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Level 111 Application

Maine Medical Center
Bramhall Street
Bean 2 Roof Addition
May 2013

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TAB 1



Maine Medical Center

MaineHealth

*Office of the Executive Vice President
and Chief Operating Officer*

May 24, 2013

Ms. Carol Morrissette, Chair
Portland Planning Board
389 Congress Street
Portland, Maine 04101

Site Plan Application
22 Bramhall Street
CBL 53-D-1,2,7; CBL 53-E-1,2,10,13; CBL 53-G-1,13; CBL 54-H-1;
CBL 64-C-1,2

Dear Chair Morrissette and Members of the Portland Planning Board:

Maine Medical Center (MMC) is requesting Major Site Plan approval for a +/- 40,000 s.f. addition to the Lower Bean Building (aka Bean 2) located at 22 Bramhall Street (in the vicinity of the MMC emergency department). The addition will modernize and upgrade MMC's existing surgical facilities by enlarging existing ORs to meet standard of care requirements and adding four additional surgical suites. The addition will be located on the roof of the Bean 2, and, as a result, will have no impact on building footprint or impervious surface.

Attached please find MMC's completed application for the required Site Plan Approval for Major Development. Along with the Application, please find payment of the \$500.00 Application Fee. We very much look forward to the opportunity to meet with you and discuss the Hospital's plan for its surgical facilities.

Sincerely,

Jeffrey D. Sanders
Executive Vice President and Chief Operating Officer

Cc: Jean Fraser
Walter Pochebit

TAB 2



Level III - Preliminary and Final Site Plans Development Review Application Portland, Maine

Planning and Urban Development Department
Planning Division

Portland's Planning and Urban Development Department coordinates the development review process for site plan, subdivision and other applications under the City's Land Use Code. Attached is the application form to be used for a Level III: Preliminary or Final Site Plan. Please note that Portland has delegated review from the State of Maine for reviews under the Site Location of Development Act, Chapter 500 Stormwater Permits, and Traffic Movement Permits. General information pertaining to the thresholds of review and fee structure is contained on page 3 of this application. The Land Use Code (including Article V), the Technical Manual, and the Design Manual are available on the City's web site at <http://www.portlandmaine.gov/planning/default.asp>

Level III: Site Plan Development includes:

- New structures with a total floor area of 10,000 sf or more except in Industrial Zones.
- New structures with a total floor area of 20,000 sf or more in Industrial Zones.
- New temporary or permanent parking area(s) or paving of existing unpaved parking areas for more than 75 vehicles.
- Building addition(s) with a total floor area of 10,000 sf or more (cumulatively within a 3 year period) except in Industrial Zones.
- Building addition(s) with a total floor area of 20,000 sf or more in Industrial Zones.
- A change in the use of a total floor area of 20,000 sf or more in any existing building (cumulatively within a 3 year period).
- Multiple family development (3 or more dwelling units) or the addition of any additional dwelling unit if subject to subdivision review.
- Any new major or minor auto business in the B-2 or B-5 Zone, or the construction of any new major or minor auto business greater than 10,000 sf of building area in any other permitted zone.
- Correctional prerelease facilities.
- Park improvements: New structures greater than 10,000 sf and/or facilities encompassing 20,000 sf or more (excludes rehabilitation or replacement of existing facilities); new nighttime outdoor lighting of sports, athletic or recreation facilities not previously illuminated.
- Land disturbance of 3 acres or more (includes stripping, grading, grubbing, filling or excavation).

The Land Use Code (including Article V), the Technical Manual, and the Design Manual are available on the City's web site at <http://www.portlandmaine.gov/planning/default.asp> or copies may be purchased at the Planning Division Office.

Planning Division
Fourth Floor, City Hall
389 Congress Street
(207) 874-8721 or 874-8719

Office Hours
Monday thru Friday
8:00 a.m. - 4:30 p.m.

PROJECT NAME: Maine Medical Center - Bean 2 Roof Addition

PROPOSED DEVELOPMENT ADDRESS:

Bramhall Street

PROJECT DESCRIPTION:

Vertical Expansion of LL Bean building for new operating rooms and mechanical systems.

CHART/BLOCK/LOT: CBL 53-D-1,2,7 PRELIMINARY PLAN 5/28/13 (date)
CBL 53-E-1,2,10,13 FINAL PLAN _____ (date)
CBL 53-G-1,13
CBL 54-H-1
CBL 64-C-1,2

CONTACT INFORMATION:

Applicant - must be owner, Lessee or Buyer Name: Penelope St. Louis Business Name, if applicable: Maine Health Address: 110 Free Street City/State : Portland ME Zip Code: 04101	Applicant Contact Information Work # 207-661-7157 Home# N/A Cell # N/A Fax# e-mail: stlouis@mmc.org
Owner - (if different from Applicant) Name: Same as Applicant Address: City/State : Zip Code:	Owner Contact Information Work # Home# Cell # Fax# e-mail:
Agent/ Representative Name: William Conway, Sebago Technics Inc. Address: 75 John Roberts Road, Suite 1A City/State : South Portland, ME Zip Code: 04106	Agent/Representative Contact information Work # 207-200-2055 Cell # 207- 205-5271 e-mail: wconway@sebagotechnics.com
Billing Information Name: Same as Applicant Address: City/State : Zip Code:	Billing Information Work # N/A Cell # Fax# e-mail:

Engineer Name: Same as Agent Address: City/State : Zip Code:	Engineer Contact Information Work # N/A Cell # Fax# e-mail:
Surveyor Name: Same as Agent Address: City/State : Zip Code:	Surveyor Contact Information Work # N/A Cell # Fax# e-mail:
Architect Name: Susanna Baker, Perkins&Will Address: 55 Court Street City/State : Boston, MA Zip Code: 02108	Architect Contact Information Work # 617-478-0321 Cell # N/A Fax# N/A e-mail: susanna.baker@perkinswill.com
Attorney Name: N/A Address: City/State : Zip Code:	Attorney Contact Information Work # N/A Cell # Fax# e-mail:

APPLICATION FEES:

Check all reviews that apply. (Payment may be made by Cash or Check payable to the City of Portland.)

<p>Level III Development (check applicable reviews)</p> <p><input type="checkbox"/> Less than 50,000 sq. ft. (\$500.00)</p> <p><input type="checkbox"/> 50,000 - 100,000 sq. ft. (\$1,000)</p> <p><input type="checkbox"/> 100,000 - 200,000 sq. ft. (\$2,000)</p> <p><input type="checkbox"/> 200,000 - 300,000 sq. ft. (\$3,000)</p> <p><input type="checkbox"/> over \$300,00 sq. ft. (\$5,000)</p> <p><input type="checkbox"/> Parking lots over 11 spaces (\$1,000)</p> <p><input type="checkbox"/> After-the-fact Review (\$1,000.00 plus applicable application fee)</p> <hr/> <p>The City invoices separately for the following:</p> <ul style="list-style-type: none"> - Notices (\$.75 each) - Legal Ad (% of total Ad) - Planning Review (\$40.00 hour) - Legal Review (\$75.00 hour) <p>Third party review is assessed separately.</p>	<p>Other Reviews (check applicable reviews) N/A</p> <p><input type="checkbox"/> Traffic Movement (\$1,000)</p> <p><input type="checkbox"/> Stormwater Quality (\$250)</p> <p><input type="checkbox"/> Subdivisions (\$500 + \$25/lot)</p> <p> # of Lots ___ x \$25/lot = _____</p> <p><input type="checkbox"/> Site Location (\$3,000, except for residential projects which shall be \$200/lot)</p> <p> # of Lots ___ x \$200/lot = _____</p> <p><input type="checkbox"/> Other _____</p> <p><input type="checkbox"/> Change of Use</p> <p><input type="checkbox"/> Flood Plain</p> <p><input type="checkbox"/> Shoreland</p> <p><input type="checkbox"/> Design Review</p> <p><input type="checkbox"/> Housing Replacement</p> <p><input type="checkbox"/> Historic Preservation</p>
<p>Plan Amendments (check applicable reviews)</p> <p><input type="checkbox"/> Planning Staff Review (\$250) N/A</p> <p><input type="checkbox"/> Planning Board Review (\$500)</p>	

APPLICATION SUBMISSION

All site plans and written application materials must be uploaded to a website for review. At the time of application, instructions for uploading the plans will be provided to the applicant. One paper set of the plans, written materials and application fee must be submitted to the Planning Division Office to start the review process.

