



*Ring W. Lardner, P.E.
W. Zachary Crouch, P.E.
Michael E. Wheedleton, AIA, LEED GA
Jason P. Loar, P.E.
Jamie L. Sechler, P.E.*

**PREBID MEETING MINUTES
STOCKLEY MAC CENTER ROOF REPLACEMENT
26351 PATRIOTS WAY
GEORGETOWN, DELAWARE
DBF #0586B064.K01 ❖ OMB/DFM #MC3511000072
JUNE 30, 2026**

ADDENDUM NO. 1

The following items shall become a part of the contract documents. Contractor must acknowledge receipt of this addendum on the Bid Form. Failure to do so may subject the Bidder to disqualification.

Item 1: The pre-bid meeting minutes and sign-in sheet are attached to this addendum.

Item 2: The Bid Form has been revised to include the sub list and is attached to this addendum.

Item 3: DFM has an assessment completed by Roofing Resources. A copy of this assessment is attached to this addendum.

END OF ADDENDUM

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26351 PATRIOTS WAY
GEORGETOWN, DELAWARE
DBF #0586B064.K01 ❖ OMB/DFM #MC3511000072
JUNE 30, 2026**

In Attendance

OMB/DFM:	Michael Bailey	michael.bailey@delaware.gov
Davis, Bowen & Friedel, Inc.:	Michael Bauman Brianna Booth	mpb@dbfinc.com bnb@dbfinc.com
DHSS FAC OPS:	Guy Farmer	guy.farmer@delaware.com

Contractor attendees:

See attached sign-in sheet.

Items Discussed

1. Attendance at the pre-bid is mandatory for general contractors to submit a bid. An attendance list is attached. A brief project description was given by DBF.
2. Bids will be accepted until 1:00 p.m. local time on July 28, 2026, on Bonfire Portal. Bids will be read in the conference room at the Haslet Armory, 122 Martin Luther King Jr. Blvd South, Dover, DE 19901, at 2:00 p.m. If the bid date and time change, the revised bid date and time will be issued via written Addendum. Please allow extra time when submitting bids to account for possible delays. No late bids will be considered. Sealed bids are not accepted.
3. All questions during the bidding shall be submitted in writing to Davis, Bowen & Friedel, Inc., attention: Michael Bauman, via email mpb@dbfinc.com no later than close of business on July 17, 2026. Last day for substitutions is July 14th. No addenda will be issued 2 days prior to the date for receipt of bids except an addendum withdrawing the request for bids or one which extends the time or changes the location for the opening of bids.
4. Bid forms must be submitted along with a Bid Bond equal to ten percent of the bid price. All bid submission documents, including the bid bond, must be completed on the forms provided in the specifications. A Performance and Payment Bonds equal to 100 percent of the contract amount must also be posted upon execution of the contract. Bonds must also cover the allowance and

alternates. No construction schedules are required with the bid.

5. Contractor shall note the projected contract duration on the Bid Form. Contract duration is the time from issuance of the Purchase Order to Substantial Completion.
6. The subcontractor list must accompany the Bid Form and be fully completed in order to submit a qualifying bid. The subcontractor list shall include the following trades: roofing, lightning protection, fireproofing, mechanical, and plumbing
7. The prime general contractor and all subcontractors must be licensed to practice their trade in the State of Delaware prior to execution of the contract.
8. General Contractors who wish to receive addenda directly and be on the bidders list must purchase one (1) set of bid documents from Davis, Bowen & Friedel, Inc. An electronic set can be purchased for \$25.00.
9. A walk through of the areas of work will take place after today's meeting. A second walk through will be held on July 7th at 9:00 a.m.
10. Funding: The project is state funded. Prevailing Wage Rates will be required. For bidding purposes, contractors should refer to the rates and benefits for Building Construction effective March 15, 2026. The contractor will be responsible for sending wage reports to the Department of Labor.
11. Submissions: All permits and costs are the responsibility of the contractor.
12. The contractor will be responsible for having a supervisor on-site at all times during work of any subcontractors or their own forces, including punch-list work.
13. Normal business hours are 8:00 a.m. to 5:00 p.m., Monday through Friday, except State holidays. The contractor will be allowed to work during normal business hours.
14. The Owner will provide water service and power. Contractor shall provide their own toilet facility.
15. The contractor shall be responsible for the means and methods required to complete the scope of work.
16. The Affidavit of Craft Training Compliance and the Affidavit of Employee Drug testing for the General Contractor and all Subcontractors shall be required prior to Contract execution.

Pre-Bid Meeting Minutes
Stockley MAC Center Roof Replacement
June 30, 2026
Page 3

Any changes, additions or deletions to these minutes should be submitted in writing to Davis, Bowen & Friedel, Inc., within ten (10) days.

Respectfully submitted,
DAVIS, BOWEN & FRIEDEL, INC.

A handwritten signature in black ink, appearing to read "Michael Bauman". The signature is fluid and cursive, with a long horizontal stroke at the end.

