling upgrade is planned for the summer of 2022. This would be installing CAT 6 or better and removing the old CAT 5E. Classroom technology has been upgraded and in good condition. CCTV (IP) are in place with 21 DAY recording capacity. Card access is in place with spare capacity to allow for additional doors. A-phone devices are located at main entrance doors. Intercom systems have been upgraded and in good condition



COLOR KEY

- MEETS STANDARDS (32.9%)
- MARGINAL (26.8%)
- DOES NOT MEET STANDARDS (40.3%)
- TS TEACHING STATION

FIGURE 4: Educational Adequacy Plan

APPENDIX

1.1 EDUCATION STANDARDS.....PAGE 109
1.2. ROOFING CONDITION ASSESSMENTS.....PAGE 110
JEFFERSON ELEMENTARY.....PAGE 110
WASHINGTON ELEMENTARY.....PAGE 151
MIDDLE SCHOOL/ HIGH SCHOOL.....PAGE 171
SHEYENNE VALLEY.....PAGE 289

EDUCATION STANDARDS

Grade Level	Space	Standard Square Foot Range	
Elementary School (K-5)	General Classroom	Green	850+
		Yellow	750-850
		Red	< 750
	PreK or K Classroom	Green	1,200 +
		Yellow	1,000 -1,200
		Red	< 1,000
	Music Room	Green	1,000+
		Yellow	850-1,000
		Red	< 850
	Library	Green	1200+
		Yellow	1,000-1,200
		Red	< 1,000
	Gymnasium	Green	6,000+
		Yellow	5,000-6,000
		Red	< 5,000
	Cafeteria	Green	3,000+
		Yellow	2,000-3,000
		Red	< 2,000
Middle School (6-8)	General Classroom	Green	850+
		Yellow	750-850
		Red	<750
	Science/FACs Lab	Green	1,200+
		Yellow	1,000-1,200
		Red	< 1,000
	Music Room	Green	1,500 +
		Yellow	1,200 -1,500
		Red	< 1,200
	Library	Green	1,800+
		Yellow	1,500-1,800
		Red	< 1,500
	Gymnasium	Green	12,000+
		Yellow	10,000-12,000
		Red	< 10,000
	Cafeteria	Green	3,000+
		Yellow	2,000-3,000
		Red	< 2,000
High School (6-8)	General Classroom	Green	850+
		Yellow	750-850
		Red	<750
	Science/FACs Lab	Green	1,200+
		Yellow	1,000-1,200
		Red	< 1,000
	Music Room	Green	1,500 +
		Yellow	1,200 -1,500
		Red	< 1,200
	Library	Green	2,000 +
		Yellow	1,800 - 2,000
		Red	< 1,800
	Gymnasium	Green	12,000+
		Yellow	10,000-12,000
		Red	< 10,000
	Cafeteria	Green	3,000+
		Yellow	2,000-3,000
		Red	< 2,000

Source: Minnesota Department of Children, Families and Leraning: Guide for Planning School Construction Projects in Minnesota

JEFFERSON ELEMENTARY SCHOOL ROOFING ASSESSMENT

A & R ROOFING Co. INC.

2021 Condition Assessment Report



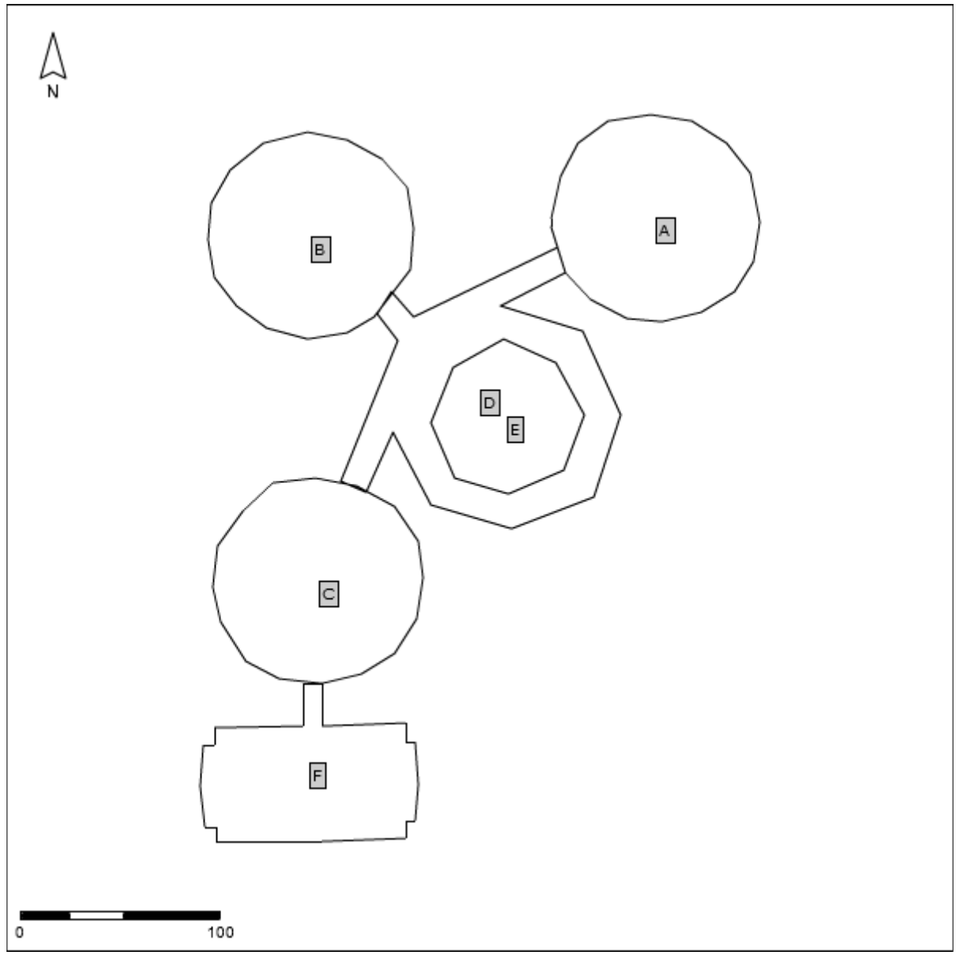
Jefferson Elementary
1150 Central Ave N
Valley City, ND

Inspection Date: Wednesday, May 19, 2021

Building & Job Summary

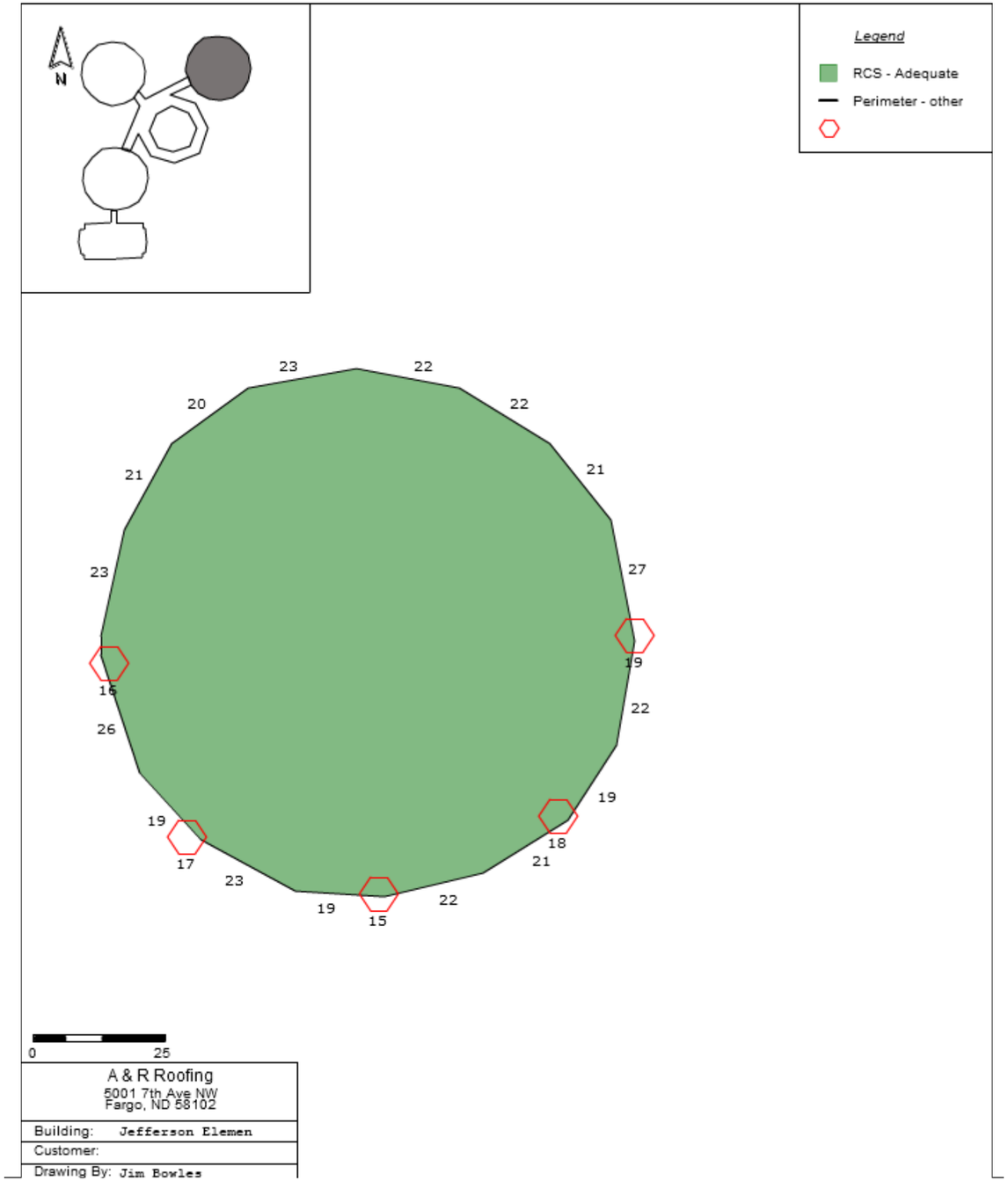
Building Name	Jefferson Elementary
Building Address	1150 Central Ave N Valley City, ND
Roof Area (total)	55,543 SF
Building Description	Building Type: School K-12 Building Zone: Residential Roof Access: Bring Ladder
Inspection Date	Wednesday, May 19, 2021
Inspector	A & R Roofing Tim Wolf jbowles@arroofing.us
Inspection Notes	Repairs recommended

Section Key Plan



Total Area: 55,543 SF

Section A



Section Summary – A



Section ID: A

Area: 9,867 SF

Year Installed: 2000 (approximate)

Height: 10 FT

Floors: 1

Sensitivity: None

Roof Condition Score: 94 (Adequate)

Roof Type: Thermoset (Single ply - rubber)

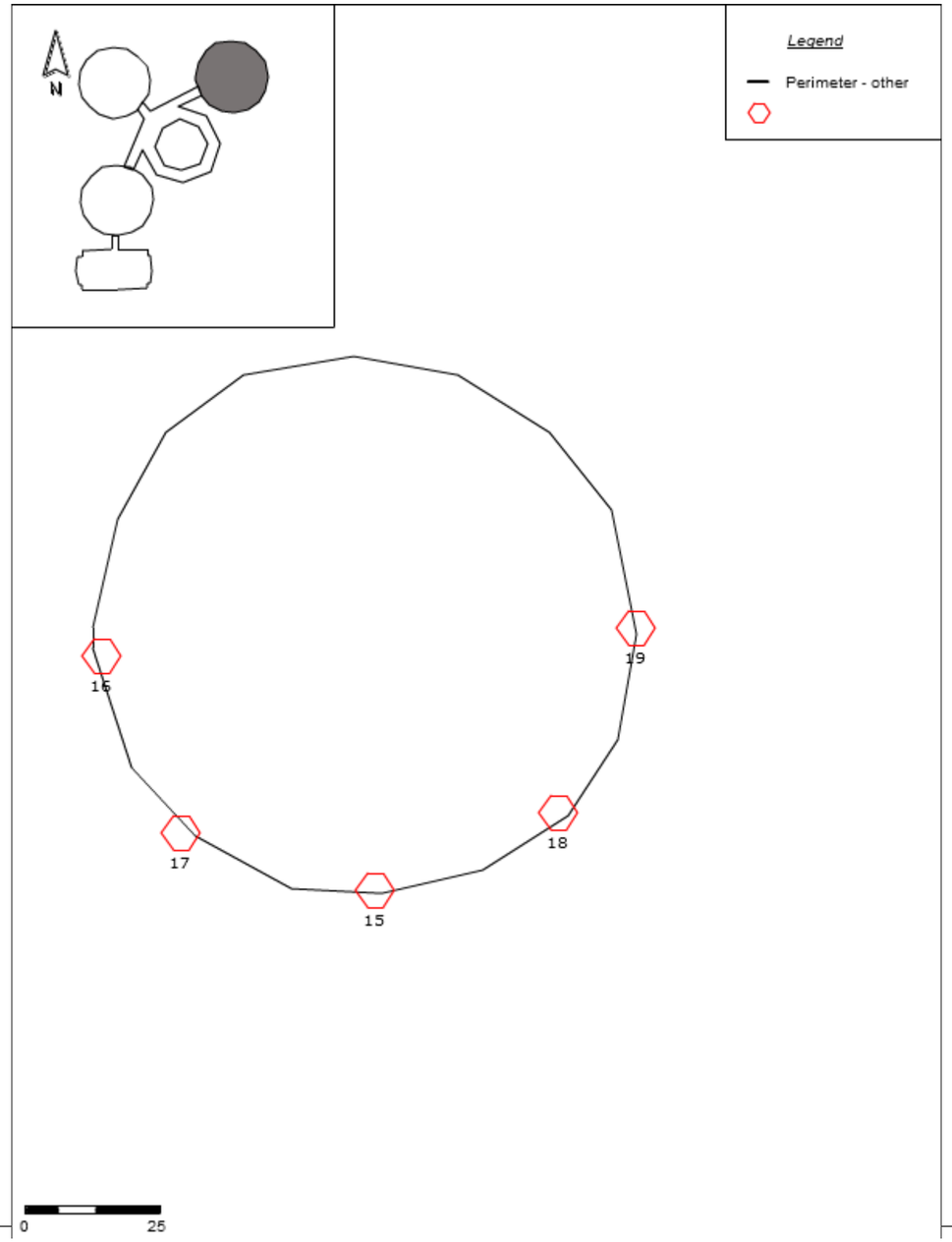
Layers:

Notes: Prior RCS=94; prior ERSL React/Proact=0/0. Prior RCS=94; prior ERSL React/Proact=0/0. Roof is in good condition.

Roof has 4 years of warranty.

Roof has 8+ years of serviceability.

Defect Map – Section A



Defect Summary – Section A

Defect #15 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #15 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #16 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #16 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #17 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #17 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #18 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #18 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #19 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.

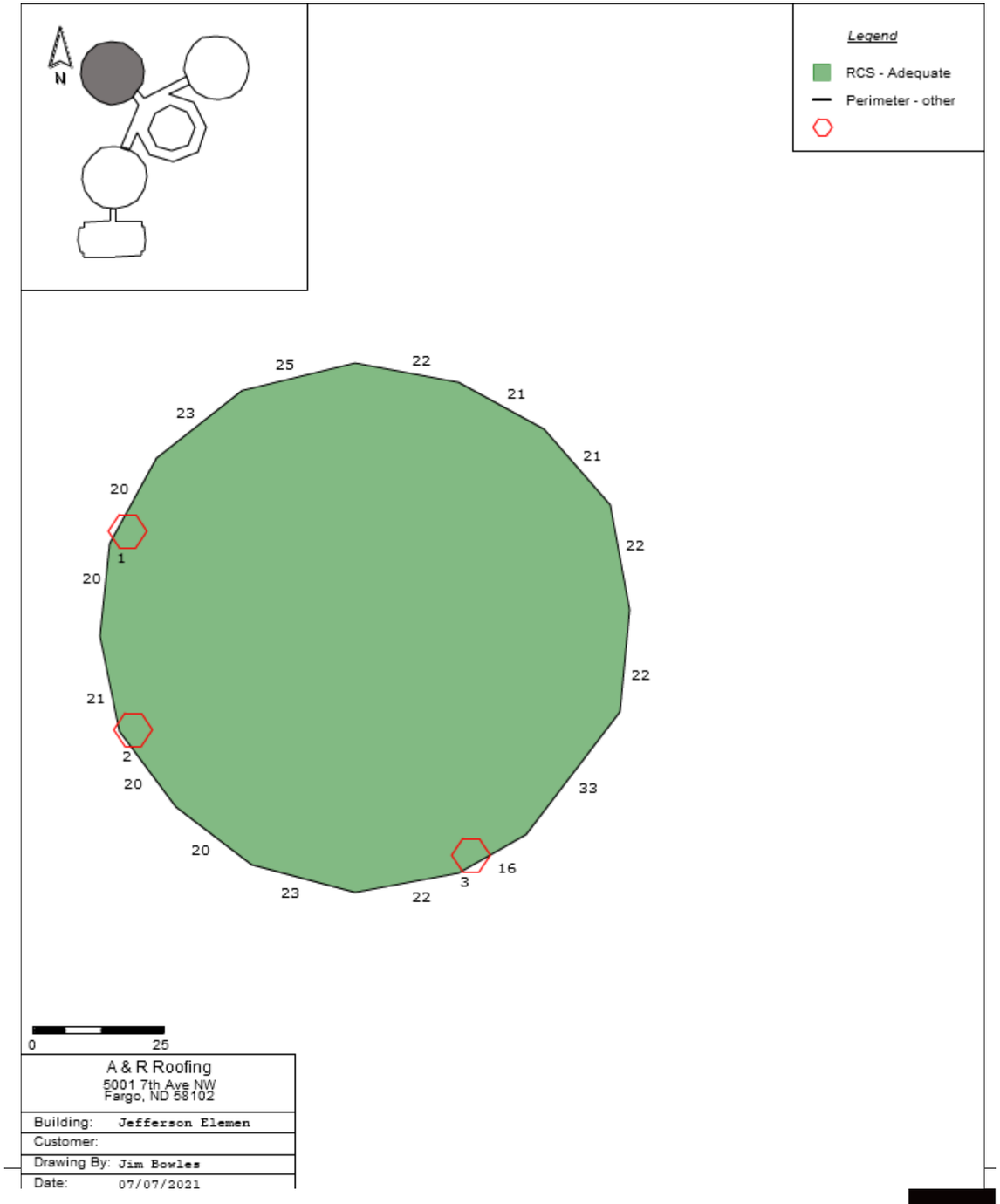


Defect #19 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Section B



Section Summary – B



Section ID:	B
Area:	9,688 SF
Year Installed:	2000 (approximate)
Height:	10 FT
Floors:	1
Sensitivity:	None
Roof Condition Score:	94 (Adequate)

Roof Type: Thermoset (Single ply - rubber)

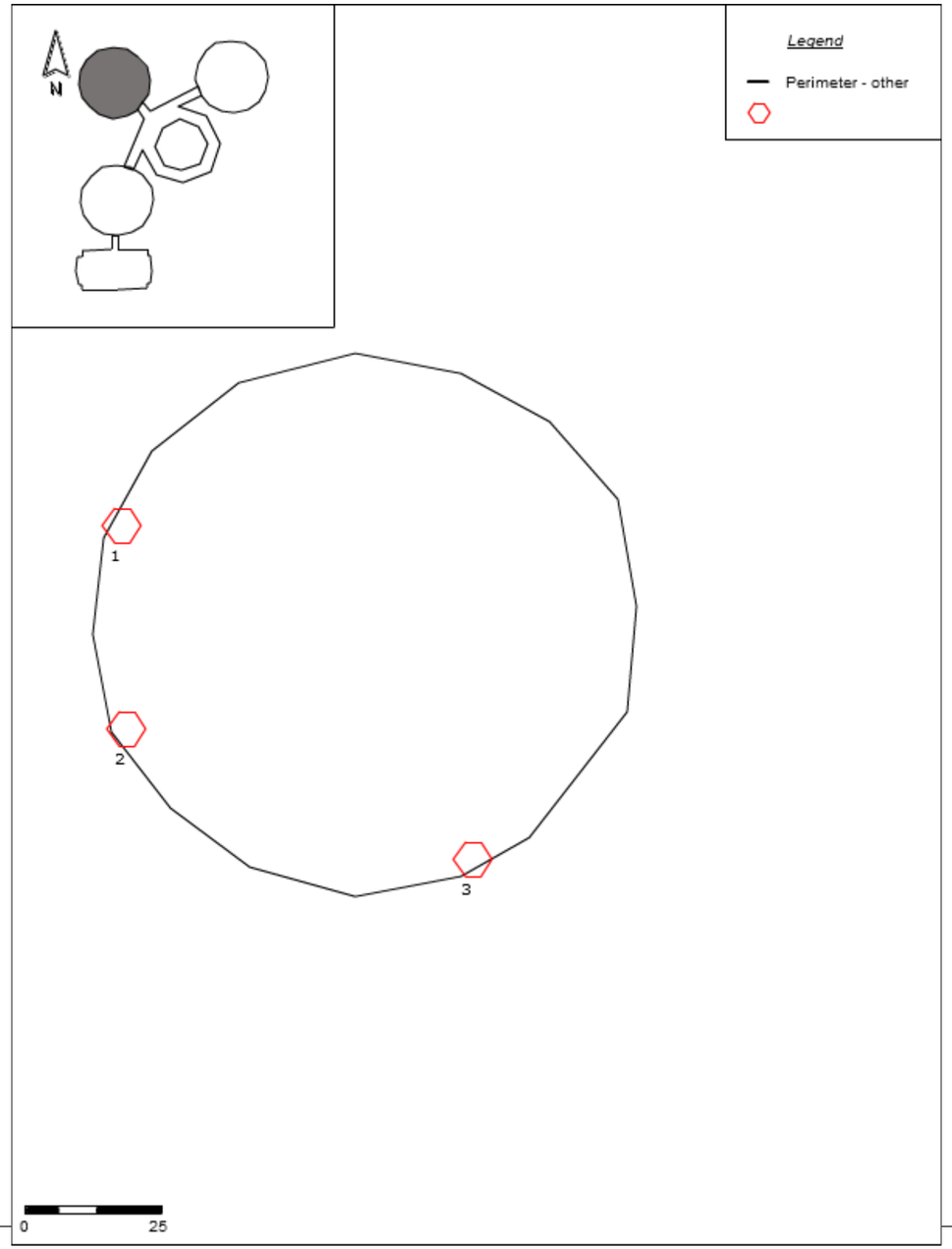
Layers:

Notes: Prior RCS=94; prior ERSL React/Proact=0/0. Prior RCS=94; prior ERSL React/Proact=0/0. Roof is in good condition.

Roof has 4 years of warranty.

Roof has 8+ years of serviceability.

Defect Map – Section B



Defect Summary – Section B

Defect #1 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #1 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #2 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #2 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #3 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.

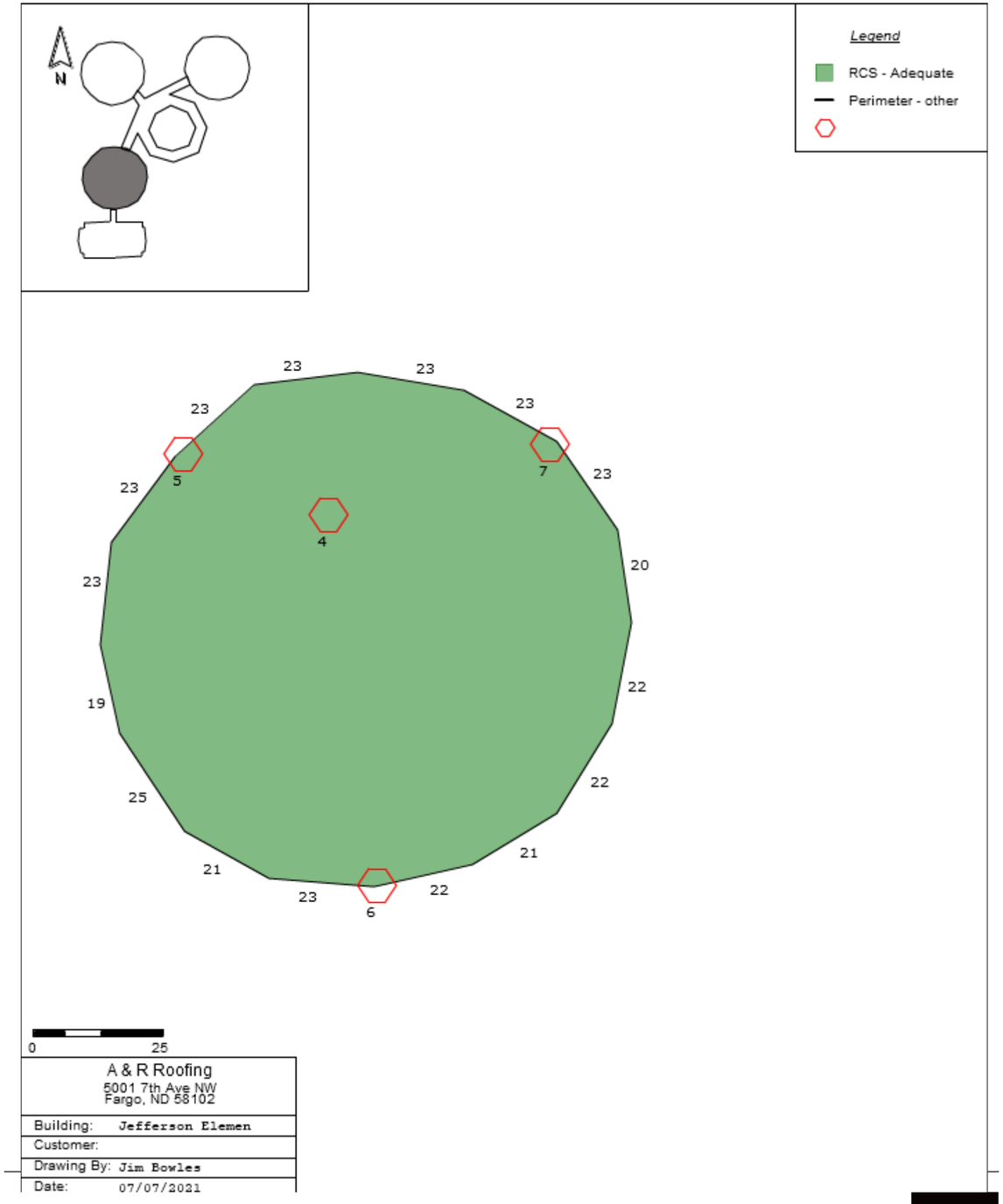


Defect #3 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Section C



Section Summary – C



Section ID: C

Area: 9,916 SF

Year Installed: 2000 (approximate)

Height: 10 FT

Floors: 1

Sensitivity: None

Roof Condition Score: 94 (Adequate)

Roof Type: Thermoset (Single ply - rubber)

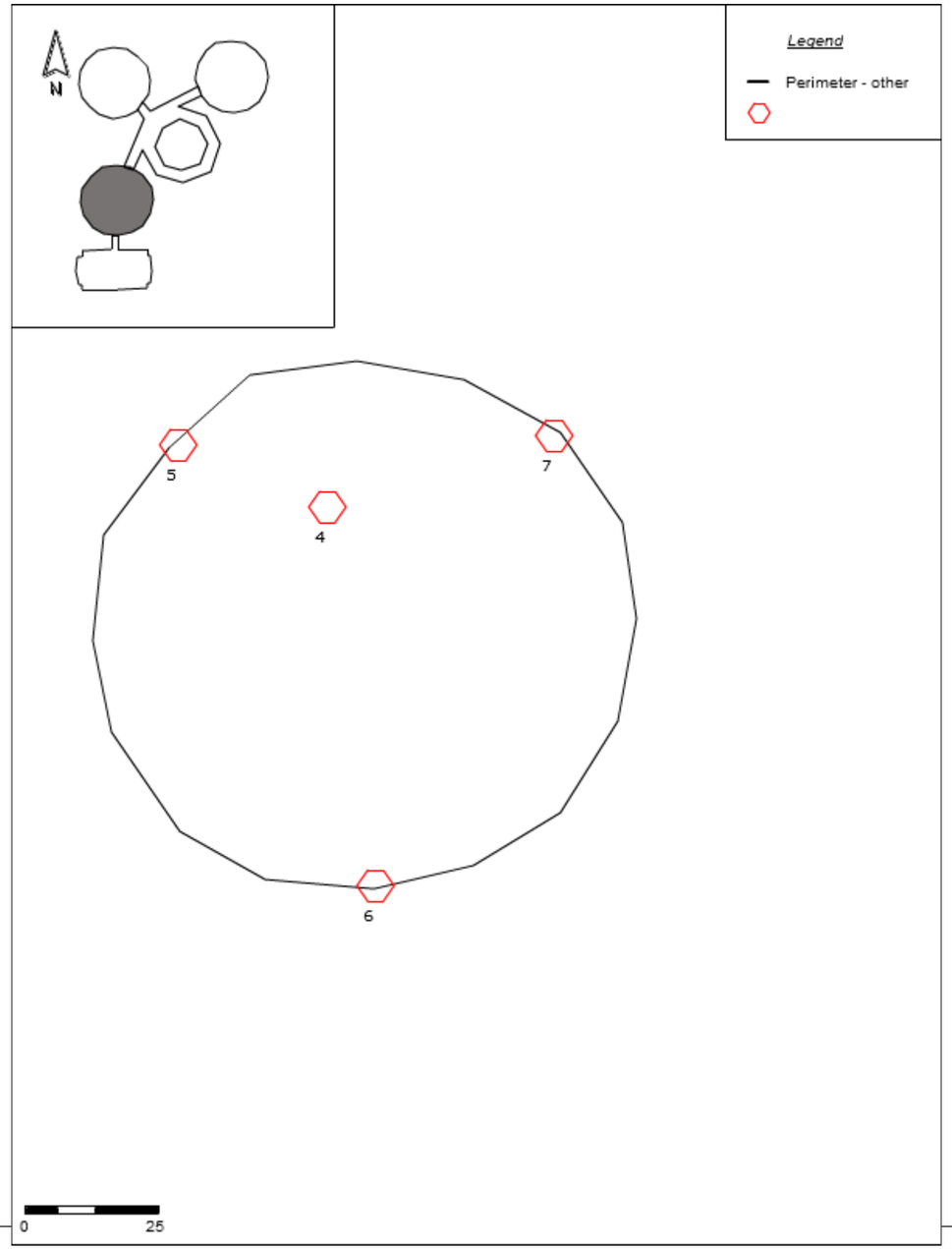
Layers:

Notes: Prior RCS=94; prior ERSL React/Proact=0/0. Prior RCS=94; prior ERSL React/Proact=0/0. Roof is in good condition.