Submissions shall include one (1) paper packet with folded plans containing the following materials:

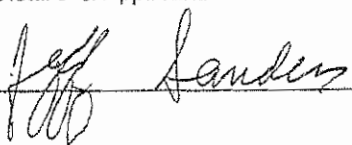
1. One (1) full size set of plans that must be folded.
2. One (1) copy of all written materials as follows, unless otherwise noted:
 - a. Application form that is completed and signed.
 - b. Cover letter stating the nature of the project.
 - c. All Written Submittals (Sec. 14-525 2. (c), including evidence of right, title and interest.
3. A stamped standard boundary survey prepared by a registered land surveyor at a scale not less than one inch to 50 feet.
4. Plans and maps based upon the boundary survey and containing the information found in the attached sample plan checklist.
5. Copy of the checklist completed for the proposal listing the material contained in the submitted application.
6. One (1) set of plans reduced to 11 x 17.

Refer to the application checklist for a detailed list of submittal requirements.

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14), which includes the Subdivision Ordinance (Section 14-491) and the Site Plan Ordinance (Section 14-521). Portland's Land Use Code is on the City's web site: www.portlandmaine.gov Copies of the ordinances may be purchased through the Planning Division.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Level III Site Plan review. It is not a permit to begin construction. An approved site plan, a Performance Guarantee, Inspection Fee, Building Permit, and associated fees will be required prior to construction. Other Federal, State or local permits may be required prior to construction, which are the responsibility of the applicant to obtain.

Signature of Applicant: 	Date: May 28, 2013
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PROJECT DATA

The following information is required where applicable, in order complete the application.

Total Area of Site	12.84 +/-
Proposed Total Disturbed Area of the Site	9.0 ac +/-
(If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with DEP and a Stormwater Management Permit, Chapter 500, with the City of Portland)	
Impervious Surface Area	
Impervious Area (Existing)	9.0 ac +/-
Impervious Area (Proposed)	9.0 ac +/-
Building Ground Floor Area and Total Floor Area	
Building Footprint (Existing)	49,972 sq. ft.
Building Footprint (Proposed)	
Floor Area (Existing)	
Floor Area (Proposed)	40,000 sq. ft.
Zoning	
Existing	See Tab 8
Proposed, if applicable	
Land Use	
Existing	
Proposed	
Residential, If applicable	N/A
Residential Units (Existing)	
Residential Units (Proposed)	
# Number of Lots (Proposed)	
Affordable Housing Units (Proposed)	
Efficiency Units (Proposed)	
One-Bedroom Units (Proposed)	
Two-Bedroom Units (Proposed)	
Three-Bedroom Units (Proposed)	
Parking Spaces	See Tab 9
Parking Spaces (Existing)	
Parking Spaces (Proposed)	
Handicapped Spaces (Proposed)	
Bicycle Parking Spaces	See Tab 9
Bicycle Spaces (Existing)	
Bicycle Spaces (Proposed)	
Estimated Cost of Project	\$40 M

General Submittal Requirements – Preliminary Plan (Optional)

Level III Site Plan

Preliminary Plan Phase Check list (if elected by applicant)

Applicant Checklist	Planner Checklist	Number of Copies	Written Submittal Requirements
X (tab 2)	<input type="checkbox"/>	1	Completed application form
X	<input type="checkbox"/>	1	Application fees
X(tab 5)	<input type="checkbox"/>	1	Written description of project
X(tab 6)	<input type="checkbox"/>	1	Evidence of right, title and interest.
X(tab 7)	<input type="checkbox"/>	1	Copies of required State and/or Federal permits.
X(tab 8)	<input type="checkbox"/>	1	Written assessment of proposed project's compliance with applicable zoning requirements.
n/a	<input type="checkbox"/>	1	Written description of existing and proposed easements or other burdens.
n/a	<input type="checkbox"/>	1	Written requests for waivers from individual site plan and/or technical standards, where applicable.
X(tab 9)	<input type="checkbox"/>	1	Traffic analysis (may be preliminary, in nature, during the preliminary plan phase).
n/a	<input type="checkbox"/>	1	Written summary of significant natural features located on the site.
X(tab 10)	<input type="checkbox"/>	1	Written summary of project's consistency with related city master plans.
X(tab 9)	<input type="checkbox"/>	1	Neighborhood Meeting Material (refer to page 13 of this application.)
Applicant Checklist	Planner Checklist	Number of Copies	Site Plan Submittal Requirements
X (Plans)	<input type="checkbox"/>	1	Boundary Survey meeting the requirements of Section 13 of the City of Portland Technical Manual.
X (Plans)	<input type="checkbox"/>	1	Preliminary Site Plan including the following: (*information provided may be preliminary in nature during preliminary plan phase):
X (Plans)	<input type="checkbox"/>		▪ Existing and proposed structures with distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone).
X (Plans)	<input type="checkbox"/>		▪ Location of adjacent streets and intersections and approximate location of structures on abutting properties.
n/a	<input type="checkbox"/>		▪ Proposed site access and circulation.
n/a	<input type="checkbox"/>		▪ Proposed grading and contours.
X (Plans)	<input type="checkbox"/>		▪ Location and dimension of existing and proposed paved areas including all parking areas and vehicle, bicycle and pedestrian access ways.
n/a	<input type="checkbox"/>		▪ Preliminary landscape plan including existing vegetation to be preserved, proposed site landscaping and street trees.
n/a	<input type="checkbox"/>		▪ Existing and proposed utilities (preliminary layout).
n/a	<input type="checkbox"/>		▪ Preliminary infrastructure improvements (e.g. - curb and sidewalk improvements, roadway intersection modifications, utility connections, transit infrastructure, roadway improvements).
n/a	<input type="checkbox"/>		▪ Preliminary stormwater management and erosion control plan.
n/a	<input type="checkbox"/>		▪ Existing significant natural features located on the site (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features listed in Section 14-526 (b) 1. of the Land Use Code).
n/a	<input type="checkbox"/>		▪ Proposed alterations to and protection measures for significant natural features located on the site (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features listed in Section 14-526 (b)1. of the Land Use Code).
X (Plans)	<input type="checkbox"/>		▪ Existing and proposed easements or public or private rights of way.

General Submittal Requirements – Final Plan (Required)

Level III Site Plan

Final Plan Phase Check list (including items listed above in General Requirements for Preliminary Plan, if applicant did not elect to submit for a preliminary plan review)

Applicant Checklist	Planner Checklist	Number of Copies	Written Submittal Requirement
X (tab 12)	<input type="checkbox"/>	1	Evidence of financial and technical capacity.
X (tab 13)	<input type="checkbox"/>	1	Evidence of utilities' capacity to serve the development.
X (tab 14)	<input type="checkbox"/>	1	Written summary of fire safety (referencing NFPA fire code and Section 3 of the City of Portland Technical Manual).
X (tab 15)	<input type="checkbox"/>	1	Construction management plan.
X (tab 9)	<input type="checkbox"/>	1	Traffic Plan (if development will (1) generate 100 or more PCE or (2) generate 25 or more PCE and is located on an arterial, within 1/2 mile of a high crash location, and/or within ¼ mile of an intersection identified in a previous traffic study as a failing intersection).
n/a	<input type="checkbox"/>	1	Stormwater management plan.
X (tab 16)	<input type="checkbox"/>	1	Written summary of solid waste generation and proposed management of solid waste.
X (tab 17)	<input type="checkbox"/>	1	Written assessment of conformity with applicable design standards.
X (tab 18)	<input type="checkbox"/>	1	Manufacturer's verification that HVAC and manufacturing equipment meets applicable state and federal emissions requirements.