Michael Bauman, AIA
Architect - Associate

cc: All attendees

PRE-BID SIGN-IN SHEET

Tuesday, June 30, 2026
DBF #0586B064.K01

MAC CENTER ROOF REPLACEMENT, STOCKLEY CAMPUS, GEORGETOWN, DE
MC3511000072

NAME	REPRESENTING	PHONE	EMAIL
John M. Peck	Garvey Roark, LLC	(610) 738-4661	john@garveyroark.com
Christian Locke	Sottan Roofing	(609) 447-6200	Nancy@Sottan.com
Jason Stallings	Quality Exteriors, Inc.	302-398-9283	jason@qexteriorsinc.com
Carmela Falcone	USABCC	908-436-3739	info@usabcc.com
David Reynolds	Detailer Roofing LLC	717-200-4000	info@detailerroofing.com
Angela Mariano	P&C Roofing	302-322-6767	angela@pcroofinginc.com
Coty Cribb	CTA Roofing	302-454-8551	Coty@ctar Roofing.com mark@ctar Roofing.com
Mike Vitale	Alpha Omega Corp	917-453-0830	Michael@AOCGI.com
MATT Truvel	HLC GARDEN	302-766-3962	Matt@HLCGarden.com
Spiras Cassing	Firstline Contracting	781-721-0080	office@firstlinegc.com
Michal megaw	D.A. Volt, Inc.	856-753-9333	mat+@danolt.com
Ryan Sole	Winchester Roofing Corp.	856-534-6291	LynneK@winchesternj.com
Andreas Paromatz	Island Contracting Inc	347-580-9944	ngp788@gmail.com

STATE OF DELAWARE
OFFICE OF MANAGEMENT AND BUDGET
DIVISION OF FACILITIES MANAGEMENT
CONTRACT #MC3511000072
STOCKLEY MAC CENTER ROOF REPLACEMENT
STOCKLEY CENTER
GEORGETOWN, DELAWARE

SECTION 00 41 13

BID FORM

For Bids Due: _____

To: State of Delaware
Division of Facilities Management
122 Martin Luther King Jr. Blvd South
Dover, DE 19901

Name of Bidder: _____

Delaware Business License No.: _____ **Taxpayer ID No.:** _____

(Other License Nos.): _____

Phone No.: () _____ - _____ **Fax No.:** () _____ - _____

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

\$ _____
(\$ _____)

ALLOWANCES

Allowances conform to applicable project specification section. Refer to specifications for a complete description.

Allowance No. 1: Provide an allowance of \$50,000.00 for unforeseen conditions. _____ acknowledged

ALTERNATES

Alternates conform to applicable project specification section. Refer to specifications for a complete description of the following Alternates.

ALTERNATE NO. 1: Complete roof work at column grid C as shown on A-801.

\$ _____

ALTERNATE NO. 2: Complete roof work at column grid D as shown on A-802.

\$ _____

STATE OF DELAWARE
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GEORGETOWN, DELAWARE

ALTERNATE NO. 3: Complete roof work at column grid E as shown on A-803.

\$ _____

ALTERNATE NO. 4: Complete roof work on cupola as shown on A-804.

\$ _____

ALTERNATE NO. 5: Replace pool house roof as shown on A-805.

\$ _____

ALTERNATE NO. 6: Replace the entire roof with standing seam metal roof.

\$ _____

STATE OF DELAWARE
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STOCKLEY MAC CENTER ROOF REPLACEMENT
STOCKLEY CENTER
GEORGETOWN, DELAWARE

BID FORM

I/We acknowledge Addendums numbered _____ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for thirty (30) days from the date of opening of bids (60 days for School Districts and Department of Education), and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid.

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

Should I/We be awarded this contract, I/We pledge to achieve substantial completion of all the work within _____ calendar days of the Notice to Proceed.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By _____ Trading as _____
(Individual's / General Partner's / Corporate Name)

(State of Corporation)

Business Address: _____

Witness: _____ By: _____
(SEAL) (Authorized Signature)

(Title)
Date: _____

ATTACHMENTS

Sub-Contractor List
Non-Collusion Statement
Affidavit of Employee Drug Testing Program
Affidavit of Contractor Qualifications
Bid Security
(Others as Required by Project Manuals)

STATE OF DELAWARE
OFFICE OF MANAGEMENT AND BUDGET
DIVISION OF FACILITIES MANAGEMENT
CONTRACT #MC3511000072
STOCKLEY MAC CENTER ROOF REPLACEMENT
STOCKLEY CENTER
GEORGETOWN, DELAWARE

BID FORM

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 69, Section 6962(d)(10)b of the Delaware Code, the following subcontractor listing must accompany any bid submittal. The bidder must list **in each category** the full name and address (City & State) of the sub-contractor that the bidder will be using to perform the work and provide material for that subcontractor category. Should the bidder's listed subcontractor intend to provide any of their subcontractor category of work through a third-tier contractor, the bidder shall list that third-tier contractor's full name and address (City & State). **If the bidder intends to perform any category of work itself, it must list its full name and address.** For clarification, if the bidder intends to perform the work themselves, the bidder **may not** insert "not applicable", "N/A", "self" or anything other than its own full name and address (City & State). To do so shall cause the bid to be rejected. In addition, the failure to produce a completed subcontractor list with the bid submittal shall cause the bid to be rejected. If you have more than three (3) third-tier contractors to report in any subcontractor category, print out additional page(s) containing the appropriate category, complete the rest of your list of third-tier contractors for that category, notate the addition in parentheses as (CONTINUATION) next to the subcontractor category and an asterisk (*) next to any additional third-tier contractors, and submit it with your bid.

