Progressive Design Collaborative, Ltd
3101 Poplarwood Court, Suite 320
Raleigh, North Carolina 27604
919-790-9989

ADDENDUM 01 – GENERAL

NORTH CAROLINA PROFESSIONAL SEAL 025020 ENGINEER STEVE W. CAMPBELL
6/27/23

DATE: June 27, 2023

PROJECT: ENCSD Mayfield Hall HVAC Upgrades
PDC Project No. 22035
SCO ID# 22-24314-01A

This Addendum, applicable to the work designed below, shall be understood to be and is a change to the bid documents and shall be part of and included in the contract for the above referenced project. All General, Supplementary and Special Conditions, etc., as originally specified or as modified below shall apply to these items.

Pre-Bid Agenda, Sign-in Sheet and ENCSD Campus Roof Report

Changes to Specifications:

Bid Form – Added HVAC contractor listing

END OF ADDENDUM 01 – GENERAL

Attachments: See list above

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PDC PROJECT NO. 22035
EASTERN NORTH CAROLINA SCHOOL FOR THE DEAF – MAYFIELD HALL HVAC
PRE-BID CONFERENCE MEETING MINUTES
JUNE 26, 2023 AT 10:30AM

Pre-Bid #2 Meeting Agenda

Bid date on July 13, 2023 at 2:00pm. Shall be received by Mr. Jon D. Long, AIA, Eastern NC School for the Deaf, MASSEY BUILDING, 1311 U.S. Hwy 301 N, Wilson, NC 27893

Should be labeled **"Bid: Attn Jon Long, NC Department of Public Instruction – ENCSD – Mayfield Hall HVAC (Bid Date) (Contractor) (License Number)"**

Provide 1 Original

5% Bid Bond is required

Performance and payment bonds are required on State forms

M/WBE paperwork must be filled out

All questions are due in writing by 3:00pm on 7/5/23

PDC will issue the final addendum on 7/6/23

Project duration is 180 calendar days.

Provide temporary toilets during construction

$250/day liquidated damages

Sales Tax forms and HUB documentation will be required with each monthly pay application.

Bid pricing must be held for 30 days.

Make sure you are familiar with the General and Supplementary Conditions.

All work must be inspected by PDC and the State Inspector

No work until HVAC, Electrical and doors are on site.

pdc

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Raleigh, North Carolina 27604
919-790-9989

PRE-BID #2 COMBINED SIGN IN SHEET

ENCSD Alford and Mayfield Halls HVAC
June 26, 2023 at 10:30am
PDC Project No. 22034 & 22035
SCO 22-24313-01A and 22-24314-01A

NAME	COMPANY	PHONE NUMBER	EMAIL ADDRESS
Steve W. Campbell, PE LEED AP	PDC	919-790-9989	scampbell@pdcengineers.com
Tim Carter	CTWilson	919-619-2368	Tim.Carter@CTWilson.com
John T. Williams	Watson Electric	252-756-4550 Ext. 1109	john.williams@watsonelec.com
BRIAN WRIGHT	PROCON ROOFING CORP.	336-690-3522	BWRIGHT@PROCONROOFING.COM
David Savary	Baker Mechanical	252-327-4051	dsavary@bakermechanicalinc.com
Billy Stewart	Group 3 Mgt Inc	252-648-1200	Bstewart@groupiiimgt.com
Jasper David	Group III Mgt	252-527-3333	JDavid@groupiiimgt.com
Joseph Rouse	Carolina Bay Construction	919 429 4240	info@carolinabayconstruction.com jrouse@carolinabayconstruction.com
Jeff Morgan	ENCSD	252-237-2456	jeff.morgan@esdb.dpi.nc.gov
Nick McLeod	SCI	919-268-0353	nmcleod@Searscontract.com
Jim Salano	Primus Structures	252 764 2455	Jim@primustructures.com

Section 00 52 00 - BID/ACCEPTANCE FORM

for

EASTERN NC SCHOOL FOR THE DEAF

MAYFIELD HALL HVAC UPGRADES

The project includes disconnecting the building from the existing steam supply and condensate return systems, providing four new split system heat pumps with electric heat and standalone controls, demolition of existing ceilings in areas to faciliate the work, new ceilings in areas where ceiling is required to be removed, patching holes in exterior walls where thru-the-wall AC units are removed, and minor patching and painting. The building electrical service will also be upgraded to support the additional HVAC load.

We are in receipt of

Addendum 1 _________ Addendum 2 _________ Addendum 3 _________
Addendum 4 _________ Addendum 5 _________ Addendum 6 _________

The undersigned, as bidder, proposes and agrees if this bid is accepted to contract with the State of North Carolina through NC Department of Public Instruction for the furnishing of all materials, equipment, and labor necessary to complete the construction of the work described in these documents in full and complete accordance with plans, specifications, and contract documents, and to the full and entire satisfaction of the Owner for the sum of:

BASE BID: ____Dollars $____________

ALTERNATE 1: REMOVAL & REPLACEMENT OF CEILING AS NOTED ON DWGS__
____Dollars $____________

ALTERNATE 2: OWNER PREFERRED BRAND OF DOOR HARDWARE
____Dollars $____________

_______________________________________ _____________________________
HVAC Subcontractor License #:

_______________________________________ _____________________________
Electrical Subcontractor License #:

Respectively submitted this ______________ day of ________________ 202_

____
(Contractor’s Name)

By:

Title: ________________________________(Owner, partner, corp. Pres. Or Vice President)

Address:

Email Address:

(Corporate Seal)

License #:

Title:

ACCEPTED by ____________________________

Total amount of accepted by the owner: ____________________

TITLE:

END OF SECTION 00 52 00

RICHARD A. NUHN P.E. CONSULTANTS

CAMPUS WIDE STUDY FOR
EASTERN NORTH CAROLINA SCHOOL FOR THE DEAF

WILSON, NORTH CAROLINA

Prepared By:

Rick Nuhn
Tad Furrow

Produced By:
Fearless Productions

Table of Contents

Section 1.0 – Summary Report

INTRODUCTION

This report presents the results of an engineering study of the roofing systems for the various buildings of the Eastern North Carolina campus of the School for the Deaf in Wilson, North Carolina. An on-site investigation was conducted on April 11 and May 5, 2022. Each visit consisted of a visual examination of all roof areas with core cuts made on May 5. Authorization to perform the engineering study was obtained through Mr. Jon Long, Architect with the School Planning Section at the North Carolina Department of Public Instruction.

PURPOSE

Presented in this report will be a summary of the actual roof conditions, roofing system evaluation, analysis, remedial action priority, and recommendations. The site visit was used to evaluate the current physical condition of the roof areas, make random samples of roofing system components, and document the various components of the roof areas.

The roofs were also reviewed for conditions surrounding the roofing system that can possibly contribute to moisture infiltration into the building. These items include defective materials on roof-mounted equipment, improper detailing of equipment supports, and damage to walls, gutters, downspouts, etc. above and below the roof surface. All these items contribute to the success or failure of the roofing system's ability to act as a watertight membrane over its expected service-life.

BACKGROUND INFORMATION

There are eight buildings evaluated for this report. These buildings were identified as the Alford Building, Eagles Hall, the Independent Living Center (ILC), Massey Activity Center, Mayfield Hall, McAdams Hall, Vestal Hall, and Woodard Hall. Additionally, there are several small utility structures adjacent to these buildings. These small buildings will not be included in this report.

The age of the buildings and the year of installation of the current roofing system vary greatly. Roofing systems for McAdams Hall and Vestal Hall were replaced around 2000. Woodard Hall was replaced in 2002 with Alford Building and Mayfield Hall replaced in 2007. Eagles Hall was also reroofed, but there is no documentation as to an approximate date. Massey Activity Center and ILC are the original roofing system.

At this time, only the roofs on Alford Building and Mayfield Hall are under warranty.

To properly summarize these roof areas in detail, a section in the report has been prepared in Section 2.0, entitled “Historical Profile.” Additionally, test cuts, referred to as cores, were taken of each area to confirm the existing roofing materials and are summarized in Section 3.2 - “Core Test Data”.

DESCRIPTION OF EXISTING CONDITIONS AND OBSERVATIONS

The roof areas were walked and visually examined for physical damage and other deficiencies that would affect the watertight integrity of the roofing system. Although, documentation of every potential roofing system deficiency would be very difficult, we have attempted to identify items that impact the watertight integrity and long-term performance of the roofing systems.

Attached to this report is Section 3.1 entitled “Inspection Notes", that details each roof area and significant items of concern during this evaluation. The following is a brief summary of these comments.

Overall, the field of the roof on most of the buildings was in fair to good condition. Buildings where the field of the roof is in poor condition include Eagles and Vestal Halls. Generally, the roofing systems replaced since 2002 – Woodard Hall, Mayfield Hall, and Alford Building – are each performing well and have no significant problems.

Test samples of all roof areas indicate that the roofing systems generally have a minimum amount of insulation. All samples taken were dry, but a more thorough examination, such as an infrared scan, would be required to assure the Owner that there is no entrapped moisture.

With the exception of Eagles and Vestal Halls, the base flashing of perimeter walls was in fair to good condition on most the roof areas. The flashing of typical roof features, such as pitch pockets, roof drains, unit curbs, and vent stacks, are also in fair to good condition.

Due to the lack of slope in the roof surface, many of the roof areas have poor drainage characteristics and would not meet recommendations of the NRCA and many building code authorities. The gutter and downspout systems on the steep-slope roof areas of Woodard Hall and ILC are in good condition with no remedial work documented.

ROOFING SYSTEM PRIORITIES AND RECOMMENDATIONS

Limited remedial work or future replacement of the roofing systems, in portions of several buildings, is our recommendation at this time. We have identified Vestal Hall as having the roofing assembly with the highest priority for replacement. Eagles Hall a high priority, as well, if-and-only-if the building is determined to be reopened. The roofing membrane on Massey Activity Center is nearing at the end of its service life; with replacement forecast within 5-8 years. The roof assemblies on the other buildings should be serviceable for the next 10 years with proper preventative maintenance.

As with any engineering problem, there are many solutions to obtaining a watertight roofing system. Determination of the proper roofing system, or repair procedure, will require further investigation and is outside the scope of this study.

To assess to the most cost-effective solution, the importance of maintaining a watertight roofing system as it relates to the operations of the building must be addressed. Priorities may be identified in many ways. A suggested level of priorities is as follows:

- Should water entry cause interruptions to operations, damage to supporting structure, or suggest a safety concern, the **highest** priority should be assigned.
- Should water entry into the building not interfere with the operations but cause physical damage to equipment or furnishings, a **moderate** level of priority can be assigned.
- Water-entry into the building is minimal and can be contained with limited measures, the **lowest** level of priority can be assigned.

The need to establish a project replacement budget has become increasingly difficult in the past two years. Availability of adequate labor, supply-chain interruptions, shipping delays, and other issues have made accurately estimating costs difficult in the short-term, as well as forecasting costs in the future. Based on project bids that have been recently re-bid – with the exact same scope – costs of projects have escalated between 25% and 50% in the span of the last year. For the purposes of this report, estimating tables have been included in the Appendix that can be used as aids in forecasting costs. The Estimate breaks each building down by roof area, with square footage and unit costs based on current pricing. In addition, escalation fees have been taken into account at a rate of 5% annually. This will allow the Owner to replace individual areas or entire building roofs depending on funding available.

CONCLUSION

Based on this assessment, we find that the roofing systems on several buildings to be in good condition and should be serviceable for many years with a professional maintenance program. These buildings would include all areas of Woodard Hall, Mayfield Hall, Alford Building, and the Independent Living Center (ILC).

The roofing systems on Vestal Hall and Eagles Hall that are over 20 years old are approaching the end of their expected service life. Attempts to maintain these roof areas for an extended time will not be as cost-effective as replacing the roofing system.

The roofs on Massey Activity Center and McAdams Hall are also in excess of 20 years old but should have additional service-life with proper preventative maintenance. Should reroofing projects be budgeted, roofing system replacement projects should have several major design criteria evaluated. This would include providing positive slope to drain on all roof areas and determining optimum insulation for energy efficiency.

As with any facility, we recommend addressing all roof leaks so as to prevent deterioration of roofing system components, to provide a safer working environment, limit the potential for structural damage, and to minimize downtime or interference with daily operations. Several roof areas of this facility would benefit from an aggressive roof maintenance program, including semi-annual inspections by well-trained roofing contractors.