Final Plan Phase			
X (Plans)	<input type="checkbox"/>	1	Final Site Plan including the following
X (Plans)	<input type="checkbox"/>		▪ Existing and proposed structures on the site with distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone).
X (Plans)	<input type="checkbox"/>		▪ Location of adjacent streets and intersections and approximate location of structures on abutting properties.
n/a	<input type="checkbox"/>		▪ Proposed site access and circulation.
n/a	<input type="checkbox"/>		▪ Proposed grading and contours.
X (Plans)	<input type="checkbox"/>		▪ Location and dimension of existing and proposed paved areas including all parking areas and vehicle, bicycle and pedestrian access ways. Proposed curb lines must be shown.
n/a	<input type="checkbox"/>		▪ Proposed loading and servicing areas, including applicable turning templates for delivery vehicles
n/a	<input type="checkbox"/>		▪ Proposed snow storage areas or snow removal plan.
n/a	<input type="checkbox"/>		▪ Proposed trash and recycling facilities.
n/a	<input type="checkbox"/>		▪ Landscape plan including existing vegetation to be preserved, proposed site landscaping and street trees.
n/a	<input type="checkbox"/>		▪ Existing and proposed utilities.
n/a	<input type="checkbox"/>		▪ Location and details of proposed infrastructure improvements (e.g. - curb and sidewalk improvements, roadway intersection modifications, utility connections, public transit infrastructure, roadway improvements).
n/a	<input type="checkbox"/>		▪ Proposed septic system, if not connecting to municipal sewer. (Portland Waste Water Application included in this application)
X (Plans)	<input type="checkbox"/>		▪ Proposed finish floor elevation (FFE).
X (Plans)	<input type="checkbox"/>		▪ Exterior building elevation(s) (showing all 4 sides).
n/a	<input type="checkbox"/>		▪ Proposed stormwater management and erosion controls.
n/a	<input type="checkbox"/>		▪ Exterior lighting plan, including street lighting improvements..

n/a

n/a

n/a

n/a

n/a

n/a

n/a

<ul style="list-style-type: none"> ▪ <i>Proposed signage.</i>
<ul style="list-style-type: none"> ▪ <i>Identification of existing significant natural features located on the site (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features listed in Section 14-526 (b)1. of the Land Use Code). Wetlands must be delineated.</i>
<ul style="list-style-type: none"> ▪ <i>Proposed alterations to and protection measures for of existing significant natural features located on the site (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features listed in Section 14-526 (b)1. of the Land Use Code).</i>
<ul style="list-style-type: none"> ▪ <i>Total area and limits of proposed land disturbance.</i>
<ul style="list-style-type: none"> ▪ <i>Soil type and location of test pits and borings.</i>
<ul style="list-style-type: none"> ▪ <i>Details of proposed pier rehabilitation (Shoreland areas only).</i>
<ul style="list-style-type: none"> ▪ <i>Existing and proposed easements or public or private rights of way.</i>

11107
May 28, 2013

Captain Chris Pirone
City of Portland
Fire Department
380 Congress Street
Portland, ME 04101

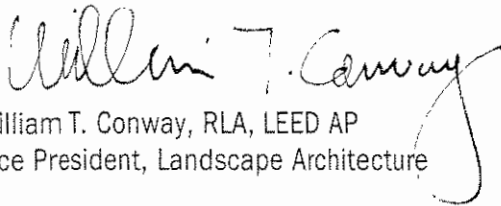
Maine Medical Center
Bean Building Roof Addition
Level III Site Plan Application

Dear Chris,

Maine Medical Center is filing an application with the City to construct a vertical expansion on the roof of the L.L. Bean Building at the Bramhall Campus. Enclosed are the submission materials required in the Fire Department Checklist. If you have any questions as you review the project, please let me know.

Sincerely,

SEBAGO TECHNICS, INC.



William T. Conway, RLA, LEED AP
Vice President, Landscape Architecture

WTC:jsf



PORTLAND FIRE DEPARTMENT
SITE REVIEW
FIRE DEPARTMENT CHECKLIST



A separate drawing[s] shall be provided to the Portland Fire Department for all site plan reviews.

1. Name, address, telephone number of applicant.
2. Name address, telephone number of architect
3. Proposed uses of any structures [NFPA and IBC classification]
4. Square footage of all structures [total and per story]
5. Elevation of all structures
6. Proposed fire protection of all structures
 - *As of September 16, 2010 all new construction of one and two family homes are required to be sprinkled in compliance with NFPA 13D. This is required by City Code. (NFPA 101 2009 ed.)*
7. Hydrant locations
8. Water main[s] size and location
9. Access to all structures [min. 2 sides]
10. A code summary shall be included referencing NFPA 1 and all fire department. Technical standards.

Some structures may require Fire flows using annex H of NFPA 1

Fire Safety Summary

Per the Code Report prepared for the Bean 2 Roof Addition on December 19, 2012 (and enclosed with this submission), the project complies with the requirements of NFPA.



RWS

HVAC

Electrical

Plumbing

Fire Protection

Code

**R.W. Sullivan
Engineering**

The Schrafft Center
529 Main Street
Suite 203
Boston, MA 02129

617.523.8227

www.rwsullivan.com

Bean Addition Maine Medical Center Portland, Maine

Code Report

December 19, 2012

Prepared By: Andrew P. Schwalbenberg
Reviewed By: Don E. Contois, P.E.

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Introduction

The project includes renovations and an addition to the second floor of the Bean Building at Maine Medical Center in Portland, Maine. The following code summary report is based on the plans received December 10, 2012 and the Statement of Conditions plans received November 4, 2011. The following is a list of applicable codes:

Code Type	Applicable Code (Model Code Basis)
Building	2009 International Building Code
Fire Prevention	NFPA 101: Life Safety Code, 2009 Edition
Accessibility	Maine Human Rights Commission
Electrical	2011 National Electrical Code
Mechanical	ASHRAE 62.1 – 2007 ASHRAE 62.2 - 2007
Plumbing	2009 Uniform Plumbing Code (with State Amendments)
Energy Conservation	2009 International Energy Conservation Code

For the purpose of this report, the building is assumed to be fully sprinklered in accordance with the International Building Code (IBC) Section 903.

1. Occupancy Classification:

IBC Occupancy Classifications (Section 302)

- I-2 (Hospital)

NFPA 101 Occupancy Classifications (Section 6.1)

- Health Care

2. Min. Construction Type:

- IBC – Type IB (noncombustible, 2 hour rated)
- NFPA 101 – Type I (2,2,2) (noncombustible, 2 hour rated)

3. Height and Area Limitations:

Since the existing construction type of Bean and Richard is IB, the allowable area for this building (Bean and Richard) is unlimited; therefore, the addition does not exceed the area limitation for this building (IBC Table 503).

The addition will be separated from the adjacent existing building by two hour fire barriers; this separation permits the existing portions of the building to remain as-is without requiring full compliance with NFPA 101 (NFPA 101 Section 19.1.1.4.1).

4. Fire Resistance Ratings:

The following fire resistance ratings are required in accordance with IBC Table 601 and various sections of the code.

New Building Elements	Fire Resistance Rating (Hrs)	Opening Protectives (Hrs)
Structural Frame	2 ^A	-
Exterior Bearing Walls	2 ^A	-
Interior Bearing Walls	2 ^A	-
Exterior Non-Bearing Walls	Based on FSD	-
Interior Non-Bearing Walls	0	-
Floor Construction	2 ^A	-
Roof Construction	1	-
Exit Access Corridors (IBC 407.2 & 407.3)	Smoke Resistant	Positive-latching
Stair Shafts (IBC 1022.1)	2	1½
Other Shafts (IBC 708.4)	2	1½
Trash Room Greater than 100 ft ² in Area (IBC Table 508.2.5)	Smoke Resistant	Self Closing
Rooms With Equipment Greater than 400,000 Btuh Input Capacity (IBC Table 508.2.5)	Smoke Resistant	Self Closing

^A Not less than the rating supported (IBC 707.5, 709.4, and 712.4).