Roof has 4 years of warranty.

Roof has 8+ years of serviceability.

Defect Map – Section C



Defect Summary – Section C

Defect #4 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #4 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #5 - Field defect

Defect: Flashing damage or deterioration (LF).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Length: 0 LF
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #5 - Field defect (Continued)

Defect: Flashing damage or deterioration (LF).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #5 - Field defect (Continued)

Defect: Flashing damage or deterioration (LF).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #6 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #6 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #7 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.

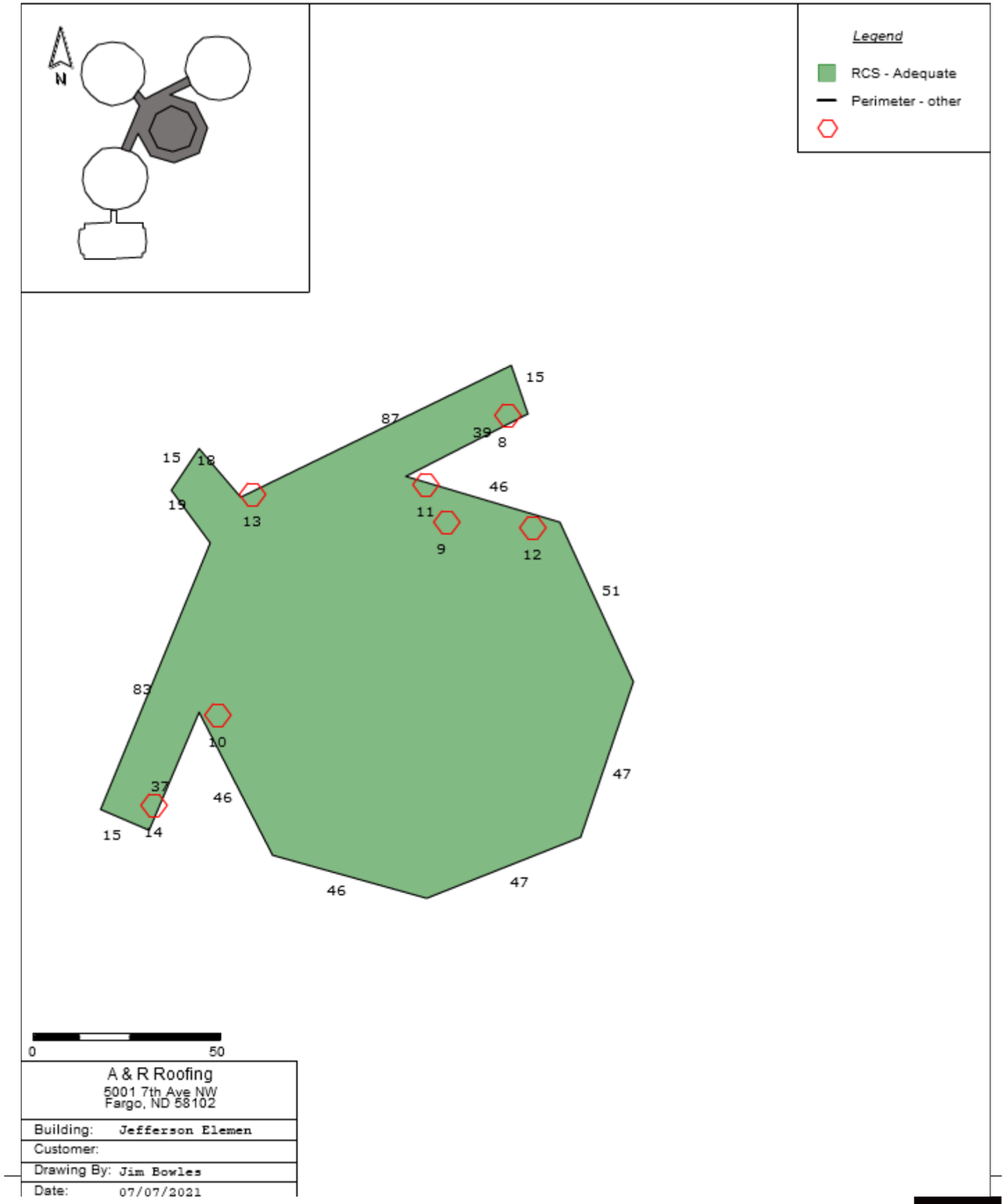


Defect #7 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Section D



Section Summary – D



Section ID: D

Area: 13,913 SF

Year Installed: 2000 (approximate)

Height: 10 FT

Floors: 1

Sensitivity: None

Roof Condition Score: 93 (Adequate)

Roof Type: Thermoset (Single ply - rubber)

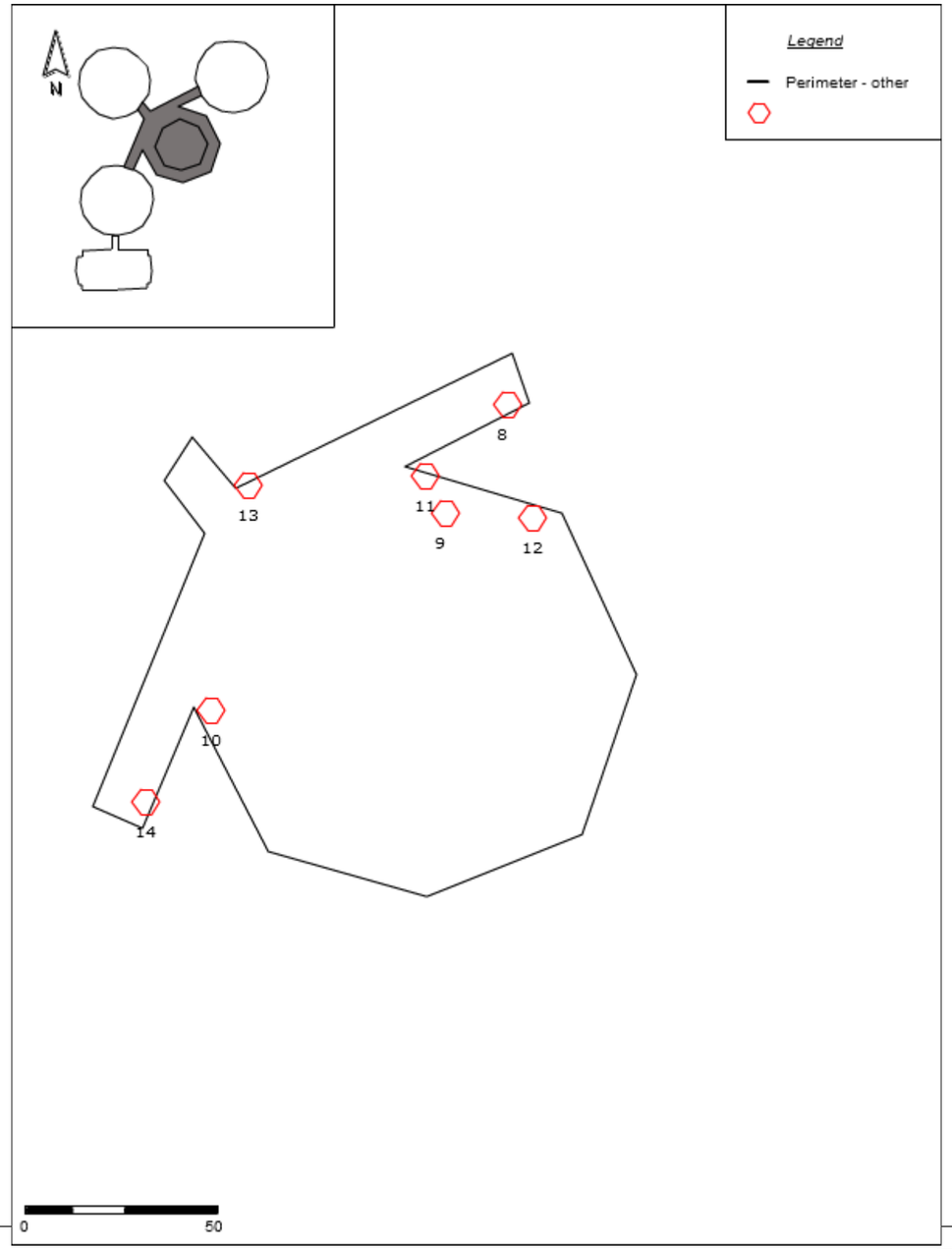
Layers:

Notes: Prior RCS=93; prior ERSL React/Proact=0/0. Prior RCS=93; prior ERSL React/Proact=0/0. Roof is in good condition.

Roof has 4 years of warranty.

Roof has 8+ years of serviceabiltiy.

Defect Map – Section D



Defect Summary – Section D

Defect #8 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #8 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #9 - Field defect

Defect: Flashing damage or deterioration (LF).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Length: 0 LF
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #9 - Field defect (Continued)

Defect: Flashing damage or deterioration (LF).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #10 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #10 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #10 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #11 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #11 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #12 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #12 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #12 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #13 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #13 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #14 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.

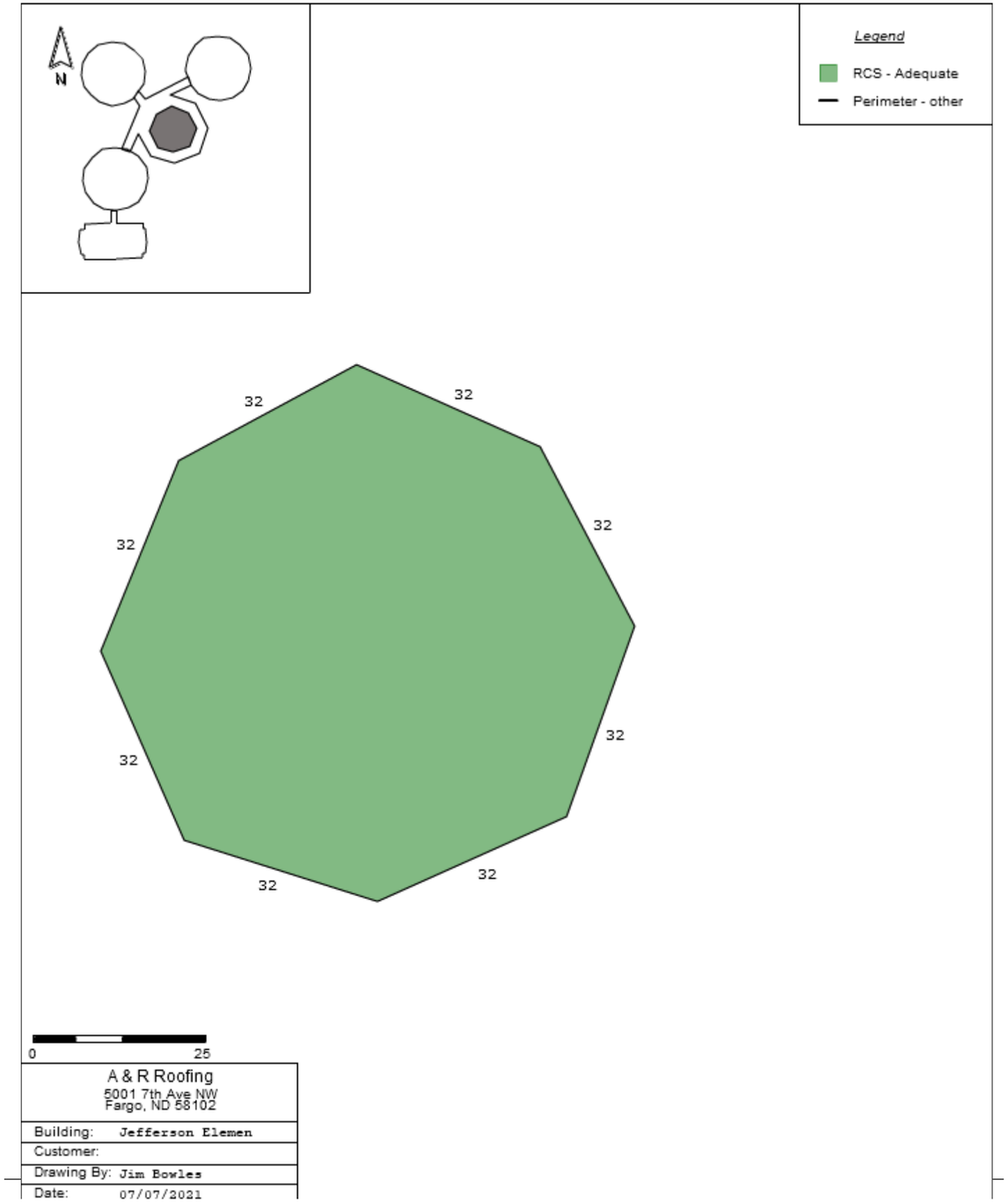


Defect #14 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Section E



A & R Roofing	
5001 7th Ave NW Fargo, ND 58102	
Building:	Jefferson Elemen
Customer:	
Drawing By:	Jim Bowles
Date:	07/07/2021

Section Summary – E



Section ID: E

Area: 4,931 SF

Year Installed: 2000 (approximate)

Height: 15 FT

Floors: 1

Sensitivity: None

Roof Condition Score: 98 (Adequate)

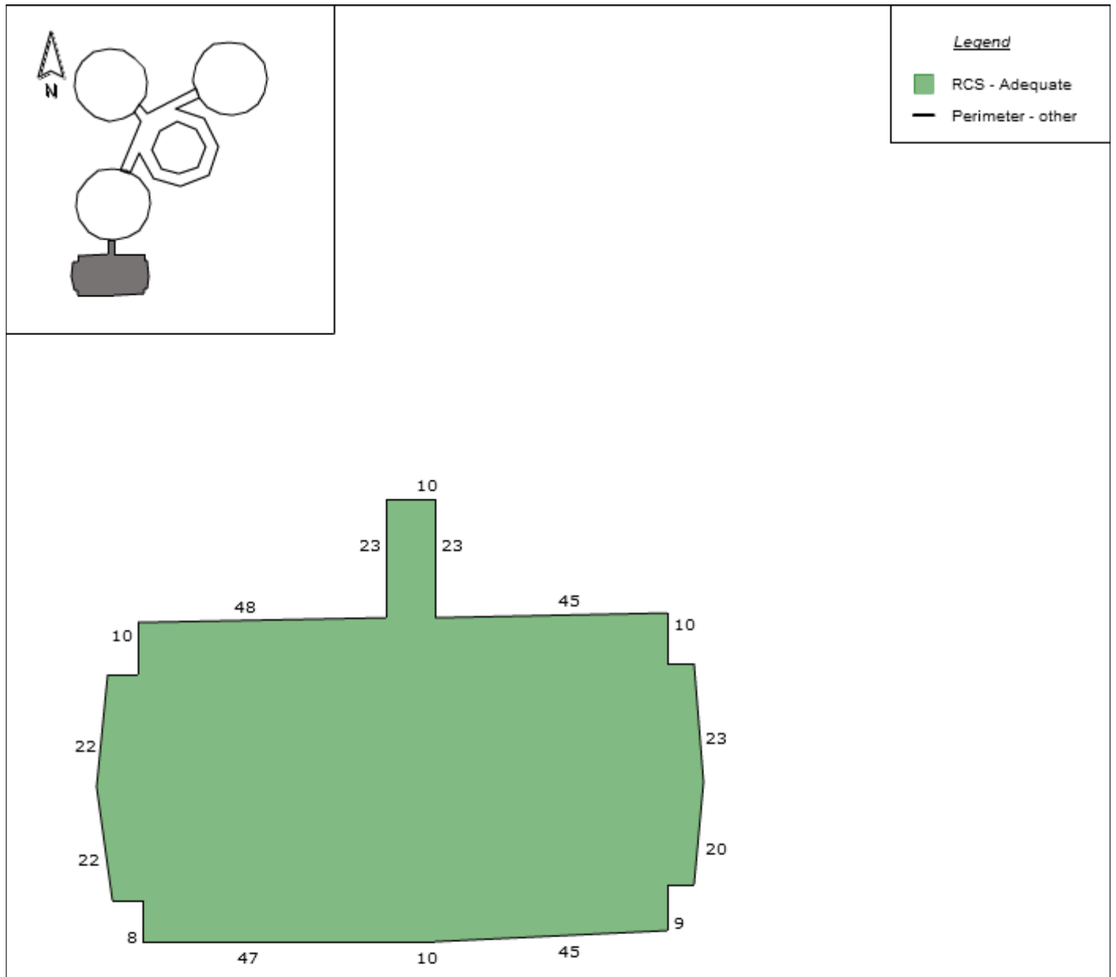
Roof Type: Metal

Layers:

Notes: Prior RCS=98; prior ERSL React/Proact=0/0. Prior RCS=98; prior ERSL React/Proact=0/0. Roof is in good condition.

Roof has 8+ years of serviceability.

Section F



0 25

A & R Roofing 5001 7th Ave NW Fargo, ND 58102	
Building:	Jefferson Elemen
Customer:	
Drawing By:	Jim Bowles
Date:	07/07/2021

Section Summary – F



Section ID:	F
Area:	7,228 SF
Year Installed:	2000 (approximate)
Height:	10 FT
Floors:	1
Sensitivity:	None
Roof Condition Score:	96 (Adequate)

Roof Type: Metal

Layers:

Notes: Prior RCS=96; prior ERSL React/Proact=0/0. Prior RCS=96; prior ERSL React/Proact=0/0. Roof is in good condtion.

Roof has 8+ years of serviceabiltiy.

A & R ROOFING Co. INC.

2021 Condition Assessment Report



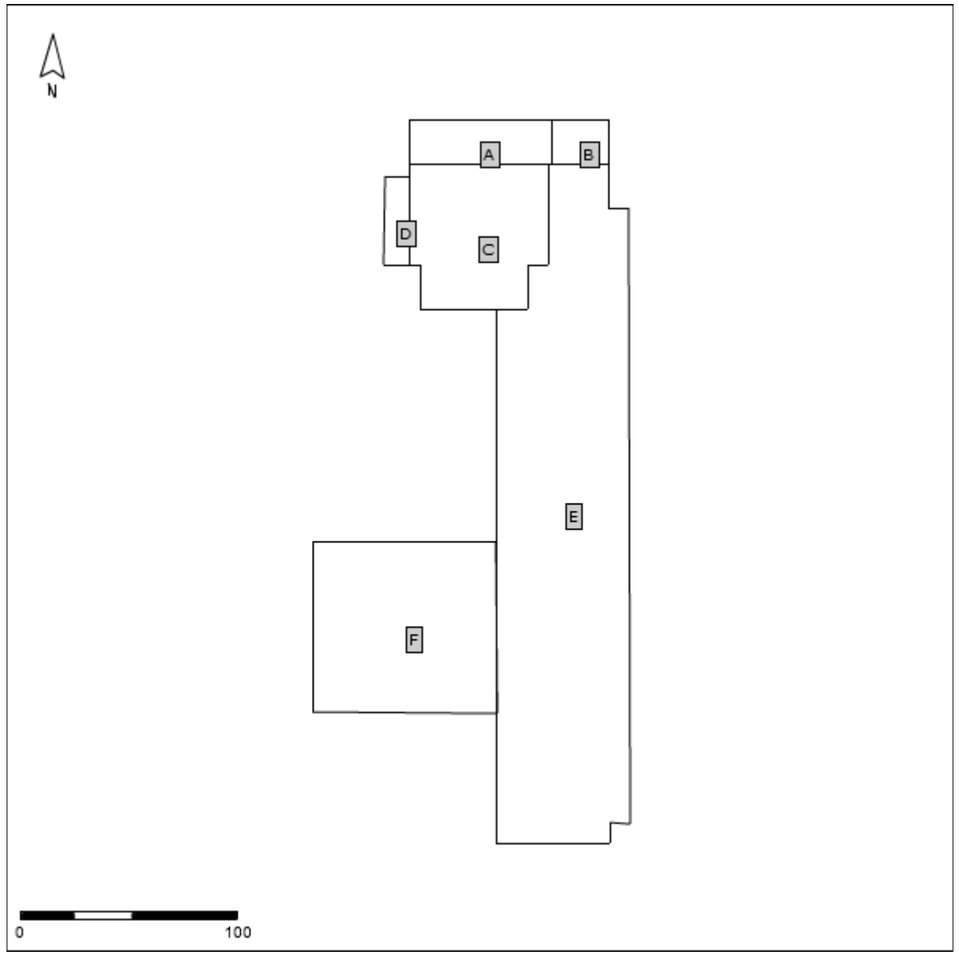
Washington Elementary
510 8th Ave SW
Valley City, ND

Inspection Date: Wednesday, May 19, 2021

Building & Job Summary

Building Name	Washington Elementary
Building Address	510 8th Ave SW Valley City, ND
Roof Area (total)	35,810 SF
Building Description	Building Type: School K-12 Building Zone: Residential Roof Access: Bring Ladder
Inspection Date	Wednesday, May 19, 2021
Inspector	A & R Roofing Tim Wolf jbowles@arroofiing.us
Inspection Notes	Minor repair recommended

Section Key Plan



Total Area: 35,810 SF

Section Information

Section ID: A

Area: 1,579 SF

Roof Type: Metal

Roof Condition Score: 94 (Adequate)



Section ID: B

Area: 616 SF

Roof Type: Thermoset (Single ply - rubber)

Roof Condition Score: 94 (Adequate)



Section ID: C

Area: 4,682 SF

Roof Type: Metal

Roof Condition Score: 96 (Adequate)



Section ID: D

Area: 530 SF

Roof Type: Metal

Roof Condition Score: 95 (Adequate)



Section ID: E

Area: 20,484 SF

Roof Type: Metal

Roof Condition Score: 86 (Adequate)



Section ID: F

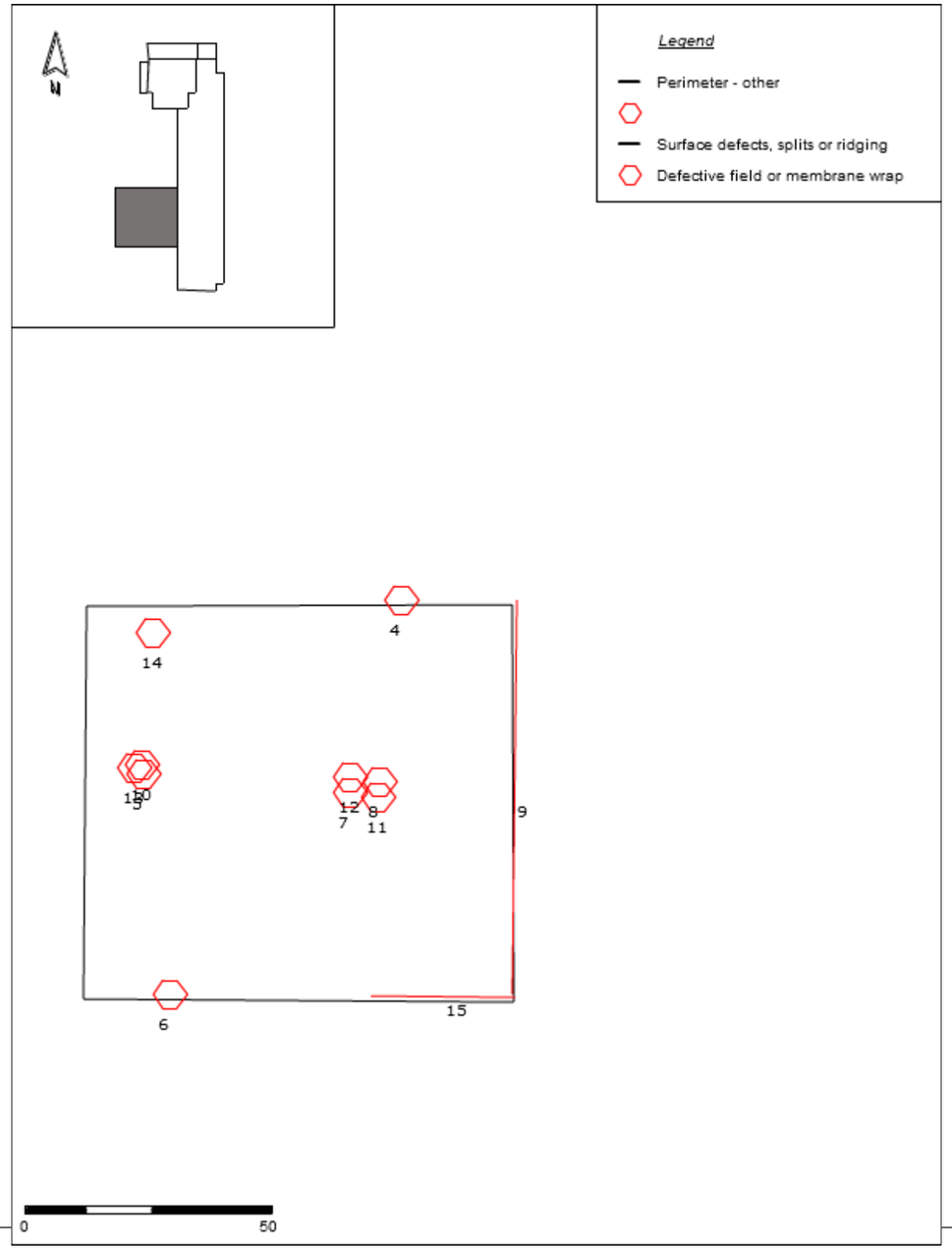
Area: 7,919 SF

Roof Type: Thermoset (Single ply - rubber)

Roof Condition Score: 75(Degraded)



Defect Map – Section F



Defect Summary – Section F

Defect #3 - Field defect

Defect: Pitch pan defect.
Severity: Pitch pan defect (minor).
Counted: 1
Status: Proposed

Definition: Metal Flashing fastener loose or missing
Consequence: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.

Recommendation: New larger diameter screw fasteners through neoprene washers should be installed at existing screw locations.



Defect #3 - Field defect (Continued)

Defect: Pitch pan defect.
Severity: Pitch pan defect (minor).
Status: Proposed



Defect #4 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #4 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #5 - Field defect

Defect: Open membrane corner.
Severity: Obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #5 - Field defect (Continued)

Defect: Open membrane corner.
Severity: Obvious water penetration.
Status: Proposed



Defect #6 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #6 - Field defect (Continued)

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Defect #7 - Field defect

Defect: Open membrane corner.
Severity: Obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #8 - Field defect

Defect: Open membrane corner.
Severity: Obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #8 - Field defect (Continued)

Defect: Open membrane corner.
Severity: Obvious water penetration.
Status: Proposed



Defect #9 - Field defect

Defect: Surface defects, splits or ridging.
Severity: Membrane ridging is apparent, no water penetration.
Length: 85 LF
Status: Monitor

Definition: Bridging
Consequence: Vulnerable to punctures, existing stress will result in separation of flashing from substrate and ensuing water penetration.

Recommendation: Monitor



Defect #9 - Field defect (Continued)

Defect: Surface defects, splits or ridging.
Severity: Membrane ridging is apparent, no water penetration.
Status: Monitor



Defect #10 - Field defect

Defect: Open membrane corner.
Severity: Obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #10 - Field defect (Continued)

Defect: Open membrane corner.
Severity: Obvious water penetration.
Status: Proposed



Defect #11 - Field defect

Defect: Open membrane corner.
Severity: Obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #11 - Field defect (Continued)

Defect: Open membrane corner.
Severity: Obvious water penetration.
Status: Proposed



Defect #12 - Field defect

Defect: Open membrane corner.
Severity: Obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #12 - Field defect (Continued)

Defect: Open membrane corner.
Severity: Obvious water penetration.
Status: Proposed



Defect #13 - Field defect

Defect: Open membrane corner.
Severity: Obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #13 - Field defect (Continued)

Defect: Open membrane corner.
Severity: Obvious water penetration.
Status: Proposed



Defect #14 - Field defect

Defect: Defective field or membrane wrap .
Severity: Defective wrap (extensive).
Status: Monitor



Defect #14 - Field defect (Continued)

Defect: Defective field or membrane wrap .
Severity: Defective wrap (extensive).
Status: Monitor



Defect #15 - Field defect

Defect: Surface defects, splits or ridging.
Severity: Membrane ridging is apparent, no water penetration.
Length: 31 LF
Status: Monitor

Definition: Bridging
Consequence: Vulnerable to punctures, existing stress will result in separation of flashing from substrate and ensuing water penetration.

Recommendation: Monitor



Defect #15 - Field defect (Continued)

Defect: Surface defects, splits or ridging.
Severity: Membrane ridging is apparent, no water penetration.
Status: Monitor



A & R ROOFING Co. INC.