<u>Subcontractor Category</u>	<u>Subcontractor</u>	<u>Address (City & State)</u>	<u>Subcontractors tax-payer ID # or Delaware Business license #</u>
1. Roofing			
A.			
B.			
C.			
2. Lightning Protection			
A.			
B.			
C.			

STATE OF DELAWARE
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GEORGETOWN, DELAWARE

3.	Fireproofing			
	A.			
	B.			
	C.			
4.	Mechanical			
	A.			
	B.			
	C.			
5.	Plumbing			
	A.			
	B.			
	C.			

STATE OF DELAWARE
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STOCKLEY MAC CENTER ROOF REPLACEMENT
STOCKLEY CENTER
GEORGETOWN, DELAWARE

BID FORM

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date *(to the Office of Management and Budget, Division of Facilities Management)*.

All the terms and conditions of MC3511000072 have been thoroughly examined and are understood.

NAME OF BIDDER:

AUTHORIZED REPRESENTATIVE
(TYPED):

AUTHORIZED REPRESENTATIVE
(SIGNATURE):

TITLE:

ADDRESS OF BIDDER:

E-MAIL:

PHONE NUMBER:

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

STATE OF DELAWARE
OFFICE OF MANAGEMENT AND BUDGET
DIVISION OF FACILITIES MANAGEMENT
CONTRACT #MC3511000072
STOCKLEY MAC CENTER ROOF REPLACEMENT
STOCKLEY CENTER
GEORGETOWN, DELAWARE

**AFFIDAVIT
OF
EMPLOYEE DRUG TESTING PROGRAM**

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds.

We hereby certify that we have in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for our employees on the jobsite, including subcontractors, that complies with this regulation:

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____

Authorized Representative (typed or printed): _____

Authorized Representative (signature): _____

Title: _____

Sworn to and Subscribed before me this _____ day of _____, 20____.

My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

STATE OF DELAWARE
OFFICE OF MANAGEMENT AND BUDGET
DIVISION OF FACILITIES MANAGEMENT
CONTRACT #MC3511000072
STOCKLEY MAC CENTER ROOF REPLACEMENT
STOCKLEY CENTER
GEORGETOWN, DELAWARE

**AFFIDAVIT
OF
CONTRACTOR QUALIFICATIONS**

We hereby certify that we will abide by the contractor's qualifications outlined in the construction bid specifications for the duration of the contract term.

In accordance with Title 29, Chapter 69, Section 6962(d)(10)b.3 of the Delaware Code, after a contract has been awarded the successful bidder shall not substitute another subcontractor whose name was submitted on the Subcontractor Form except for the reasons in the statute and not without written consent from the awarding agency. Failure to utilize the subcontractors on the list will subject the successful bidder to penalties as outlined in the General Requirements Section 5.2 of the contract.

Contractor Name: _____

Contractor Address: _____

Authorized Representative (typed or printed): _____

Authorized Representative (signature): _____

Title: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.



***STOCKLEY MAC CENTER
GEORGETOWN, DE***

***ROOF ASSESSMENT REPORT
PO# 0000536441***

January 27, 2021

PREPARED BY:



**PROFESSIONAL BUILDING ENVELOPE
CONSULTANTS**
423 McFarlan Road
Suite #100
Kennett Square, PA 19348
Tel: 610-558-4000
WEBSITE: www.teamrri.com

A WOMAN OWNED SMALL BUSINESS

PREPARED FOR:

State of Delaware
Facilities Management Administration
Office of Management and Budget
540 S Dupont Hwy. Dover, DE
19901

ATTENTION:
Patrick McKenna
Project Manager

DELAWARE HEALTH AND SOCIAL SERVICES

Stockley MAC Center
Georgetown, DE

Roof Assessment

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EXECUTIVE SUMMARY

The Stockley MAC Center is a facility owned by the Delaware Department of Health and Social Services (DHSS). Stockley Center, located in Georgetown Delaware, is a care facility for individuals with intellectual and developmental disabilities. The facility, constructed around 2006, consists of the main administrative building, three residential wings, therapy pool building and connecting corridors. The roof systems at the facility are a combination of low-sloped and steep-sloped systems.

DHSS expressed concerns with the existing roof system after noticing depressions in the shingled roof along the North side of the Administrative building and the interior delamination of the fireproofing on the underside of the plywood deck of the steep-sloped roofs.

On Monday, January 18th and Tuesday January 19th, 2021, personnel from RRI performed a site visit at the Stockley MAC Center. The purpose of the visit was to meet with DHSS personnel, review available construction drawings, and complete a survey of the existing roof conditions at the facility. RRI gathered information for an assessment of the existing roof systems including measurements, photographic documentation, etc., and extracted representative roofs core to confirm the existing roof conditions.



Figure 1 – Building Overview

CONDITIONS & RECOMMENDATIONS

The information below outlines the conditions observed during RRI's site visit. Recommendations and budgets are also provided.

During our site visit, RRI noticed deficiencies with components of the existing roof systems.