At the conclusion of the report is an appendix with drawings and spreadsheets for your use that summarize the field data and provide information for cost analysis. They are broken down into individual roof area for each building so roofing can be budgeted in a manner that does not require replacing entire building if funding does not allow for complete replacement. Costs for skylight replacement are also included.

This concludes our engineering study for the Eastern North Carolina School for the Deaf. Additional supporting information is found in subsequent sections of this report, including photographic documentation. Richard A. Nuhn, P.E. Consultants appreciates the opportunity to have worked with you on this portion of the project. Should you have any questions or require additional information, please contact our office.

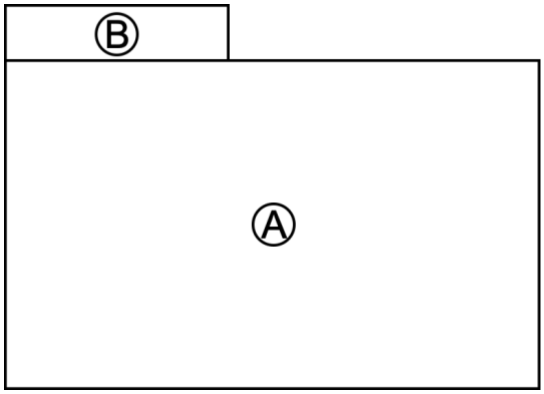
Sincerely,

Rick Nuhn

Richard A. Nuhn, P.E
Principal Registered Engineer

Section 2.0 – Historical Profile

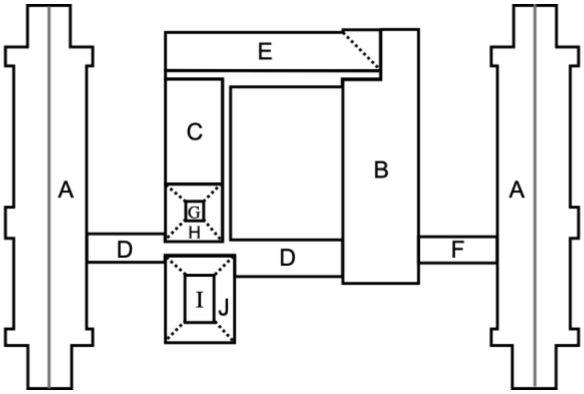
Campus Map



OWNERS NOTES

YEAR OF CONSTRUCTION	1981. Roof was replaced in 2007.
YEAR OF MAJOR ADDITIONS	Metal roof on west side appears to be added at a later date.
SQUARE FOOTAGE	Approximately 13,500 Sq. Ft.
STRUCTURAL SYSTEM	Structural steel beams and steel bar joists. Roof deck is 1.5” metal deck.
ROOF COMPOSITION	2-ply modified bitumen membrane torch-applied to lightweight insulating concrete, sloped to drain.
DRAINAGE CONDITIONS	Roof slope is approximately 1/8" per ft. Localized ponding was observed which is the result of debris build-up at roof drain strainers. Drainage is provided by interior roof drains.
ENERGY EFFICIENCY CONCERN	Insulation will not meet current code requirements

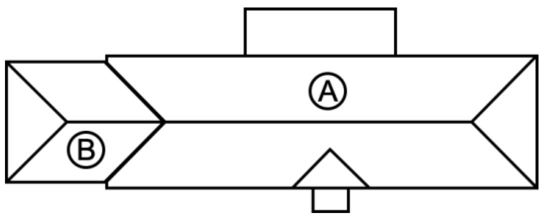
AREA ID	ROOF TYPE	SQUARE FT.	CONDITION	BUILT DATE	INSTALL DATE	AGE OF ROOF	YR. REPLACE
A	Modified Bitumen	12,650	GOOD	1981	2007	15	(u)
B	Metal Panels	900	GOOD				(u)



OWNERS NOTES

YEAR OF CONSTRUCTION	1965. Current roofing assemblies are not original. No date for reroofing of the building. Estimated to be over 25 years ago.
YEAR OF MAJOR ADDITIONS	None
SQUARE FOOTAGE	Approximately 55,900 Sq. Ft.
STRUCTURAL SYSTEM	Precast concrete frame with precast concrete slabs for roof deck.
ROOF COMPOSITION	The sloped roof area has precast concrete slab decking with a built-up roof. The metal deck is supported by 3" high steel Z-purlins attached to concrete. The low slope roof areas have a concrete deck with spray-on foam insulation with a white coating.
DRAINAGE CONDITIONS	Steep-slope roof areas - Section H and J - drain to continuous gutters. Sections A, B, and E do not have gutter edge. The low-slope roof areas have minimal slope to interior roof drains. Ponding water was observed on the foam-roof areas.
ENERGY EFFICIENCY CONCERN	Insulation will not meet current code requirements

AREA ID	ROOF TYPE	SQUARE FT.	CONDITION	BUILT DATE	INSTALL DATE	AGE OF ROOF	YR. REPLACE
A	Metal Panels	27,750	POOR	1965	1990	32	(u)
B	Metal Panels	9,300	POOR	1965	1990	32	(u)
C	SPUF	3,050	POOR	1965	1990	32	(u)
D	SPUF	6,200	POOR	1965	1990	32	(u)
E	Metal Panels	3,800	POOR	1965	1990	32	(u)
F	SPUF	1,200	POOR	1965	1990	32	(u)
G	SPUF	150	POOR	1965	1990	32	(u)
H	Metal Panels	1,450	POOR	1965	1990	32	(u)
I	SPUF	650	POOR	1965	1990	32	(u)
J	Metal Panels	2,350	POOR	1965	1990	32	(u)

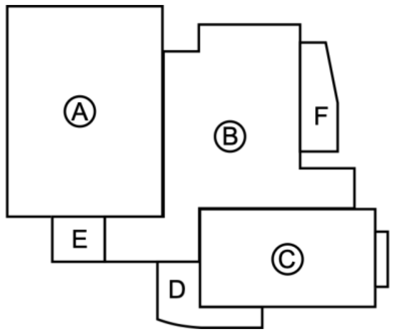


OWNERS NOTES

YEAR OF CONSTRUCTION	Unknown
YEAR OF MAJOR ADDITIONS	None
SQUARE FOOTAGE	Approximately 10,800 Sq. Ft.
STRUCTURAL SYSTEM	Structural steel beams and steel bar joists. Roof deck is a 1.5” metal deck with nail-base for the shingle securement. Original construction drawings are not available. Structural system is assumed based on limited visual access.
ROOF COMPOSITION	Asphalt shingles fastened to nail-base over metal deck.
DRAINAGE CONDITIONS	Gutters and downspouts are original and appear to be in good condition.
ENERGY EFFICIENCY CONCERN	Insulation will not meet current code requirements

AREA ID	ROOF TYPE	SQUARE FT.	CONDITION	BUILT DATE	INSTALL DATE	AGE OF ROOF	YR. REPLACE
A	Shingles	8,000	GOOD				(u)
B	Shingles	2,750	GOOD				(u)

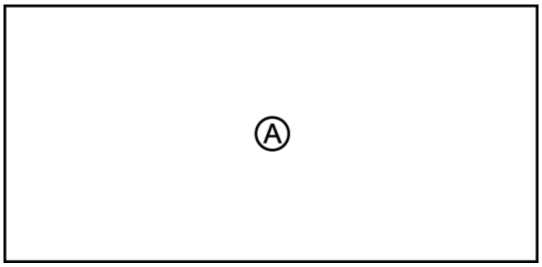
Massey Activity Center



OWNERS NOTES

YEAR OF CONSTRUCTION	1996. Roofing system is original construction.
YEAR OF MAJOR ADDITIONS	Entry lobby low roof appears to have been added after original construction. No documentation.
SQUARE FOOTAGE	Approximately 18,000 Sq. Ft.
STRUCTURAL SYSTEM	Structural steel beams and steel bar joists. Roof deck is 1.5" metal decking.
ROOF COMPOSITION	Mechanically fastened EPDM single-ply roofing membrane over 1.5" of isocyanurate insulation, mechanically-fastened to the metal deck. Slope appears to be in the structural steel.
DRAINAGE CONDITIONS	Roof slope is approximately 1/8" per foot. Drainage is to interior roof drains with pipe penetrations for the secondary drainage. Drainage is considered good for most roof areas.
ENERGY EFFICIENCY CONCERN	Insulation will not meet current code requirements

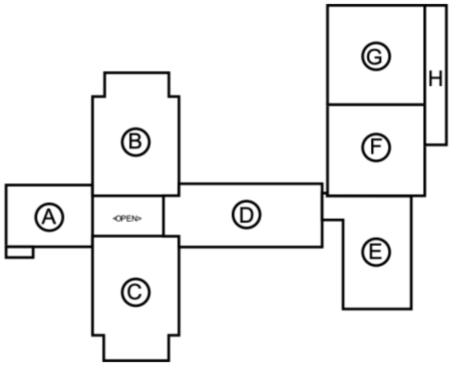
AREA ID	ROOF TYPE	SQUARE FT.	CONDITION	BUILT DATE	INSTALL DATE	AGE OF ROOF	YR. REPLACE
A	EPDM	6,350	FAIR	1996	1996	26	(u)
B	EPDM	6,350	FAIR	1996	1996	26	(u)
C	EPDM	3,300	FAIR	1996	1996	26	(u)
D	EPDM	800	FAIR	1996	1996	26	(u)
E	TPO	450	POOR	1996	(u)	(u)	(u)
F	EPDM	700	FAIR	1996	1996	26	(u)



OWNERS NOTES

YEAR OF CONSTRUCTION	1969 - Roof was replaced in 2007.
YEAR OF MAJOR ADDITIONS	None
SQUARE FOOTAGE	Approximately 12,500 Sq. Ft.
STRUCTURAL SYSTEM	Structural steel beams. Roof deck is concrete with a lightweight insulating concrete insulation; sloped to drain.
ROOF COMPOSITION	2-ply modified bitumen membrane, torch-applied to lightweight insulating concrete.
DRAINAGE CONDITIONS	Roof slope is approximately 1/8” per foot. Localized ponding was observed which is the result of debris build-up at roof drain strainers. Drainage is provided by interior roof drains. No secondary drains as the roof does not have parapet walls.
ENERGY EFFICIENCY CONCERN	Insulation will not meet current code requirements

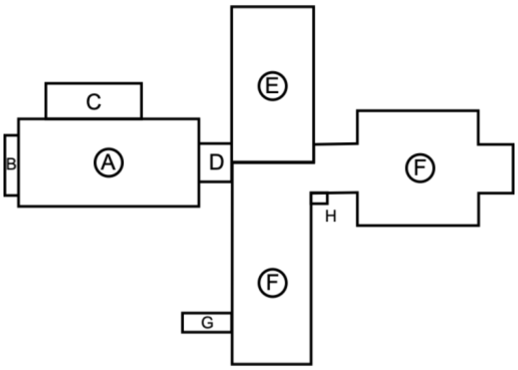
AREA ID	ROOF TYPE	SQUARE FT.	CONDITION	BUILT DATE	INSTALL DATE	AGE OF ROOF	YR. REPLACE
A	Modified Bitumen	12,500	GOOD	1969	2007	15	(u)



OWNERS NOTES

YEAR OF CONSTRUCTION	1971, Roof Replaced in 2000. (estimated date)
YEAR OF MAJOR ADDITIONS	Low roof on East side of gymnasium was added at a later date. No documentation. Gymnasium/pool roof areas (Williamson Gym) appears to have been added slightly after the classroom roofs as the roof drainage varies from other roof areas.
SQUARE FOOTAGE	Approximately 56,000 Sq. Ft.
STRUCTURAL SYSTEM	Roof deck is poured-in place concrete. Gym and Pool areas are Precast Concrete.
ROOF COMPOSITION	4-ply Built-up membrane, 6" of perlite insulation, placed directly over concrete deck. No documentation of any roof replacement projects.
DRAINAGE CONDITIONS	Roof slope is minimal, approximately 1/8" per ft. Drainage is by use of internal roof drains. Evidence of poor drainage of water on the roof was evidenced by staining of the gravel ballast through the facility.
ENERGY EFFICIENCY CONCERN	Insulation will not meet current code requirements