2020 Condition Assessment Report



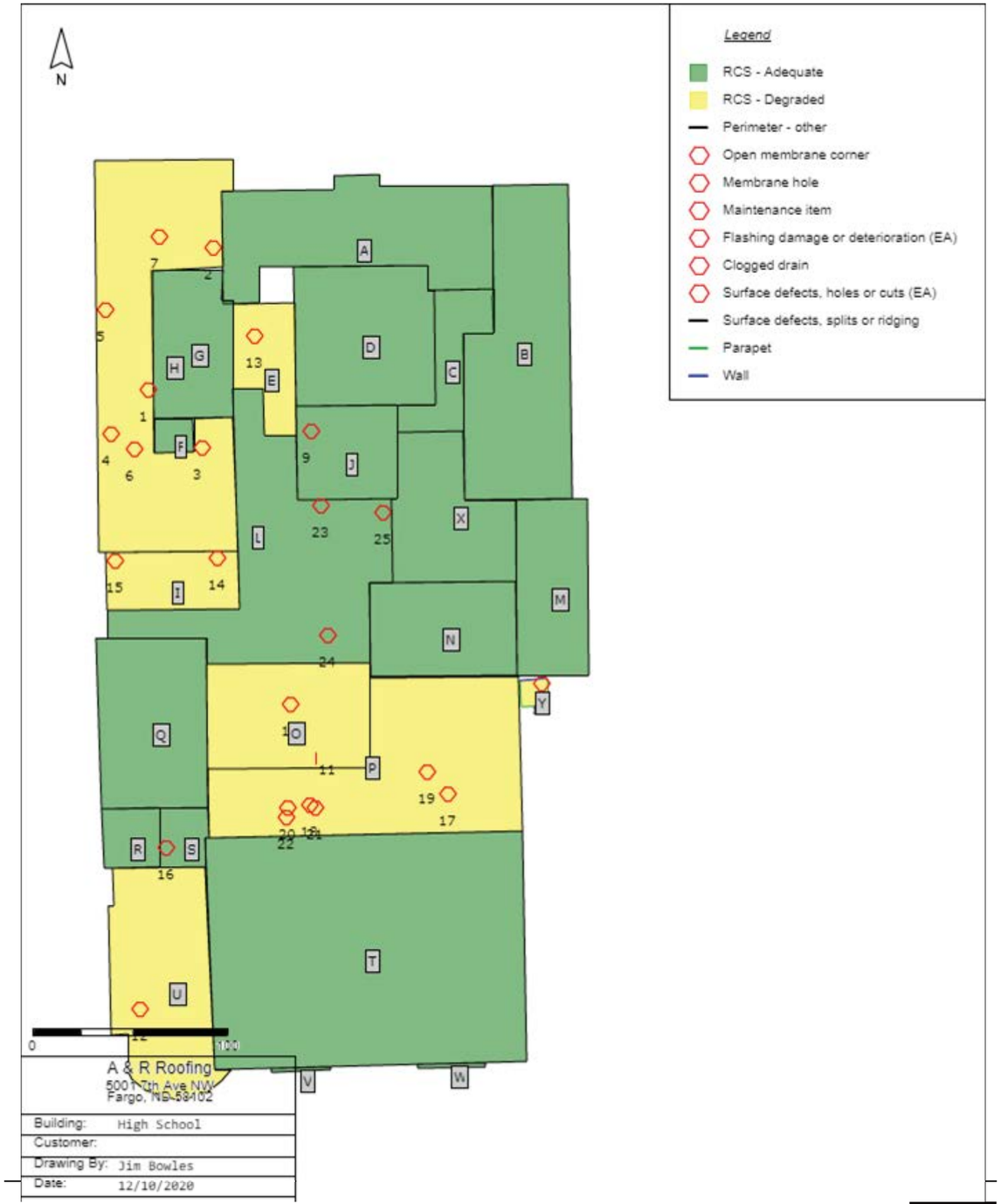
High School
493 central ave n
Valley City, ND 58072

Inspection Date: Tuesday, December 8, 2020

Building & Job Summary

Building Name	High School
Building Address	493 central ave n Valley City, ND 58072
Roof Area (total)	123,323 SF
Building Description	Building Type: School K-12 Building Zone: Residential Roof Access: Hatch/Ladder
Inspection Date	Tuesday, December 8, 2020
Inspector	A & R Roofing Jim Bowles jbowles@arroofing.us
Inspection Notes	There are a few sections that need repairs.

Section Key Plan



Section Information

Section ID: A

Area: 7,537 SF

Roof Type: Built-up membrane

Roof Condition Score: 94 (Adequate)



Section ID: A (Photo #2)

Area: 7,537 SF

Roof Condition Score: 94 (Adequate)



Section ID: A (Photo #3)

Area: 7,537 SF

Roof Condition Score: 94 (Adequate)



Section ID: A (Photo #4)

Area: 7,537 SF

Roof Condition Score: 94 (Adequate)



Section ID: A (Photo #5)

Area: 7,537 SF

Roof Condition Score: 94 (Adequate)



Section ID: A (Photo #6)

Area: 7,537 SF

Roof Condition Score: 94 (Adequate)



Section ID: A (Photo #7)

Area: 7,537 SF

Roof Condition Score: 94 (Adequate)



Section ID: B

Area: 8,892 SF

Roof Type: Metal

Roof Condition Score: 91 (Adequate)



Section ID: C

Area: 1,918 SF

Roof Type: Metal

Roof Condition Score: 94 (Adequate)



Section ID: D

Area: 5,978 SF

Roof Type: Thermoset (Single ply - rubber)

Roof Condition Score: 93 (Adequate)



Section ID: E

Area: 2,110 SF

Roof Type: Thermoset (Single ply - rubber)

Roof Condition Score: 79 (Degraded)



Section ID: F

Area: 422 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 93 (Adequate)



Section ID: G

Area: 3,524 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 92 (Adequate)



Section ID: H

Area: 12,099 SF

Roof Type: Not selected

Roof Condition Score: 67 (Degraded)



Section ID: I

Area: 2,340 SF

Roof Type: Thermoset (Single ply - rubber)

Roof Condition Score: 80 (Degraded)



Section ID: J

Area: 2,906 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 91 (Adequate)



Section ID: L

Area: 10,348 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 86 (Adequate)



Section ID: M

Area: 3,899 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 92 (Adequate)



Section ID: N

Area: 4,275 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 91 (Adequate)



Section ID: O

Area: 5,244 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 79 (Degraded)



Section ID: P

Area: 10,523 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 70 (Degraded)



Section ID: Q

Area: 5,642 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 87 (Adequate)



Section ID: R

Area: 1,039 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 93 (Adequate)



Section ID: S

Area: 860 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 88 (Adequate)



Section ID: T

Area: 22,279 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 93 (Adequate)



Section ID: U

Area: 6,628 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 76 (Degraded)



Section ID: V

Area: 66 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 93 (Adequate)



Section ID: W

Area: 86 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 93 (Adequate)



Section ID: X

Area: 4,478 SF

Roof Type: Thermoplastic (Single ply - plastic)

Roof Condition Score: 91 (Adequate)



Section ID: Y

Area: 230 SF

Roof Type: Thermoset (Single ply - rubber)

Roof Condition Score: 80 (Degraded)



Roof Condition Scores

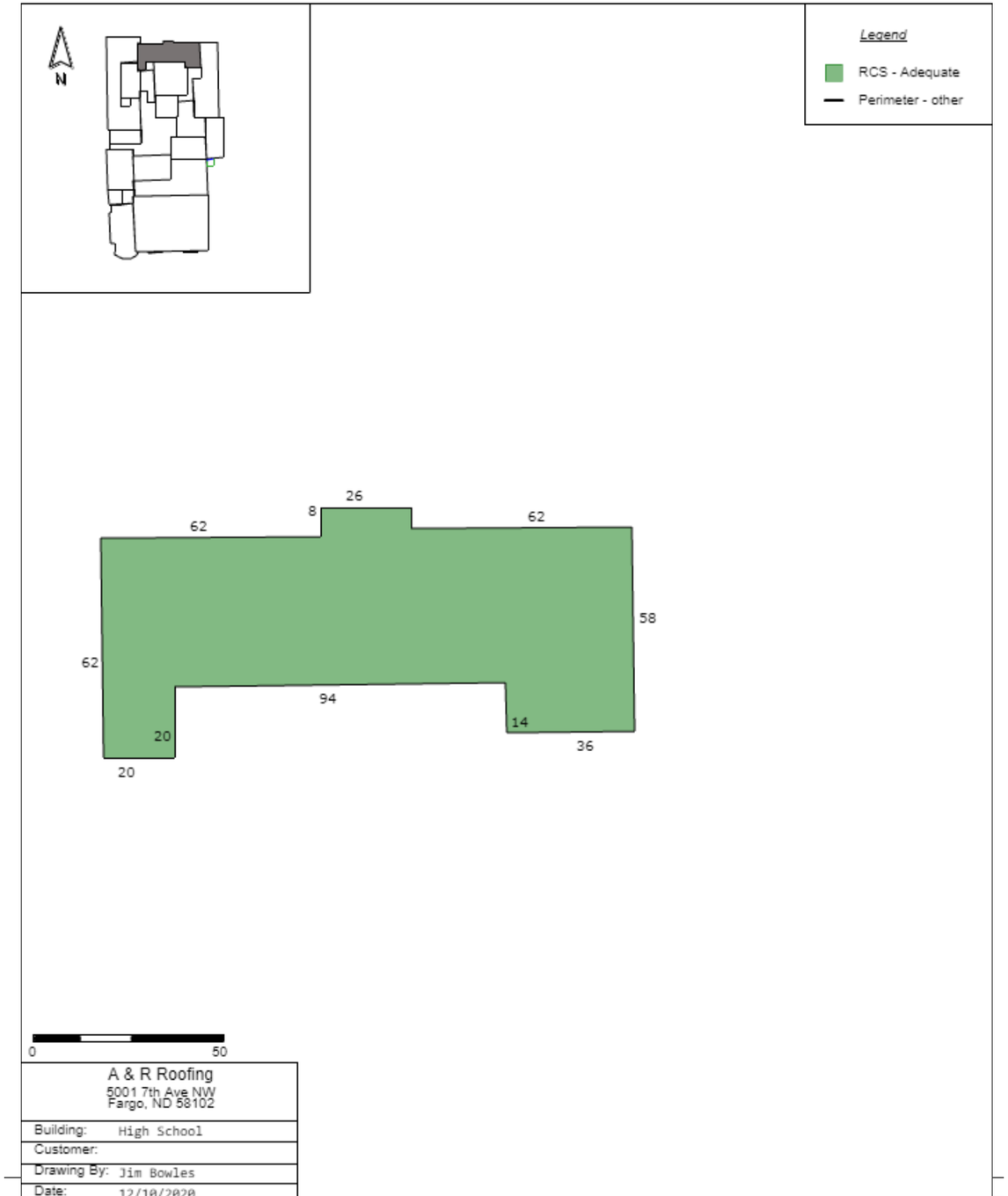
Section	Score
A (Area = 7,537 SF)	94 - Adequate
B (Area = 8,892 SF)	91 - Adequate
C (Area = 1,918 SF)	94 - Adequate
D (Area = 5,978 SF)	93 - Adequate
E (Area = 2,110 SF)	79 - Degraded
F (Area = 422 SF)	93 - Adequate
G (Area = 3,524 SF)	92 - Adequate
H (Area = 12,099 SF)	67 - Degraded
I (Area = 2,340 SF)	80 - Degraded
J (Area = 2,906 SF)	91 - Adequate
L (Area = 10,348 SF)	86 - Adequate
M (Area = 3,899 SF)	92 - Adequate
N (Area = 4,275 SF)	91 - Adequate
O (Area = 5,244 SF)	79 - Degraded
P (Area = 10,523 SF)	70 - Degraded
Q (Area = 5,642 SF)	87 - Adequate
R (Area = 1,039 SF)	93 - Adequate
S (Area = 860 SF)	88 - Adequate
T (Area = 22,279 SF)	93 - Adequate
U (Area = 6,628 SF)	76 - Degraded
V (Area = 66 SF)	93 - Adequate

Section	Score
W (Area = 86 SF)	93 - Adequate
X (Area = 4,478 SF)	91 - Adequate
Y (Area = 230 SF)	80 - Degraded

Legend

	Adequate (68%)
	Degraded (32%)
	Unsatisfactory (0%)
	Unspecified (0%)

Section A



Section Summary – A



Section ID: A

Area: 7,537 SF

Year Installed: 1980 (approximate)

Floors: 1

Sensitivity: None

Roof Condition Score: 94 (Adequate)

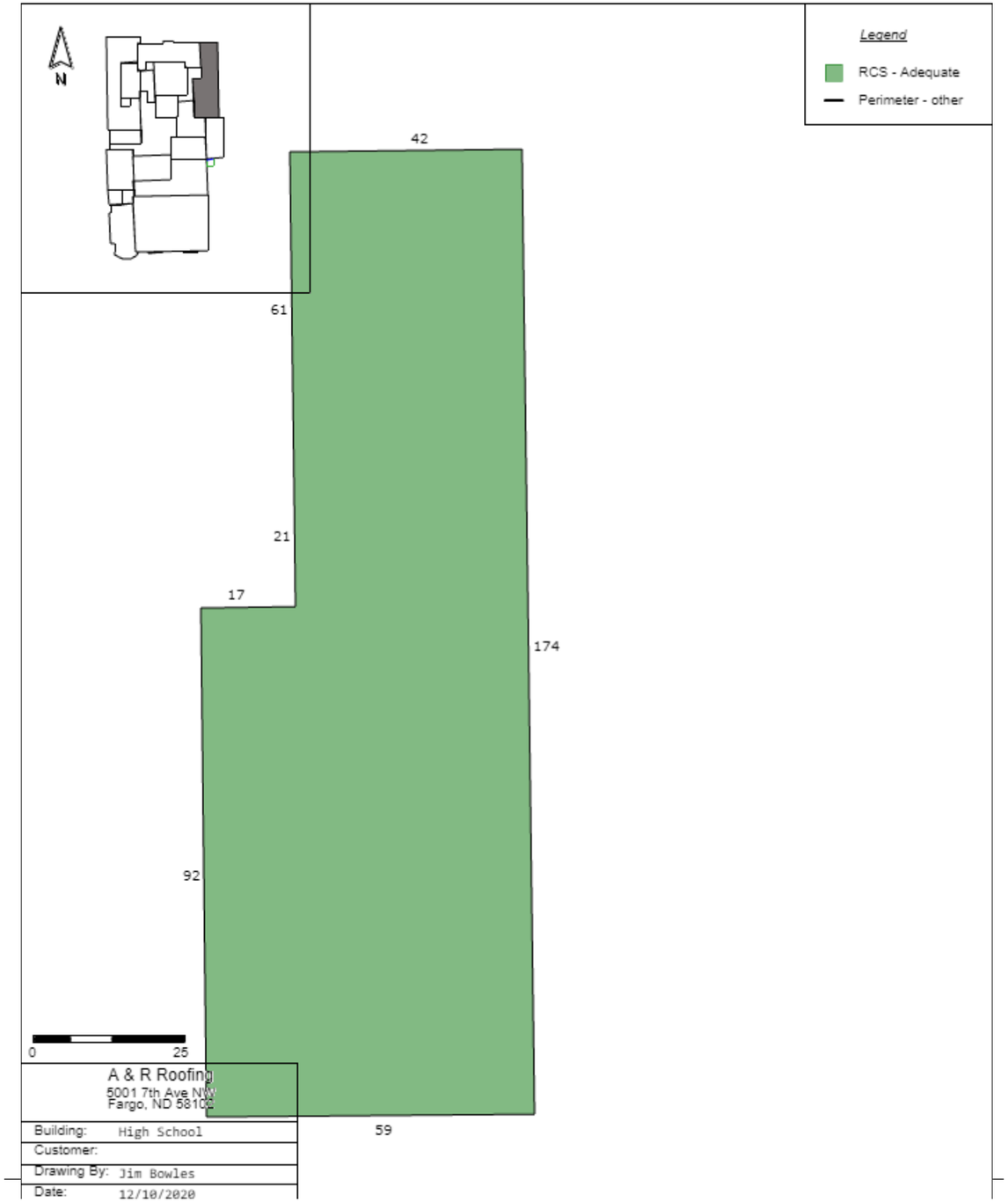
Roof Type: EPDM Membrane

Notes: Roof section has wet area in west scupper area caused by penthouse roof leak. Remainder of roof is in good condition.

Roof Condition Score – Section A

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	6
	Total	**6**
	FINAL SCORE (100 – Total)	**94**
	ROOF CONDITION SCORE: Adequate	

Section B



Section Summary – B



Section ID:	B
Area:	8,892 SF
Year Installed:	Unknown
Floors:	1
Sensitivity:	None
Roof Condition Score:	91 (Adequate)

Roof Type: EPDM

Layers:

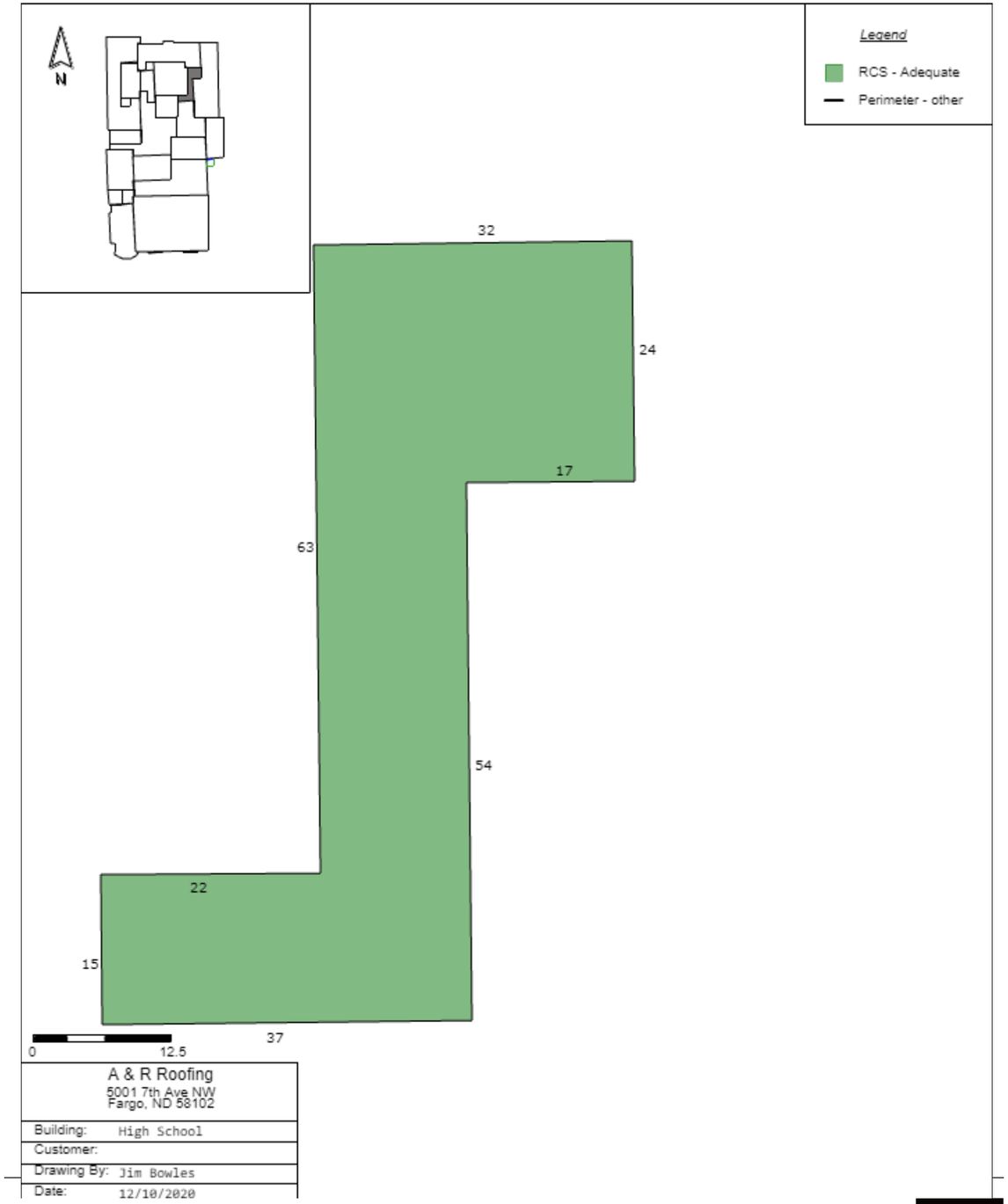
Notes: Roof is in fair condition. Roof has minor ponding.

Roof has 5+ years of serviceability

Roof Condition Score – Section B

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	7
	Total	**9**
	FINAL SCORE (100 – Total)	**91**
	ROOF CONDITION SCORE: Adequate	

Section C



Section Summary – C



Section ID: C

Area: 1,918 SF

Year Installed: 2010 (approximate)

Floors: 1

Sensitivity: None

Roof Condition Score: 94 (Adequate)

Roof Type: Metal

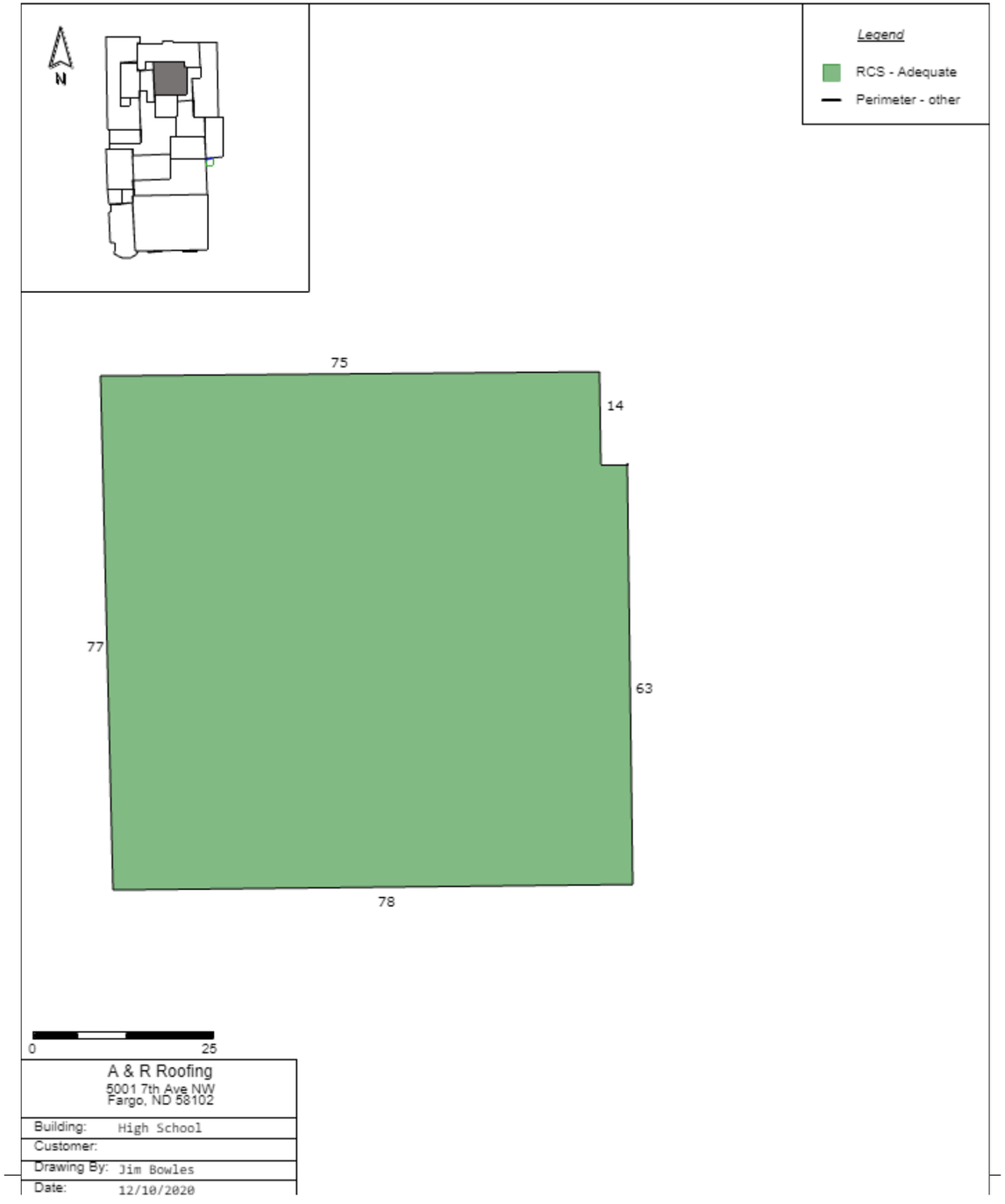
Layers:

Notes: Roof is in fair condition. Roof has 5+ years of serviceability.

Roof Condition Score – Section C

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	6
	Total	**6**
	FINAL SCORE (100 – Total)	**94**
	ROOF CONDITION SCORE: Adequate	

Section D



A & R Roofing	
5001 7th Ave NW Fargo, ND 58102	
Building:	High School
Customer:	
Drawing By:	Jim Bowles
Date:	12/10/2020

Section Summary – D



Section ID:	D
Area:	5,978 SF
Year Installed:	2010 (approximate)
Floors:	1
Sensitivity:	None
Roof Condition Score:	93 (Adequate)

Roof Type: Thermoset (Single ply - rubber)

Layers:

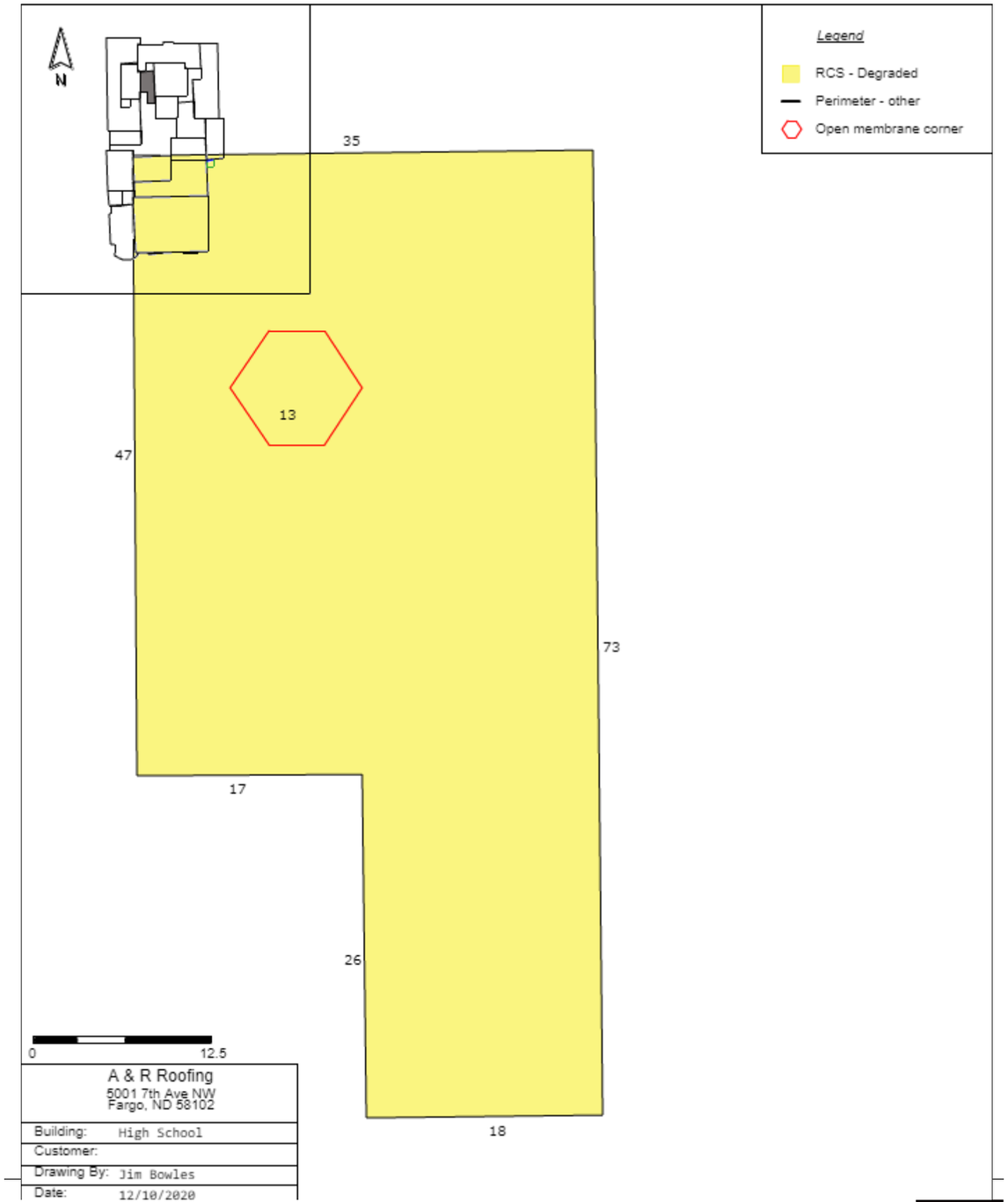
Notes: Roof is in good condition

Roof has 5+ years of serviceability.