Descriptions and conditions of the Stockley MAC Center are listed below and are based on multiple sources. First, archival information was reviewed, along with drawings provided by DHSS. Second, a site visit took place on January 18 & 19, 2021 to document the location and severity of conditions related to the potential water infiltration issues. Extensive photographs of the building, taken over the course of the visits, were also used to record and confirm existing conditions. The site visit did not include extensive testing methods, however exploratory demolition was used to ascertain dimensions and characteristics of the existing roof system. *(Note: Given the extent of the survey, the description of building configurations or components that were not visible during the survey are based on archival materials such as construction drawings.)* Once the conditions were documented, recommendations were made based on conditions existing at the time of the survey.

The conditions have been organized by building component type:

A. Roof Decking

1. Fire Rated Plywood

a. Administrative, Residential Wings and Corridors

i. Description

The roof deck at the steep-sloped section is a combination of 5/8" fire rated plywood attached to steel hat channels at the main part of the roof and 5/8" fire rated plywood attached directly to steel rafters at the dormers.

ii. Condition

The plywood deck is generally in fair condition. There are localized areas where deterioration is suspected. Visible deflection in the roof deck across the building was documented. (See Photo 1 and Photo 2) The fireproofing on the underside of the deck is delaminating and falling to the floor of the attic space (See Photo 3 and Photo 4). Additionally, RRI suspects that the roof deck was insufficiently/improperly secured in multiple locations. Ridges noticed in the shingles appear to match the vertical seams of the plywood (ridges 8' O.C.). From the interior, in several areas that were accessible, there appeared to be fasteners missing or spaced several feet apart.

iii. Recommendation

The sections of roof that have noticeable deflections should be repaired before water infiltration occurs. Sections of shingles, underlayment and plywood should be removed and replaced. The areas to be replaced will be determined by the amount of plywood that has to be removed in order for the seams of new plywood to align properly on the sub-structure. After the deck is repaired, a new underlayment and architectural shingles should be installed to blend into the existing roof.

The delamination of the fireproofing on the underside of the plywood and the deflection in the deck may be caused by insufficient or inadequate ventilation of the space underneath the roof deck. Attic space ventilation and potential condensation issues should be further investigated by a Mechanical Engineering Firm.

Questions arose surrounding the attachment of the roof deck because a consistent was pattern noticed in the shingles at the eaves of the roof (Photo 5) and conditions observed on the interior. Ridges spaced 8' O.C. were documented around the facility. The telegraphing of these seams could be caused by insufficient fasteners or because original installation lacked the use of plywood clips between the hat channels to prevent the plywood from cupping at the vertical seams. Given the age of the roof (approx. 14 years), these conditions could wait to be addressed during a future roof replacement that will have to address the fireproofing at the roof deck. RRI examined the plywood focusing explicitly on the attachment of the roof system. The interior areas observed by RRI did not appear to show deterioration of the plywood that would affect the withdraw strength of the fasteners used to attach the roofing. A Fire Protection Engineer should be consulted about the condition of the fireproofing material on the underside of the plywood.



Photo 1 – Roof deck deflection in field of roof.



Photo 2 – Roof deflection below dormer valley.



Photo 3 – Fireproofing delaminating from plywood.



Photo 4 – Fireproofing material on floor of attic space.

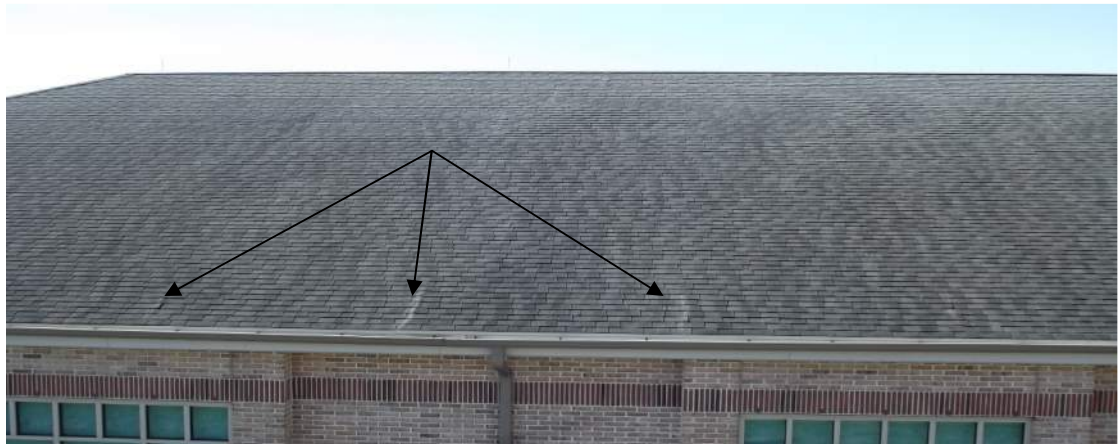


Photo 5 – Ridges in shingles at plywood seams.



Photo 6 – Missing fasteners in plywood.

2. Metal Roof Decking

a. Administrative, Residential Wings and Therapy Pool Vestibule

i. Description

Most of the low-sloped roof sections sit toward the center of the buildings except for the Therapy Pool Vestibule (RA – 14). The roof deck is a steel, B-style roof deck, that sits atop the roofs' structural members. The steel super structure of the low-slope roofs appear to provide the pitch for drainage of the roofs.

ii. Condition

The steel roof deck appears to be in good condition.

iii. Recommendation

No recommendation or remediations are needed to this component currently.