Fire walls, fire barriers, fire partitions, smoke barriers, and smoke partitions, or any other wall required to have protected openings or penetrations must be identified with signs or stenciling within accessible concealed spaces (i.e. floor-ceiling, attic spaces) at 30 ft intervals with at least 0.5" letters stating: "FIRE AND/OR SMOKE BARRIER – PROTECT ALL OPENINGS" or similar wording (IBC 703.6).

5. Exterior Wall Openings & Fire Resistance Rating:

The exterior wall rating requirements and opening limitations are based on the fire separation distance for each wall. The fire separation distance is measured perpendicular to the exterior wall to the centerline of a public street, an interior lot line, or an imaginary lot line between two buildings on the same lot (IBC 702.0). Since the fire separation distance of the new exterior walls is more than 30 ft, the walls are not required to be rated and the allowable area of openings is not limited (IBC Table 602 and Section 705.8.1 Exc. 2).

6. Vertical Floor Openings

The current plans do not indicate any unenclosed floor openings on the second floor of the building.



7. Finishes:

New Interior Finish

The new interior finish of walls, ceilings and floors must comply with the code for new construction as shown in the table below.

Building Component	Walls & Ceilings (IBC 803.9)	Floors (IBC 804.4.1)
Exit Enclosures and Passageways	Class B	Class II
Corridors	Class B	Class II
Rooms & Enclosed Spaces	Class B	DOCF-1

Exterior Finish

Exterior wall finishes must full comply with the requirements of 2009 IBC 14. Combustible materials are permitted to be used as an exterior wall finish for this building in accordance with 2009 IBC Section 1406.0; however, all exterior wall finishes and architectural trim located greater than 40 feet above grade plane must be constructed of approved noncombustible materials and must be secured to the wall with metal or other approved noncombustible brackets (2009 IBC Section 1406.2.2). Additionally, combustible exterior wall finish is limited to 10% of the exterior wall surface area where the fire separation distance is 5 ft or less.

The use of plastic materials as part of the exterior wall assembly (i.e. foam plastic insulation, exterior coatings and facings) must comply with 2009 IBC 26 (2009 IBC 1404.8). The wall assembly must be tested in accordance with NFPA 285 (2009 IBC 2603.5.5). Note that this test standard is a full scale assembly test. We recommend confirming with the manufacturer that the foam plastic insulation is part of an approved NFPA 285 assembly.

8. Smoke Compartments:

Smoke compartments are provided in the existing Bean building. The addition must also comply with the following smoke compartment requirements:

- Every story containing inpatients for sleeping or treatment, or an occupant load greater than 50 of any use, must be divided into not less than two smoke compartments (NFPA 101 Section 18.3.7.1(1) & (2)).

The design is compliant.

- The size of each smoke compartment must not exceed 22,500 SF unless the area is an atrium separated in accordance with NFPA 101 Section 8.6.7 (NFPA 101 Section 18.3.7.1(3)).

The addition to the Bean building will be considered a separate smoke compartment as shown on the attached plans.

- The travel distance from any point to reach a door in the required smoke barrier must be limited to 200 ft or less (NFPA 101 Section 18.3.7.1(4)).

The design is compliant.

- The smoke barrier is required to be 1 hour rated except where an atrium is used and the smoke barrier terminates at an atrium wall and not less than two separate smoke compartments are provided on each floor. Smoke dampers are not required in duct penetrations of smoke barriers in fully ducted heating, ventilation, and air-conditioning systems where the systems serve a single smoke compartment (NFPA 101 Section 18.3.7.3 & 2009 IBC 716.5.5).

The addition is being separated from the existing building by two hour fire barriers.

- Not less than 30 net SF per patient must be provided within the aggregate area of corridors, patient rooms, treatment rooms, lounge or dining areas, and other low hazard areas on each side of the smoke barrier (NFPA 101 Section 18.3.7.5.1).

If appears that a non-sleeping suite will be included within the addition to the Bean Building. The non-sleeping suite exceeds 2,500 SF as currently shown on the plans. The suite complies with the following provisions:

Non-sleeping Suites

- Since the suite is more than 2,500 SF a minimum of two exit access doors are required (NFPA 101 Section 18.2.5.7.3.2).
- One exit must be directly to an exit access corridor, the second exit is permitted to be through a suite if the suite is separated by the same construction as corridors (NFPA 101 Section 18.2.5.7.3.2).
- The maximum suite size is 10,000 SF (NFPA 101 Section 18.2.5.7.3.2).
- Travel distance between any point in the non-sleeping suite to an exit access door must not exceed 100 ft where the suite is arranged with one intervening room. Travel distance between any point in the non-sleeping suite to an exit must not exceed 50 ft where the suite is arranged with two intervening rooms. Travel distance between any point in the non-sleeping suite to an exit must not exceed 200 ft (NFPA 101 Section 18.2.5.7.3.4).

9. Means of Egress:

The calculated occupant load for the proposed floor plans, the corresponding required number of exits, the provided number of exits, and the provided egress capacity are summarized below (IBC Tables 1004.1.1, 1021.1 & 1005.1 and NFPA 101 Tables 7.3.1.2 & 7.3.3.1). See Appendix A of this report for detailed egress calculations.



Means of Egress

Floor	Occupant Load	Number of Exits		Exit Capacity (persons)
		Required	Provided	
2	459	2	4	660

General Egress Requirements:

- Maximum exit access travel distance must be less than 200 ft (IBC Table 1016.1, NFPA 101 Table A7.6.1). The travel distance from any point in a smoke compartment to a smoke barrier door must not exceed 200 ft (IBC 407.4).
- Maximum dead-end corridor length must be less than 20 ft (IBC 1018.4).
- All stair doors must swing in the direction of egress travel (NFPA 101 Section 7.2.1.4.3).
- Doors must swing in the direction of egress travel when serving an occupant load of 50 or more persons (IBC 1008.1.2).
- All means of egress lighting and exit signs throughout the building must be provided with an emergency power supply to assure continued illumination for not less than 1.5 hours in case of primary power loss (IBC 1006.1 & 1011.1).
- Remote means of egress must be separated by $\frac{1}{2}$ of the diagonal dimension of the room or space they serve (IBC 1015.2.1). The distance between exits must be measured in a straight line between exit doors.
- At least 30 net SF per patient must be provided within the aggregate area of patient rooms, corridors, treatment rooms, lounge, dining, and other low-hazard areas on each side of the smoke barrier (IBC 407.4.1).
- A means of egress must be provided from every smoke compartment without requiring an occupant to return through the smoke compartment from which means of egress originated (IBC 407.4.2).
- Sleeping rooms more than 1,000 SF and non-sleeping rooms more than 2,500 SF must be provided with at least two remote means of egress (NFPA 101 Section 18.2.5.5.1 & 18.2.5.5.2).
- Every habitable room must have direct access to an exit access corridor unless the rooms are located in a suite (NFPA 101 Section 18.2.5.6.1).
- Corridor walls are not required to have a fire-resistance rating but must be smoke-resistant by forming a barrier to limit the transfer of smoke (NFPA 101 Section 18.3.6.2).

- Corridor doors must be constructed to resist the passage of smoke and be self-latching and provided with positive-latching hardware (NFPA 101 Section 18.3.6.3.1 & 18.3.6.3.5). Doors to toilet rooms, bathrooms, sink closets and similar auxiliary rooms that do not contain flammable or combustible materials are not required to comply with these requirements (NFPA 101 Section 18.3.6.3.1(3) & 18.3.6.3.6).
- Every corridor must provide access to not less than two approved exits without passing through intervening rooms or spaces other than corridors or lobbies (NFPA 101 Section 18.2.5.4).
- Travel distance from any point in a health care sleeping room and an exit access door in that room must not exceed 50 ft (NFPA 101 Section 18.2.6.2.3).