Roof Condition Score – Section D

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	5
	Total	**7**
	FINAL SCORE (100 – Total)	**93**
	ROOF CONDITION SCORE: Adequate	

Section E



Section Summary – E



Section ID: E

Area: 2,110 SF

Year Installed: 2000 (approximate)

Floors: 1

Sensitivity: None

Roof Condition Score: 79 (Degraded)

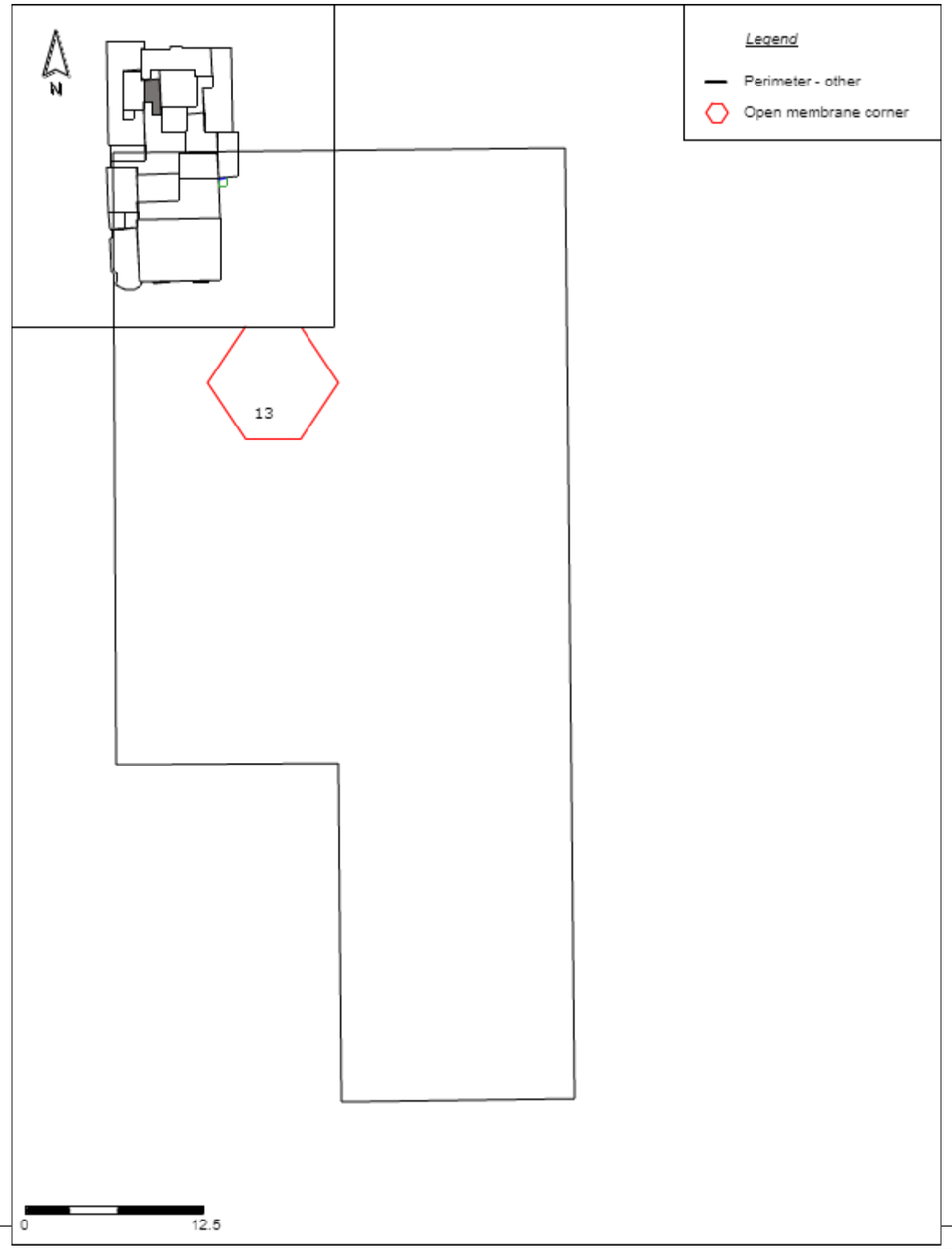
Roof Type: Thermoset (Single ply - rubber)

Layers:

Notes: Roof section has areas of standing water. Minor repairs are recommended.

If recommended repairs are made roof serviceability should be 3+ years.

Defect Map – Section E



Defect Summary – Section E

Defect #13 - Field defect

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed

Definition: Base flashing deteriorated
Consequence: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.

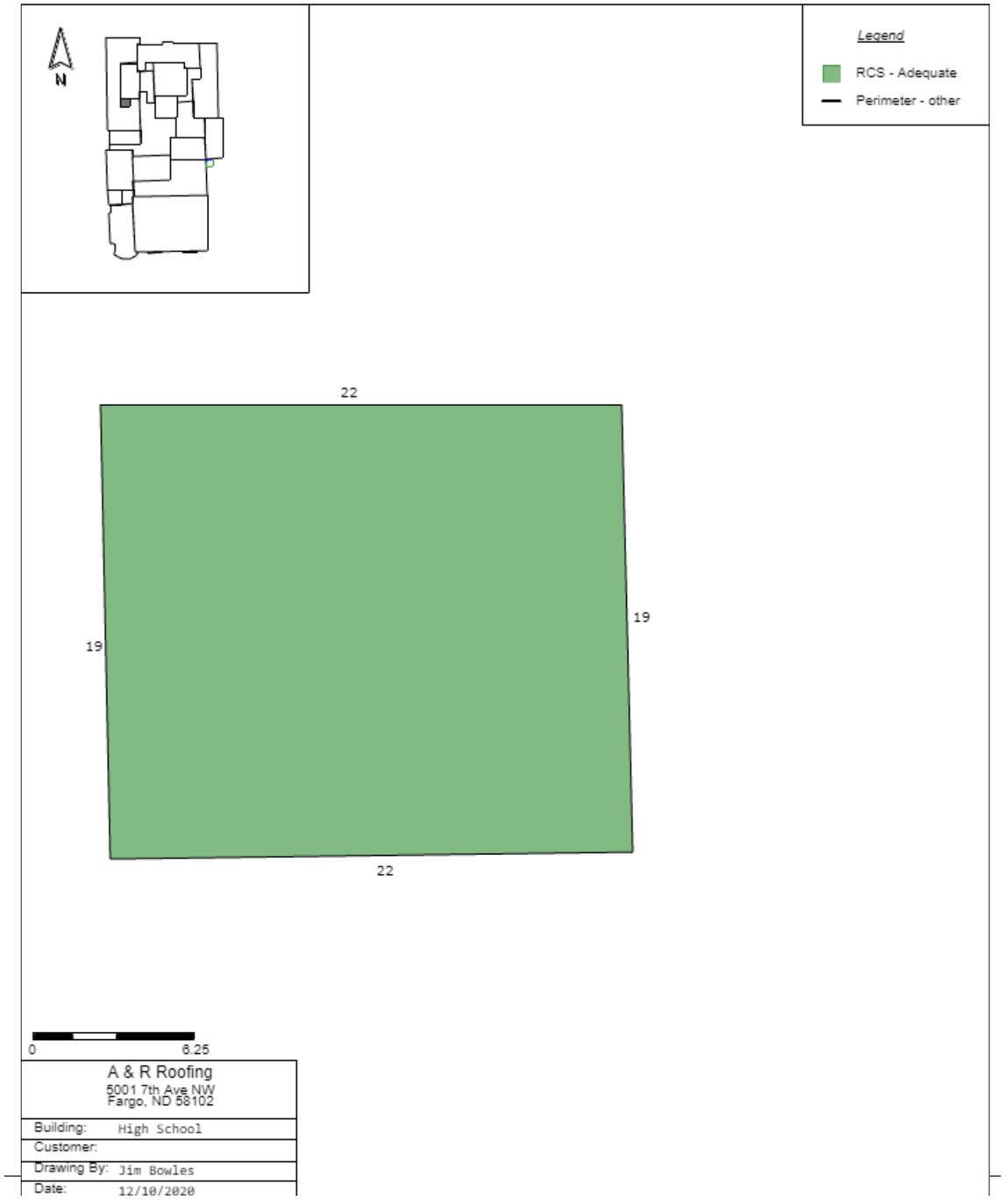
Recommendation: Deteriorated base flashing should be removed and replaced with a new multi base flashing system. The repair should be completed using compatible hot, cold or torch applied modified bitumen materials.



Roof Condition Score – Section E

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	5
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	2
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	6
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	8
	Total	**21**
	FINAL SCORE (100 – Total)	**79**
	ROOF CONDITION SCORE: Degraded	

Section F



Section Summary – F

No Image Available

Section ID:	F
Area:	422 SF
Year Installed:	2009 (approximate)
Floors:	1
Sensitivity:	None
Roof Condition Score:	93 (Adequate)

Roof Type: Thermoplastic (Single ply - plastic)

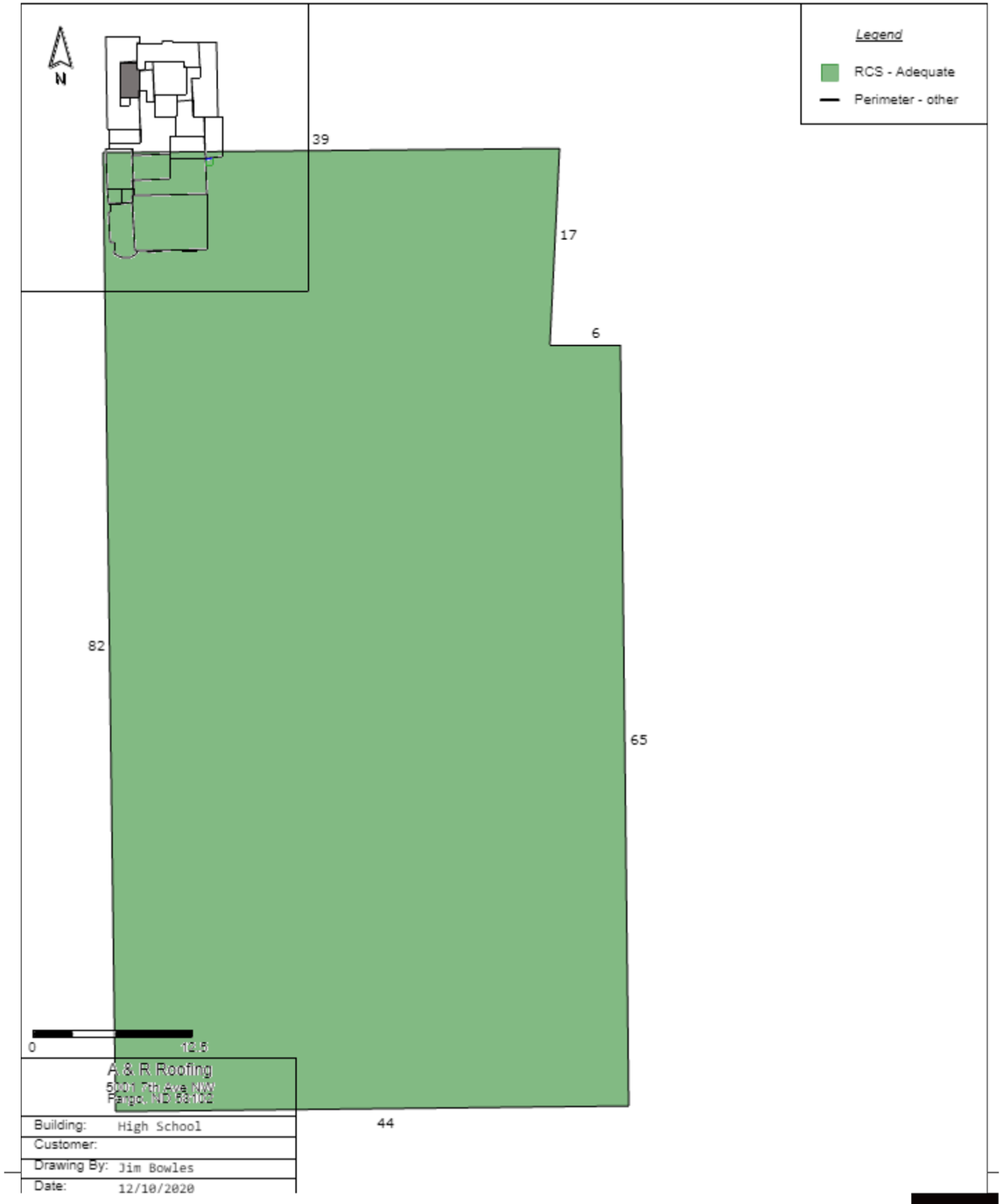
Layers:

Notes: Roof section is in good condition. Roof has 5+ years of serviceability.

Roof Condition Score – Section F

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	5
	Total	**7**
	FINAL SCORE (100 – Total)	**93**
	ROOF CONDITION SCORE: Adequate	

Section G



Section Summary – G



Section ID: G

Area: 3,524 SF

Year Installed: 2009 (approximate)

Floors: 1

Sensitivity: None

Roof Condition Score: 92 (Adequate)

Roof Type: Thermoplastic (Single ply - plastic)

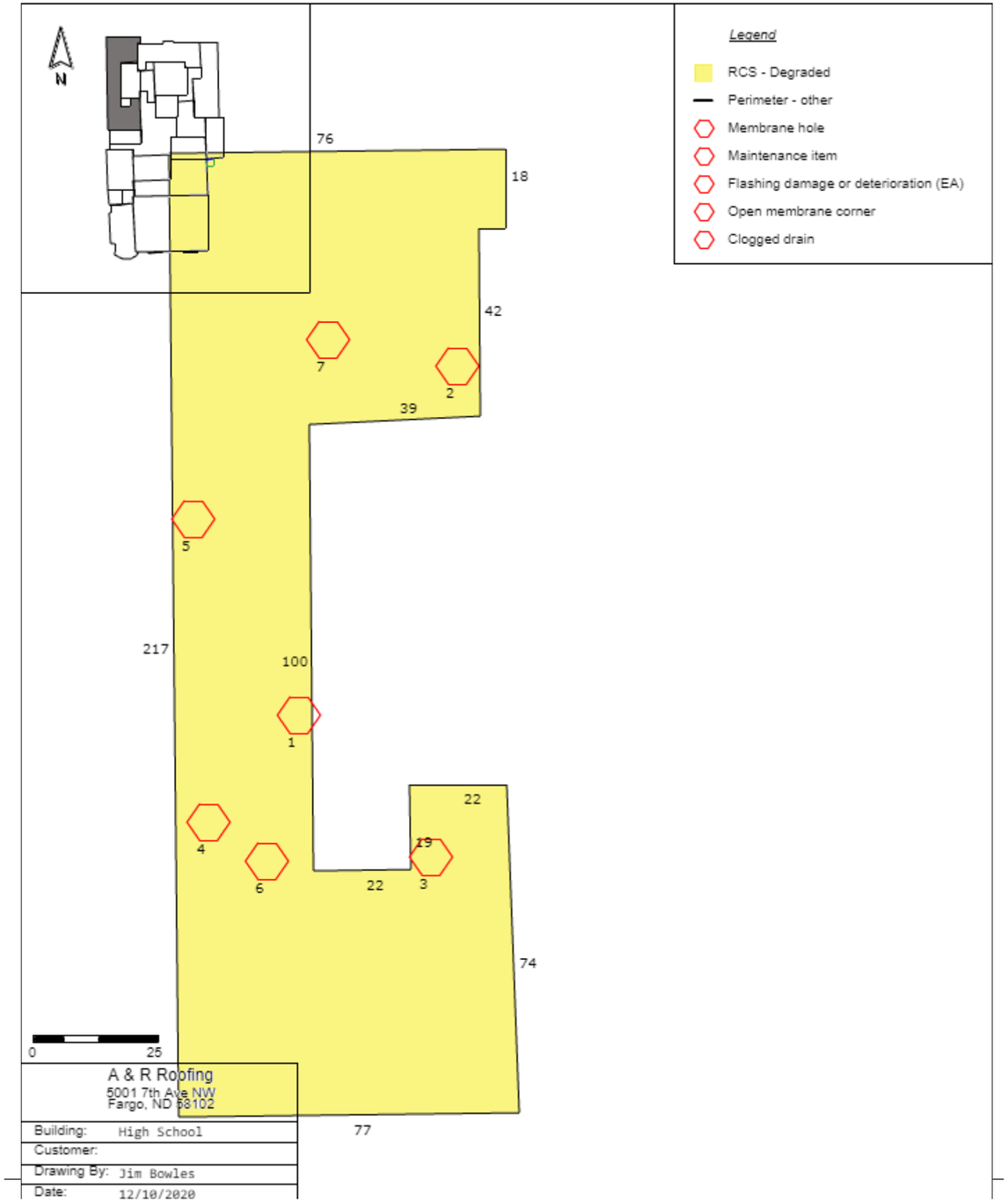
Layers:

Notes: Roof section is in good condition. Roof has 5+ years of serviceabiltiy.

Roof Condition Score – Section G

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	6
	Total	**8**
	FINAL SCORE (100 – Total)	**92**
	ROOF CONDITION SCORE: Adequate	

Section H



Section Summary – H



Section ID:	H
Area:	12,099 SF
Year Installed:	Unknown
Floors:	1
Sensitivity:	None
Roof Condition Score:	67 (Degraded)

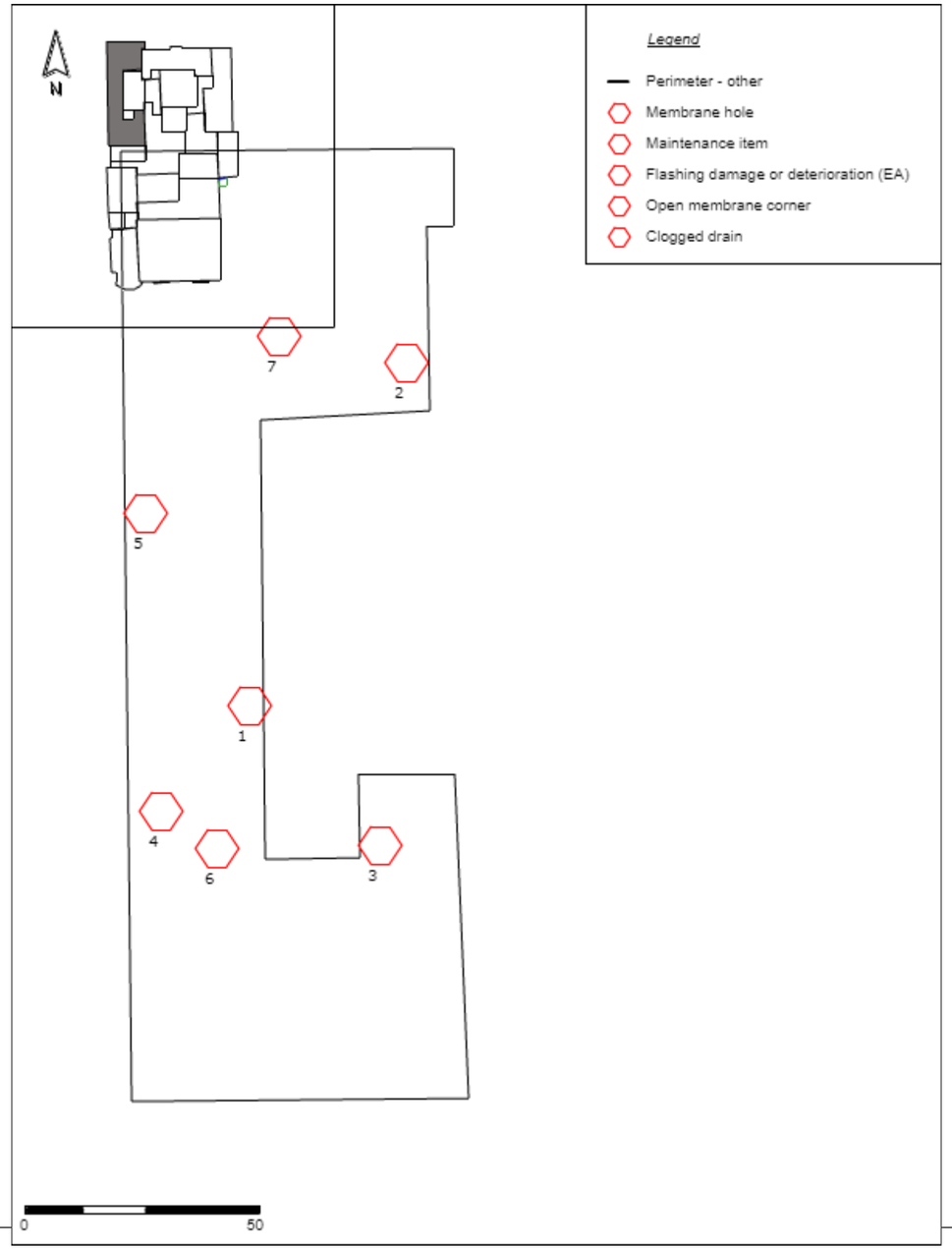
Roof Type: Not selected

Layers:

Notes: Roof section currently has open holes on roof area and a few flashing issues. Minor repairs are recommended.

If recommended repairs are made serviceability of this section is 5+ years.

Defect Map – Section H



Defect Summary – Section H

Defect #1 - Field defect

Defect: Membrane hole.
Severity: Membrane hole.
Status: Proposed

Definition: Membrane hole(s)
Consequence: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.

Recommendation: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.



Defect #2 - Field defect

Defect: Maintenance item.
Severity: Medium priority.
Status: Proposed

Definition: Membrane flashing deteriorated
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Deteriorated membrane flashing should be removed and replaced with new membrane flashing. This repair should be completed using compatible single-ply materials.

Defect #2 - Field defect (Continued)

Defect: Maintenance item.
Severity: Medium priority.
Status: Proposed



Defect #3 - Field defect

Defect: Membrane hole.
Severity: Membrane hole.
Status: Proposed

Definition: Membrane hole(s)
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.



Defect #4 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Slippage, wrinkling, or blistering, no obvious water penetration.
Status: Proposed

Definition: Membrane flashing deteriorated
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Deteriorated membrane flashing should be removed and replaced with new membrane flashing. This repair should be completed using compatible single-ply materials.



Defect #5 - Field defect

Defect: Open membrane corner.
Severity: Obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #6 - Field defect

Defect: Membrane hole.
Severity: Membrane hole.
Status: Proposed

Definition: Membrane hole(s)
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Membrane hole shouldl be repaired with compatible membrane cover stirp.



Defect #7 - Field defect

Defect: Clogged drain.
Severity: Low severity.
Status: Proposed

Definition: Drain Plugged
Consequence: Prevents normal drainage and accelerates deterioration of the membrane by ponding water.

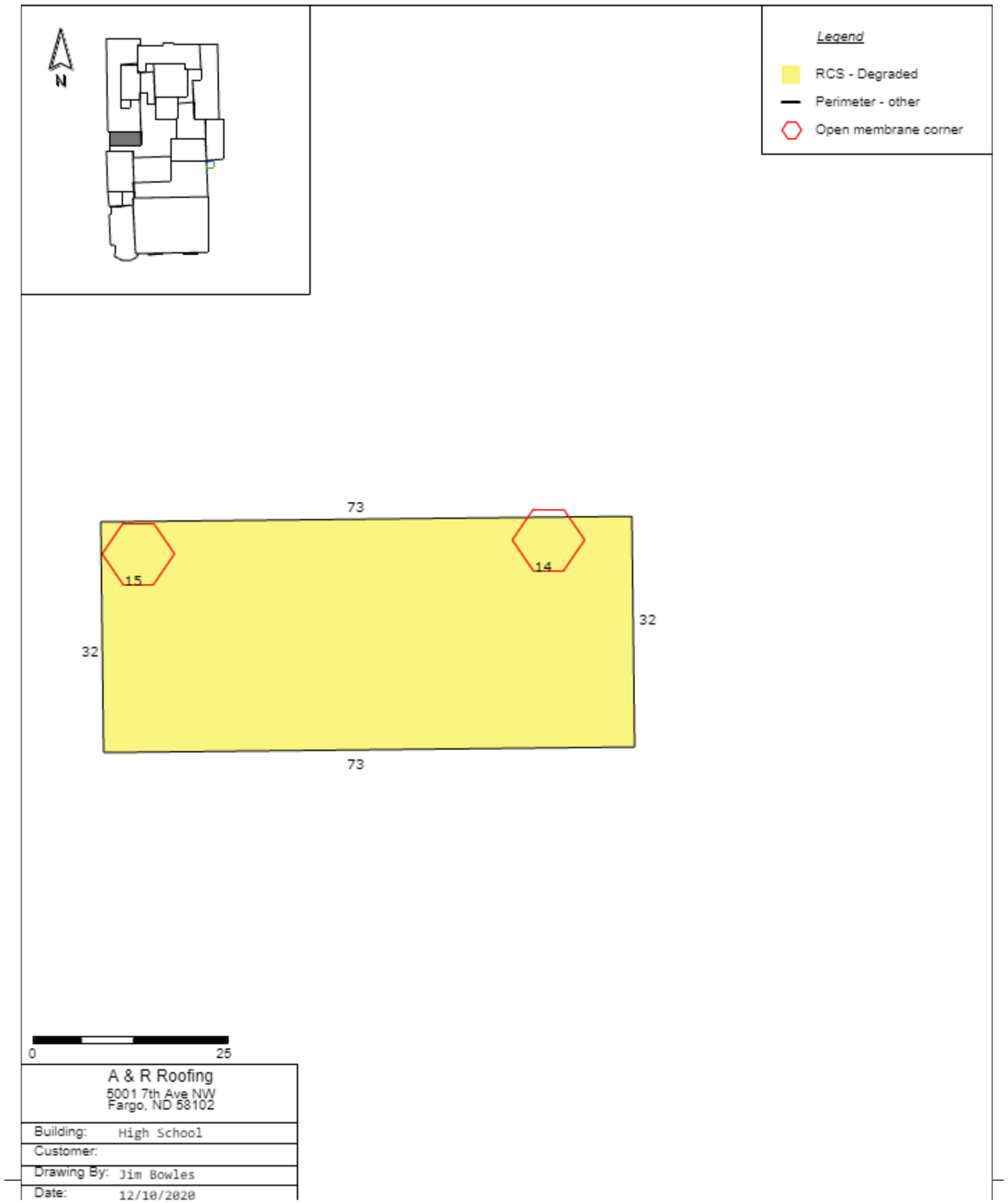
Recommendation: The drain should be unplugged and water tested to insure satisfactory drainage has been achieved.



Roof Condition Score – Section H

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	5
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	10
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	7
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	5
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	4
	Total	**33**
	FINAL SCORE (100 – Total)	**67**
	ROOF CONDITION SCORE: Degraded	

Section I



A & R Roofing	5001 7th Ave NW Fargo, ND 58102
Building:	High School
Customer:	
Drawing By:	Jim Bowles
Date:	12/10/2020

Section Summary – I



Section ID:	I
Area:	2,340 SF
Year Installed:	2009 (approximate)
Floors:	1
Sensitivity:	None
Roof Condition Score:	80 (Degraded)

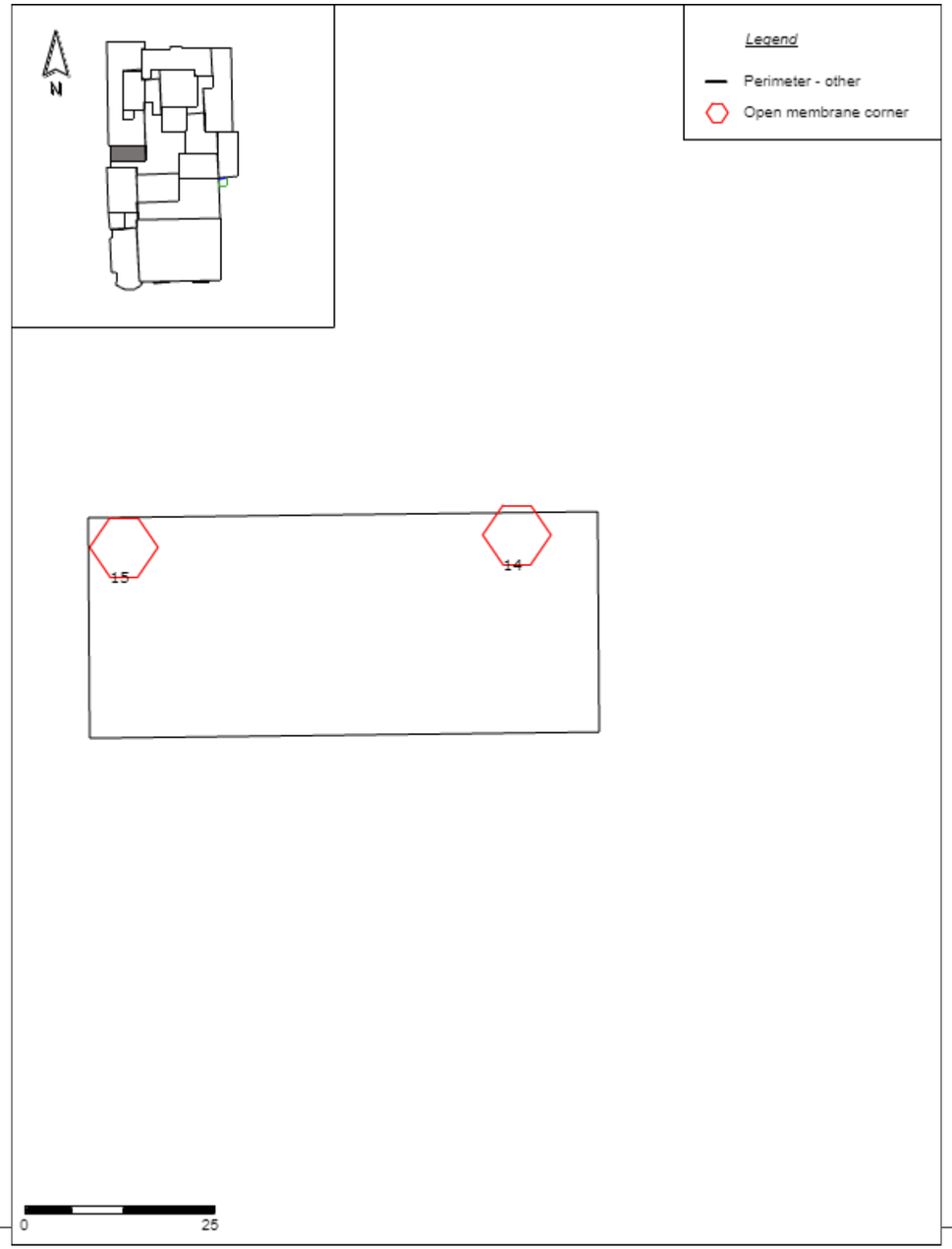
Roof Type: Thermoset (Single ply - rubber)

Layers:

Notes: Roof section is in fair condition. Minor repairs are recommended.