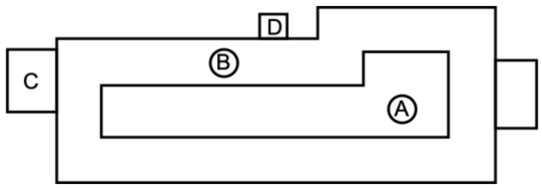
AREA ID	ROOF TYPE	SQUARE FT.	CONDITION	BUILT DATE	INSTALL DATE	AGE OF ROOF	YR. REPLACE
A	Built-Up (BUR)	4,800	FAIR	1971	2000	22	(u)
B	Built-Up (BUR)	8,700	FAIR	1971	2000	22	(u)
C	Built-Up (BUR)	8,700	FAIR	1971	2000	22	(u)
D	Built-Up (BUR)	8,300	FAIR	1971	2000	22	(u)
E	Built-Up (BUR)	7,150	FAIR	1971	2000	22	(u)
F	Built-Up (BUR)	7,400	FAIR	1971	2000	22	(u)
G	Built-Up (BUR)	8,250	FAIR	1971	2000	22	(u)
H	EPDM	2,750	FAIR	1971	(u)	(u)	(u)



OWNERS NOTES

YEAR OF CONSTRUCTION	1969. Roof Replaced in 2000. (estimated date)
YEAR OF MAJOR ADDITIONS	Smaller additions for elevator and ductwork were added at later dates that are unknown.
SQUARE FOOTAGE	Approximately 47,500 Sq. Ft.
STRUCTURAL SYSTEM	Roof deck is poured-in place concrete.
ROOF COMPOSITION	4-ply Built-up membrane, 6" of perlite insulation, placed directly over concrete deck. A white roof coating has been applied over the BUR to extend the service life of the BUR. No documentation of any roof replacement projects.
DRAINAGE CONDITIONS	Roof slope is minimal, approximately 1/8" per ft. Drainage is by use of internal roof drains.
ENERGY EFFICIENCY CONCERN	Insulation will not meet current code requirements

AREA ID	ROOF TYPE	SQUARE FT.	CONDITION	BUILT DATE	INSTALL DATE	AGE OF ROOF	YR. REPLACE
A	Coated BUR	10,900	POOR	1969	2000	22	(u)
B	Coated BUR	500	POOR	1969	2000	22	(u)
C	Coated BUR	2,250	POOR	1969	2000	22	(u)
D	Coated BUR	800	POOR	1969	2000	22	(u)
E	Coated BUR	8,800	POOR	1969	2000	22	(u)
F	Coated BUR	23,700	POOR	1969	2000	22	(u)
G	Coated BUR	500	POOR	1969	2000	22	(u)
H	EPDM	40	POOR	(u)	(u)	(u)	(u)



OWNERS NOTES

YEAR OF CONSTRUCTION	1941. Roof replaced in 2002
YEAR OF MAJOR ADDITIONS	None
SQUARE FOOTAGE	Approximately 9,100 Sq. Ft.
STRUCTURAL SYSTEM	Steel Structure and masonry bearing walls. Roof deck is 2" gypsum planks.
ROOF COMPOSITION	Steep-Slope: Asphalt shingles nailed to nail base over metal deck. Low-Slope: 2-ply modified bitumen membrane torch-applied to tapered insulation. Insulation is mechanically-fastened to metal deck.
DRAINAGE CONDITIONS	Gutters and downspouts were reported to have been replaced in 2002 project. Both are in good condition.
ENERGY EFFICIENCY CONCERN	Insulation will not meet current code requirements

AREA ID	ROOF TYPE	SQUARE FT.	CONDITION	BUILT DATE	INSTALL DATE	AGE OF ROOF	YR. REPLACE
A	Modified Bitumen	2,650	GOOD	1941	2002	20	(u)
B	Shingles	6,000	GOOD	1941	2002	20	(u)
C	Modified Bitumen	375	GOOD	1941	2002	20	(u)
D	Modified Bitumen	90	GOOD	1941	2002	20	(u)

Section 3.0 - Roof Inspection Summary

Section 3.1 – Inspection Notes

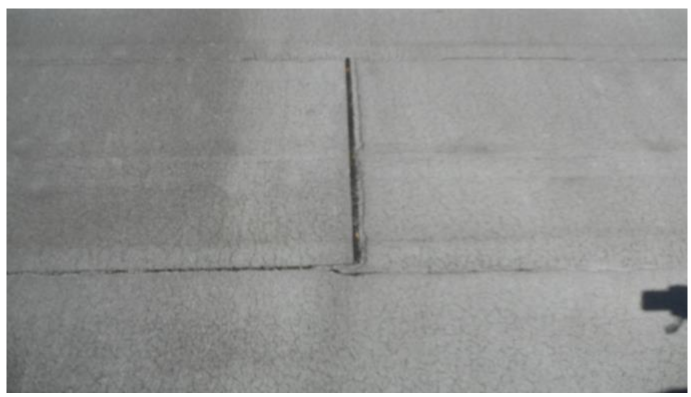
Alford Hall

Alford hall is a single-story classroom building with vocational shops along the back side of the building and under a metal roof canopy. The perimeter of the building has a parapet varying from approximately 12 inches to 28 inches high. A modified bitumen membrane is in overall good condition with minor deficiencies noted.

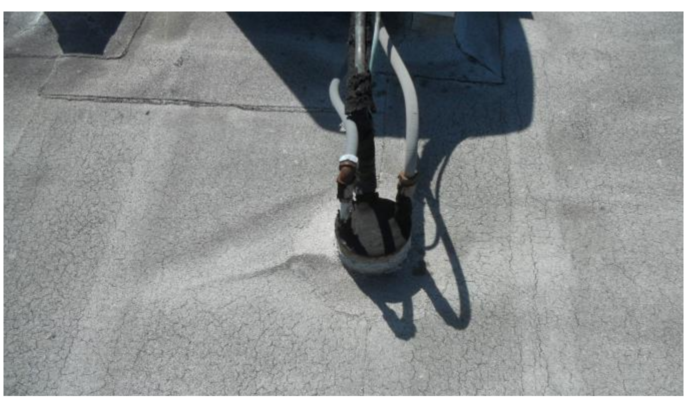
1. Low slope roof – Roof Sections A

    a. Significant vegetative debris and growth on roof.
    b. Minor blisters in modified bitumen membrane.
    c. End laps in modified bitumen membrane are slipping.

Significant debris and vegetation growing on roof



End laps in modified bitumen membrane have slipped



Pitch pocket requiring maintenance and minor blistering of membrane

Minor blister in modified bitumen

Eagles Hall

This is a large single-story, multi-wing classroom building with the majority of the roof covered with structural standing seam metal panel roofs. The ridge of the metal panels is capped with curved dome skylights. Smaller low slope roof sections have been sprayed with foam and coated. Building is currently undergoing an overall building assessment and roof replacement assessment.

1. Structural metal panels – Roof Sections A, B, E, H and J

   Deficiencies noted include:
   a. Broken skylights.
   b. Sealant joints at end of skylights are suspect/open.

2. Low slope roofs – Roof Sections C, D, F, G and I

   a. Foam roofs with deteriorated coating and poor drainage/ponding.
   b. EPDM lined built in gutters – leaking downspout outlets causing peeling coating and some concrete spalling.
   c. Low flashing height at exhaust fan curbs.

Ridge capped with domed skylight

Skylight sealant joint

Exhaust fan curbs

Intersection of low slope roof and steep roof

ILC Building

This building is a two-story administrative building with steep-slope roofs and asphalt/fiberglass shingles. Drainage is by perimeter gutters and downspouts. This building is connected to Vestal Hall with a low slope roof that is considered part of Vestal Hall. The roof transition between ILC and the connector is a small standing seam roof with visible rust/staining and repairs made with a membrane.

1. Steep-slope roof – Roof Sections A and B.
    a. Roof leaks at connector to Vestal Hall have been identified and repaired in recent years.

Asphalt / fiberglass shingles and copper topped dormer / louvers

Standing seam metal roof at connector between ILC and Vestal

Massey Activity Center

A centrally located multipurpose building with a large storefront entrance and multiple roof levels. There are leaks in the storefront entrance system and/or the adjacent roof areas. Roofing membranes are mechanically attached EPDM in overall fair condition. There are exhaust hood penetrations associated with a grease collection system over a cafeteria.

1. Low slope roof – Roof Sections A, B, C, D, E, F, and G

   a. Grease collector requiring maintenance
   b. Open coping joints
   b. Debris on roof
   d. Deteriorated membrane seams and small hole in membrane (possibly bullet hole)

Section B – Grease collector that must be maintained

Section B – Debris on roof and peeling coping finish

Section C – Open corner coping joint

Section A – Open coping joint

Section B – Counterflashing repair at spalled brick

Deteriorated sealant at membrane joint

Mayfield Hall

This building is a single-story classroom building with a gravel stop and a modified bitumen roofing system in good condition, but does have blocked drains causing ponding issues and exhaust fans with low flashing heights.

1. Low slope roof – Roof Sections A

    a. Blocked drains/ponding
    b. Low flashing heights

Blocked drain and significant ponding water

Low flashing height at exhaust fan

McAdams Building

This building is a combination two-story classroom building and athletic building. The athletic portion contains a gymnasium and abandoned indoor pool. A lower roof section provides a gym entry and administrative space. This lower roof has a fully adhered EPDM roof membrane. All other buildings have gravel surfaced built up membranes in overall fair condition.

1. Gravel surfaced low slope roofing – Roof Sections A, B, C, D, E, F and G.

    a. Minor ponding – drain strainers blocked with excessive gravel
    b. Loose metal coping cap
    c. Crazed skylight domes
    d. Cracked skylight domes containing water between the domes

2. EPDM membrane low slope roofing – Roof Section H

    a. Minor ponding and failed drain target flashing
    b. Failed flashing at coping/building intersection
    c. Debris on roof
    d. Cracked masonry wall above gym and abandoned pool
    e. Broken/missing louvers

Section H – Ponding water and failed drain target sheet

Section F – Loose sheet metal coping cap

Section H – Poor coping to wall transition.

Section H –Vegetation debris on roof

Section H – Louver slats missing can allow water intrusion at roof level

Crazed skylights

Cracked skylight with water between the domes

Vestal Hall

A two-story classroom building complex with interconnected building wings mainly low slope sections. The majority of the roofing sections appear to be gravel surface membranes where the gravel has been removed and the membrane has been coated. Small accessory roofs include connectors between buildings, a maintenance shed and a small structure that appears to be an added elevator shaft.

1. Low slope roof – Roof Sections A, B, C, D, E, F, G and H

   a. Blocked drains/ponding
   b. Deteriorated coating
   c. Small elevator shaft membrane roof loose, wrinkled

Drainage issues and ponding – Sections E and F

Coating in poor condition – Section E

Section H in poor condition

Ponding water and poor coating condition – Sections A & C

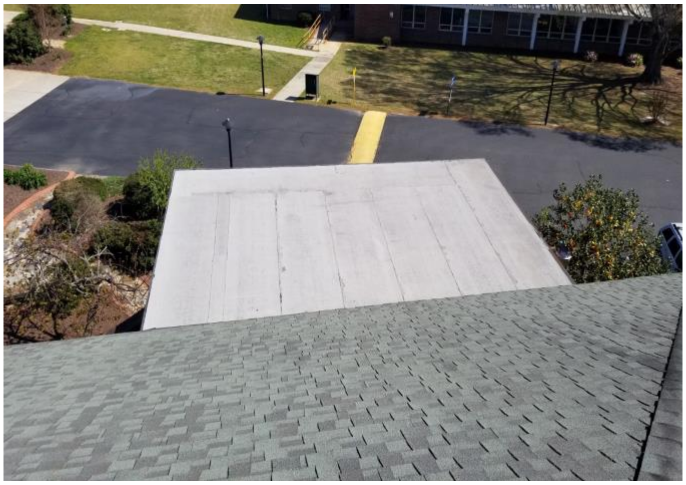
Ponding water on Section F

Connector roof D between Sections A and E.

Woodard Hall

This administrative building has steep-sloped hip roofs with asphalt shingles and a low-slope section, entrance and accessory roofs that have modified bitumen. Roofing systems are in good condition.