3. Tectum Roof Decking

a. Therapy Pool

i. Description

The Therapy Pool Roof (RA – 13) appears to have a multi-layer roof deck system. On the interior of the facility, tectum panels of an undetermined thickness are visible. A core taken from the exterior appears to show the tectum panels are topped with a OSB plywood. There is an air space of approx. 3/4” which we assume is caused by battens attached to the tectum panel, followed by a 5/8” CDX plywood deck to which the shingle roof is attached.

ii. Condition

The roof deck assembly at the Therapy Pool Roof has interior and exterior issues visible. Widespread staining is present on the interior of the tectum deck. On the exterior portion of the roof deck there were several bulges that were noticed.

iii. Recommendation

RRI was informed that the Therapy Pool is no longer in use. The interior staining appears to be the product of the humidity in the pool area and the ability of the air handling units to effectively remove that moist air. With the pool drained and the air handling system offline no action appears to be needed at this time.

The bulges on the exterior portion of the roof deck may have also been caused by interior moisture conditions. The bulges in the roof deck do not appear to be affecting the integrity of the roof system or leading to water infiltration. Considering the age of the roof, no action is needed until the roof is slated to be replaced or a leak occurs.



Photo 7 – Staining on tectum deck.



Photo 8 – Bulge in roof deck.



Photo 8 – Roof core taken at Therapy Pool.

B. Thermal & Moisture Protection

1. Roof System

a. Shingles

i. Description

The shingled sections of roof make up the majority of the total square footage of roofing at the facility. The light gray mineral coated architectural shingles appear to be in good condition overall. Step flashings, counter flashings and valleys are constructed out of stainless steel and also appear to be in good condition. A shed style ridge vent is present at the transition between the shingle roof system and the modified built-up roof system on the low sloped section. The dormers across the building do not have a ridge vent installed.



Photo 9 – Overview of shingled roof



Photo 10 – Overview shingled roof

ii. Conditions

There are some typical localized issues that were observed, including nail pops, missing shingles and hip caps caused by wind events, and a modest loss of granules. There are also potential technical problems related to the original design and installation described below. The nail pops are spread liberally across the facility, the loose or missing shingles are all called out on the drawing in appendix B.

The shingles, which overall appear to be correctly installed have an excessive overhang at the eaves and rakes. Standard overhang for a shingle at the eave and rake drip edge is $\frac{3}{4}$ " and can vary according to manufacturer. The reveal observed on site at the rake and eave was almost double that recommended by manufacturers. This condition over time will cause the shingles

to curl downwards (Photo 11) and can, at rake location make the exposed edge more susceptible to wind uplift. The shingle roof system has an architecturally designed exhaust system, using a vented soffit in conjunction with a vented ridge on the main roof sections. This should allow for a continuous flow of air through the attic space. In contrast, the dormer sections do not have a ridge vent installed. The dormers have a vented soffit and a louver at the gable end, relying on the ridge vent on the main roof to exhaust air. In the areas that were where able to access the louvers at the gables were blocked off (Photo 12).

The detailing and design of the roof system appears to be well thought out and well executed. There is one detail on the roof that could have been enhanced to protect against potential future water infiltration. The open valley detail (V-shaped), which appears to be correctly installed but could benefit from enhancement such as the ones listed in Appendix C. Additionally, the installation of a 1" center rib in the valley creating a W-shaped valley is typically recommended. According to the National Roofing Contractors Association (NRCA) "V-shaped valley metal performs satisfactory in certain environments but not when a valley is formed by two different roof slopes." Potential water infiltration issues at the dormers may be caused by this detail.

iii. Recommendations

The existing roof appears to be in good condition with normal weathering and with preventative maintenance appears to have a fair amount of useful life remaining. Preventative roof maintenance to address nail pops and missing or loose shingles should take place to prevent potential leaks.

In RRI's opinion, a bead of sealant could be applied between the valley metal and the underside of the shingles on the low side of the transition between the dormers and the main roof to prevent potential "wash over" in the valley. The interior conditions, specifically the air flow should be addressed by a Mechanical Engineering Firm.



Photo 11 - Shingles curling down into gutter.

Photo 12 – Louver in gable of dormer closed off.



Photo 13 – Typical nail pops at shingles.



Photo 14 – Loose shingles at dormer.



b. Modified Asphalt Roof with Flood Coat and Stone (Administrative and Residential Wings)

i. Description

The low-sloped roof sections the Administrative and Residential Wings consist of a multiple ply modified roof membrane set in hot asphalt and topped with a flood coat of asphalt and embedded stone aggregate.

ii. Conditions

These roof areas appear to be in good condition. There are however components that should be addressed with regular maintenance before water infiltration occurs. The existing pitch

pockets have started to show signs of deterioration and there are rooftop items that have been incorrectly installed or abandoned.

iii. Recommendations

Preventative maintenance on the low-slope systems will ensure that they reach the end of their warranted period/useful life without burdensome leak issues. The existing pitch pockets should be removed and re-installed or re-flashed with a fluid applied membrane with an embedded fabric reinforcement. There are also several rail curbs and penetrations that are no longer in use but were not properly abandoned. These items should be removed or properly flashed. Finally, items including the large speaker system and the fall protection railings around the roof hatches should be addressed. The speaker was not set on a slip/sacrificial sheet and will start dig into the roof membrane over time. The railings at the roof hatches are in poor shape and are no longer functioning properly. Replacement of the railings should be considered.