If recommended repairs are made roof would have 5+ years of serviceabiltiy.

Defect Map – Section I



Defect Summary – Section I

Defect #14 - Field defect

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #14 - Field defect (Continued)

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed



Defect #15 - Field defect

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed

Definition: Membrane flashing deteriorated
Consequence: Existing or potential source for water penetration and damage to roof system and building.

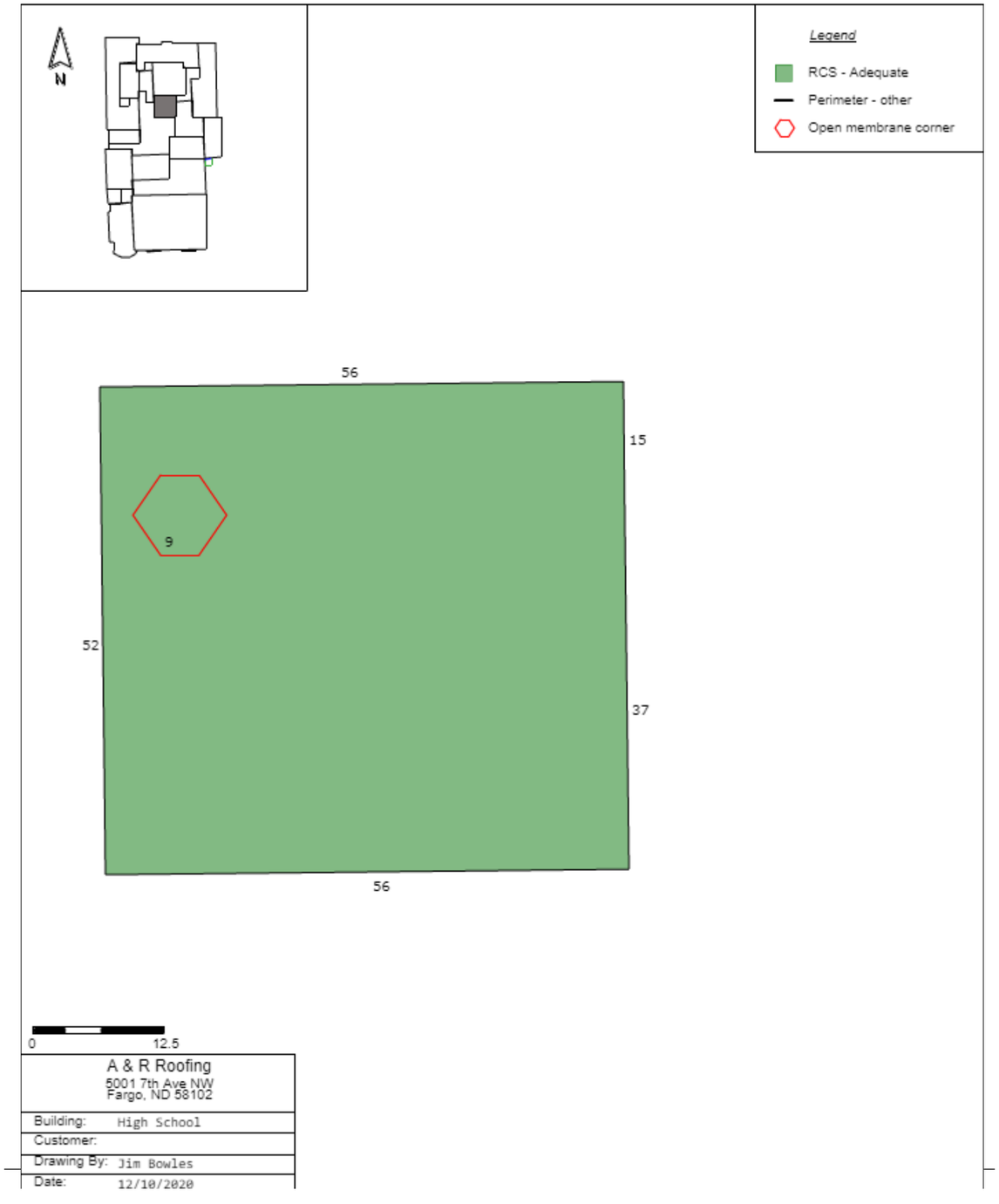
Recommendation: Deteriorated membrane flashing should be removed and replaced with new membrane flashing. This repair should be completed using compatible single-ply materials.



Roof Condition Score – Section I

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	5
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	5
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	8
	Total	**20**
	FINAL SCORE (100 – Total)	**80**
	ROOF CONDITION SCORE: Degraded	

Section J



Section Summary – J



Section ID:	J
Area:	2,906 SF
Year Installed:	Unknown
Floors:	1
Sensitivity:	None
Roof Condition Score:	91 (Adequate)

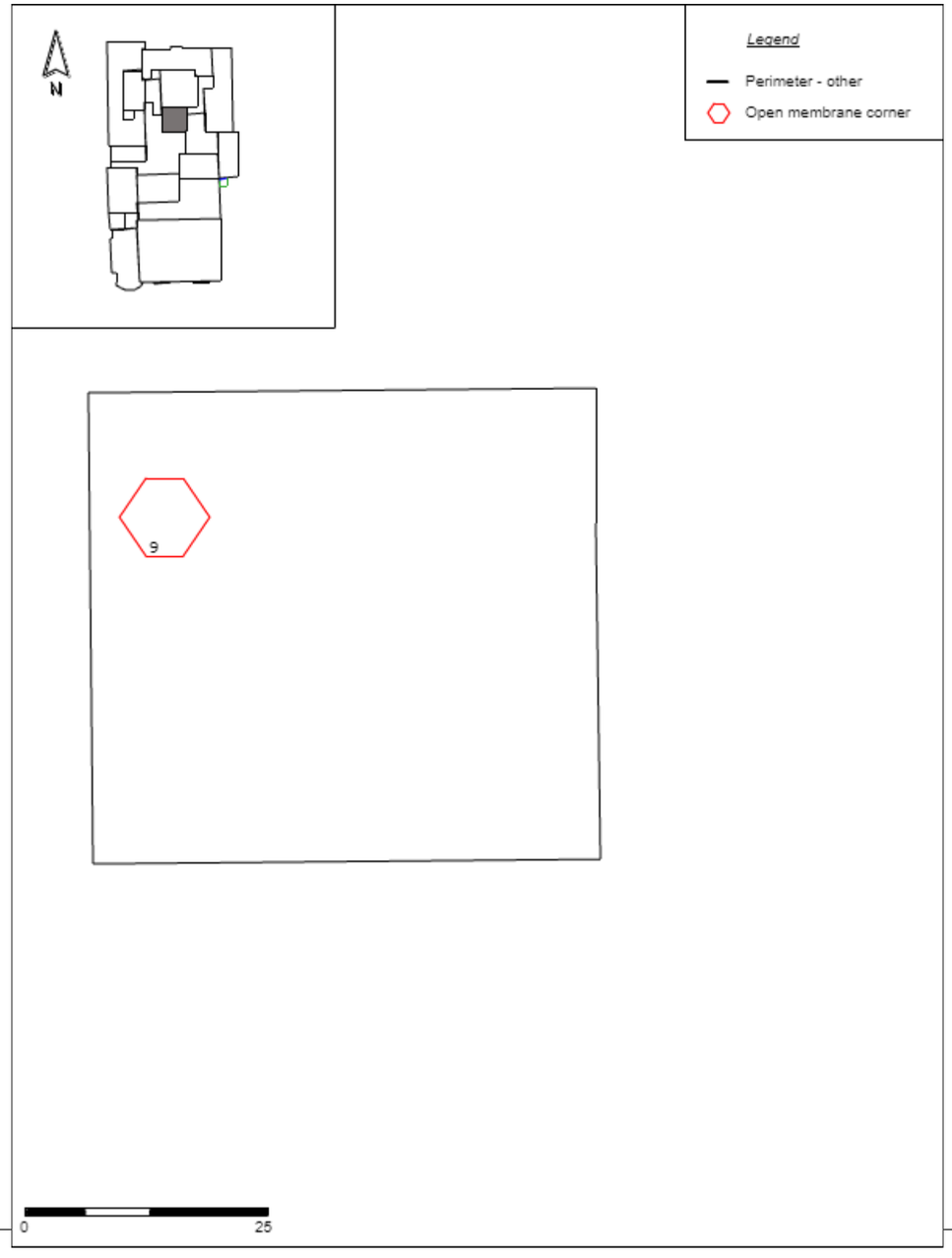
Roof Type: Thermoplastic (Single ply - plastic)

Layers:

Notes: Roof section is in fair condition.

If recommended repairs are made serviceabiltiy of roof is estimated at 5+ years.

Defect Map – Section J



Defect Summary – Section J

Defect #9 - Field defect

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed

Definition: Membrane flashing deteriorated
Consequence: Existing or potential source for water penetration and damage to roof system and building.

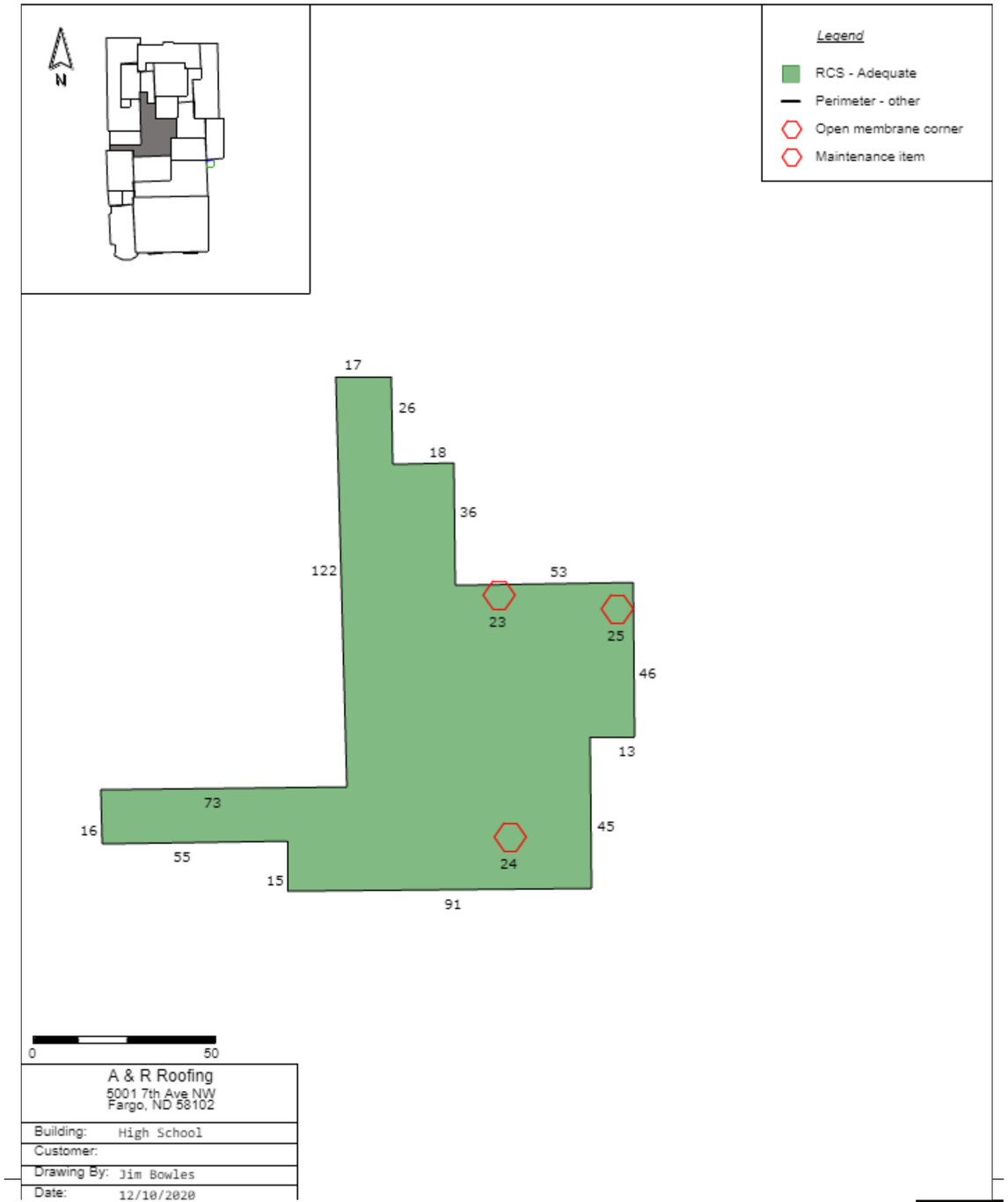
Recommendation: Deteriorated membrane flashing should be removed and replaced with new membrane flashing. This repair should be completed using compatible single-ply materials.



Roof Condition Score – Section J

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	7
	Total	**9**
	FINAL SCORE (100 – Total)	**91**
	ROOF CONDITION SCORE: Adequate	

Section L



Section Summary – L



Section ID: L

Area: 10,348 SF

Year Installed: Unknown

Floors: 1

Sensitivity: None

Roof Condition Score: 86 (Adequate)

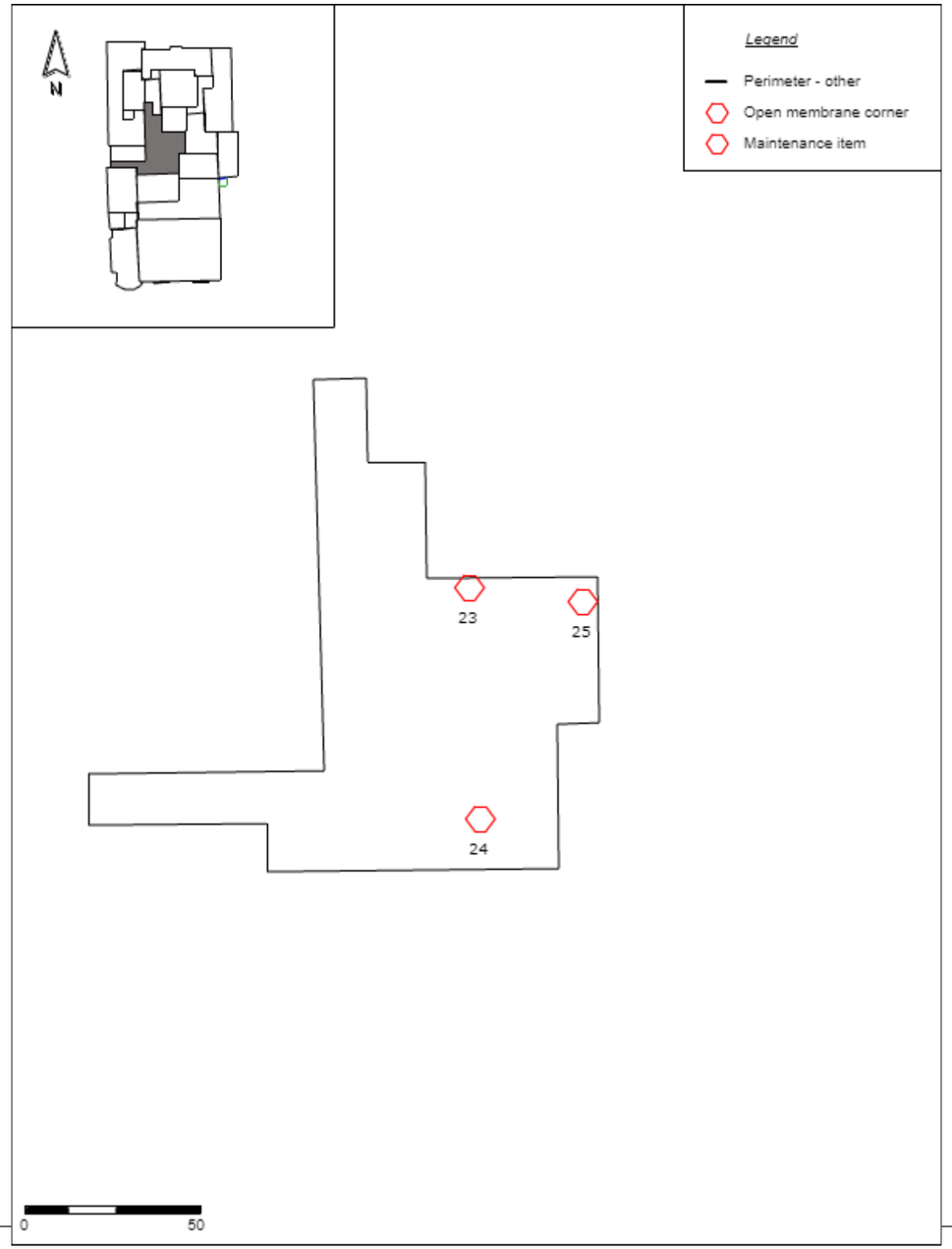
Roof Type: Thermoplastic (Single ply - plastic)

Layers:

Notes: Roof section is in fair condition. Minor repairs recommended.

If recommended repairs are made roof section should have 5+ years of serviceability.

Defect Map – Section L



Defect Summary – Section L

Defect #23 - Field defect

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed

Definition: Membrane flashing deteriorated
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Deteriorated membrane flashing should be removed and replaced with new membrane flashing. This repair should be completed using compatible single-ply materials.



Defect #23 - Field defect (Continued)

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed



Defect #24 - Field defect

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed

Definition: Membrane flashing deteriorated
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Deteriorated membrane flashing should be removed and replaced with new membrane flashing. This repair should be completed using compatible single-ply materials.



Defect #25 - Field defect

Defect: Maintenance item.
Severity: Low priority.
Status: Monitor

Definition: Equipment support defective

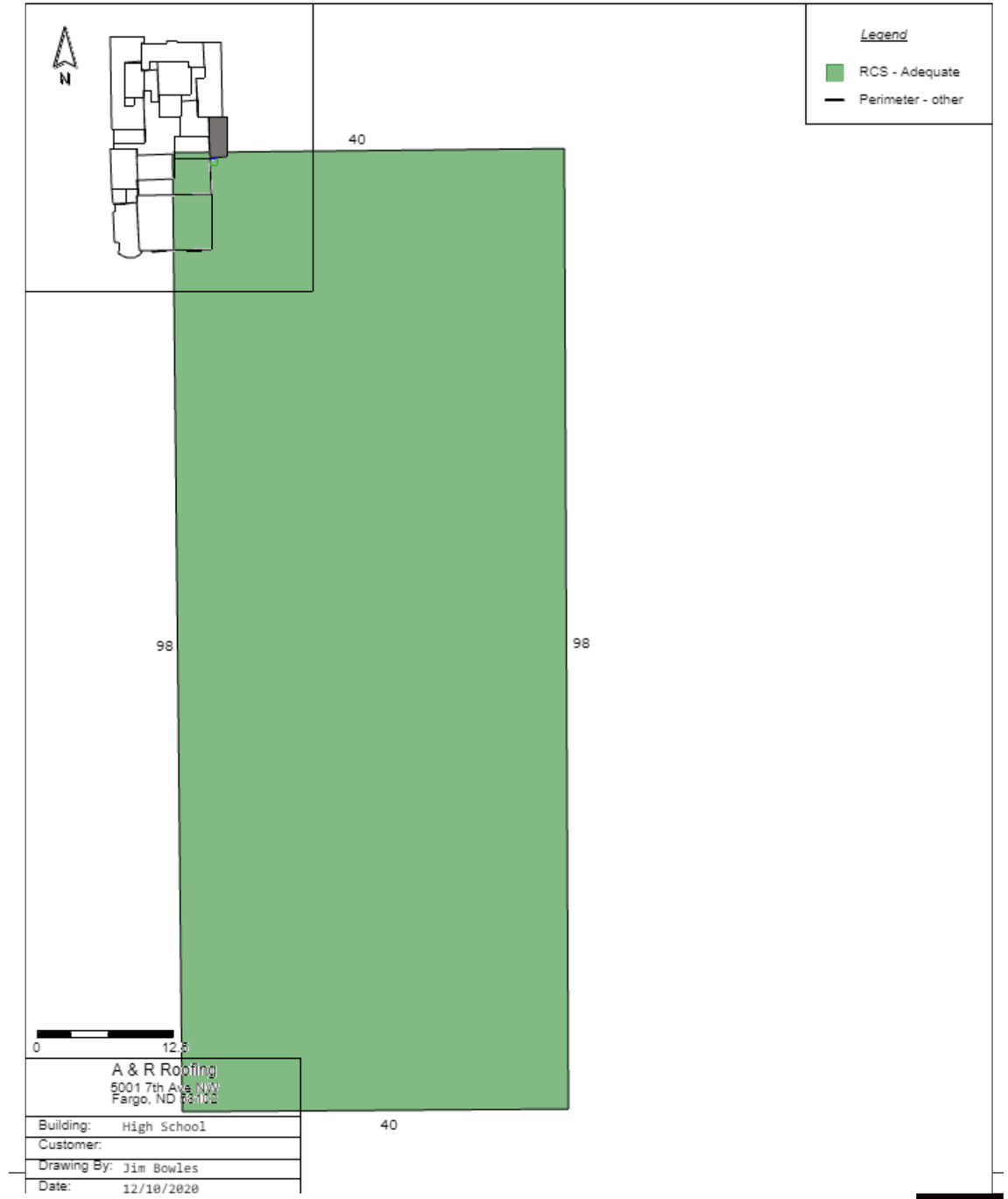
Recommendation: The defective support should be removed and a new support device installed.



Roof Condition Score – Section L

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	8
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	6
	Total	**14**
	FINAL SCORE (100 – Total)	**86**
	ROOF CONDITION SCORE: Adequate	

Section M



Section Summary – M



Section ID: M

Area: 3,899 SF

Year Installed: 2009 (approximate)

Floors: 1

Sensitivity: None

Roof Condition Score: 92 (Adequate)

Roof Type: Thermoplastic (Single ply - plastic)

Layers:

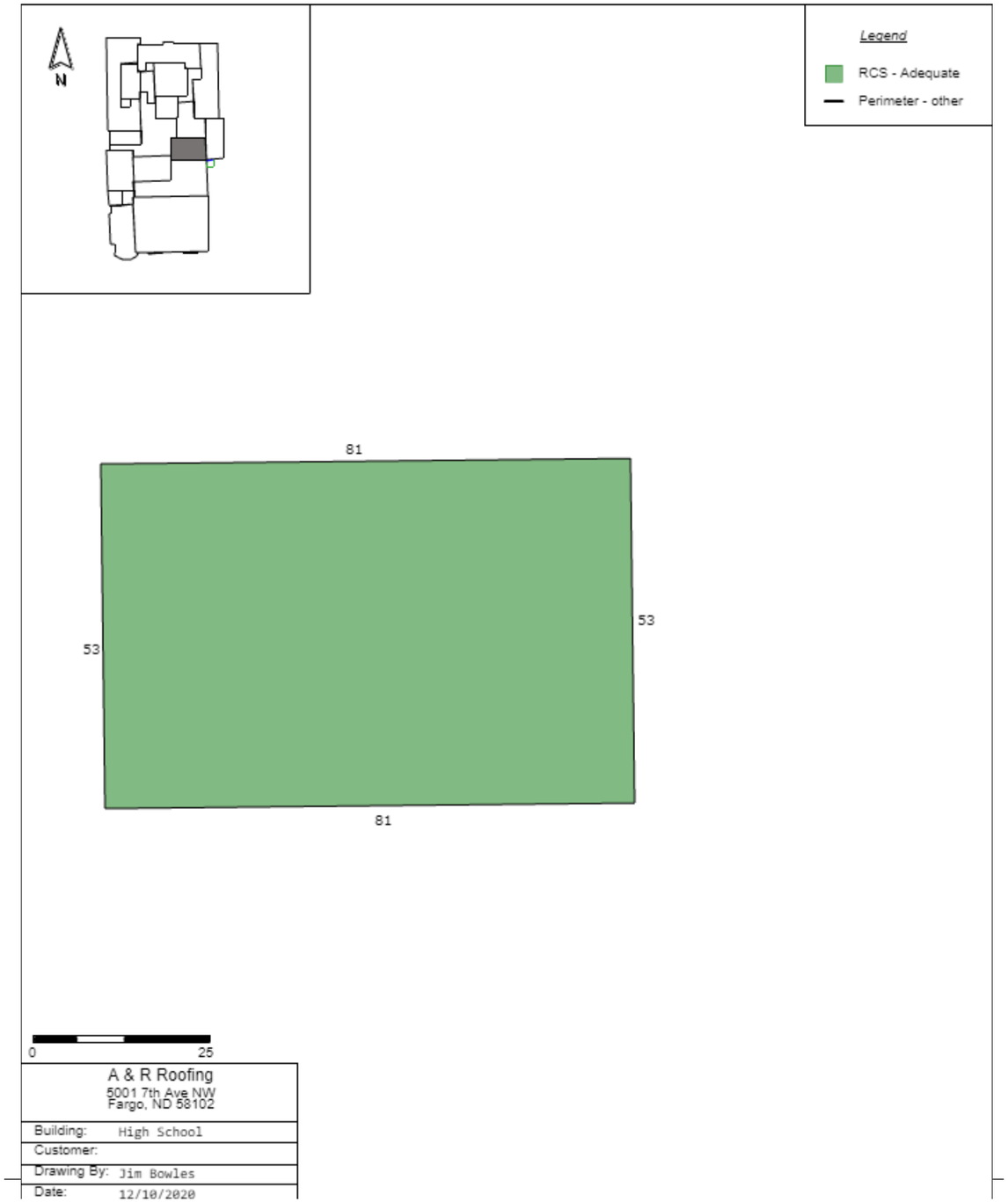
Notes: Roof is in good condition.

Roof has 5+ years of serviceability.

Roof Condition Score – Section M

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	6
	Total	**8**
	FINAL SCORE (100 – Total)	**92**
	ROOF CONDITION SCORE: Adequate	

Section N



Section Summary – N



Section ID: N

Area: 4,275 SF

Year Installed: 2009 (approximate)

Floors: 1

Sensitivity: None

Roof Condition Score: 91 (Adequate)

Roof Type: Thermoplastic (Single ply - plastic)

Layers:

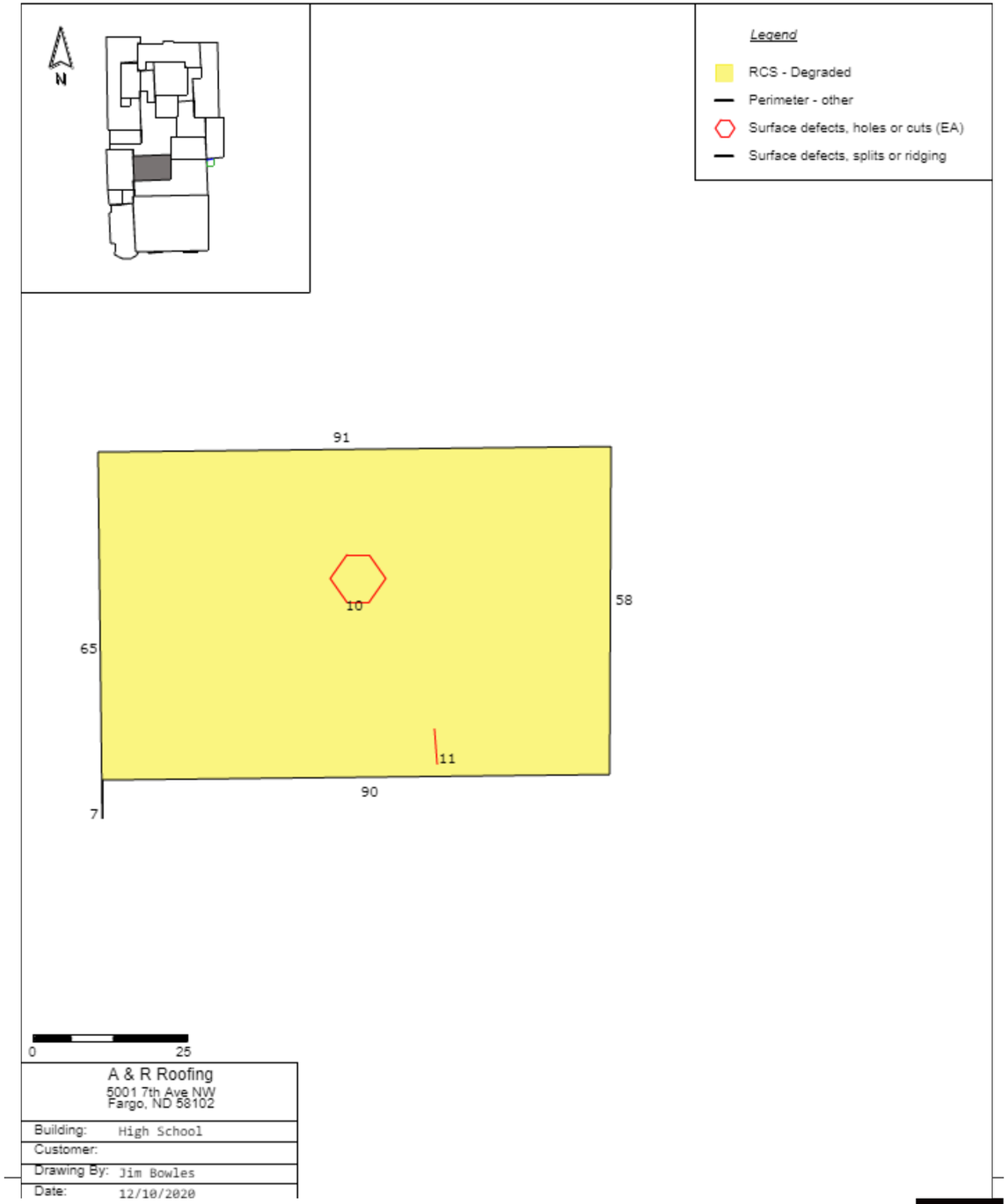
Notes: Roof is in good condition.