1. Low slope roof – Roof Sections A, C and D
2. Steep-slope roof – Roof Section B



			Core Number					
Category	Observation	Units	1	2	3	4	5	6
	Building		Eagles Hall	Eagles Hall	McAdams Hall	McAdams Hall	McAdams Hall	Massey Hall
	Location*		Steep-slope	Low-slope	Classroom	Gym	Gym Entry	
	Size	in.	2	2	2	2	2	2
	Depth	in.		2.25	7.5	7.5	3	1.5
Membrane	**Manufacture**							
Membrane	**Surfacing**		Metal Panel Roof with BUR on Concrete	Spray-on foam direct for deck	Gravel	Gravel	None	None
Membrane	**Flood Coat**	Y / N	YES	-	YES	YES	-	-
Membrane	**Felts**		Fiberglass	-	Fiberglass	Fiberglass	EPDM	EPDM
Membrane	**Num. of Plies**		- UND -	-	- UND -	- UND -	-	-
Membrane	**Ply Condition**	G / F / P	POOR	-	GOOD	GOOD	FAIR	FAIR
Membrane	**Interply**		Asphalt	-	Asphalt	Asphalt	-	-
Insulation	**Insulation**		Woodfiberboard	Urethane Foam	1.5” Perlite 6” Isocyanurate	1.5” Perlite 6” Isocyanurate	3” Isocyanurate (structural slope)	1.5” Isocyanurate (structural slope)
Insulation	**Thickness**	in.	2.5	2	7.5	7.5	3	1.5
Insulation	**Condition****	G / F / P	FAIR	GOOD	GOOD	GOOD	GOOD	GOOD
Insulation	**Attachment**		Asphalt	Adhered	Asphalt	Asphalt	Mechanically Fastened	Mechanically Fastened
Vapor Barrier	**Vapor Barrier**	Y / N	YES	YES	YES	YES	NO	NO
Vapor Barrier	**Condition**	G / F / P	GOOD	GOOD	GOOD	GOOD	-	-
Vapor Barrier	**Attachment**		Adhered	Adhered	Adhered	Adhered	-	-
	Deck Type		Precast Concrete	Concrete	Concrete	Concrete	1.5” Metal	1.5” Metal
	Structure		Precast Concrete	Precast Concrete	Precast Concrete	Precast Concrete	Steel	Structural Concrete
	Recover Roof		Metal Panel	None	None	None	None	None
	Comments		Metal is Aluminum set on 2” Z-clips	Original BUR roof has been removed. Spray-on foam has a white coating to protect from UV	Insulation is likely tappered. Test cut at high point	Insulation is likely tappered. Test cut at high point. Appears to have been installed after classroom based on roof drains	EPDM is adhered to insulation. Structural steel appears to be sloped to drains	EPDM is mechanically fastened to insulation. Structural steel appears to be sloped to drains

- N / A, Not Applicable

- UND - Undetermined

<blank> Unknown

* Alford, Mayfield, and Woodard information based on project specifications.

** GOOD => Dry; FAIR => Damp; POOR => Soaked

Category	Observation	Units	Core Number 7	8	9	10	11	12
	Building		Vestal Hall	Woodard Hall	Woodard Hall	Mayfield Hall	Alford Building	ILC
	Location*		Classroom	Low-slope	Steep-slope			Steep-slope
	Size	in.	2	-	-	-	-	-
	Depth	in.	6.5	-	-	-	-	-
Membrane	**Manufacture**			GAF	GAF	Soprema	Soprema	
	Surfacing		Gravel w/ Coating	Granular Cap Sheet	Asphalt Shingles	Granular Cap Sheet	Granular Cap Sheet	Asphalt Shingles
	Flood Coat	Y / N	YES	-	-	-	-	-
	Felts		Organic	-	Felt Underlayment	-	-	Felt Underlayment
	Num. of Plies		- UND -	2x SBS	-	2x SBS	2x SBS	-
	Ply Condition	G / F / P	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
	Interply		Asphalt	Torch Applied	-	Torch Applied	Torch Applied	-
Insulation	**Insulation**		6” Perlite	Tapered Isocyanurate	None	Lightweight Insulating Concrete w/ R-19	2x 1.5” Isocyanurate w/ 0.25” Overlayment	None
	Thickness	in.	6	varies	-	varies	3.25	-
	Condition**	G / F / P	GOOD	GOOD	-	GOOD	GOOD	-
	Attachment		Asphalt	Mechanically Fastened	-	Adhered	Mechanically Fastened	-
Vapor Barrier	**Vapor Barrier**	Y / N	YES	NO	YES	YES	NO	NO
	Condition	G / F / P	GOOD	-	- UND -	- UND -	-	-
	Attachment		Adhered	-	- UND -	- UND -	-	-
	Deck Type		Concrete	2” Gypsum Plank w/ OSB Nail-base	2” Gypsum Plank w/ OSB Nail-base	Concrete	1.5” Metal	1.5” Metal w/ OSB Nail-base
	Structure		Steel	Steel	Steel	Structural Concrete	Steel	Steel
	Recover Roof		Coated	None	None	None	None	None
	Comments		Insulation is likely to be tapered. Test cut at high point					No documentation for this building. Information from visual observation at site

- N / A, Not Applicable
- UND - Undetermined
<blank> Unknown
* Alford, Mayfield, and Woodard information based on project specifications.
** GOOD => Dry
FAIR => Damp
POOR => Soaked

Section 4.0 – Building Roof Service Life Assessment

10-year Priority Plan based on Age and Condition

Building Name	Area ID	Roof System	Condition	Build Date	Age of Roof	Size	Priority
Vestal Hall	A - G	BUR	POOR	1969	22	47,450	1
Eagles Hall	A - E	METAL	POOR	1965	UNK	44,650	UND
	F - J	FOAM	POOR	1965	UNK	11,250	UND
McAdams	A - G	BUR	FAIR	1971	20	53,300	3
	H	EPDM	FAIR	UNK	UNK	2,750	2
Massey	A - F	EPDM	FAIR	1996	26	17,950	2
Woodard	A, C, D	Modified	GOOD	1941	20	3,115	-
	B	Shingle	GOOD	1941	20	6,000	-
Mayfield	A	Modified	GOOD	1969	15	12,500	-
Alford	A	Modified	GOOD	1981	15	12,650	-
ILC	A	Shingle	GOOD	UNK	UNK	8,000	-

UNK - Unknown
UND - Undetermined

Section 5.0 – Roofing Criteria and Recommendations

5.1 – Design Criteria

The design criteria developed for this facility incorporates not only acceptable roofing practice as recommended by the NRCA, but also includes considerations for the operations of the facility and the potentially severe weather in this particular geographic location. The following design criteria were developed as a basis for the engineering study presented herein.

- Roofing systems to be under consideration shall be the most cost-effective system available in the present market place. The cost shall provide the Owner with an acceptable annualized-cost based on the anticipated life of the roofing system.

- A roofing system will be installed in a facility with on-going daily operations. The day to day operations of the roofer and the installation of the materials should be such that the operations on the ENCSD campus are least impacted.

- A new roofing system should be designed to withstand periodic, light to moderate foot traffic. Additionally, the membrane must resist construction traffic due to future renovations to the facility.

- A roofing system should be designed so that leak detection and temporary leak repair is easy, simple, and at the least cost. If possible, emergency leak repairs should be able to be performed by the facility's maintenance personnel until such time that the approved roofer of the membrane manufacturer is made available.

- The roofing system should be easily maintained. Alterations due to the installation of new air conditioning units, vents, pipes, etc. should be made as simple as possible.

- The new roofing system should be capable of installation in a wide range of seasonal temperatures, allowing for environmental concerns, such as moisture and wind conditions.

- Due to existing details and construction, the roofing system should be designed to function with non-typical penetrations, flashing heights, and less than standard elevations above the roof deck level for equipment supports.

- Installation equipment and procedures should minimize hazards to students, faculty, guests, employees, and the contractor's workers. The storage and use of highly flammable materials should be minimized. Materials with odors which could be uncomfortable to campus occupants shall be minimized.

- The roofing system should be as chemically-resistant as possible to withstand the effects of any chemicals discharged or spilled onto the roof surface and atmospheric conditions, such as kitchen hood discharge, ultraviolet light, acid rain, and A/C lubricants, which may be present during the life of the membrane.

- The roofing system must be installed in phases to accommodate budget restrictions. Each area should be installed such that it is complete and watertight in every way at the end of each area within the scope of the project.

- The roofing system chosen must minimize repair/maintenance costs for the owner from year to year.

Design Criteria	Modified Bitumen	PVC / KEE Fully Adhered	BUR	EPDM Fully Adhered	Protected Roofing Assemblies
MINIMIZE INSTALLATION HAZARDS / SENSITIVITY	6	7	5	7	8
MINIMIZE POTENTIAL FOR INTERIOR DEBRIS	7	7	5	7	7
ABILITY TO WITHSTAND PONDING WATER	6	7	5	6	8
CHEMICAL RESISTANCE OF MEMBRANE	7	9	5	2	8
THERMAL EFFICIENCY OF ROOFING SYSTEM	7	8	5	7	9
ALLOWANCE FOR BLDG / TEMP MOVEMENT	7	8	5	9	7
EASE OF FLASHING	7	9	5	9	8
NON-TYPICAL FLASHING DETAILS	8	8	5	8	7
DETAILING AT EXPANSION JOINTS	7	9	5	9	9
MINIMIZE ROOFING SYSTEM WEIGHT	9	9	7	9	7
WITHSTAND CONSTANT MAINTENANCE TRAFFIC	8	6	7	3	9
EASE OF LONG-TERM MAINTENANCE	7	9	5	7	7
EASE OF LEAK DETECTION	7	8	5	6	4
MINIMIZE INITIAL COST	6	7	5	8	5

RATING: Best => 10
Worst => 1

5.3 – Alternative Roofing Systems Comparison

Alternative System - Fully-Adhered Modified Bitumen Membrane

System would include removing the existing roof system down to the vapor barrier, repairing and enhancing the vapor barrier with an additional layer of felt/asphalt, installing isocyanurate insulation and overlayment board, fully-adhered to deck, and a fully-adhered, two-ply fiberglass membrane plus 170 mil (min) modified bitumen sheet membrane.

Advantages

- Detailing of many roof features can be considered as superior to standard built-up roofing system requirements.
- The exposed membrane is very durable and puncture resistant compared to a typical exposed single-ply membrane.
- Membrane damage is easy to identify. The roofing system has no ballast which could conceal any deficiencies.
- Membrane damage resulting in leaks in membrane/flashing repairs are easy to make. Temporary repairs can be made by facility maintenance personnel.
- Available with light-colored surface which is energy efficient.
- Roofing system is lightweight relative to ballasted roofing systems or typical BUR membrane installations.
- Relative to other roofing systems, this roofing assembly can be expected to have the longest service life with good preventative maintenance program.

Disadvantages

- System is subject to inter-ply delamination and blistering if not properly installed.
- Details for flashing walls, curbs, etc. are more difficult compared to single-ply systems, increasing short-term and long-term costs.
- May require coatings to be UV resistant and meet fire-rating requirements if granular-coated cap sheets are not used.

Alternative System - Loose-Laid, Equalizer-System, Single-Ply Membrane

System would not remove the existing roof system. This system is design to overlay the existing roofing assembly with installation only requiring insulation, coverboard, and loose-laid thermoplastic sheet. The system requires one-way valves which are installed at locations determined by engineering analysis.

Advantages

- Light-weight system which does not require ballast. Can be designed to be withstand extremely high wind loads.
- Easy to make modifications in future and to make emergency repairs.
- Functions well with non-typical flashing heights, and non-typical penetrations.
- Extremely chemical-resistant membrane and UV stable.
- White or light-colored surface is energy efficient.
- Minimizes use of heavy equipment and high-odor adhesives at job site during installation.
- Long-term warranties (twenty years) available from manufacturers, which would include several years of workmanship from the contractor.
- Relatively inexpensive roofing system due to not having to tear-off the existing system and does not require the use of adhesives or ballast to hold membrane in place.

Disadvantages

- Requires an existing roofing system to be air tight at perimeters in order to create vacuum when winds blow across roof. Typically, the existing membrane can remain to create the air barrier.
- Single-layer of thin membrane relies on integrity of seam for long-term watertight integrity.
- Limited number of contractors with extensive experience with installation.
- History profile of the roofing system is limited. Relies on vapor/air barrier to protect building contents should a major failure occur.
- No protection of membrane from damage due to roof maintenance traffic.

Alternative System - Fully-Adhered Built-up Asphalt Bitumen Membrane

System would include removing the existing roof system down to the vapor barrier, repairing and enhancing the vapor barrier with an additional layer of felt/asphalt, installing isocyanurate/overlayment board insulation, fully-adhered to deck, and a fully-adhered, 4-ply fiberglass-felt with asphalt bitumen membrane.