Photo 15 – Deterioration at pitch pocket. Typical condition



Photo 16 – Abandoned rail curb. Metal cap is not secured.



Photo 17 – Wood base of speaker system is not on a slip sheet.



Photo 18 – The fall protection rails around the hatch units are deteriorating.

c. Two-ply Modified Asphalt Roof (Therapy Pool Vestibule and Entrance Roof)

i. Description

The low-sloped roof section of the Therapy Pool Vestibule and Entrance roof consist of a Two-ply modified roof membrane set in hot asphalt. The cap sheet is a mineral surfaced cap sheet.

ii. Conditions

These roof areas appear to be in good condition. There are however components that should be addressed with regular maintenance before water infiltration occurs. The flashing that meets the rising wall of the Therapy Pool Building has openings at the seams. The Entrance roof appears to have had all its seams coated with roof mastic and fabric.

iii. Recommendations

The open flashing sections on the Therapy Pool Vestibule roof should be repaired using an asphalt roof mastic and reinforcement fabric.



Photo 19 – Roof Overview



Photo 20 – Entrance Roof

Photo 21 – Opening
in flashing at rising
wall.



d. Single Ply EPDM Roof (Therapy Pool Corridor Connecting to Main Buildings)

i. Description

The low-sloped roof section of the Therapy Pool Corridor consists of a single ply EPDM. This was the only low-sloped roof section that was confirmed to have a plywood deck.

ii. Conditions

This roof appears to be in good condition.

iii. Recommendations

There is currently no recommendation for this area.



Photo 22 – Therapy Pool Corridor Roof Overview



Photo 23 – Therapy Pool Corridor Roof Overview

SUMMARY OF RECOMMENDATIONS

A. Roof Decking

Overall, the roof decking appears to be in good condition from the areas review visually on the interior of the building. There does not appear to be any issues with the areas that contain steel roof deck. The Therapy Pool Roof has a multi-layer deck assembly with tectum visible on the interior and a CDX plywood at the top of the assembly to which the architectural shingles are attached. There is staining that is visible on the tectum deck but with the space decommissioned the staining does not appear to be from water infiltration. The deck visually appears to be sound and with the area currently inactive there are no remedial remedies recommended.

The 5/8" fire resistant plywood, which is the roof deck for all the shingle roof section except the Therapy Pool has some underlying issues. Strictly from a roofing perspective, the plywood appears to be functional. There are several areas across the roof where the roof deck is visibly concaved. This does not appear to be related to the shingles or a leak in the roof. These areas should be removed and replaced before an eventual roof leak causes interior damage. The primary cause of this deterioration is currently unknown, but we believe it could be related to an interior condensation issue also causing the fireproofing to delaminate. A Mechanical Engineering firm should be consulted to determine if interior air flow or condensation is contributing or causing the delamination. Separately, a Fire Protection Engineering firm should be consulted to determine if the conditions present on interior of the plywood have affected its fire rating.

B. Thermal and Moisture Protection

Overall, the roofing systems appear to be in good condition. The low-sloped roof sections at the facility need preventative maintenance to address typical concerns for a roof of this age. Deterioration at existing pitch pockets should be addressed by removing and re-installing the current pitch pockets or coating them with a fluid applied membrane. The modified roof systems at the facility are approximately 14 years old, with a typical life expectancy of 20-25

years with yearly maintenance.

The steep-sloped roofs areas are covered with an architectural shingle. The majority of the shingled roofs appear to be in good condition. There are typical concerns for a roof of this age, including nail pops and localized areas that appear to have sustained minor wind damage. The nail pops should be repaired, and the loose or missing shingles should be properly repaired. The shingled roof systems at the facility are approximately 14 years old with a typical life expectancy of 20-25 years with yearly maintenance. There are several areas across the roof where the plywood appears to be damaged underneath the shingles. In these locations the roof system should be removed, the damaged plywood should be removed and replaced and new underlayment and shingles should be installed.

BUDGETS

Material/Repair/Replacement Type	Square Foot Area	Estimated Square Foot Cost	Steep or Low Slope	Total Estimated Budget
Low-Sloped Roof Repair	N/A	N/A	Low	\$15,000
Replacement Two-Ply Modified	36,823	\$35	Low	\$1,288,805
Replacement Single-Ply EPDM	36,823	\$22	Low	\$810,106
Replacement Single-Ply TPO	36,823	\$25	Low	\$920,575
Steep-sloped Roof Repair	N/A	N/A	Steep	\$20,000
Replacement Architectural Shingles	75,154	\$15	Steep	\$1,127,190
Replacement Standing Seam Metal	75,154	\$35	Steep	\$2,630,110
Replacement Synthetic Slate	75,154	\$30	Steep	\$2,254,380