Roof has 5+ years of serviceability.

Roof Condition Score – Section N

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	7
	Total	**9**
	FINAL SCORE (100 – Total)	**91**
	ROOF CONDITION SCORE: Adequate	

Section O



Section Summary – O



Section ID: O

Area: 5,244 SF

Year Installed: 2009 (approximate)

Floors: 1

Sensitivity: None

Roof Condition Score: 79 (Degraded)

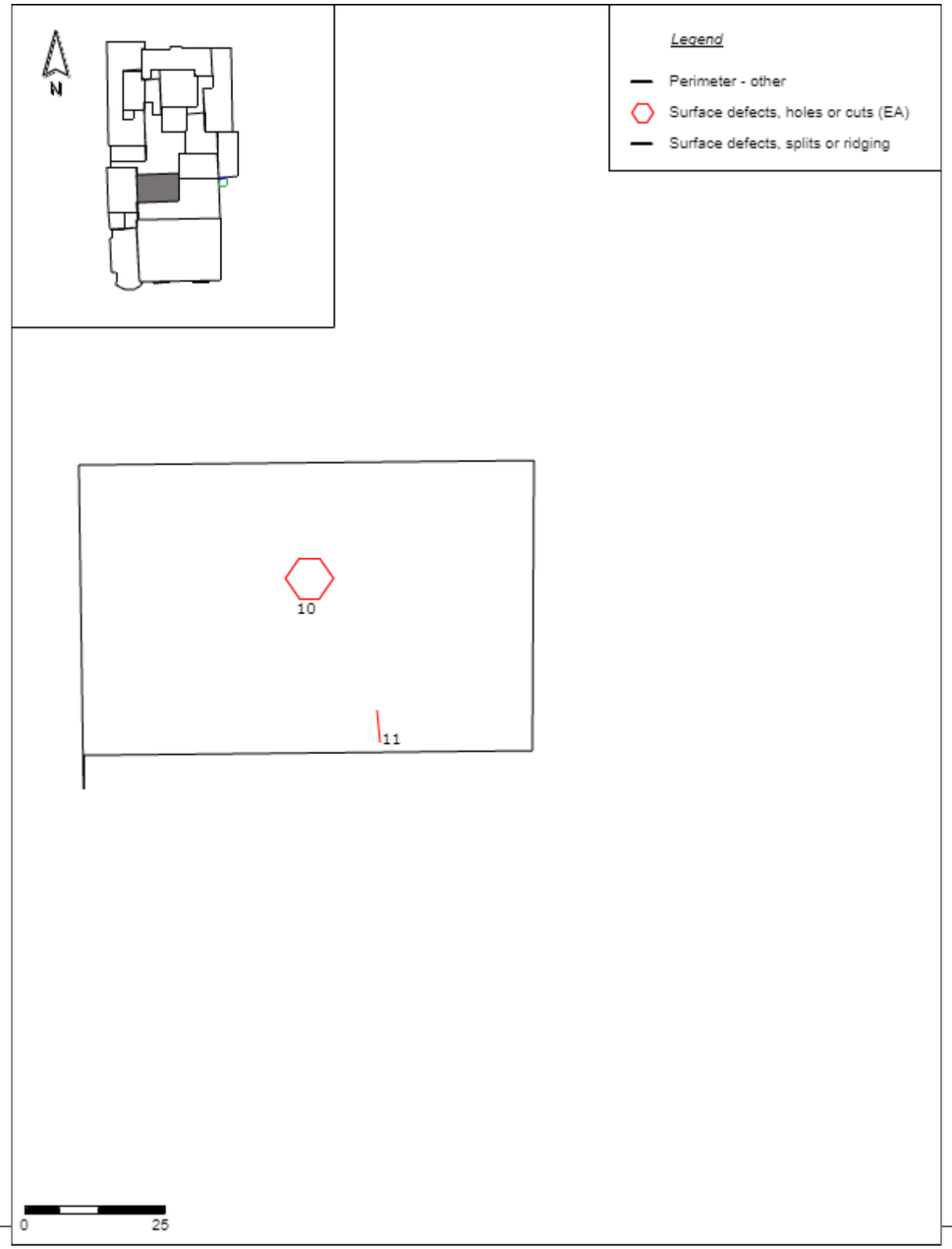
Roof Type: Thermoplastic (Single ply - plastic)

Layers:

Notes: Roof is in fair conditiion. Minor repairs are recommended.

If recommended repairs are made roof would have 5+ years of serviceability.

Defect Map – Section O



Defect Summary – Section O

Defect #10 - Field defect

Defect: Surface defects, holes or cuts (EA).
Severity: Cuts or abrasions to membrane allowing water to penetrate roof system.
Status: Proposed

Definition: Membrane hole(s)
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Membrane hole shouldl be repaired with compatible membrane cover stirp.



Defect #10 - Field defect (Continued)

Defect: Surface defects, holes or cuts (EA).
Severity: Cuts or abrasions to membrane allowing water to penetrate roof system.
Status: Proposed



Defect #11 - Field defect

Defect: Surface defects, splits or ridging.
Severity: Membrane ridging is apparent, no water penetration.
Length: 6 LF
Status: Proposed

Definition: Membrane lap unbonded
Consequence: Existing or potential source for water penetration and damage to roof system and building.

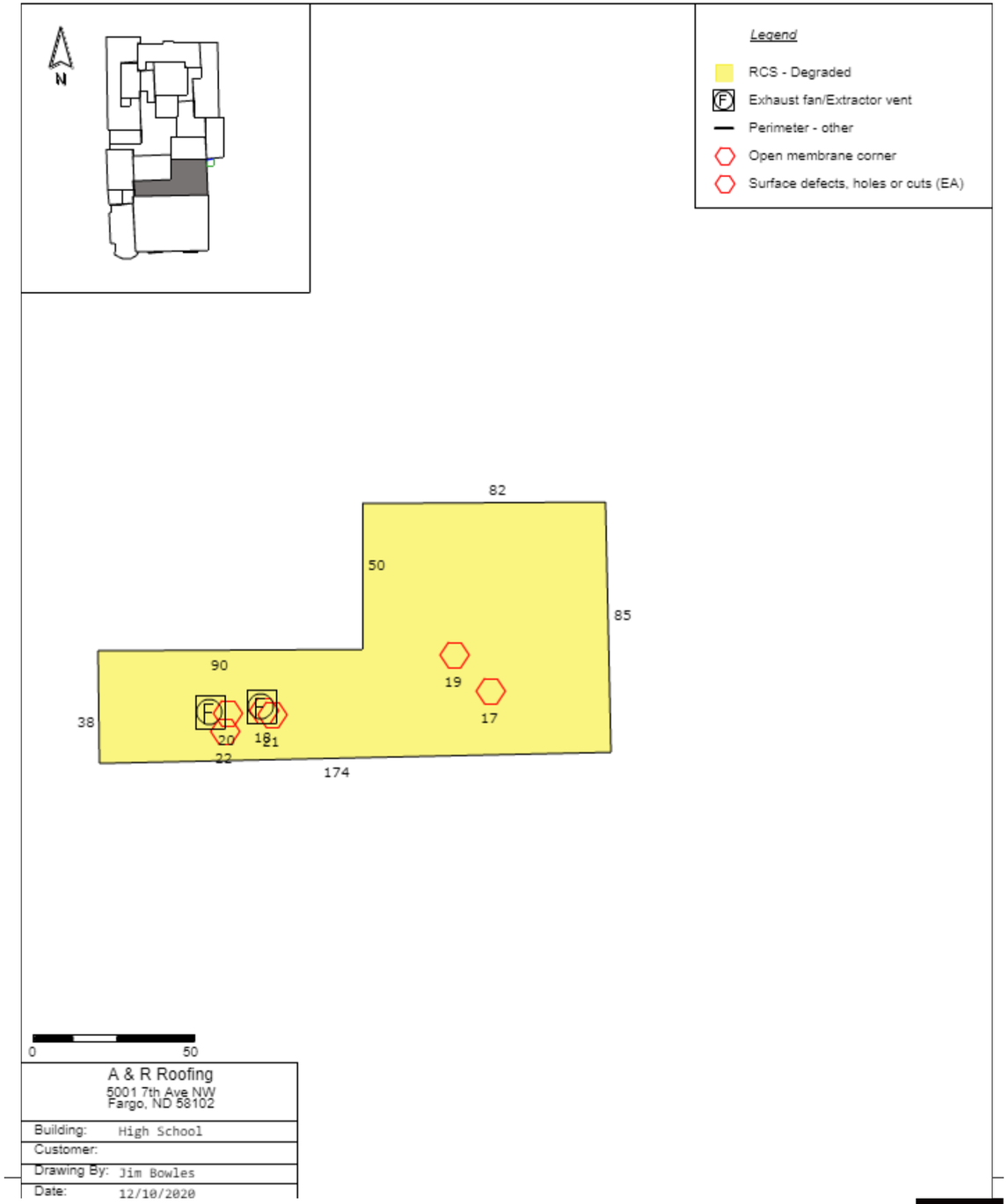
Recommendation: The membrane should be re-secured at the perimeter using compatible single-ply materials.



Roof Condition Score – Section O

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	5
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	10
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	4
	Total	**21**
	FINAL SCORE (100 – Total)	**79**
	ROOF CONDITION SCORE: Degraded	

Section P



Section Summary – P



Section ID: P

Area: 10,523 SF

Year Installed: 2009 (approximate)

Floors: 1

Sensitivity: None

Roof Condition Score: 70 (Degraded)

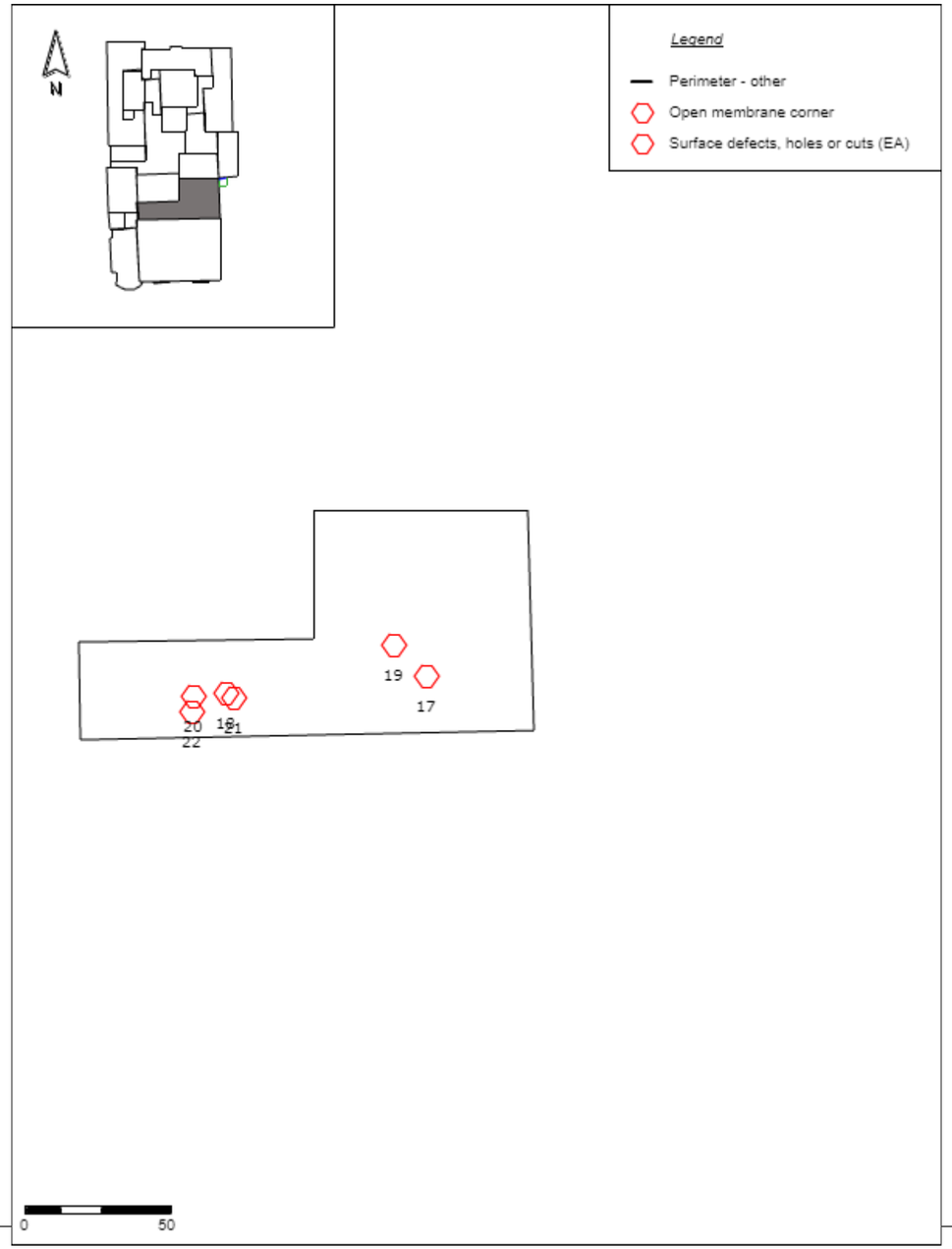
Roof Type: Thermoplastic (Single ply - plastic)

Layers:

Notes: Roof is in poor condition. Repairs are recommended.

If recommended repairs are made roof would have 5+ years of serviceabiltiy.

Defect Map – Section P



Defect Summary – Section P

Defect #17 - Field defect

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #17 - Field defect (Continued)

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed



Defect #18 - Field defect

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #18 - Field defect (Continued)

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed



Defect #18 - Field defect (Continued)

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed



Defect #18 - Field defect (Continued)

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed



Defect #18 - Field defect (Continued)

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed



Defect #19 - Field defect

Defect: Surface defects, holes or cuts (EA).
Severity: Cuts or abrasions to membrane allowing water to penetrate roof system.
Status: Proposed

Definition: Membrane hole(s)
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Membrane hole shouldl be repaired with compatible membrane cover stirp.



Defect #19 - Field defect (Continued)

Defect: Surface defects, holes or cuts (EA).
Severity: Cuts or abrasions to membrane allowing water to penetrate roof system.
Status: Proposed



Defect #20 - Field defect

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #20 - Field defect (Continued)

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed



Defect #20 - Field defect (Continued)

Defect: Open membrane corner.
Severity: No obvious water penetration.
Status: Proposed



Defect #21 - Field defect

Defect: Surface defects, holes or cuts (EA).
Severity: Cuts or abrasions to membrane allowing water to penetrate roof system.
Status: Proposed

Definition: Membrane hole(s)
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Membrane hole shouldl be repaired with compatible membrane cover stirp.



Defect #22 - Field defect

Defect: Surface defects, holes or cuts (EA).
Severity: Cuts or abrasions to membrane allowing water to penetrate roof system.
Status: Proposed

Definition: Membrane hole(s)
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Membrane hole shouldl be repaired with compatible membrane cover stirp.



Defect #22 - Field defect (Continued)

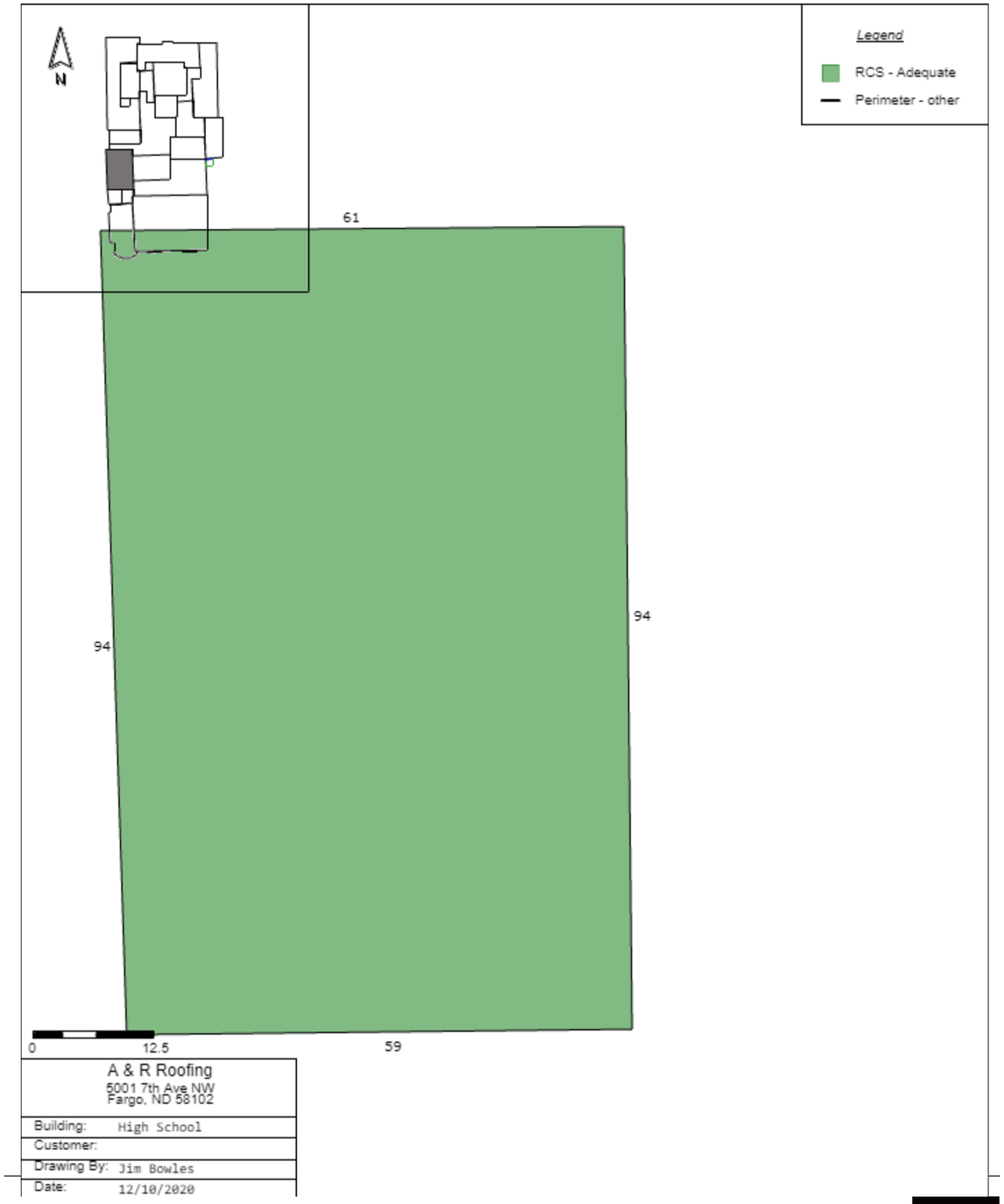
Defect: Surface defects, holes or cuts (EA).
Severity: Cuts or abrasions to membrane allowing water to penetrate roof system.
Status: Proposed



Roof Condition Score – Section P

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	5
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	10
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	7
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	6
	Total	**30**
	FINAL SCORE (100 – Total)	**70**
	ROOF CONDITION SCORE: Degraded	

Section Q



Section Summary – Q



Section ID: Q

Area: 5,642 SF

Year Installed: 2009 (approximate)

Floors: 1

Sensitivity: None

Roof Condition Score: 87 (Adequate)

Roof Type: Thermoplastic (Single ply - plastic)

Layers:

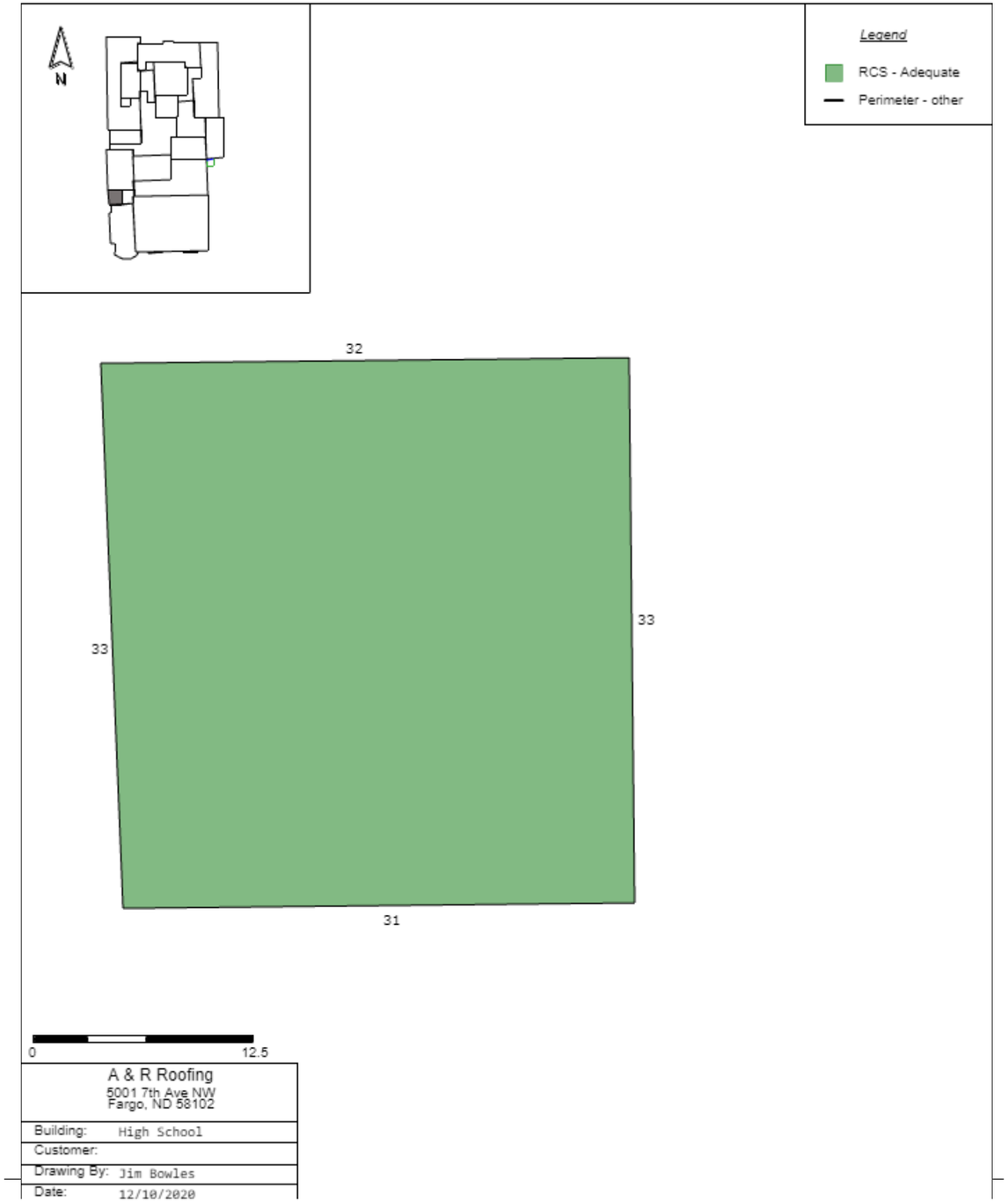
Notes: Roof is in good condtion.

Roof has 5+ years of serviceability.

Roof Condition Score – Section Q

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	2
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	2
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	7
	Total	**13**
	FINAL SCORE (100 – Total)	**87**
	ROOF CONDITION SCORE: Adequate	

Section R



Section Summary – R



Section ID:	R
Area:	1,039 SF
Year Installed:	2009 (approximate)
Floors:	1
Sensitivity:	None
Roof Condition Score:	93 (Adequate)

Roof Type: Thermoplastic (Single ply - plastic)

Layers:

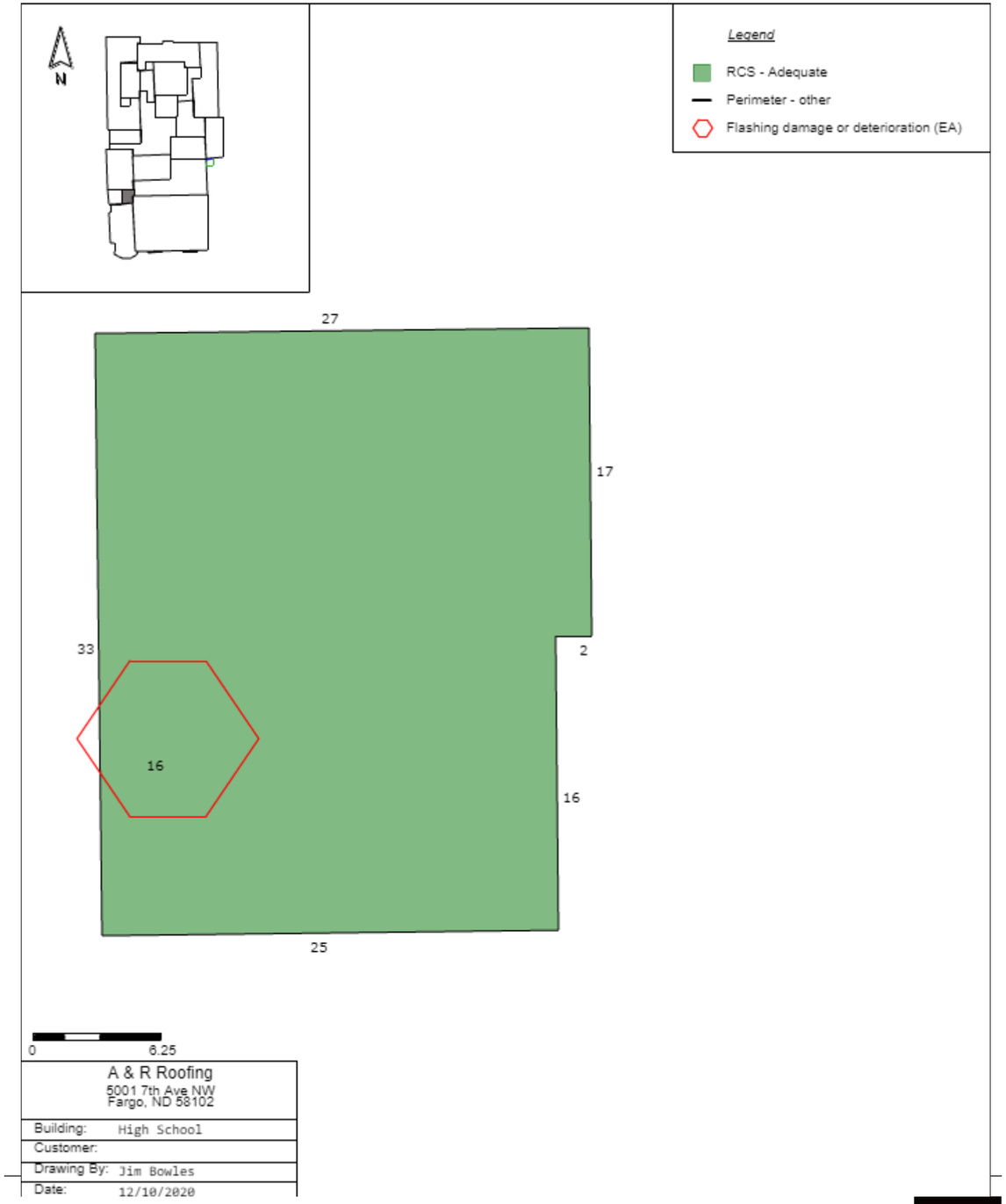
Notes: Roof is in good condition.

Roof has 5+ years of serviceability.