Advantages

- Longest experience record.
- The exposed membrane is very durable and puncture resistant compared to a typical exposed single-ply membrane or modified bitumen membrane system.
- Leaks due to poor seam integrity less likely than other systems.
- Roofing system relatively chemical-resistant.

Disadvantages

- System is subject to delamination and blistering if not properly installed.
- Odors from asphalt can cause disruptions to facility operations
- Requires ballast of gravel which increases dead load to roof structure
- Extremely labor intensive with greater chance for installation errors to go undetected.
- Materials subject to moisture damage during application.
- Requires a relatively long period of time to install.
- Extremely difficult to find leaks.
- Requires use of heavy equipment at site.

Alternative System - Protected-Membrane-Assembly- Fully-Adhered Modified Bitumen Membrane

System would include removing the existing roof system down to the vapor barrier, repairing and enhancing the vapor barrier with an additional layer of felt/asphalt, applying a fully-adhered builtup roofing membrane and flashing system, installing a high-performance insulation directly over the membrane system, laying a loose-laid filter fabric between insulation and ballast, and ballast with a rock/stone.

Advantages

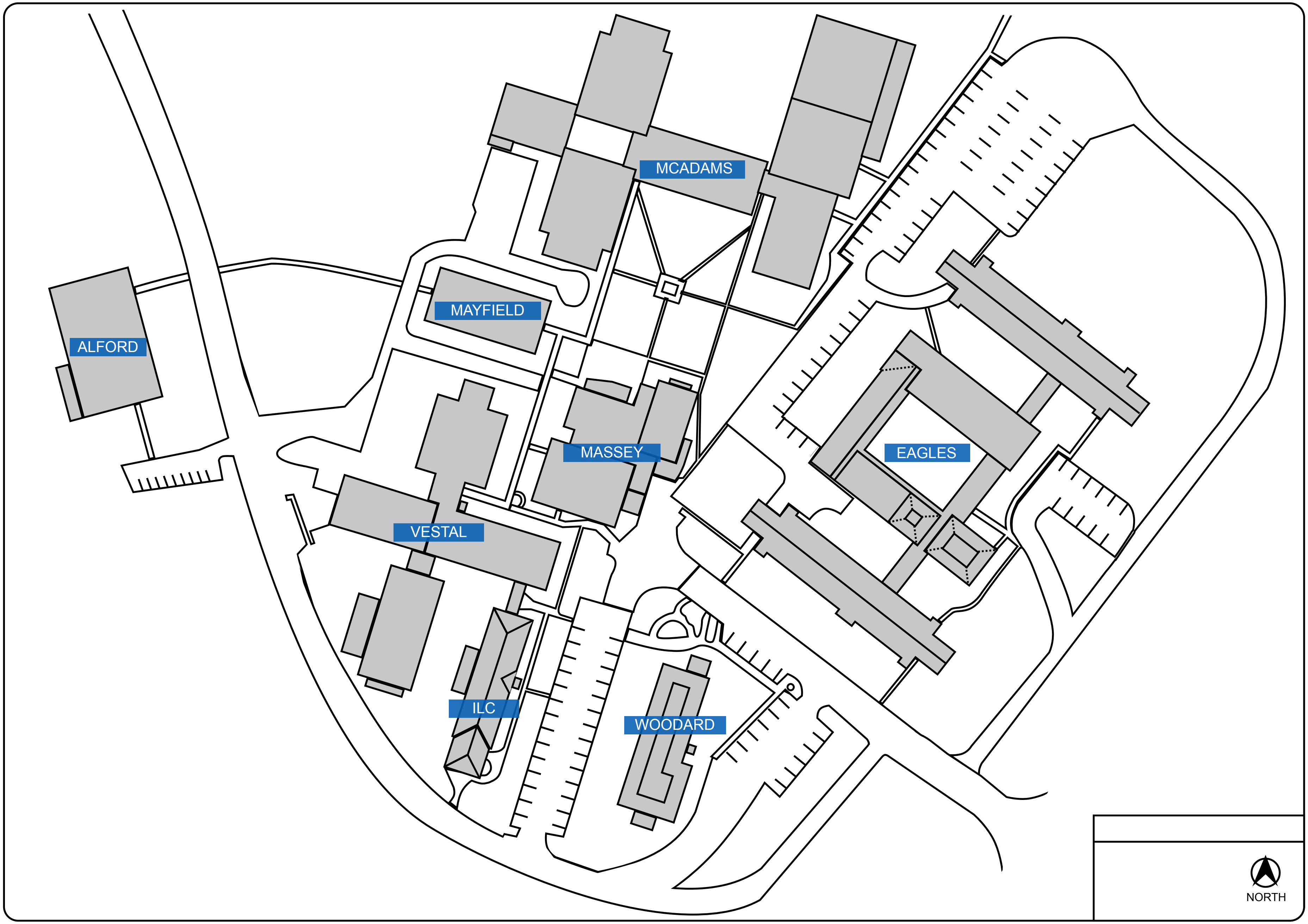
- Provides the lowest life-cycle cost of roof systems compared for this project. Since the membrane is not exposed to ultraviolet light, membrane degradation is reduced.
- Installs relatively in shortest period of time. Insulation and ballast can be installed during inclement weather.
- Roofing membrane is protected and will be the least likely to be damaged. Maintenance traffic will be not be in direct contact with the roofing membrane.
- Since membrane is directly attached to deck, there is no chance of water migration should a leak occur. This should aid in leak detection and repair.
- Since the membrane is adhered directly to the deck, daily tie-off of new roofing system can be made such that the risk of water migration under the new roofing system will be reduced.
- Long-term warranties (twenty years or more) available from manufacturers, which would include several years of workmanship from the contractor.
- Additional insulation can be added at any time in the future at a minimum cost, if required. The ballast can be moved aside, new board insulation applied, the ballast relocated. All other systems will require more expense to increase the insulating value.

Disadvantages

- Superior contractor workmanship and inspection required prior to application of insulation for successful installation.
- May require use of heavy equipment at site.
- Availability of contractors with extensive experience in installing this system is limited.
- Repairs to the roofing membrane, when out of warranty, will likely be more expensive. This is a result of the presence of insulation and ballast, which will have to be removed prior to making repair.

Section 6.0 – Appendix

6.1 – Site Plan
6.2 – Roof Plans
6.3 – Estimate Sheets



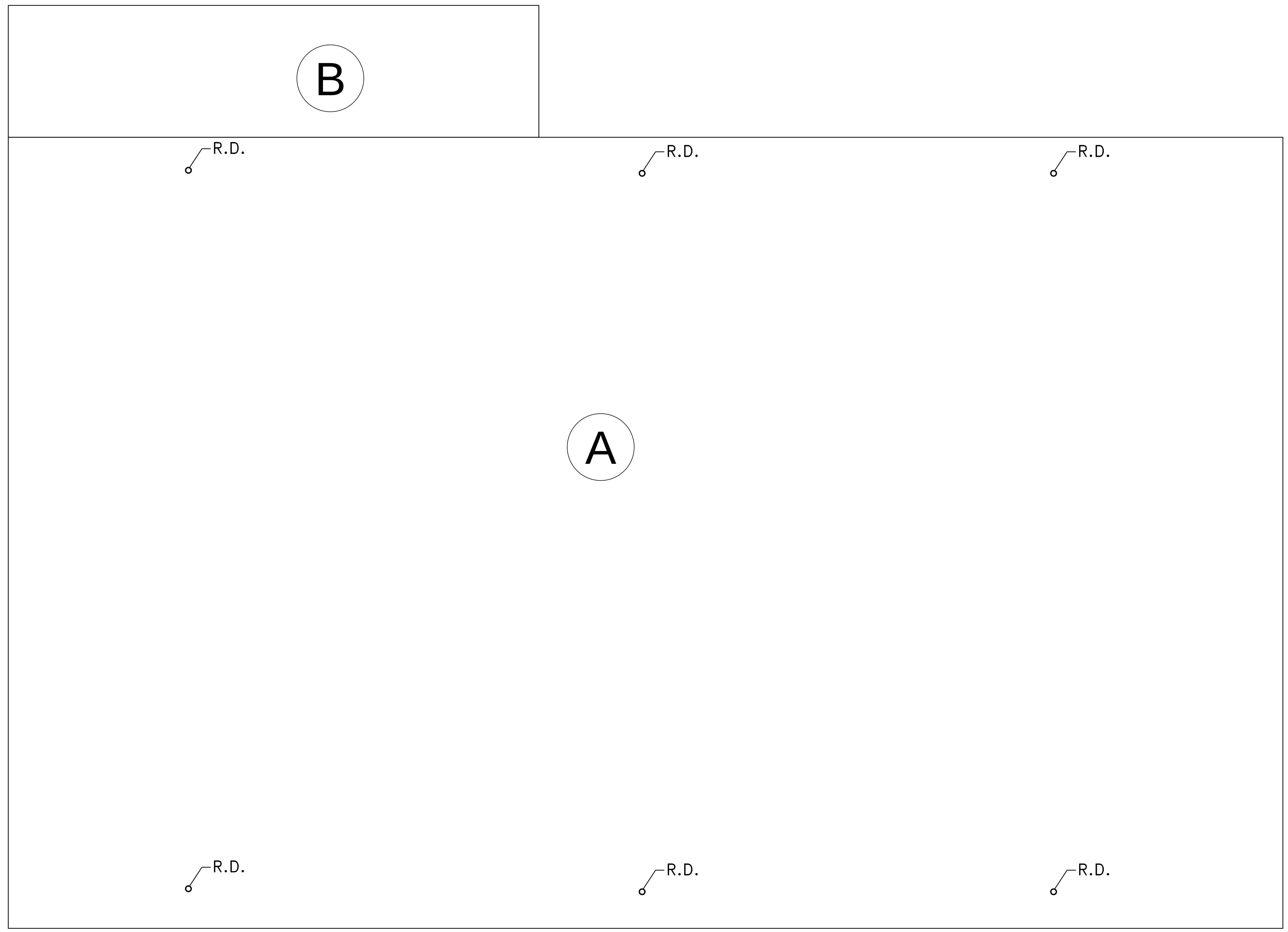
NC DEPARTMENT OF PULBIC INSTRUCTION
EASTERN NORTH CAROLINA SCHOOL FOR THE DEAF
301 N WILMINGTON STREET
RALEIGH, NC 27601

SHEET TITLE
SITE PLAN

JOB TITLE
ENCSD

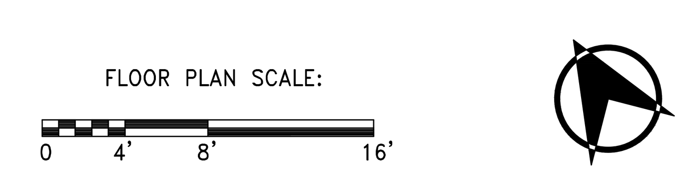
JOB NO.:
DRAWN BY:
CHECKED BY:
DATE:

SHEET NO.
S1
OF



ROOF AREA – A	12,650 SQ FEET
ROOF AREA – B	900 SQ FEET

FLOOR PLAN SCALE:



NOTE: PRINTS TO 1/8" = 1 FT ON A D-SIZE SHEET

SYM

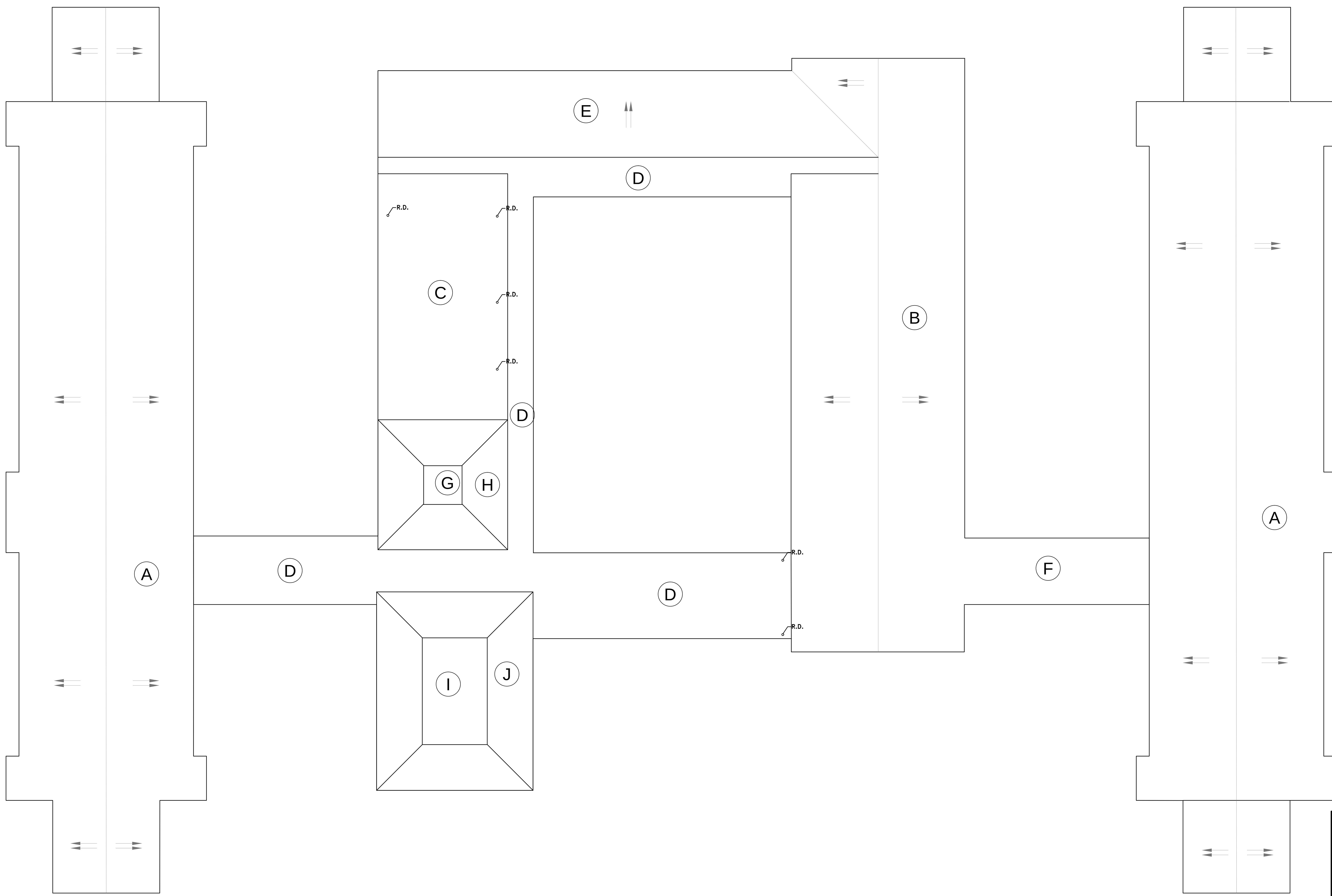
NC DEPARTMENT OF PUBLIC INSTRUCTION
EASTERN NORTH CAROLINA SCHOOL FOR THE DEAF
301 N WILMINGTON STREET
RALEIGH, NC 27601

SHEET TITLE
ROOF PLAN

JOB TITLE
ALFORD HALL

JOB NO.:
DRAWN BY: RAN
CHECKED BY: RTF
DATE: 4–1–2022

SHEET NO.
R1
OF



ROOF AREA – A	27,750 SQ FEET
ROOF AREA – B	9,300 SQ FEET
ROOF AREA – C	3,050 SQ FEET
ROOF AREA – D	6,200 SQ FEET
ROOF AREA – E	3,800 SQ FEET
ROOF AREA – F	1,200 SQ FEET
ROOF AREA – G	150 SQ FEET
ROOF AREA – H	1,450 SQ FEET
ROOF AREA – I	650 SQ FEET
ROOF AREA – J	2,350 SQ FEET

FLOOR PLAN SCALE:

0 8' 16' 32'

NORTH

NOTE: PRINTS TO 1/16" = 1 FT ON A D-SIZE SHEET

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301 N WILMINGTON STREET
RALEIGH, NC 27601
PHONE 984–236–2100

SHEET TITLE: ROOF PLAN

JOB TITLE: EAGLES HALL

JOB NO.:

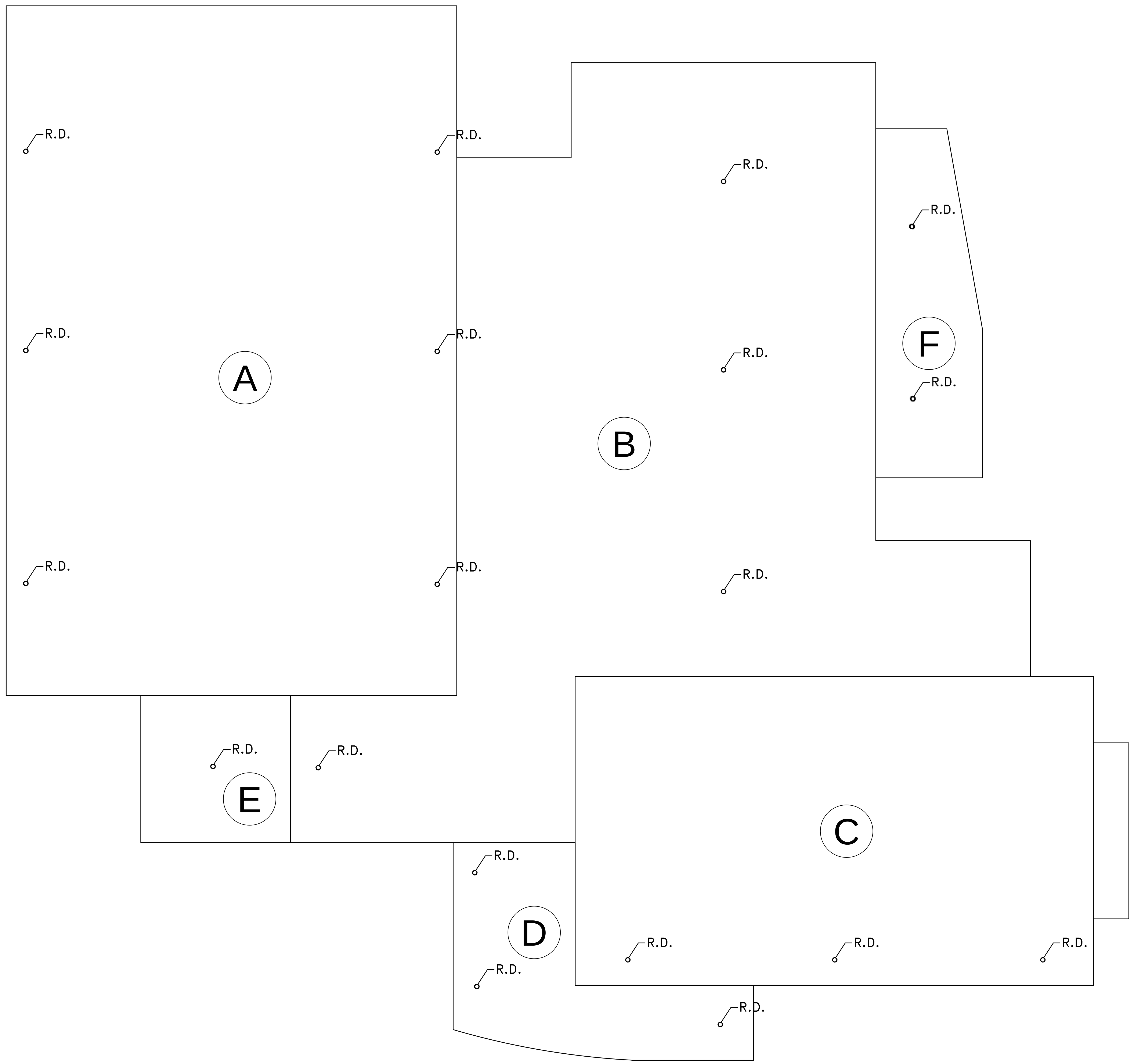
DRAWN BY: RAN

CHECKED BY: RTF

DATE: 4–1–2022

SHEET NO. R1

OF



ROOF AREA – A	6,350 SQ FEET
ROOF AREA – B	6,350 SQ FEET
ROOF AREA – C	3,300 SQ FEET
ROOF AREA – D	800 SQ FEET
ROOF AREA – E	450 SQ FEET
ROOF AREA – F	700 SQ FEET

FLOOR PLAN SCALE:

0 5' 10' 20'

NORTH

NOTE: PRINTS TO 1" = 10 FT ON A D-SIZE SHEET

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RALEIGH, NC 27601
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SHEET TITLE
ROOF PLAN

JOB TITLE
MASSEY ACTIVITY CTR

JOB NO.:

DRAWN BY: RAN

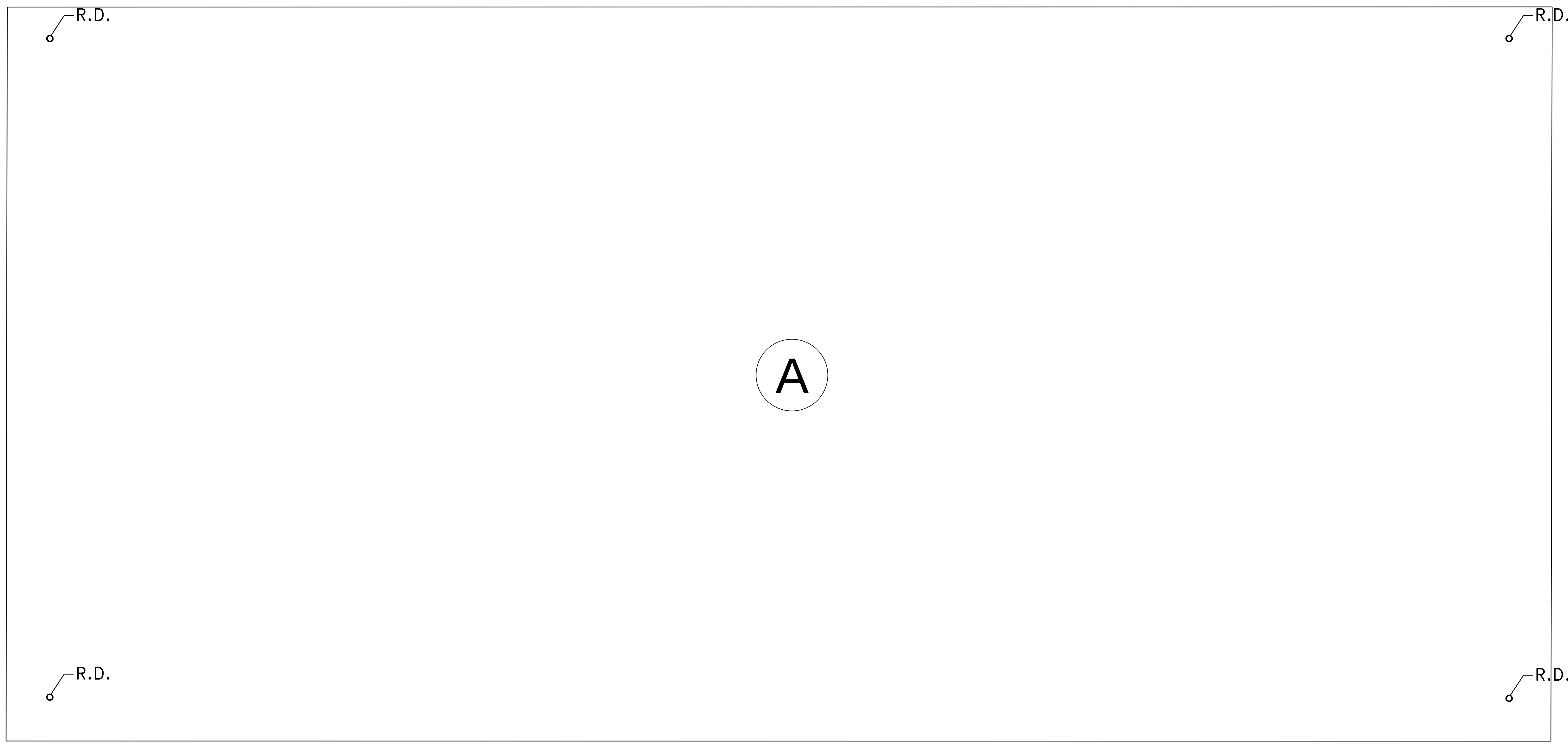
CHECKED BY: RTF

DATE: 4-1-2022

SHEET NO.