10. Required Fire Protection Systems:

- NFPA 13 sprinkler system (2009 IBC 407.5)
- Fire alarm system (2009 IBC 407.6)
- Standpipe system (2009 IBC 905.3.1)
- Fire extinguishers (2009 IBC 906.1)

11. Accessibility for Persons with Disabilities

This facility is open to and used by the general public. The new building must therefore comply in full with the provisions of the Maine Human Rights Commission (Americans with Disabilities Act Accessibility Guidelines).

APPENDIX: Egress Plans

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Department of Public Services,
55 Portland Street,
Portland, Maine 04101-2991



Mr. Frank J. Brancely,
Senior Engineering Technician,
Phone #: (207) 874-8832,
Fax #: (207) 874-8852,
E-mail: fjb@portlandmaine.gov

Date: May 28 2013

1. Please, Submit Utility, Site, and Locus Plans.

Site Address: 22 Bramhall Street

(Regarding addressing, please contact Leslie Kaynor, either at 756-8346, or at LMK@portlandmaine.gov)

Chart Block Lot Number: Bramhall Campus

Proposed Use: Hospital

Previous Use: Hospital

Existing Sanitary Flows: Unknown GPD

Existing Process Flows: Unknown GPD

Description and location of City sewer, at proposed building sewer lateral connection:

Existing connection; no new connection proposed.

Site Category	Commercial	_____
	Industrial <i>(complete part 4 below)</i>	_____
	Governmental	_____
	Residential	_____
	Other <i>(specify)</i> <u>Hospital</u>	<u>X</u>

Clearly, indicate the proposed connection, on the submitted plans.

2. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 3600 GPD

Peaking Factor/ Peak Times:

Specify the source of design guidelines: *(i.e., "Handbook of Subsurface Wastewater Disposal in Maine," "Plumbers and Pipe Fitters Calculation Manual," Portland Water District Records, X, Other (specify)* Engineer - See attached letter

Note: Please submit calculations showing the derivation of your design flows, either on the following page, in the space provided, or attached, as a separate sheet.

3. Please, Submit Contact Information.

Owner/Developer Name: Maine Medical Center

Owner/Developer Address: 22 Bramhall Street

Phone: 622-2988 Fax: n/a E-mail: bartlm@mmc.org

Engineering Consultant Name: AFK Group/ Peter Reilly

Engineering Consultant Address: 41 Farnsworth Street, Boston, MA 02210

Phone: 617-737-1111 Fax: n/a E-mail: preilly@afkgroup.com

City Planner's Name: _____ Phone: tbd

Note: Consultants and Developers should allow +/- 15 days, for capacity status, prior to Planning Board Review.

4. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated: n/a GPD

Do you currently hold Federal or State discharge permits? Yes _____ No _____

Is the process wastewater termed categorical under CFR 40? Yes _____ No _____

OSHA Standard Industrial Code (SIC): _____ *(http://www.osha.gov/oshstats/sicser.html)*

Peaking Factor/Peak Process Times: _____

Note: On the submitted plans, please show the locations, where the building's sanitary, and process water sewer laterals, exit the facility, where they enter the city's sewer, the location of any control manholes, wet wells, or other access points, and the locations of any filters, strainers, or grease traps.

(n/a - no new connections)

AKF

May 24, 2013

Susanna M. Baker, AIA, LEED AP BD+C
Associate
Senior Project Manager
Perkins+Will.
225 Franklin Street, Suite 1100
Boston, MA 02110

Re: Maine Medical Center – Bean Roof Addition
Estimated Daily Sewage Flows
AKF Project No. B120229-000

Dear Susanna,

As requested, we are providing the estimated daily sewage calculations for the Maine Medical Center – Bean 2 Roof Addition Project. The calculations represent the estimated increase in sewage flow anticipated from the addition and are based on industry standard flow rates. The project will have minimal impact on the utility requirements as all systems are being served by the existing infrastructure and no new site utility work is anticipated.

Average Daily Flow Rates for hospitals are calculated on the basis of 200 GPD/1,000 sq. ft. with an additional 35 GPD per employee. This incorporates in-patient loading and other daily functions of a full hospital. For our calculations, we used a lower flow rate similar to a medical office building because of the fact that the addition will see a more transient population and does not include in-patient services.

The anticipated flow rate estimated for the addition is 3,600 Gallons per day based on an average of 20 Gallons per day per 100 sq. ft.

$$(18,000 \text{ sq. ft.} / 100 \text{ sq. ft.} \times 20 \text{ GPD} = 3,600 \text{ GPD})$$

If needed the estimated water demand for the addition can be calculated at 125% of the daily sewage flow rate or 4,500 GPD

Please feel free to call with any questions or comments regarding this matter or if you wish to discuss this further.

AKF



Peter J. Reilly, P.E.
Partner
JR/sv

Cc Dennis Kaiser – P+W
Dieter Gartner – P+W
BMM, RAC

Tab 5

Maine Medical Center (MMC) is requesting Site Plan approval for a +/- 40,000 s.f. addition to the Lower Bean Building (aka Bean2)) located at 22 Bramhall Street (in the vicinity of the MMC emergency department). The addition will begin modernizing interventional capacity, decompressing its main surgical suite, and adding four additional operating rooms, with accompanying prep and recovery rooms. The inclusion of additional storage space will reduce congestion within the surgical suite. Rooftop mechanicals will be enclosed.

The addition will be located on the roof of the Bean 2, and, as a result, will have no impact on building footprint or impervious surface. It is within the zoning requirements of the applicable Conditional Zoning Agreement and therefore will require only major site plan approval from the Portland Planning Board.

The architecture of the building is compatible with the existing structures within the campus. It is intended to promote healing while providing staff and visitors with a pleasant experience. The glass exterior provides a light and transparent feel both internally and externally.

The cost of the project is \$40M.

MaineHealth

TAB6

May 24, 2013

Ms. Jean Fraser
Senior Planner
City of Portland
389 Congress Street
Portland, Maine 04104

Re: MMC/ 22 Bramhall Street
CBL 53-D-1,2,7; CBL 53-E-1,2,10,13; CBL 53-G-1,13;
CBL 54-H-1; CBL 64-C-1,2

Dear Ms. Fraser:

Attached please find deeds providing evidence of MMC's Right, Title and Interest to develop the property at 22 Bramhall Street, Portland, Maine. Please let me know should you have any questions or need more information.

Sincerely,



Penelope St. Louis

(13)

927

Know all Men by these Presents,

That I, HELEN M. GRIFFIN

of Portland in the county of Cumberland
sole acting executor of the last will and testament
of Mary Davis late of Portland
deceased, testate, by virtue of the authority to me given by
the said Mary Davis in her last will and
testament, in my capacity of executor as afore-
said, and in consideration of One Dollar (\$1.00) and other
valuable considerations ~~to~~

to me paid by MAINE MEDICAL CENTER, a corporation organized under
the laws of Maine and situated in Portland

of the receipt whereof is hereby ac-
knowledged, do hereby sell and convey unto the said Maine Medical Center,
its successors
~~and~~ and assigns, the following described real estate, which was
the property of the said Mary Davis. ~~with~~

~~and bounded as follows:~~

A certain lot or parcel of land with the buildings thereon situated
in Portland on the northerly side of Brackett Street, bounded and
described as follows:

Beginning at the intersection of the northerly side of Brackett Street
with the westerly side of Russell Street; thence running northeasterly
by Russell Street thirty-seven (37) feet, more or less, to land formerly
owned by Hobart W. Richardson; thence running northwesterly by said
Richardson land seventy-four (74) feet, more or less, to land formerly
owned or occupied by W. S. Dunn; thence southwesterly by the line of
said Dunn's land forty-one (41) feet, more or less, to a lane; thence
southeasterly by said lane forty-one (41) feet, more or less, to
Brackett Street; thence easterly by Brackett Street thirty-seven (37)
feet, more or less, to the point of beginning.

Being the same premises conveyed to Mary Davis by Harry E. Davis by
deed dated March 18, 1915, recorded in Cumberland County Registry of
Deeds in Book 945, Page 109.