Roof Condition Score – Section R

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	5
	Total	**7**
	FINAL SCORE (100 – Total)	**93**
	ROOF CONDITION SCORE: Adequate	

Section S



Section Summary – S



Section ID: S

Area: 860 SF

Year Installed: 2009

Floors: 1

Sensitivity: None

Roof Condition Score: 88 (Adequate)

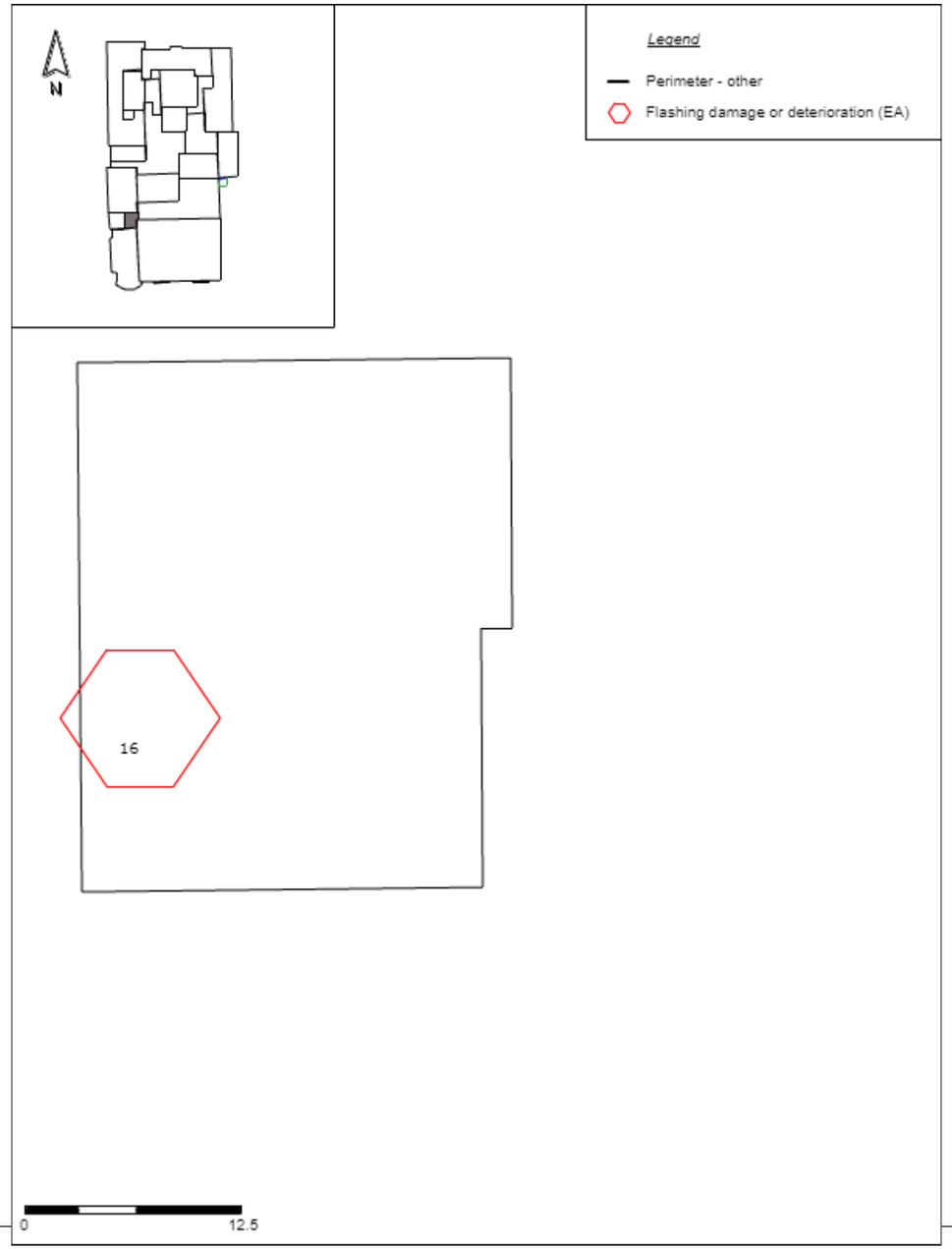
Roof Type: Thermoplastic (Single ply - plastic)

Layers:

Notes: Roof is in good condition. Minor repairs are recommended.

If recommended repairs are made roof would have 5+ years of serviceability.

Defect Map – Section S



Defect Summary – Section S

Defect #16 - Field defect

Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed

Definition: Membrane flashing holes/splits/open laps
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Base flashing holes, splits or open laps should be repaired using compatible single-ply materials.



Defect #16 - Field defect (Continued)

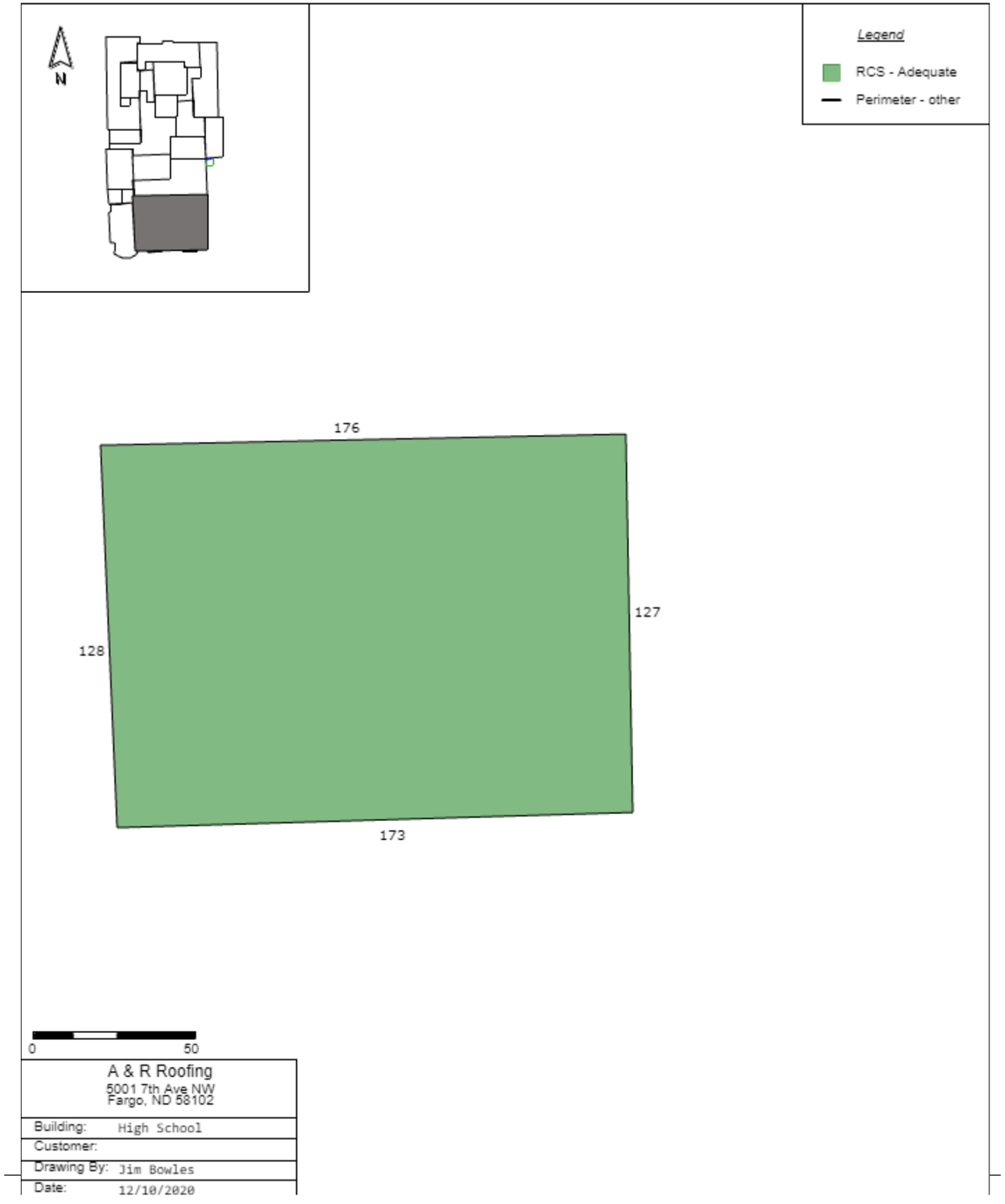
Defect: Flashing damage or deterioration (EA).
Severity: Holes, splits, cuts, or tears, obvious water penetration.
Status: Proposed



Roof Condition Score – Section S

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	5
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	5
	Total	**12**
	FINAL SCORE (100 – Total)	**88**
	ROOF CONDITION SCORE: Adequate	

Section T



A & R Roofing	
5001 7th Ave NW Fargo, ND 58102	
Building:	High School
Customer:	
Drawing By:	Jim Bowles
Date:	12/10/2020

Section Summary – T



Section ID:	T
Area:	22,279 SF
Year Installed:	2010 (approximate)
Floors:	1
Sensitivity:	None
Roof Condition Score:	93 (Adequate)

Roof Type: Thermoplastic (Single ply - plastic)

Layers:

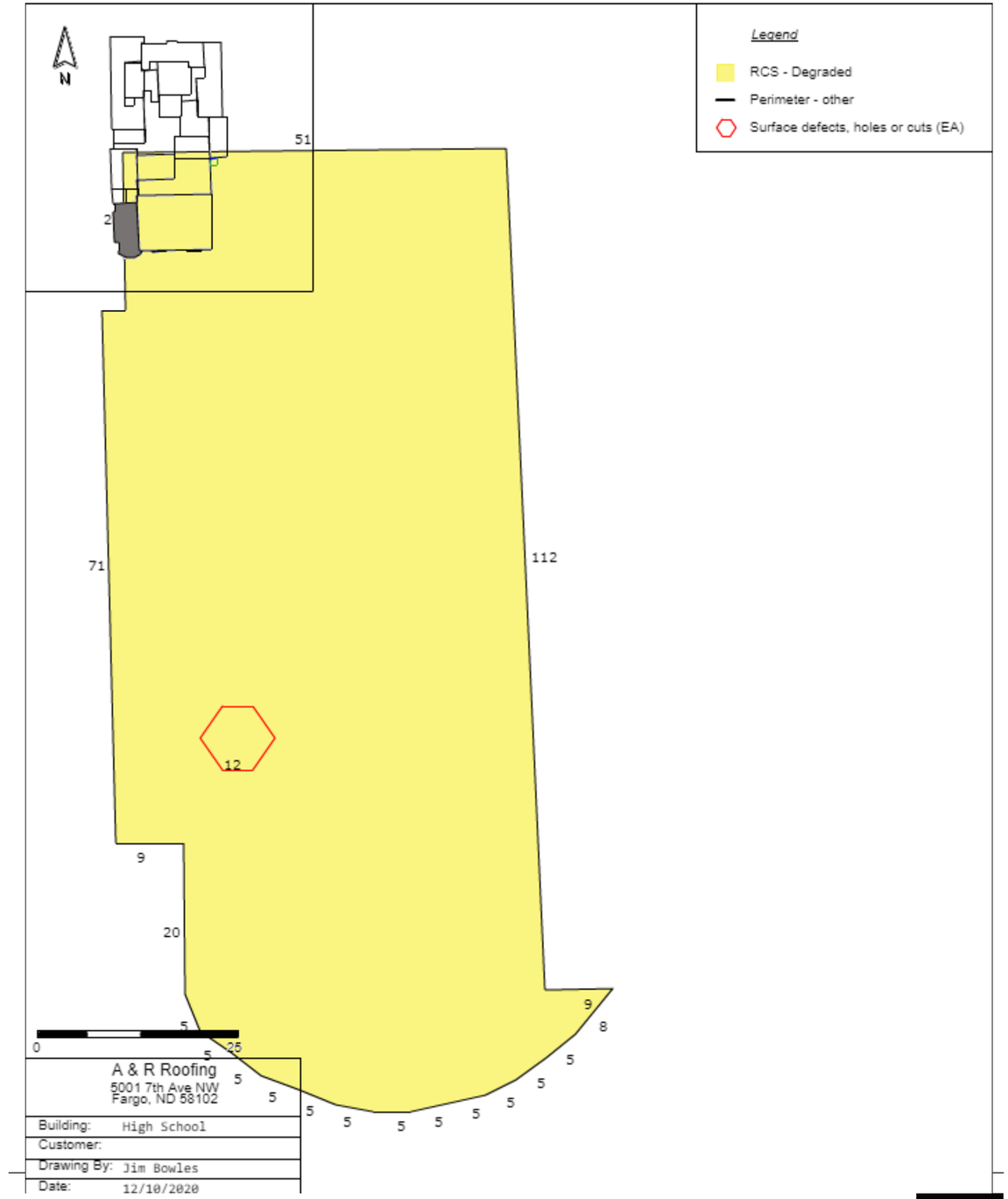
Notes: Roof is in good condition.

Roof has 5+ years of serviceability.

Roof Condition Score – Section T

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	5
	Total	**7**
	FINAL SCORE (100 – Total)	**93**
	ROOF CONDITION SCORE: Adequate	

Section U



Section Summary – U



Section ID: U

Area: 6,628 SF

Year Installed: 2010 (approximate)

Floors: 1

Sensitivity: None

Roof Condition Score: 76 (Degraded)

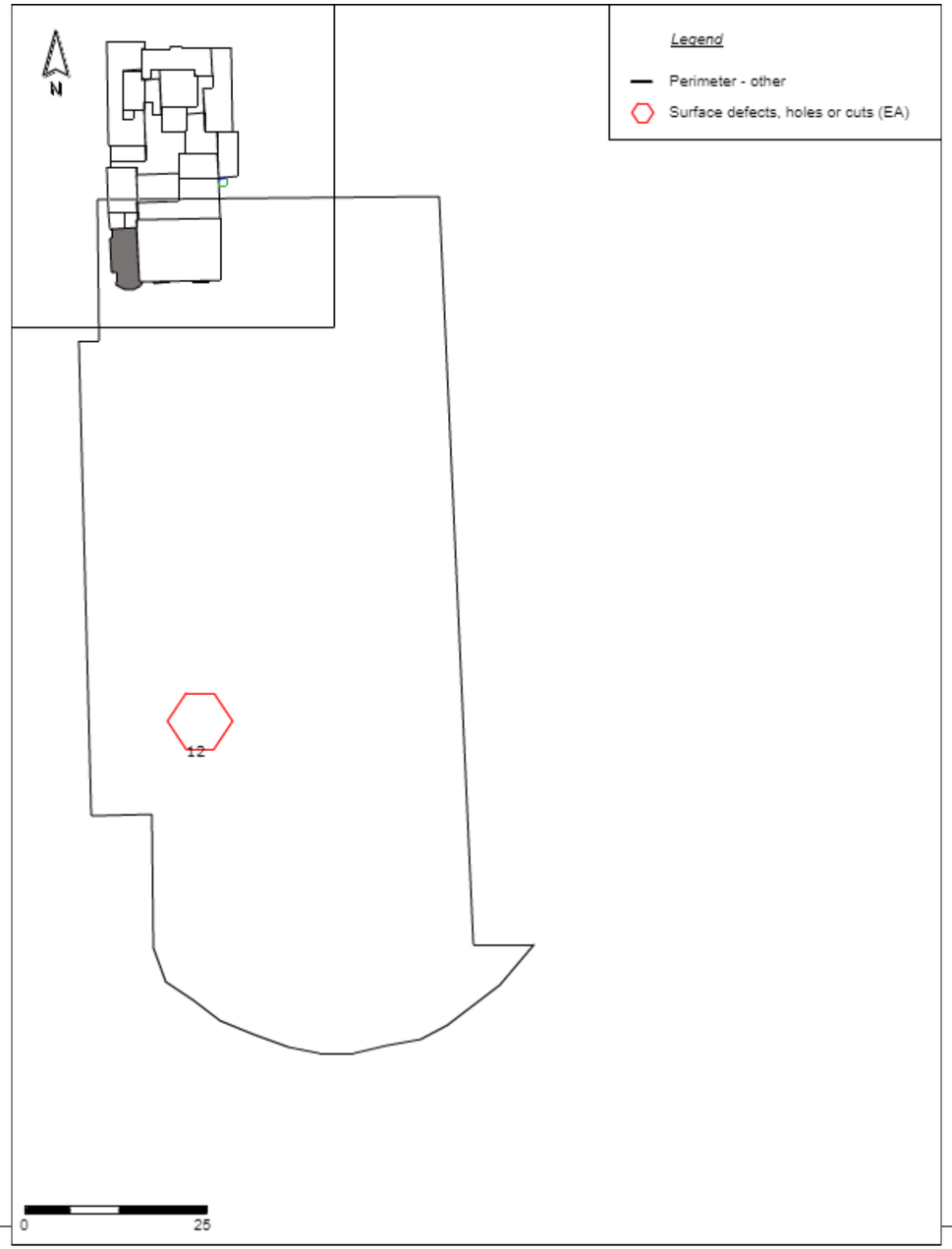
Roof Type: Thermoplastic (Single ply - plastic)

Layers:

Notes: Roof is in good condition. Minor repairs are recommended.

If recommeneded repairs are made roof would have 5+ years of serviceabiltiy.

Defect Map – Section U



Defect Summary – Section U

Defect #12 - Field defect

Defect: Surface defects, holes or cuts (EA).
Severity: Cuts or abrasions to membrane allowing water to penetrate roof system.
Status: Proposed

Definition: Membrane hole(s)
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Membrane hole shouldl be repaired with compatible membrane cover stirp.



Defect #12 - Field defect (Continued)

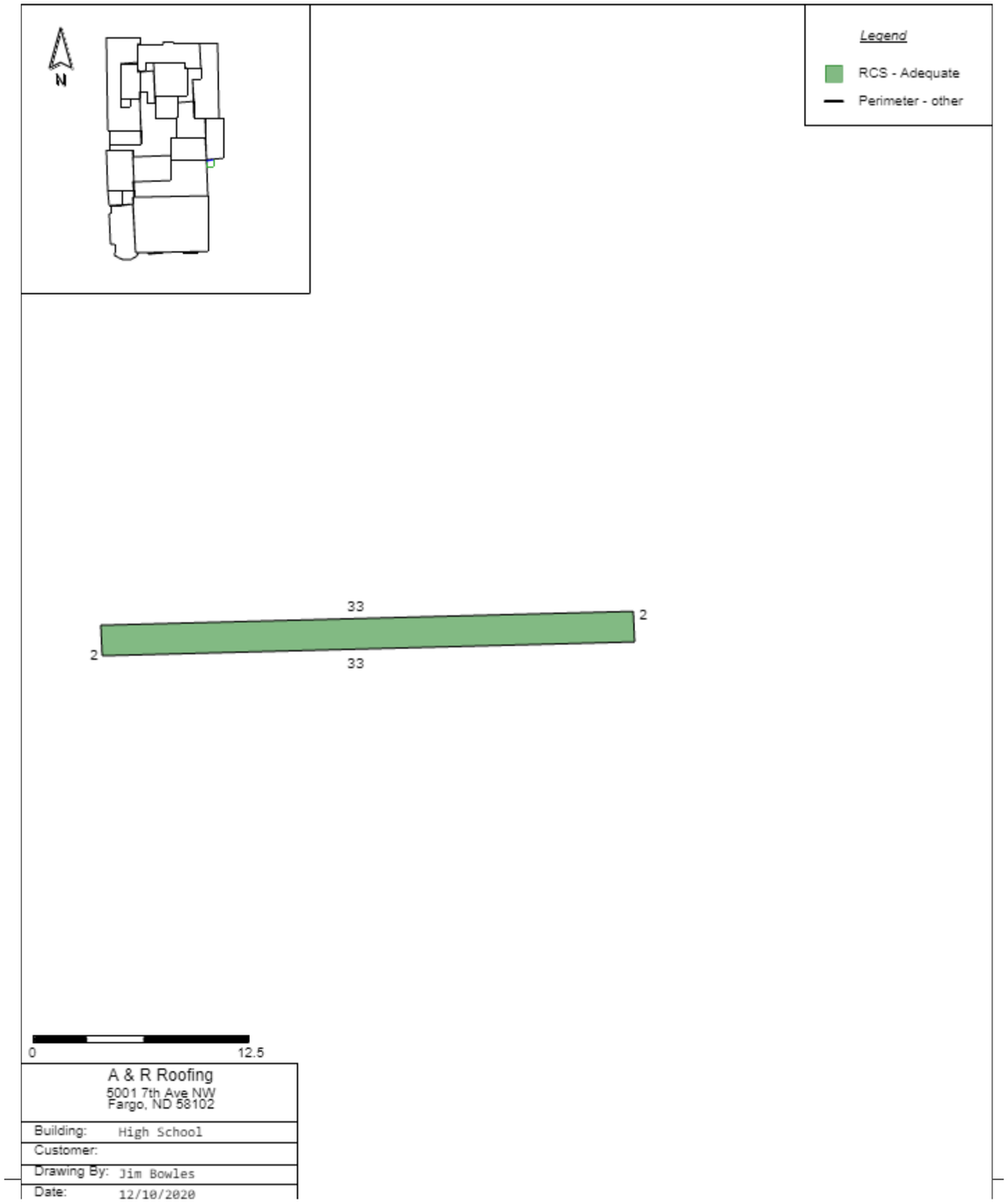
Defect: Surface defects, holes or cuts (EA).
Severity: Cuts or abrasions to membrane allowing water to penetrate roof system.
Status: Proposed



Roof Condition Score – Section U

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	5
2	Does the roof leak every time it rains in 3 or fewer places? (5)	5
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	7
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	5
	Total	**24**
	FINAL SCORE (100 – Total)	**76**
	ROOF CONDITION SCORE: Degraded	

Section V



Section Summary – V



Section ID:	V
Area:	66 SF
Year Installed:	Unknown
Floors:	1
Sensitivity:	None
Roof Condition Score:	93 (Adequate)

Roof Type: Thermoplastic (Single ply - plastic)

Layers:

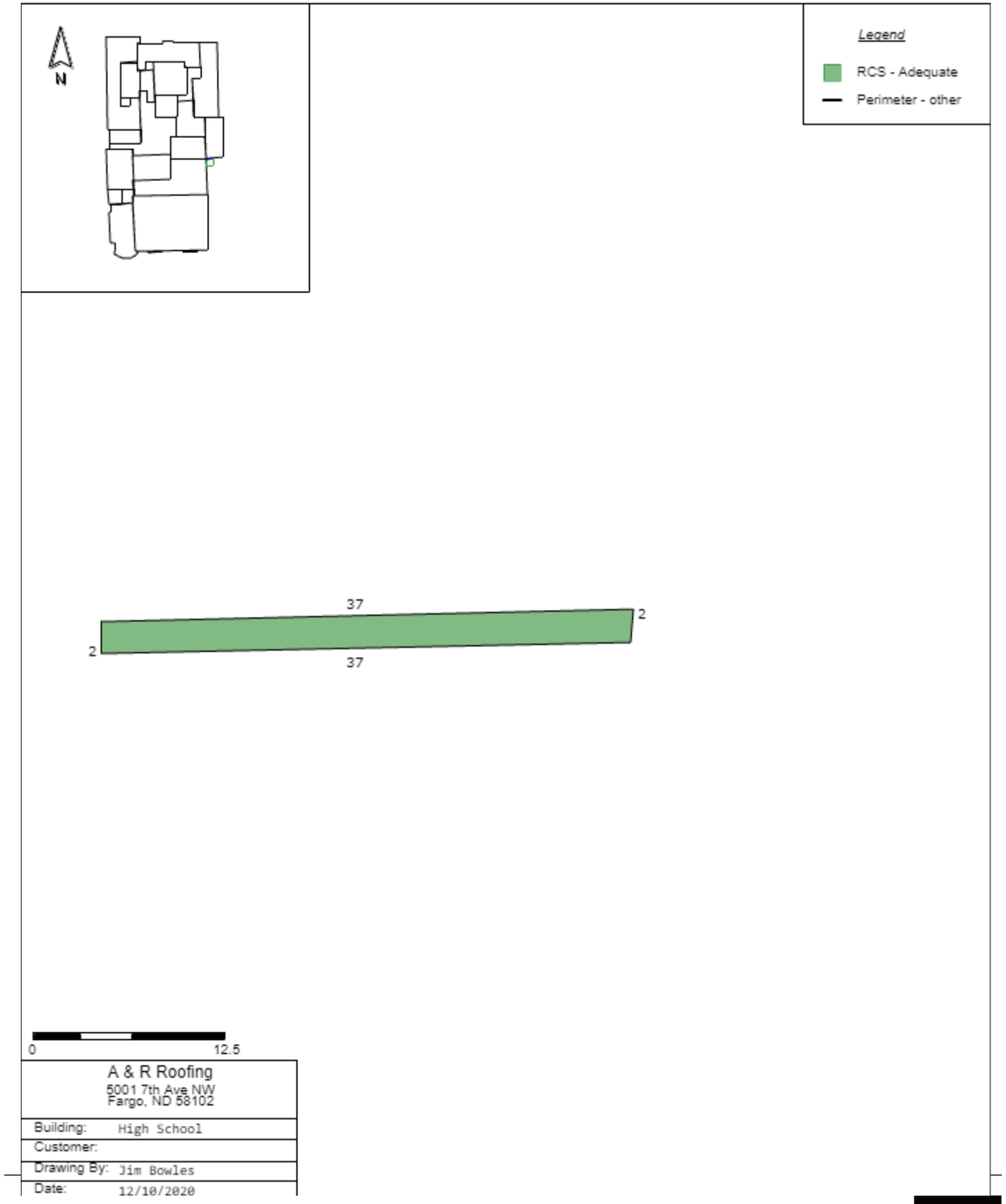
Notes: Roof is in good condition.

Roof has 5+ years of serviceability.

Roof Condition Score – Section V

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	5
	Total	**7**
	FINAL SCORE (100 – Total)	**93**
	ROOF CONDITION SCORE: Adequate	

Section W



Section Summary – W



Section ID: W

Area: 86 SF

Year Installed: Unknown

Floors: 1

Sensitivity: None

Roof Condition Score: 93 (Adequate)

Roof Type: Thermoplastic (Single ply - plastic)

Layers:

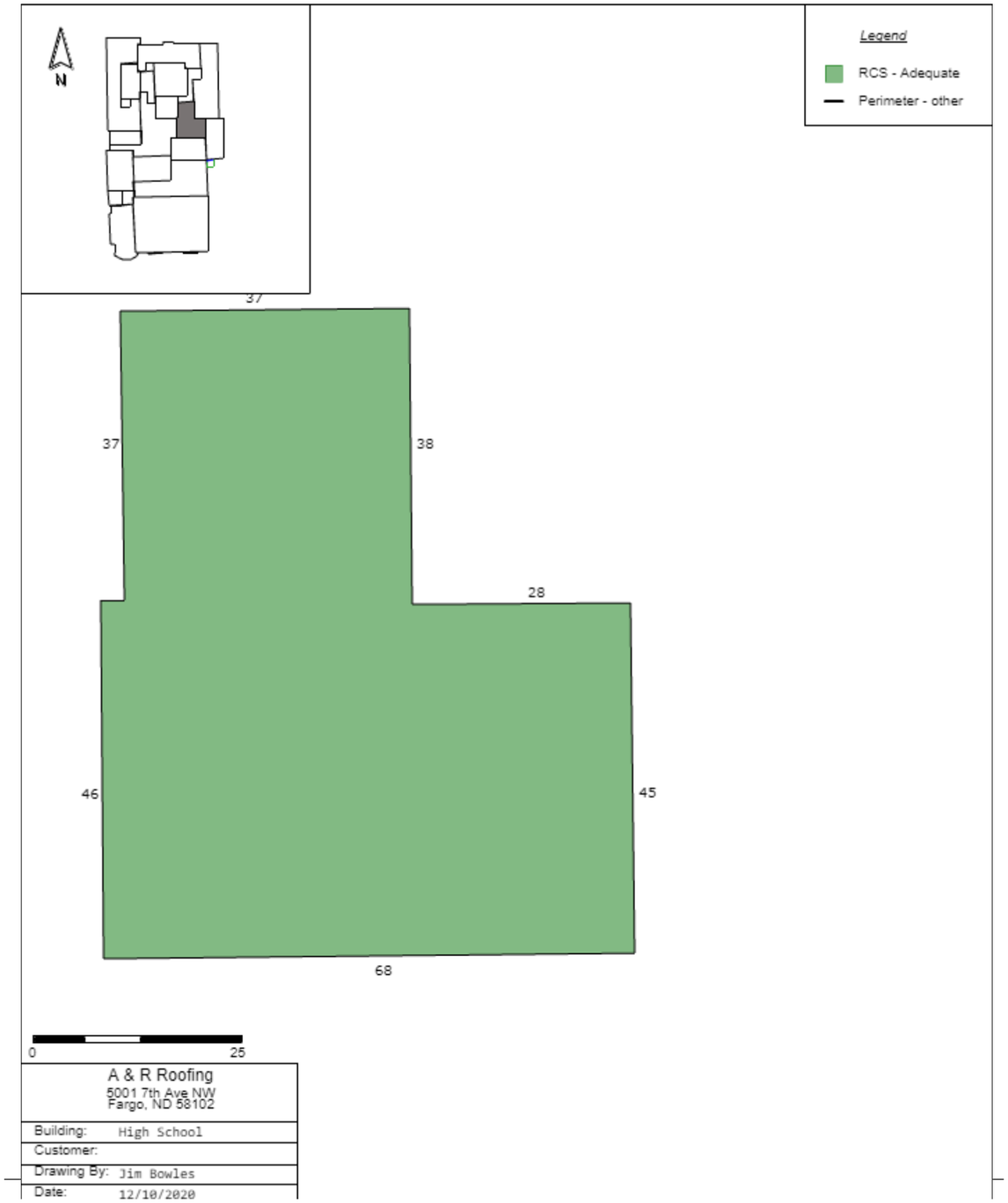
Notes: Roof is in good condition.

Roof has 5+ years of serviceability.