Appendix A

Roof Construction

Roof Area/Core #	System Construction	Wet (Y/N)	Asbestos
Core #1 Admin. Wing RA - 1	Metal Deck, 8" Polyisocyanurate, .5" Fiber Board, .5" Two-ply modified roof set in hot asphalt with a flood coat of asphalt with embedded stone. This core was taken at the high point of the roof in a cricket.	N	N/A
Core #2 Admin. Wing RA - 1	Metal Deck, 3" Polyisocyanurate, .5" Fiber Board, .5" Two-ply modified roof set in hot asphalt with a flood coat of asphalt with embedded stone. Taper in structure.	N	N/A
Core #3 Residential Wing RA - 11	Metal Deck, 3" Polyisocyanurate, .5" Fiber Board, .5" Two-ply modified roof set in hot asphalt with a flood coat of asphalt with embedded stone. Taper in structure.	N	N/A
Core #4 Residential Wing RA - 11	Metal Deck, 3" Polyisocyanurate, .5" Fiber Board, .5" Two-ply modified roof set in hot asphalt with a flood coat of asphalt with embedded stone. Taper in structure.	N	N/A
Core #5 Therapy Pool Corridor RA- 15	Plywood Deck, 4" Polyisocyanurate, EPDM. Tapered Insulation	N	N/A
Core #6 Therapy Pool Corridor RA- 15	Plywood Deck, 1.75" Polyisocyanurate, EPDM. Tapered Insulation	N	N/A
Core #7 Therapy Pool Vestibule RA- 14	Metal Deck, 6.5" Polyisocyanurate, .5" Fiber Board, .5" Two-ply modified roof set in hot asphalt. Taper in structure.	N	N/A
Core #8 Therapy Pool Vestibule RA- 14	Metal Deck, 6.5" Polyisocyanurate, .5" Fiber Board, .5" Two-ply modified roof set in hot asphalt. Taper in structure.	N	N/A

Core #9 Therapy Pool RA- 13	Tectum deck thickness undetermined with a OSB plywood topper. ¾" air space for assumed batten or hat channel, 5/8 CDX plywood, Asphalt underlayment, Architectural shingles	N	N/A
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Roof Core Pool Corridor RA - 15



Roof Core Pool Vestibule Roof RA - 14



Roof Core Admin. Wing RA - 1



Roof Core Residential Wing RA - 11

APPENDIX B

ROOF PLAN

APPENDIX C

NRCA EXCERPTS

With asphalt shingle roof systems, there are three basic types of valleys:

- Open valley
- Closed-cut valleys
- Woven valleys

These three general types of valleys are constructed only after the necessary layer(s) of underlayment and any valley-lining material specified have been applied to a deck.

Valley underlayment construction consists of an additional full-width sheet of polymer-modified bitumen underlayment, base sheet or self-adhering polymer-modified bitumen sheet. This valley underlayment is centered in a valley. Mechanically attached underlayment sheets are secured with only enough fasteners to hold them in place until the balance of valley materials is applied. The courses of underlayment from the fields of two adjoining roof areas are extended so each course overlaps the valley underlayment by at least 12 inches. A valley is then lined with the balance of the valley flashing. Another recognized installation method is weaving intersecting underlayment courses through a valley in addition to the sheet centered in the valley on top of the underlayment. All layers of underlayment in and through a valley should be tight with no bridging. See Figure 3-23.

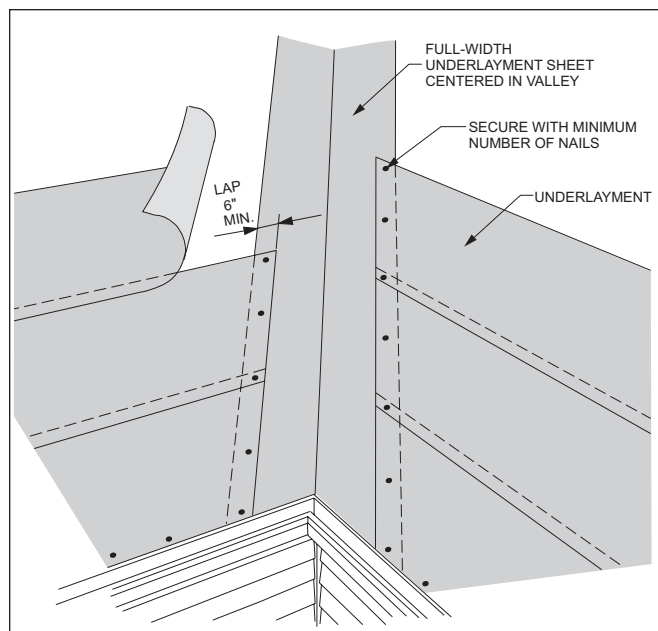


Figure 3-23: Underlayment centered in valley to channel water runoff down the valley

To prevent leakage, it is important with all types of valley construction to avoid placing fasteners and penetrations near the center of a valley. Generally, fasteners should be kept back from the center of a valley a minimum of 8 inches. However, with very shallow valleys or in climates where freeze-thaw cycling or intense rainfall may be regularly anticipated, holding nails back farther from the center of the valley is not uncommon.

Open Valleys: An open valley is constructed by installing typically 8-foot or 10-foot lengths of corrosion-resistant metal from the low point to the high point in the valley. Asphalt shingles are lapped onto both sides of the valley metal, leaving a clear space between the roofing material to channel runoff water down the valley. An example of open valley construction using metal valley material is illustrated in Figure 3-24.