Reference is made to Will of said Mary Davis, abstract of which is
recorded in said Registry of Deeds in Book 3025, Page 28.

928

To have and to hold the above-granted premises unto the said
Maine Medical Center, its successors

~~and~~ ~~assigns~~ and assigns forever. And I the said
Helen M. Griffin,

in my said capacity, do hereby covenant to and with the said
Maine Medical Center, its successors ~~and~~ and assigns, that
I am the lawful executor of the last will and
testament of the said Mary Davis ; that I
have power under said will to sell as aforesaid; and that in making
this conveyance, I have in all respects, acted in pursuance of
the authority granted in and by the said last will and testament.



In Witness Whereof,

I the said Helen M. Griffin

in my said capacity of executor

as aforesaid have hereunto set my hand and seal

this 31st day of March in the year of our Lord one thousand nine hundred and sixty-six.

Signed, Sealed and Delivered
in presence of

[Signature]

[Signature]



State of Maine.

Cumberland

{ ss.

March 31 1966.

Then personally appeared the above named Helen M. Griffin

and acknowledged the above instrument to be her free act and deed in her said capacity.

Before me,

[Signature]

Justice of the Peace.

MAR 31 1966

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE

Received at 9:55 P.M. and recorded in

BOOK 2957 PAGE 927 *[Signature]* Register

Executor's and Trustee's Deed.

(WHICH THE WIFE AUTHORIZES A SALE.)

Helen M. Griffin

to

Maine Medical Center

Dated: _____ 19 _____

sa. Registry of Deeds.

Received _____ 18 _____

at _____ n. MAR 31 1966 M., and

recorded in Book _____ Page _____

Attest: _____ Registrar.

FROM THE OFFICE OF

Verrill Dana Walker Philbrick

& Whitehouse

57 Exchange Street

Portland, Maine

LORING, SHORT & HARMON, LAW STATIONERS

PORTLAND, MAINE

355

12

Know All Men by these Presents,

That We, WILLIAM C. GOKEY and SUZANNE E. GOKEY, both of Portland in the County of Cumberland and State of Maine

in consideration of One Dollar (\$1.00) and other valuable considerations

paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of Maine and located at Portland, County of Cumberland and State of Maine

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Maine Medical Center,

its successors ~~heirs~~ and Assigns forever,

the following described property:

A certain lot or parcel of land with the buildings thereon situated on the southeasterly side of Ellsworth Street in said Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at the northeasterly corner of a lot of land on Bramhall's Hill which John B. Brown sold to one Tuttle; thence northeasterly on said Ellsworth Street forty (40) feet; thence southeasterly about seventy-four (74) feet to land formerly of Davis; thence southwesterly by said Davis's land to land formerly of said Tuttle forty (40) feet; thence northwesterly to said Ellsworth Street, the bounds begun at, seventy-four (74) feet.

Being the same premises conveyed to William C. Gokey and Suzanne E. Gokey by Thelma A. Barter, by deed dated June 19, 1968, recorded in Cumberland County Registry of Deeds in Book 3045, Page 187.

This conveyance is made subject to taxes for the year 1969 which the Grantee assumes and agrees to pay.



~~On~~ ~~have~~ ~~and~~ ~~in~~ ~~hold~~ the aforegranted and bargained premises,
with all privileges and appurtenances thereof to the said
Maine Medical Center, its successors

~~Heirs~~ and Assigns, to its and their use and behoof
forever.

And we do WARRANT with the said Grantee, ^{its successors} ~~Heirs~~
and Assigns, that we are lawfully seized in fee of the premises;
that they are free of all incumbrances;

that we have good right to sell and convey the same to the said
Grantee to hold as aforesaid; and that we and our Heirs, shall
and will WARRANT and DEFEND the same to the said Grantee,
its successors

~~Heirs~~ and Assigns forever, against the lawful claims and demands
of all persons.

PC 11.1/1/69

Warranty Book.

FROM

William G. Gokey et al
TO

Maine Medical Center

Date: August, 1969

State of Maine,

we, Registry of Births

Received AUG 11 1969, 19

at R, M, K, and

recorded in Book Page

ATTENT:

....., REGISTRAR

FROM THE OFFICE OF
Verrill Dana Philbrick Whitehouse
& Putnam
57 Exchange Street
Portland, Maine

No. 106. ROBERTS OPTICS SUPPLY COMPANY
Portland, Maine

17-21

Know all Men by these Presents,

4

That I, Henry E. Grant of Portland, in the County of Cumberland and State of Maine,

in consideration of one dollar and other valuable consideration

paid by Maine Medical Center, a corporation organized and existing under the laws of the State of Maine and located at said Portland,

the receipt whereof I do hereby acknowledge, do hereby

give, grant, bargain, sell and convey unto the said

Maine Medical Center, its Successors

~~heirs~~ and assigns forever,

a certain lot or parcel of land with the buildings thereon situated between Bramhall and Arsenal Streets in said Portland, adjoining land now or formerly belonging to Sophia P. Jones, and more particularly bounded and described as follows:

Beginning on the northerly side line of said Bramhall Street, at the south-westerly corner of said Jones' land; thence westerly by said Bramhall Street, twenty-five (25) feet to a stake and from these two points extending northerly adjoining said Jones land, keeping the width of twenty-five (25) feet, to Arsenal Street.

Excepting and reserving however, a certain lot or parcel of land with the buildings thereon out of the aforesaid property, a conveyance by Westprom Realty Company to Maud L. and Janice M. Pillsbury by deed dated January 25, 1946 and recorded in Cumberland County Registry of Deeds in Book 1803, Page 444, to which reference may be had.

Meaning and intending to convey a parcel of land at the rear of 26 Bramhall Street, which parcel of land is approximately 26'x25' and contains a garage thereon.

Being the same premises conveyed to me by Westprom Realty Company by their warranty deed dated April 11, 1951 and recorded in said Registry of Deeds in Book 2040, Page 192.

On ~~Have~~ and in ~~Hold~~ the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said

Maine Medical Center, its Successors

~~heirs~~ and assigns, to its and their use and behoof forever.

And I do COVENANT with the said Grantee, its ^{Successors} ~~heirs~~ and assigns, that I am lawfully seized in fee of the premises, that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs shall and will WARRANT AND DEFEND the same to the said Grantee, its ^{Successors} ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said

Henry H. Grant
and I, Gladys E. Grant,

wife of the said

Henry H. Grant

Joining in this deed as Grantor, and relinquishing and conveying
my right by descent and all other rights in the above described
premises, have hereunto set our hands and seals this 4th
day of ~~June~~ *September* in the year of our Lord one thousand nine
hundred and fifty-three.

Signed, Sealed and Delivered

in presence of

H. Edwin Lee

Henry H. Grant
Gladys E. Grant

State of Maine,
Cumberland,

} ss.

September 4, 1953 .

Personally appeared the above named

HENRY H. GRANT

and acknowledged the above instru-

ment to be his free act and deed.

Before me,

H. Edwin Lee
Justice of the Peace.
Notary Public

My Commission Expires June 29, 1955



Phillips

116

Guaranty Trust

From

HENRY H. GRANT

To

MAINE MEDICAL CENTER

Dated, 1953

State of Maine,

Kimberland

ss. Registry of Deeds,
SEP 9 1953

Received 10

at H., M., K., and

recorded in Book 2147 Page 110

Attest *[Signature]* *[Signature]*
Register

FROM THE OFFICE OF

Warren E. Winslow, Esq.,
443 Congress Street
Portland, Maine

LORING, SHOFT & HARRISON, LAW OFFICERS
PORTLAND, MAINE

9-5-53

4

MORTGAGE AND SECURITY AGREEMENT

KNOW ALL MEN BY THESE PRESENTS, that MAINE MEDICAL CENTER, a corporation organized and existing under the laws of the State of Maine, having its principal place of business at 22 Bramhall Street, in Portland, County of Cumberland, State of Maine (hereinafter referred to as the Grantor), for and in consideration of the sum of ONE MILLION SEVEN HUNDRED NINETY-NINE THOUSAND FIVE HUNDRED SIXTY-NINE (\$1,799,569) DOLLARS, paid by MAINE SAVINGS BANK, a banking corporation organized and existing under the laws of the State of Maine, having its principal office at One Maine Savings Plaza, in the said Portland, County of Cumberland and State of Maine (hereinafter called the Grantee), the receipt of which is hereby acknowledged, does give, grant, bargain, sell, and convey unto the said Grantee, its successors and assigns, forever, the following-described premises:

A certain lot or parcel of land with the buildings and improvements thereon situated at and near Gilman Street, Congress Street, Charles Street, Brackett Street, Bramhall Street and the Western Promenade, in the City of Portland, County of Cumberland and State of Maine, more particularly described in Schedule A attached hereto, which Schedule A is hereby made a part of this Mortgage and Security Agreement by reference thereto.