R1

OF



ROOF AREA – A 12,500 SQ FEET

FLOOR PLAN SCALE:

0 4' 8' 16'

NORTH

NOTE: PRINTS TO 1/8" = 1 FT ON A D-SIZE SHEET

SYM

NC DEPARTMENT OF PUBLIC INSTRUCTION
EASTERN NORTH CAROLINA SCHOOL FOR THE DEAF
301 N WILMINGTON STREET
RALEIGH, NC 27601
PHONE 984-236-2100

SHEET TITLE
ROOF PLAN

JOB TITLE
MAYFIELD HALL

JOB NO.:

DRAWN BY: RAN

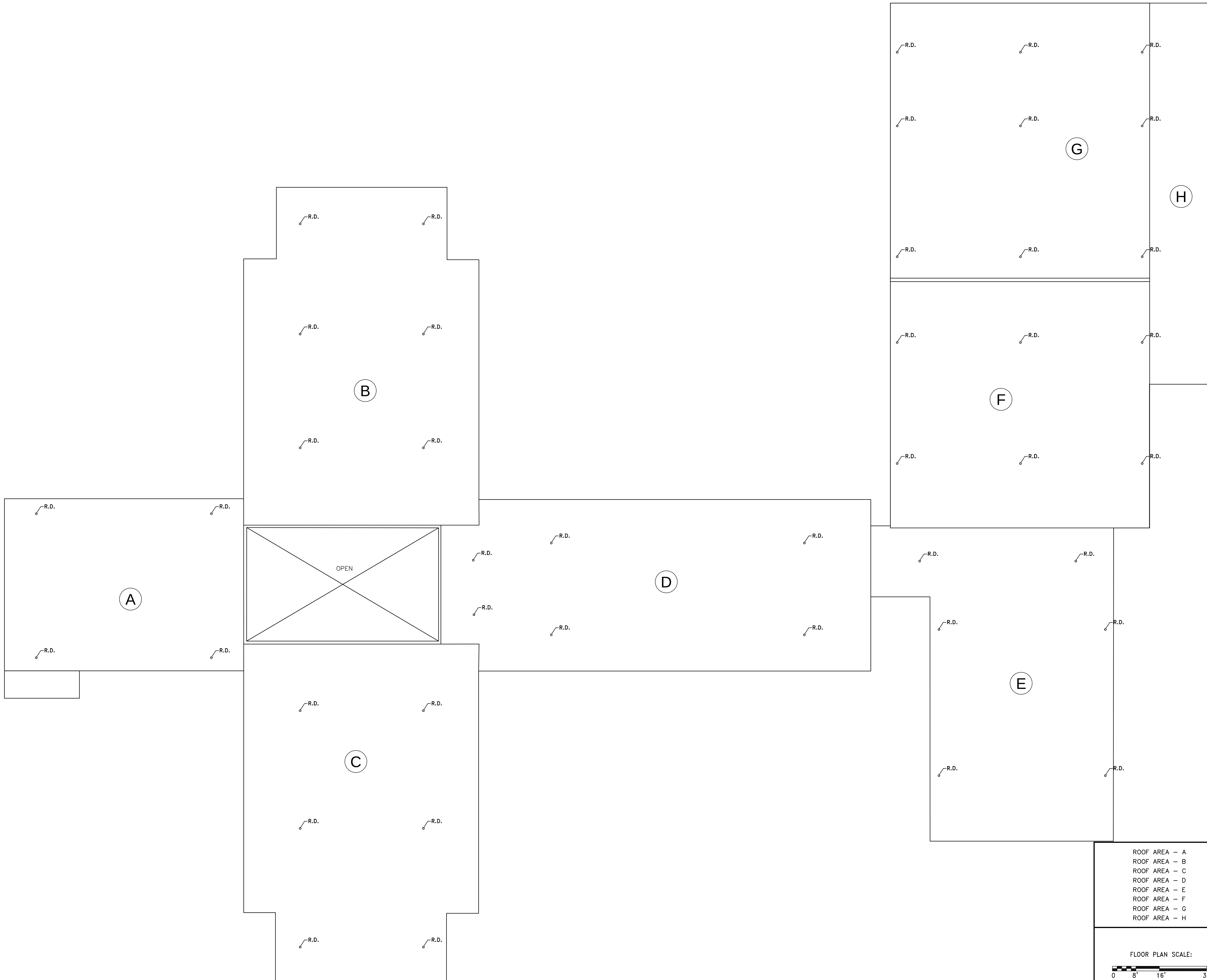
CHECKED BY: RTF

DATE: 4-1-2022

SHEET NO.

R1

OF



ROOF AREA – A	4,800 SQ FEET
ROOF AREA – B	8,700 SQ FEET
ROOF AREA – C	8,700 SQ FEET
ROOF AREA – D	8,300 SQ FEET
ROOF AREA – E	7,150 SQ FEET
ROOF AREA – F	7,400 SQ FEET
ROOF AREA – G	8,250 SQ FEET
ROOF AREA – H	2,750 SQ FEET

FLOOR PLAN SCALE:

0 8' 16' 32'

NORTH

NOTE: PRINTS TO 1/16" = 1 FT ON A D-SIZE SHEET

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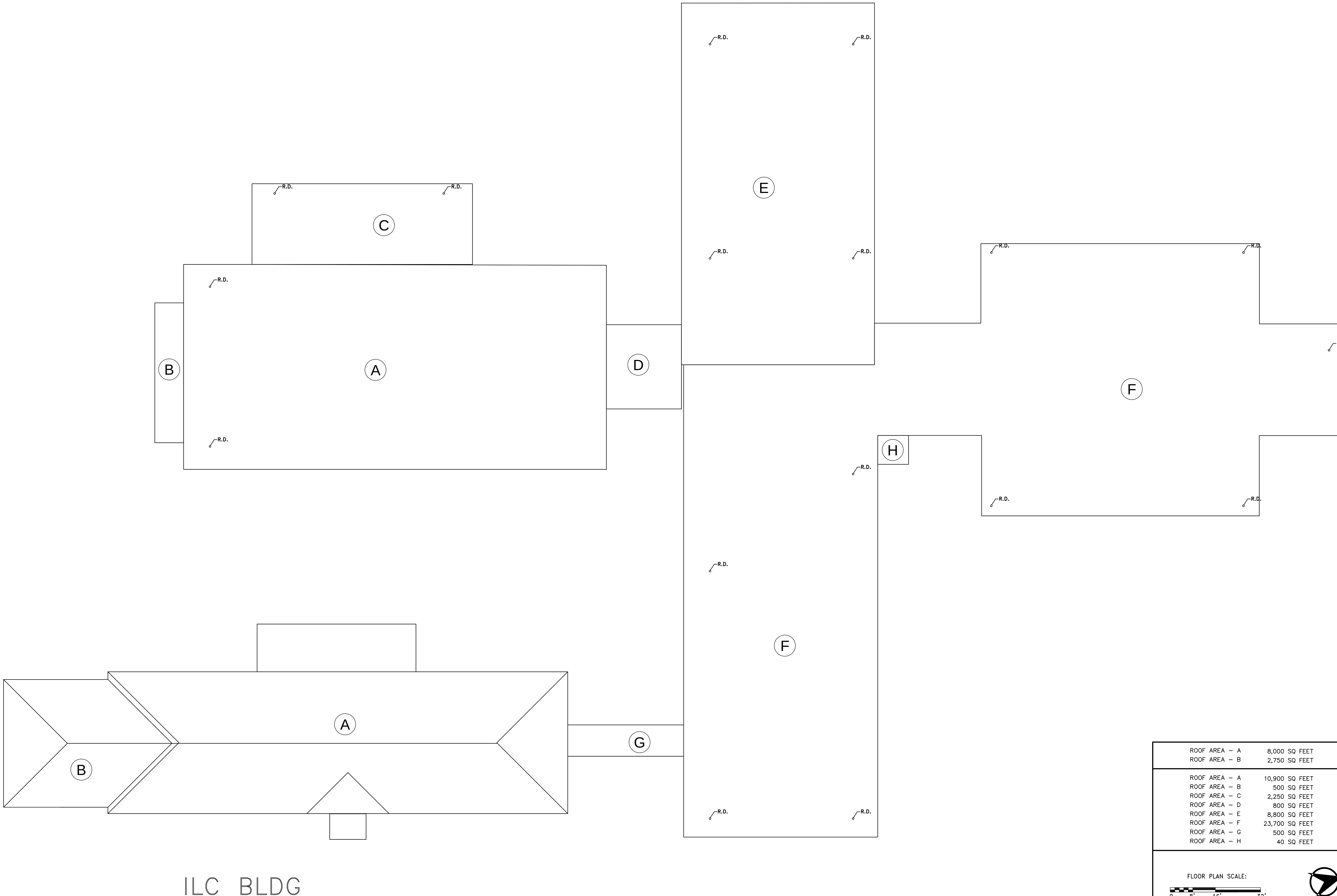
RALEIGH, NC 27601
PHONE 984-236-2100

SHEET TITLE
ROOF PLAN

JOB TITLE
MCADAMS BLDG

JOB NO.:
DRAWN BY: RAN
CHECKED BY: RTF
DATE: 4-1-2022

SHEET NO.
R1
OF



ROOF AREA – A	8,000 SQ FEET
ROOF AREA – B	2,750 SQ FEET

ROOF AREA – A	10,900 SQ FEET
ROOF AREA – B	500 SQ FEET
ROOF AREA – C	2,250 SQ FEET
ROOF AREA – D	800 SQ FEET
ROOF AREA – E	8,800 SQ FEET
ROOF AREA – F	23,700 SQ FEET
ROOF AREA – G	500 SQ FEET
ROOF AREA – H	40 SQ FEET

FLOOR PLAN SCALE:

0 8' 16' 32'

NORTH

NOTE: PRINTS TO 1/16" = 1 FT ON A D-SIZE SHEET

RICHARD NUHN, P.E.
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NC DEPARTMENT OF PUBLIC INSTRUCTION
EASTERN NORTH CAROLINA SCHOOL FOR THE DEAF
301 N WILMINGTON STREET
RALEIGH, NC 27601
PHONE 984-236-2100

SHEET TITLE: ROOF PLAN

JOB TITLE: VESTAL HALL and IRC

JOB NO.:

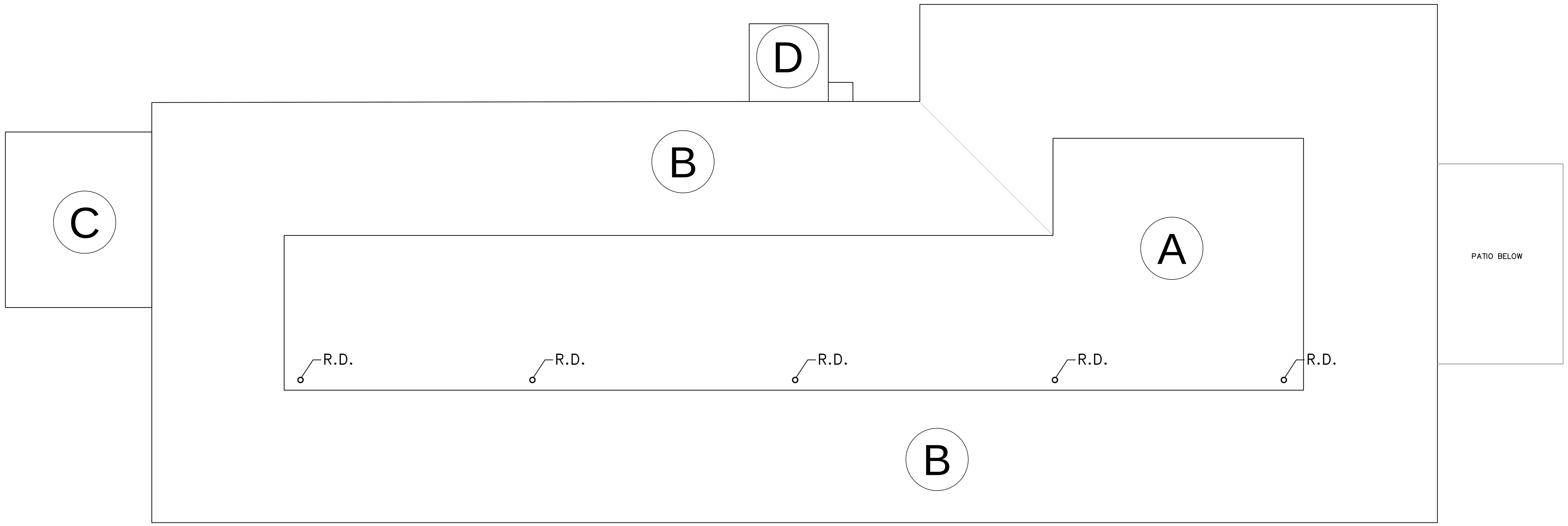
DRAWN BY: RAN

CHECKED BY: RTF

DATE: 4-1-2022

SHEET NO. R1

OF



ROOF AREA – A	2,650 SQ FEET
ROOF AREA – B	6,000 SQ FEET
ROOF AREA – C	375 SQ FEET
ROOF AREA – D	90 SQ FEET

NORTH

FLOOR PLAN SCALE:

0 8' 16' 32'

NOTE: PRINTS TO 1/8" = 1 FT ON A D-SIZE SHEET

SYM

NC DEPARTMENT OF PUBLIC INSTRUCTION
EASTERN NORTH CAROLINA SCHOOL FOR THE DEAF
301 N WILMINGTON STREET
RALEIGH, NC 27601
PHONE 984-236-2100

SHEET TITLE
ROOF PLAN

JOB TITLE
WOODARD HALL

JOB NO.:
DRAWN BY: RAN
CHECKED BY: RTF
DATE: 4-1-2022

SHEET NO.
R1
OF

BUILDING NAME ALFORD HALL

AREA ID	SIZE	REPLACEMENT	ROOF TYPE	SKYLIGHT	DIFFICULTY	INFLATION	TOTAL	TOTAL
	Sq. Ft.	Year	Select	Ln. Ft.	1.0 - 5.0	5% / Anumm	2022 Dollars	Adjusted Dollars
A	12,650	2030	Modified Bitumen	0	1	1.477	$ 379,500.00	$ 561,000.00

MISC	UNIT COST
Skylight	$ 100.00

TYPE	UNIT COST
Metal Panels	$ 15.00
Modified Bitumen	$ 30.00
PVC	$ 23.00
Tear Off + PVC	$ 27.00
Shingles	$ 8.00

YEAR	TOTAL
2022	$ 380,000.00
2027	$ 485,000.00
2032	$ 619,000.00

NOTE: Difficulty is a rating only and not applied to cost calculation
Replacement Year is for basis of calculating costs only

BUILDING NAME **EAGLES HALL**

AREA ID	SIZE	REPLACEMENT	ROOF TYPE	SKYLIGHT	DIFFICULTY	INFLATION	TOTAL	TOTAL
	Sq. Ft.	Year	Select	Ln. Ft.	1.0 - 5.0	5% / Anumm	2022 Dollars	Adjusted Dollars
A	27,750	2030	PVC *	400	2	1.477	$ 686,250.00	$ 1,014,000.00
B	9,300	2030	PVC *	150	2	1.477	$ 231,900.00	$ 343,000.00
C	3,050	2030	Tear Off + PVC	0	2	1.477	$ 82,350.00	$ 122,000.00
D	6,200	2030	Tear Off + PVC	0	2	1.477	$ 167,400.00	$ 247,000.00
E	3,800	2030	PVC *	0	2	1.477	$ 87,400.00	$ 129,000.00
F	1,200	2030	Tear Off + PVC	0	2	1.477	$ 32,400.00	$ 48,000.00
G	150	2030	Tear Off + PVC	0	2	1.477	$ 4,050.00	$ 6,000.00
H	1,450	2030	PVC *	0	2	1.477	$ 33,350.00	$ 49,000.00
I	650	2030	Tear Off + PVC	0	2	1.477	$ 17,550.00	$ 26,000.00
J	2,350	2030	PVC *	0	2	1.477	$ 54,050.00	$ 80,000.00

MISC	UNIT COST
Skylight	$ 120.00

TYPE	UNIT COST
Metal Panels	$ 15.00
Modified Bitumen	$ 30.00
PVC *	$ 23.00
Tear Off + PVC	$ 27.00
Shingles	$ 8.00

YEAR	TOTAL
2022	$ 1,397,000.00
2027	$ 1,783,000.00
2032	$ 2,276,000.00

* Metal Roofing and Insulation removed
NOTE: Difficulty is a rating only and not applied to cost calculation
Replacement Year is for basis of calculating costs only

BUILDING NAME **ILC BUILDING**

AREA ID	SIZE	REPLACEMENT	ROOF TYPE	SKYLIGHT	DIFFICULTY	INFLATION	TOTAL	TOTAL
	Sq. Ft.	Year	Select	Ln. Ft.	1.0 - 5.0	5% / Anumm	2022 Dollars	Adjusted Dollars
A	8,000	2030	Shingles	0	1	1.477	$ 64,000.00	$ 95,000.00
B	2,750	2030	Shingles	0	1	1.477	$ 22,000.00	$ 32,000.00

MISC	UNIT COST
Skylight	$ 100.00

TYPE	UNIT COST
Metal Panels	$ 15.00
Modified Bitumen	$ 30.00
PVC	$ 23.00
Tear Off + PVC	$ 27.00
Shingles	$ 8.00

YEAR	TOTAL
2022	$ 86,000.00
2027	$ 110,000.00
2032	$ 140,000.00

NOTE: Difficulty is a rating only and not applied to cost calculation
Replacement Year is for basis of calculating costs only

BUILDING NAME **MASSEY ACTIVITY CENTER**

AREA ID	SIZE	REPLACEMENT	ROOF TYPE	SKYLIGHT	DIFFICULTY	INFLATION	TOTAL	TOTAL
	Sq. Ft.	Year	Select	Ln. Ft.	1.0 - 5.0	5% / Anumm	2022 Dollars	Adjusted Dollars
A	6,350	2030	PVC (Memb. Only)	0	1	1.477	$ 95,250.00	$ 141,000.00
B	6,350	2030	PVC (Memb. Only)	0	1	1.477	$ 95,250.00	$ 141,000.00
C	3,300	2030	PVC (Memb. Only)	0	1	1.477	$ 49,500.00	$ 73,000.00
D	800	2030	PVC (Memb. Only)	0	1	1.477	$ 12,000.00	$ 18,000.00
E	450	2030	PVC (Memb. Only)	0	1	1.477	$ 6,750.00	$ 10,000.00
F	700	2030	PVC (Memb. Only)	0	1	1.477	$ 10,500.00	$ 16,000.00

MISC	UNIT COST
Skylight	$ 100.00

TYPE	UNIT COST
Metal Panels	$ 15.00
Modified Bitumen	$ 30.00
PVC	$ 23.00
PVC (Memb. Only)	$ 15.00
Shingles	$ 8.00
Tear Off + PVC	$ 27.00

YEAR	TOTAL
2022	$ 269,000.00
2027	$ 343,000.00
2032	$ 438,000.00

NOTE: Difficulty is a rating only and not applied to cost calculation
Replacement Year is for basis of calculating costs only

BUILDING NAME MAYFIELD HALL

AREA ID	SIZE	REPLACEMENT	ROOF TYPE	SKYLIGHT	DIFFICULTY	INFLATION	TOTAL	TOTAL
	Sq. Ft.	Year	Select	Ln. Ft.	1.0 - 5.0	5% / Anumm	2022 Dollars	Adjusted Dollars
A	12,500	2030	Modified Bitumen	0	1	1.477	$ 375,000.00	$ 554,000.00

MISC	UNIT COST
Skylight	$ 100.00

TYPE	UNIT COST
Metal Panels	$ 15.00
Modified Bitumen	$ 30.00
PVC	$ 23.00
PVC (Memb. Only)	$ 15.00
Shingles	$ 8.00
Tear Off + PVC	$ 27.00

YEAR	TOTAL
2022	$ 375,000.00
2027	$ 479,000.00
2032	$ 611,000.00

NOTE: Difficulty is a rating only and not applied to cost calculation
Replacement Year is for basis of calculating costs only

BUILDING NAME **MCADAMS BUILDING**

AREA ID	SIZE	REPLACEMENT	ROOF TYPE	SKYLIGHT	DIFFICULTY	INFLATION	TOTAL	TOTAL
	Sq. Ft.	Year	Select	Units	1.0 - 5.0	5% / Anumm	2022 Dollars	Adjusted Dollars
A	4,800	2030	Modified Bitumen	0	2	1.477	$ 144,000.00	$ 213,000.00
B	8,700	2030	Modified Bitumen	0	2	1.477	$ 261,000.00	$ 385,000.00
C	8,700	2030	Modified Bitumen	0	2	1.477	$ 261,000.00	$ 385,000.00
D	8,300	2030	Modified Bitumen	0	2	1.477	$ 249,000.00	$ 368,000.00
E	7,150	2030	Modified Bitumen	0	2	1.477	$ 214,500.00	$ 317,000.00
F	7,400	2030	Modified Bitumen	6	2	1.477	$ 240,000.00	$ 354,000.00
G	8,250	2030	Modified Bitumen	15	2	1.477	$ 292,500.00	$ 432,000.00
H	2,750	2030	PVC (Memb. Only)	0	1	1.477	$ 41,250.00	$ 61,000.00

MISC	UNIT COST
Skylight	$ 3,000.00

TYPE	UNIT COST
Metal Panels	$ 15.00
Modified Bitumen	$ 30.00
PVC	$ 23.00
PVC (Memb. Only)	$ 15.00
Shingles	$ 8.00
Tear Off + PVC	$ 27.00

YEAR	TOTAL
2022	$ 1,703,000.00
2027	$ 2,174,000.00
2032	$ 2,774,000.00

NOTE: Difficulty is a rating only and not applied to cost calculation
Replacement Year is for basis of calculating costs only

BUILDING NAME VESTAL HALL

AREA ID	SIZE	REPLACEMENT	ROOF TYPE	SKYLIGHT	DIFFICULTY	INFLATION	TOTAL	TOTAL
	Sq. Ft.	Year	Select	Units	1.0 - 5.0	5% / Anumm	2022 Dollars	Adjusted Dollars
A	10,900	2030	Modified Bitumen	0	2	1.477	$ 327,000.00	$ 483,000.00
B	500	2030	Modified Bitumen	0	2	1.477	$ 15,000.00	$ 22,000.00
C	2,250	2030	Modified Bitumen	0	2	1.477	$ 67,500.00	$ 100,000.00
D	800	2030	Modified Bitumen	0	2	1.477	$ 24,000.00	$ 35,000.00
E	8,800	2030	Modified Bitumen	0	2	1.477	$ 264,000.00	$ 390,000.00
F	23,700	2030	Modified Bitumen	0	2	1.477	$ 711,000.00	$ 1,050,000.00
G	500	2030	Modified Bitumen	0	2	1.477	$ 15,000.00	$ 22,000.00
H	40	2030	PVC (Memb. Only)	0	1	1.477	$ 600.00	$ 1,000.00

MISC	UNIT COST
Skylight	$ 3,000.00

TYPE	UNIT COST
Metal Panels	$ 15.00
Modified Bitumen	$ 30.00
PVC	$ 23.00
PVC (Memb. Only)	$ 15.00
Shingles	$ 8.00
Tear Off + PVC	$ 27.00

YEAR	TOTAL
2022	$ 1,424,000.00
2027	$ 1,817,000.00
2032	$ 2,320,000.00

NOTE: Difficulty is a rating only and not applied to cost calculation
Replacement Year is for basis of calculating costs only

BUILDING NAME **WOODARD HALL**

AREA ID	SIZE	REPLACEMENT	ROOF TYPE	SKYLIGHT	DIFFICULTY	INFLATION	TOTAL	TOTAL
	Sq. Ft.	Year	Select	Units	1.0 - 5.0	5% / Anumm	2022 Dollars	Adjusted Dollars
A	2,650	2030	Modified Bitumen	0	1	1.477	$ 79,500.00	$ 117,000.00
B	6,000	2030	Shingles	0	1	1.477	$ 48,000.00	$ 71,000.00
C	375	2030	Modified Bitumen	0	1	1.477	$ 11,250.00	$ 17,000.00
D	90	2030	Modified Bitumen	0	1	1.477	$ 2,700.00	$ 4,000.00

MISC	UNIT COST
Skylight	$ 3,000.00

TYPE	UNIT COST
Metal Panels	$ 15.00
Modified Bitumen	$ 30.00
PVC	$ 23.00
PVC (Memb. Only)	$ 15.00
Shingles	$ 8.00
Tear Off + PVC	$ 27.00

YEAR	TOTAL
2022	$ 141,000.00
2027	$ 180,000.00
2032	$ 230,000.00

NOTE: Difficulty is a rating only and not applied to cost calculation
Replacement Year is for basis of calculating costs only