Roof Condition Score – Section W

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	5
	Total	**7**
	FINAL SCORE (100 – Total)	**93**
	ROOF CONDITION SCORE: Adequate	

Section X



A & R Roofing
5001 7th Ave NW
Fargo, ND 58102

Building:	High School
Customer:	
Drawing By:	Jim Bowles
Date:	12/10/2020

Section Summary – X



Section ID:	X
Area:	4,478 SF
Year Installed:	Unknown
Floors:	1
Sensitivity:	None
Roof Condition Score:	91 (Adequate)

Roof Type: Thermoplastic (Single ply - plastic)

Layers:

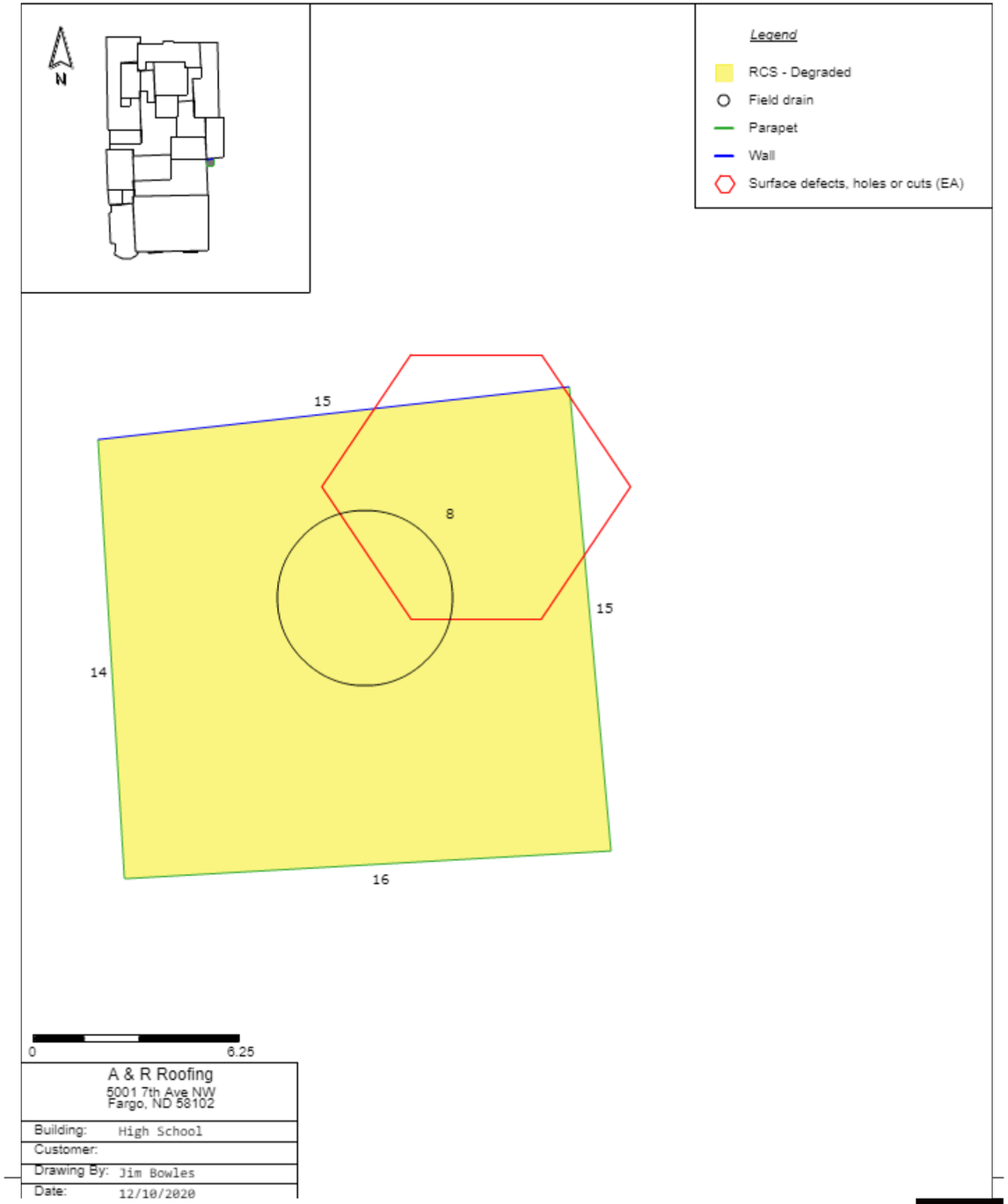
Notes: Roof is in good condition.

Roof has 5+ years of serviceability.

Roof Condition Score – Section X

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	
2	Does the roof leak every time it rains in 3 or fewer places? (5)	
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	2
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	7
	Total	**9**
	FINAL SCORE (100 – Total)	**91**
	ROOF CONDITION SCORE: Adequate	

Section Y



Section Summary – Y



Section ID:	Y
Area:	230 SF
Year Installed:	2010 (approximate)
Height:	20 FT
Floors:	1
Sensitivity:	None
Roof Condition Score:	80 (Degraded)

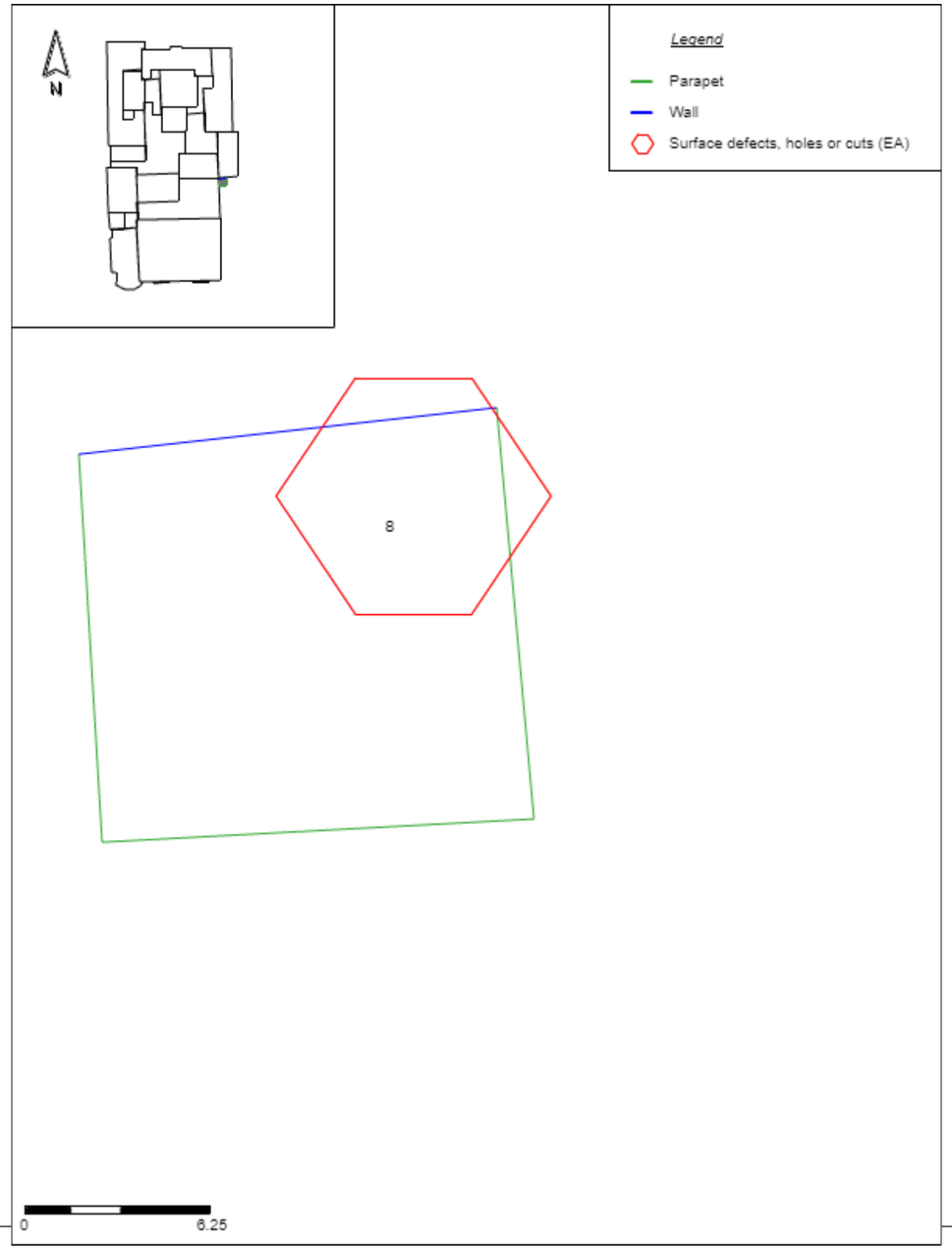
Roof Type: Thermoset (Single ply - rubber)

Layers:

Notes: Roof is in good condition. Minor repairs are recommended.

If recommended repairs are made roof would have 5+ years of serviceabiltiy.

Defect Map – Section Y



Defect Summary – Section Y

Defect #8 - Field defect

Defect: Surface defects, holes or cuts (EA).
Severity: Cuts or abrasions to membrane allowing water to penetrate roof system.
Status: Proposed

Definition: Membrane hole(s)
Consequence: Existing or potential source for water penetration and damage to roof system and building.

Recommendation: Membrane hole shouldl be repaired with compatible membrane cover stirp.



Defect #8 - Field defect (Continued)

Defect: Surface defects, holes or cuts (EA).
Severity: Cuts or abrasions to membrane allowing water to penetrate roof system.
Status: Proposed



Roof Condition Score – Section Y

#	Question (Max Value) / Notes	Score
1	Are there roof leaks? (5)	5
2	Does the roof leak every time it rains in 3 or fewer places? (5)	5
3	Does the roof leak every time it rains in 4 or more places? (10)	
4	Have the past roof leaks caused significant interior damage? (10)	
5	Has the roof been leaking for over 1 year? (7)	7
6	Is there a moderate amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (3)	3
7	Is there an excessive amount of shrinkage, bridging, blisters, ridging, open laps, or splits? (5)	
8	Is there a moderate number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (3)	
9	Is there an excessive number of Metal-Coating defects/loose or missing fasteners/poor end lap conditions? (5)	
10	Is the surface of the roofing deteriorated excessively? (4)	
11	Are roofing felts exposed or are there open metal joints? (3)	
12	Is there excessive patching on the roof? (8)	
13	Equipment not on continuous curb/service not in curb (4)	
14	Is there a moderate number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (2)	
15	Is there an excessive number of cracks or openings in the flashing that are 4 inches or higher off of the roof level? (5)	
16	Does the flashing look deteriorated but does not appear to be letting water enter the building? (2)	
17	Does the flashing look deteriorated and appear to be letting the water enter the building in a few places? (6)	
18	Does the flashing look deteriorated and appear to be letting the water enter the building in an excessive number of places? (10)	
19	Is sheet metal loose and or missing? (3)	
20	Are the joints in the metal open to let water enter? (2)	
21	Is there indication of minimal standing water? (2)	
22	Is there indication of excessive standing water/a visual indication of the roof decking being low? (6)	
23	Is roof slope < 3 in per foot on shingle or metal roof? (2)	
24	Is roof slope < 5 in per foot on slate or shake roof? (4)	
25	Interrupted drain (no cricket)? (3)	
26	Miscellaneous and other conditions (15)	
	Total	**20**
	FINAL SCORE (100 – Total)	**80**
	ROOF CONDITION SCORE: Degraded	

A & R ROOFING Co. INC.

2021 Condition Assessment Report



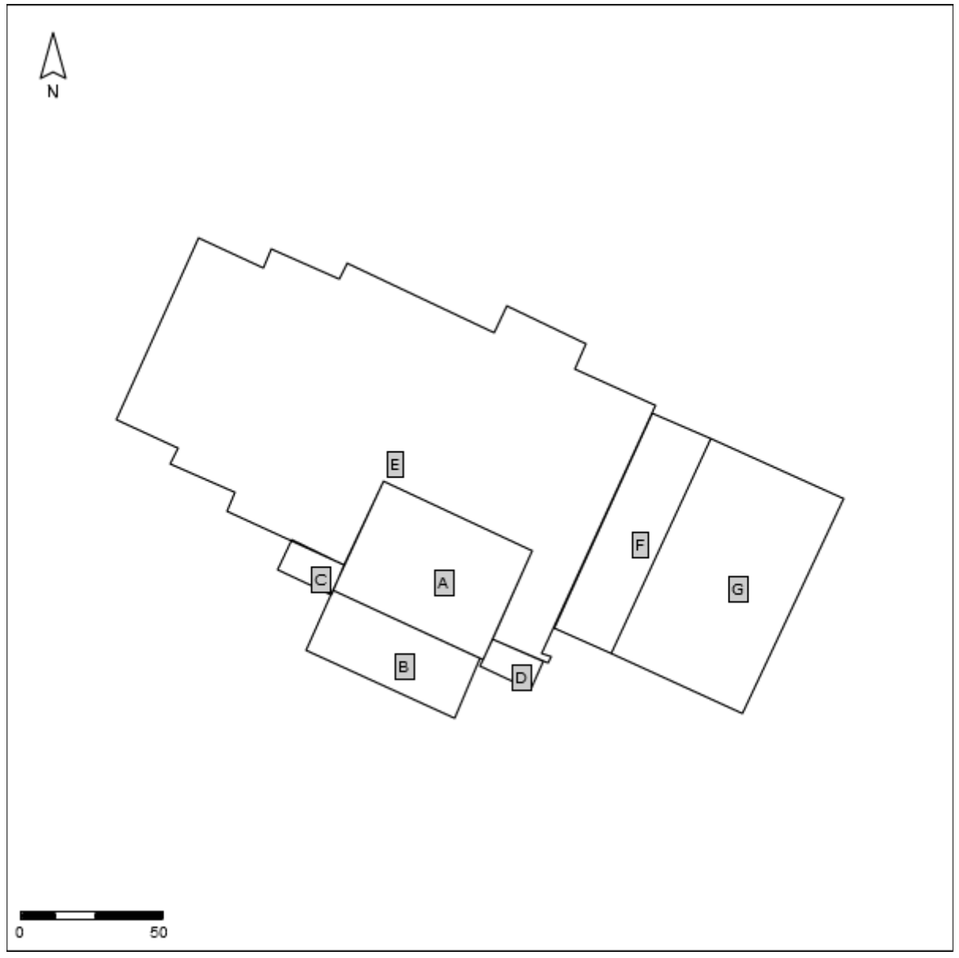
Sheyenne Valley Career and Tech Center
801 Valley Ave Se
Valley City, ND

Inspection Date: Wednesday, May 19, 2021

Building & Job Summary

Building Name	Sheyenne Valley Career and Tech Center
Building Address	801 Valley Ave Se Valley City, ND
Roof Area (total)	30,823 SF
Building Description	Building Type: School K-12 Building Zone: Industrial
Inspection Date	Wednesday, May 19, 2021
Inspector	A & R Roofing Tim Wolf jbowles@arroofing.us
Inspection Notes	Minor repairs are recommended

Section Key Plan



Total Area: 30,823 SF

Section Information

Section ID: A

Area: 3,098 SF

Roof Type: Built-up membrane

Roof Condition Score: 72 (Degraded)



Section ID: B

Area: 1,684 SF

Roof Type: Built-up membrane

Roof Condition Score: 73 (Degraded)



Section ID: C

Area: 302 SF

Roof Type: Metal

Roof Condition Score: 93 (Adequate)



Section ID: D

Area: 267 SF

Roof Type: Metal

Roof Condition Score: 93 (Adequate)



Section ID: E

Area: 17,717 SF

Roof Type: Metal

Roof Condition Score: 92 (Adequate)



Section ID: F

Area: 2,350 SF

Roof Type: Metal

Roof Condition Score: 92 (Adequate)



Section ID: G

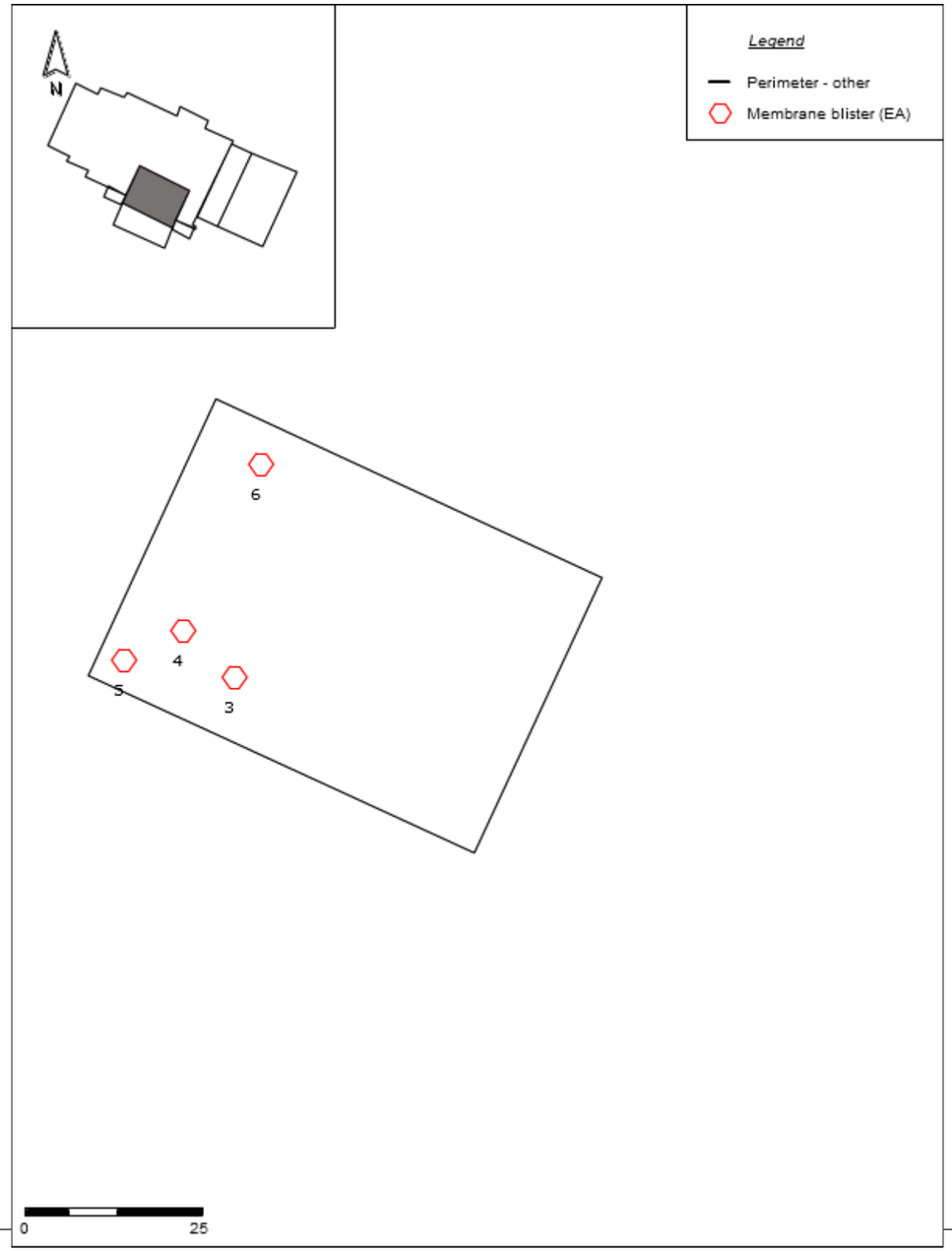
Area: 5,405 SF

Roof Type: Metal

Roof Condition Score: 93 (Adequate)



Defect Map – Section A



Defect Summary – Section A

Defect #3 - Field defect

Defect: Membrane blister (EA).
Severity: Blister with exposed felts or plies or blisters that are broken.
Status: Proposed

Definition: Membrane Blister(s)
Consequence: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.

Recommendation: Broken or exposed membrane felts at blisters or cracked ridges should be repaired using compatible hot, cold or torch applied modified bitumen materials.



Defect #3 - Field defect (Continued)

Defect: Membrane blister (EA).
Severity: Blister with exposed felts or plies or blisters that are broken.
Status: Proposed



Defect #4 - Field defect

Defect: Membrane blister (EA).
Severity: Blister with exposed felts or plies or blisters that are broken.
Status: Proposed

Definition: Membrane Blister(s)
Consequence: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.

Recommendation: Broken or exposed membrane felts at blisters or cracked ridges should be repaired using compatible hot, cold or torch applied modified bitumen materials.



Defect #4 - Field defect (Continued)

Defect: Membrane blister (EA).
Severity: Blister with exposed felts or plies or blisters that are broken.
Status: Proposed



Defect #5 - Field defect

Defect: Membrane blister (EA).
Severity: Blister with exposed felts or plies or blisters that are broken.
Status: Proposed

Definition: Membrane Blister(s)
Consequence: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.

Recommendation: Broken or exposed membrane felts at blisters or cracked ridges should be repaired using compatible hot, cold or torch applied modified bitumen materials.



Defect #5 - Field defect (Continued)

Defect: Membrane blister (EA).
Severity: Blister with exposed felts or plies or blisters that are broken.
Status: Proposed



Defect #6 - Field defect

Defect: Membrane blister (EA).
Severity: Blister with exposed felts or plies or blisters that are broken.
Status: Proposed

Definition: Membrane Blister(s)
Consequence: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.

Recommendation: Broken or exposed membrane felts at blisters or cracked ridges should be repaired using compatible hot, cold or torch applied modified bitumen materials.



Defect #6 - Field defect (Continued)

Defect: Membrane blister (EA).
Severity: Blister with exposed felts or plies or blisters that are broken.
Status: Proposed

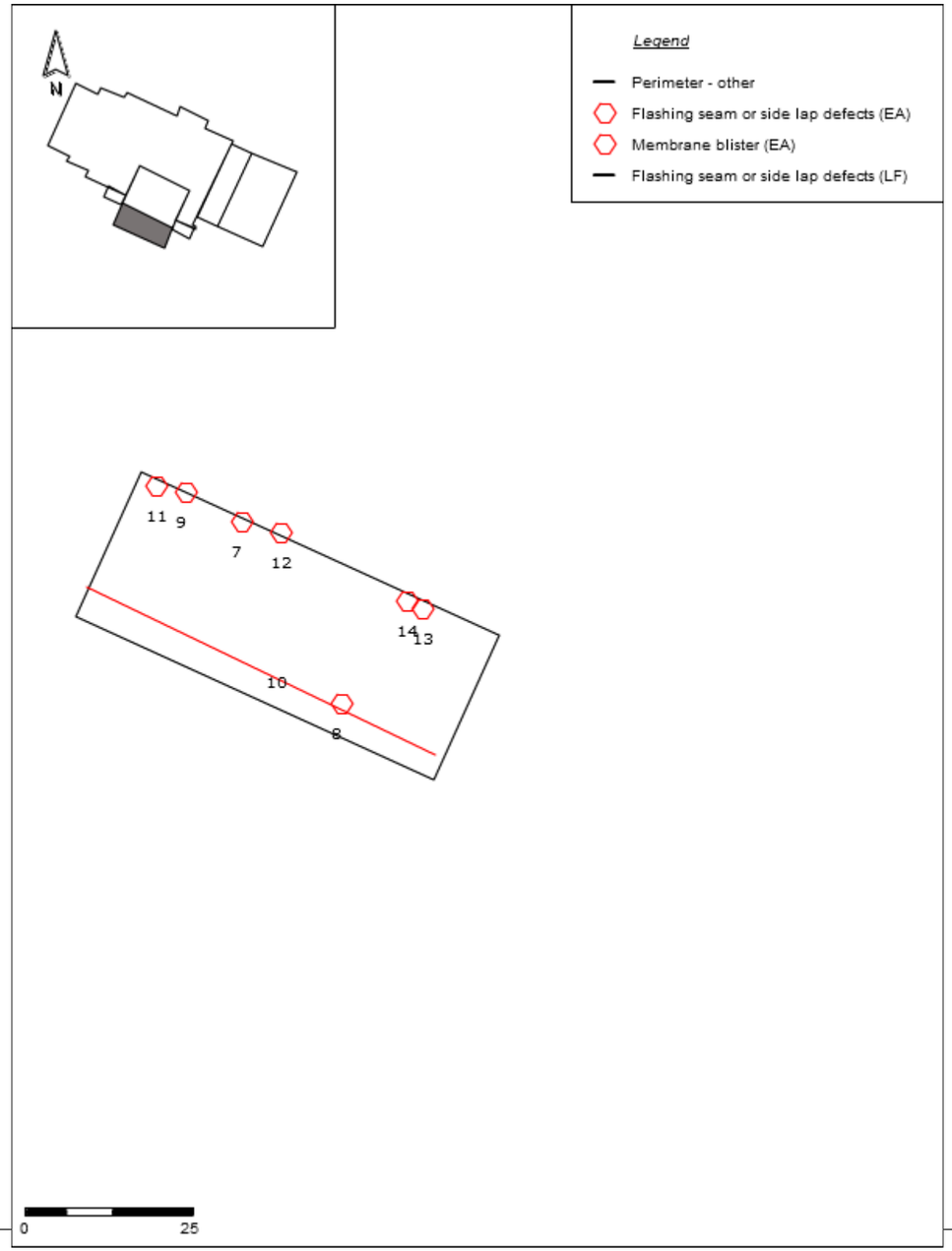


Defect #6 - Field defect (Continued)

Defect: Membrane blister (EA).
Severity: Blister with exposed felts or plies or blisters that are broken.
Status: Proposed



Defect Map – Section B



Defect Summary – Section B

Defect #7 - Field defect

Defect: Flashing seam or side lap defects (EA).
Severity: Seam or side lap is open, obvious water penetration.
Status: Proposed

Definition: Base flashing holes/splits/open laps
Consequence: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.

Recommendation: Base flashing holes, splits and/or open laps should be repaired using compatible hot, cold or torch applied modified bitumen materials.



Defect #7 - Field defect (Continued)

Defect: Flashing seam or side lap defects (EA).
Severity: Seam or side lap is open, obvious water penetration.
Status: Proposed



Defect #8 - Field defect

Defect: Membrane blister (EA).
Severity: Blister less than 1 SF with surface material intact; no exposed felts or plies.
Status: Proposed

Definition: Membrane Blister(s)
Consequence: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.

Recommendation: Broken or exposed membrane felts at blisters or cracked ridges should be repaired using compatible hot, cold or torch applied modified bitumen materials.



Defect #8 - Field defect (Continued)

Defect: Membrane blister (EA).
Severity: Blister less than 1 SF with surface material intact; no exposed felts or plies.
Status: Proposed



Defect #9 - Field defect

Defect: Flashing seam or side lap defects (EA).
Severity: Seam or side lap is open, obvious water penetration.
Status: Proposed

Definition: Base flashing holes/splits/open laps
Consequence: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.

Recommendation: Base flashing holes, splits and/or open laps should be repaired using compatible hot, cold or torch applied modified bitumen materials.



Defect #9 - Field defect (Continued)

Defect: Flashing seam or side lap defects (EA).
Severity: Seam or side lap is open, obvious water penetration.
Status: Proposed



Defect #9 - Field defect (Continued)

Defect: Flashing seam or side lap defects (EA).
Severity: Seam or side lap is open, obvious water penetration.
Status: Proposed



Defect #10 - Field defect

Defect: Flashing seam or side lap defects (LF).
Severity: Seam or side lap is open, obvious water penetration.
Length: 64 LF
Status: Proposed

Definition: Base flashing holes/splits/open laps
Consequence: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.

Recommendation: Base flashing holes, splits and/or open laps should be repaired using compatible hot, cold or torch applied modified bitumen materials.



Defect #10 - Field defect (Continued)

Defect: Flashing seam or side lap defects (LF).
Severity: Seam or side lap is open, obvious water penetration.
Status: Proposed



Defect #10 - Field defect (Continued)

Defect: Flashing seam or side lap defects (LF).
Severity: Seam or side lap is open, obvious water penetration.
Status: Proposed



Defect #10 - Field defect (Continued)

Defect: Flashing seam or side lap defects (LF).
Severity: Seam or side lap is open, obvious water penetration.
Status: Proposed



Defect #11 - Field defect

Defect: Flashing seam or side lap defects (EA).
Severity: Seam or side lap is open, obvious water penetration.
Status: Proposed

Definition: Base flashing holes/splits/open laps
Consequence: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.

Recommendation: Base flashing holes, splits and/or open laps should be repaired using compatible hot, cold or torch applied modified bitumen materials.



Defect #12 - Field defect

Defect: Flashing seam or side lap defects (EA).
Severity: Seam or side lap is open, obvious water penetration.
Status: Proposed

Definition: Base flashing holes/splits/open laps
Consequence: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.

Recommendation: Base flashing holes, splits and/or open laps should be repaired using compatible hot, cold or torch applied modified bitumen materials.



Defect #12 - Field defect (Continued)

Defect: Flashing seam or side lap defects (EA).
Severity: Seam or side lap is open, obvious water penetration.
Status: Proposed



Defect #13 - Field defect

Defect: Flashing seam or side lap defects (EA).
Severity: Seam or side lap is open, obvious water penetration.
Status: Proposed

Definition: Base flashing holes/splits/open laps
Consequence: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.

Recommendation: Base flashing holes, splits and/or open laps should be repaired using compatible hot, cold or torch applied modified bitumen materials.



Defect #13 - Field defect (Continued)

Defect: Flashing seam or side lap defects (EA).
Severity: Seam or side lap is open, obvious water penetration.
Status: Proposed



Defect #14 - Field defect

Defect: Flashing seam or side lap defects (EA).
Severity: Seam or side lap is open, obvious water penetration.
Status: Proposed

Definition: Base flashing holes/splits/open laps
Consequence: Permitting or could permit water entry and ensuing damage to roof system and/or interior of building.

Recommendation: Base flashing holes, splits and/or open laps should be repaired using compatible hot, cold or torch applied modified bitumen materials.



Defect #14 - Field defect (Continued)

Defect: Flashing seam or side lap defects (EA).
Severity: Seam or side lap is open, obvious water penetration.
Status: Proposed