A minimum 36-inch-wide layer of polymer-modified bitumen underlayment, base sheet or self-adhering underlayment is centered in the valley under the field underlayment.

Valley metal should be installed so the downslope end is flush with the eave shingle starter strips. When heavy laminated shingles are used, the valley flanges can be hemmed and each section fastened with metal clips spaced 8 inches to 24 inches. In many regions, metal valleys are

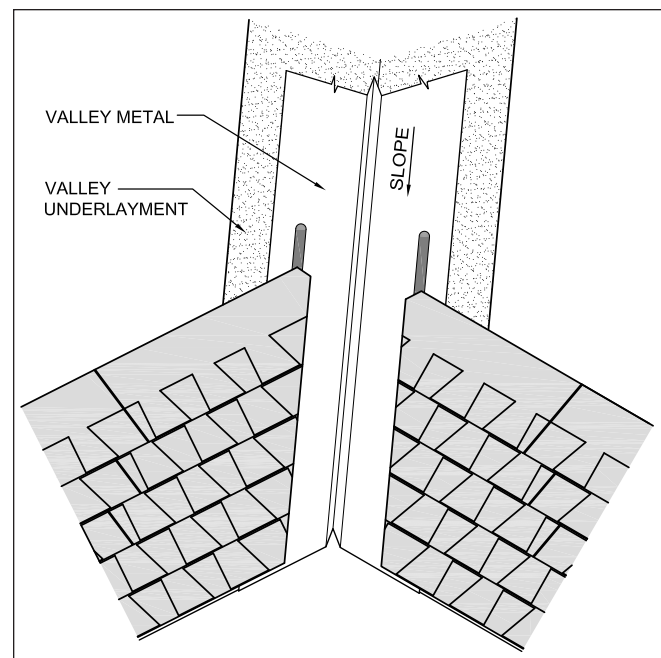


Figure 3-24: Open valley using metal valley flashing

fastened by nailing along outer flanges, and the flanges are not hemmed.

The type and minimum thickness of the metal used in an open valley should be commensurate with the expected service life of the asphalt shingle roof system. NRCA suggests valley metal for asphalt shingle roof systems be fabricated from one of the following metal types and minimum thicknesses:

- 26-gauge galvanized steel
- 26-gauge prefinished galvanized steel
- 26-gauge Galvalume
- 26-gauge stainless steel
- 0.016-inch-thick copper-coated stainless steel
- 0.032-inch-thick aluminum
- 0.032-inch-thick prefinished aluminum
- 16-ounce copper
- 16-ounce lead-coated copper

NRCA also suggests valley metal be formed into a W shape with a splash diverter or rib in the center. A center rib can be especially beneficial in valleys where adjoining roof areas are of unequal slope because the rib helps prevent wash over of runoff. A center rib should not be less than 1 inch high. For easier installation and for controlling thermal expansion and contraction, NRCA suggests valley metal pieces used with asphalt shingle roofing be s longer than 10 feet.

NRCA recognizes that V-shaped valley metal performs satisfactorily in certain environments but not when a valley is formed by two different roof slopes.

NRCA recommends valley metal for use with asphalt shingles be a minimum of 24 inches wide. This means the flanges on each side of a metal valley centerline are about 11 inches wide. This allows asphalt shingles to lap onto a flange at least 4 inches.

Open valleys permit clear, unobstructed drainage and are advantageous in locations where foliage shed from surrounding trees settles on a roof surface and tends to accumulate in the valleys, where slopes are relatively shallow and where high-definition laminate shingles are used.

In climates prone to heavy accumulations of snow and ice

or regular freeze-thaw cycling, open valley construction can be enhanced by the following procedures:

- Using clips to secure flanges where heavy shingles are used
- Lining a valley with a self-adhering polymer-modified bitumen underlayment material before application of the metal valley
- Stripping in flanges on each side of a metal valley with a 9- to 12-inch strip of self-adhering polymer-modified bitumen underlayment material. The self-adhering material is adhered onto the valley metal flange and the underlying width of similar self-adhering underlayment material.
- Adding a closure at the eave end of the W-shaped valley metal to minimize water and ice infiltration
- Tapering the valley so it is wider at its low point than it is at its high point

Tapering a valley has the following advantages:

- It allows for increase in water runoff volume to be received at the downslope end.
- It allows any ice that may form within the valley to free itself when melting and slide down and exit the valley rather than lodging somewhere along the length of the valley.

A valley's width, or the amount of space between valley shingles from the adjacent roof areas, should increase uniformly so the valley widens as it continues downslope. The difference in the width of the upper end of a valley and lower end is referred to as the taper. In most climates, the amount of valley taper is suggested to be about $\frac{1}{8}$ of an inch per foot of valley length. For example, in a valley 16 feet long, the distance between asphalt shingles should be 2 inches greater at the bottom of the valley than at the top. The length of a valley may necessitate a wider metal profile to allow for taper from top to eave.

Closed-cut Valleys: In closed-cut valleys, shingles on one side of the valley are installed across the valley and shingles from the other side are cut about 2 inches short of the centerline of the valley. The closed-cut valley method can be used with most types of strip shingles and light-weight laminates. Single-layer, individual-type shingles