Also conveying and granting hereby as part of the realty and in addition to said realty and as property mortgaged hereunder, all of the following articles now or hereafter owned or acquired by Grantor, or in which it may now or hereafter acquire an interest, and now or hereafter located on the above-described premises or used therewith as follows: All machinery, equipment, furnishings, furniture, fixtures, chattels and articles of tangible personal property, including, without limitation, all hospital and medical diagnostic, treatment and convalescent equipment, machinery and supplies, all beds and bedding, all food service and cafeteria equipment, machinery and supplies, all other machinery, equipment and chattels used or usable in the operation of a hospital and full service medical center, furnaces, boilers, oil burner, refrigeration, air conditioning and sprinkler systems, awnings, screens, window shades, motors, dynamos, incinerators, plants and shrubbery, whether now owned or hereafter from time to time acquired by the Grantor, together with all substitutions, replacements, additions, attachments, accessories, accretions thereto or thereof, now or in the future, situated or located on, or used or usable in connection with the maintenance and/or operation of hospital and medical center now constructed and any other facilities to be constructed on the premises described in said Schedule A attached hereto. If the lien of this mortgage on any fixtures or personal property be subject to a lease agreement, conditional sale agreement or chattel mortgage covering such property, then in the event of any default hereunder all the rights, title and interest of the Grantor in and to any and all deposits made thereon or therefor are hereby assigned to the Grantee, together with the benefit of any payments now or hereafter made thereon. There are also transferred, set over and assigned by Grantor to Grantee, its successors and assigns, hereby all leases and use agreements of machinery, equipment and other personal property of Grantor in the categories hereinabove set forth, under which Grantor is the lessee of, or entitled to use, such items, and Grantor agrees to execute and deliver to Grantee specific separate assignments to Grantee of such leases and agreements when requested by Grantee; and nothing herein shall obligate Grantee to perform any obligations of Grantor under such leases, or agreements, unless it so chooses, which obligations Grantor hereby covenants and agrees to well and punctually perform.

As further security for payment of the indebtedness and performance of the obligations, covenants and agreements secured hereby, Grantor hereby transfers, sets over and assigns to Grantee:

a. All rents, profits, revenues, royalties, bonuses, rights and benefits under any and all leases or tenancies now existing or hereafter created of the premises or any part thereof, with the right to receive and apply the same to said indebtedness, and Grantee may demand, sue for and recover such payments, but shall not be required to do so; provided, however, that so long as Grantor is not in default hereunder, the right to receive and retain such rents, issues and profits is reserved to Grantor. To carry out the foregoing, Grantor agrees (1) to execute and deliver to Grantee such conditional assignments of leases and rents applicable to the mortgaged premises as the Grantee may from time to time request while this mortgage and the debt secured hereby are outstanding, and further (2) not to cancel, accept a surrender of, reduce the rentals under, anticipate any rentals under, or modify any such leases or tenancies, or consent to an assignment or subletting thereof, in whole or in part, without Grantee's written consent. Nothing herein shall obligate the Grantee to perform the duties of the Grantor as landlord or lessor under any such leases or tenancies, which duties Grantor hereby covenants and agrees to well and punctually perform.

b. All judgments, awards of damages and settlements hereafter made as a result or in lieu of any taking of the premises or any interest thereon or part thereof under the power of eminent domain, or for any damage (whether caused by such taking or otherwise) to the premises or the improvements thereon or any part thereof, including any award for change of grade of streets. Grantee may apply all such sums or any part thereof so received on the indebtedness secured hereby in such manner as it elects or, at its option, the entire amount or any part thereof so received may be released. Grantor hereby irrevocably authorizes and appoints Grantee its attorney-in-fact to collect and receive any such judgments, awards, and settlements from the authorities or entities making the same, to appear in any proceeding therefor, to give receipts and acquittances therefor, and to apply the same to payment on account of the debt secured hereby, whether then matured or not; and the Grantor will execute and deliver to the Grantee on demand such assignments and other instruments as the Grantee may require for said purposes and will reimburse the Grantee for its costs (including reasonable counsel fees) in the collection of such judgments and settlements.

Receipt of rents, awards, and any other moneys or evidences thereof, pursuant to the provisions of the foregoing paragraphs a. and b. and any disposition of the same by Grantee shall not constitute a waiver of the right of foreclosure by Grantee in the event of default or failure of performance by Grantor of any covenant or agreement contained herein or any note secured hereby.

TO HAVE AND TO HOLD the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to Grantee, its successors and assigns, to its and their use and behoof forever; PROVIDED NEVERTHELESS, that if Grantor pays to Grantee the sum of ONE MILLION SEVEN HUNDRED NINETY-NINE THOUSAND FIVE HUNDRED SIXTY-NINE (\$1,799,569.00) DOLLARS, with interest and other charges, as applicable, in accordance with all the terms and conditions of a certain Mortgage Note of even date signed and given by Grantor to Grantee, and until such payment performs all of Grantor's obligations, covenants and agreements contained herein and contained in said promissory note, then this deed, as also said certain promissory note, shall be void, otherwise shall remain in full force.

Grantor covenants and agrees with Grantee as follows:

1. That Grantor is lawfully seized of an indefeasible estate in fee simple, free from encumbrances, except as may have been specifically noted herein, or in Schedule A attached hereto, and has good right and power to convey the premises to Grantee to hold as aforesaid, and that Grantor shall and will Warrant and Defend the same to Grantee forever against the claims and demands of all persons, except as aforesaid.
2. That Grantor shall pay all sums secured hereby when due.
3. That Grantor will not permit or suffer the use of any of the mortgaged property for any purposes other than hospital or medical center purposes.
4. That the Loan Guaranty Agreement between the Grantor and the Secretary of Health, Education, and Welfare, which is being executed simultaneously herewith, is incorporated herein and made a part of this mortgage.
5. That upon default hereunder Grantee shall be entitled, in addition to any other rights given by this Agreement or by law, to the appointment of a receiver by any court having jurisdiction, without notice, to take possession and protect the property described herein and operate same and collect the rents, profits, and income therefrom.
6. That the Grantor will keep the building and improvements now existing or hereafter erected on the mortgaged property insured against loss by fire and such other hazards, casualties, and contingencies, as may be stipulated by the Secretary of Health, Education, and Welfare upon the guarantee of the Note and other hazards, all as may be required from time to time by the Grantee, and all such insurance shall be evidenced by standard fire and extended coverage insurance policy or policies, in amounts not less than necessary to comply with the applicable Coinsurance Clause percentage, but in no event shall the amounts of coverage be less than eighty per centum (80%) of the insurable value and in no event less than the unpaid balance of the debt secured hereby, and in default thereof the Grantee shall have the right to obtain such insurance at the cost of Grantor, such cost to be secured hereby. Such policies shall be endorsed with standard mortgagee clause with loss payable to the Grantee and the Secretary of Health, Education, and Welfare, as their interests may appear, and shall be deposited with the Grantee; and that if the premises mortgaged hereby, or any part thereof, shall be damaged by fire or other hazard against which insurance is held as hereinabove provided, the amounts paid by any insurance company in pursuance of the contract of insurance to the extent of the indebtedness then remaining unpaid, shall be paid to the Grantee and, at the option of Grantee and the Secretary of Health, Education, and Welfare, may be applied to the debt or released for the repairing or rebuilding of the premises.
7. That at the request of Grantor with consent of Grantee, or at the option of Grantee, the principal balance secured hereby may be reamortized on terms acceptable to the Secretary of Health, Education, and Welfare if a partial prepayment results from an eminent domain or condemnation award or from a fire or casualty insurance payment where there is a resulting loss of project income.
8. That in order more fully to protect the security of this Mortgage, together with, and in addition to, such payments of interest, or of principal and interest, Grantor will pay to the Grantee, on the

dates each month that such payments are due, until the Note is fully paid, the following sums:

- (a) A sum equal to the ground rents, if any, next due, plus the premiums that will next become due and payable on policies of fire and other property insurance covering the premises covered hereby, plus water rates, taxes and assessments next due on the premises covered hereby (all as estimated by the Grantee) less all sums already paid therefor divided by the number of months to elapse before one month prior to the date when such ground rents, premiums, water rates, taxes and assessments will become delinquent, such sums to be held by Grantee in escrow to pay said ground rents, premiums, water rates, taxes, and special assessments; no interest shall be due on sums so held;
- (b) All payments mentioned in the preceding subsection of this paragraph and all payments to be made under the Note secured hereby shall be added together and the aggregate amount thereof shall be paid each (month) in a single payment to be applied by Grantee to the following items in the order set forth:
 - (I) ground rents, taxes, special assessments, water rates, fire and other property insurance premiums;
 - (II) interest on the Note secured hereby;
 - (III) amortization of the principal of said Note;

9. In the event of Grantor's failure to pay any sums provided for in this Mortgage, the Grantee, at its option, may pay the same. Any excess funds accumulated under (a) of the preceding paragraph remaining after payment of the items therein mentioned, shall be credited to subsequent periodic payments of the same nature required thereunder; but if any such items shall exceed the estimate therefor, or if the Grantor shall fail to pay any other governmental or municipal charge, the Grantor shall forthwith make good the deficiency or pay the charge before the same become delinquent or subject to interest or penalties and in default thereof the Grantee may pay the same. All sums paid by the Grantee shall be added to the principal of the debt secured hereby and shall bear interest from the date of payment at the rate specified in the Note and shall be due and payable on demand. If the property is sold under foreclosure or is otherwise acquired by the Grantee after default, any remaining balance of the accumulations under (a) of the preceding paragraph shall be credited to the principal of the Mortgage as of the date of the commencement of foreclosure proceedings or as of the date the property is otherwise acquired.

10. That Grantor will keep the premises above conveyed in good order and condition and will not commit or permit any waste thereof, reasonable wear and tear excepted, and in the event of the failure of the Grantor to keep the buildings on said premises and those to be erected on said premises, or improvements thereon, in good repair, the Grantee may make such repairs as in its discretion it may deem necessary for the proper preservation thereof, and any sums paid for such repairs shall bear interest from the date of payment at the rate specified in the Note, shall be due and payable on demand and shall be fully secured by this Mortgage.

11. That Grantor will not voluntarily create, permit or suffer

to be created against the property subject to this Mortgage any lien or liens inferior or superior to the lien of this Mortgage and further that it will keep and maintain the same free from the claim of all persons supplying labor or materials which will enter into the construction of any and all buildings and improvements now being erected or to be erected on said premises.

12. That Grantor further covenants and agrees that this mortgage shall constitute a security agreement with respect to any and all machinery, equipment, chattels, articles of personal property, and fixtures described and included in this mortgage, and all additions, accessions, substitutions, and replacements thereto and therefor, and all of which are hereinafter referred to as the collateral, and Grantor hereby grants and conveys to Grantee, its successors and assigns, a security interest therein. That upon default of any term, condition or covenant of this mortgage and acceleration of any indebtedness hereby secured, the Grantee may, at its discretion, require the Grantor to assemble the collateral and make it available to the Grantee at a place reasonably convenient to both parties to be designated by the Grantee. That the Grantee shall give the Grantor notice, by registered mail, postage prepaid, of the time and place of any public sale or other intended disposition thereof is to be made by sending notice to the Grantor at least five days before the time of the sale or other disposition, which provisions for notice the Grantor and Grantee agree are reasonable; provided, however, that nothing herein shall preclude the Grantee from proceeding as to both real and personal property in accordance with Grantee's rights and remedies in respect of the real property. Grantee shall have all of the remedies of a secured party under the Uniform Commercial Code as now in effect in the State of Maine and such further remedies as may from time to time hereafter be provided in Maine for a secured party. Grantor agrees that all rights of Grantee as to said collateral and as to said real estate, and rights and interests appurtenant thereto, may be exercised together or separately and further agrees that in exercising its power of sale as to said collateral and as to said real estate, and rights and interest appurtenant thereto, the Grantee may sell the collateral or any part thereof either separately from or together with the said real estate, rights and interests appurtenant thereto, or any part thereof, all as the Grantee may in its discretion elect.

13. That Grantor shall maintain full and correct books and records showing in detail the earnings and expenses of the mortgaged premises; will permit the Grantee and its representatives to examine said books and records and all supporting vouchers and data any time and from time to time upon request by the Grantee at the mortgaged premises or at such other place in the County in which the mortgaged premises are located as such books and records are customarily kept; and Grantor hereby agrees to furnish to Grantee within one hundred twenty (120) days after the close of each fiscal year an audited financial statement of the operation of the premises reflecting income (including sources thereof) and expenses, such statement to be prepared by a certified or other competent accountant satisfactory to the Grantee.

14. That Grantor within seven (7) days upon request in person or within ten (10) days upon request by mail shall furnish a duly acknowledged written statement setting forth the amount of the debt secured by this mortgage, and stating either that no offsets or defenses exist against the mortgage debt, or, if such offsets or defenses are alleged to exist, the nature thereof.

15. That in case of foreclosure of this Mortgage, and as often

as any proceedings shall be taken to foreclose the same, the Grantor will pay to the Grantee a reasonable attorney's fee, and the same shall be a further charge and lien upon the said premises.

16. That no sale of the premises hereby mortgaged and no forbearance on the part of the Grantee, and no extension of the time for the payments of the debt hereby secured given by the Grantee, shall operate to release, discharge, modify, change, or affect the original liability of the Grantor herein either in whole or in part.

17. That in the event of any default, as herein described, this mortgage may be foreclosed in any manner prescribed or permitted by law, appraisement being hereby waived; and out of all the monies arising from a sale to retain the amount then due or to become due according to the conditions of this instrument together with the costs and charges of making such sale, and the overplus, if any there be, shall be paid by the party or parties making such sale to the Grantor, its successors and assigns.

18. That no waiver of any covenant herein or of the Note secured hereby shall at any time thereafter be held to be a waiver of the terms hereof or of the Note secured hereby.

19. That receipt and disposition of rents, income of the premises, insurance proceeds, eminent domain awards, or any other sums under the provisions of the mortgage, the note, or other loan documentation by Grantee shall not be a waiver or release of any rights of the Grantee, including but not limited to, the right of foreclosure or acceleration of the note, whether such receipt or disposition shall be before or after exercise of any such rights.

20. That Grantee hereof, its successors and assigns, shall have The Statutory Power of Sale in addition to all other rights of a Mortgagee allowed by law and this mortgage in case of default in any term or condition contained or referred to herein.

21. That it is an additional condition of this Mortgage and Security Agreement for breach of which foreclosure may be claimed and for breach of which all indebtedness secured hereby may be declared due and payable at once, that title to the within described mortgaged premises shall not pass be deed, mortgage or other means, or operation of law, from Grantor, or from any subsequent title holder, either voluntarily or involuntarily. This condition shall continue until all indebtedness and obligations secured hereby are satisfied, and permission given, or election not to foreclose or accelerate said indebtedness by Grantee, its successors or assigns, as to any one such transfer, shall not constitute a waiver of any rights of Grantee, its successors or assigns, as to any subsequent such transfer of title as to which this condition shall remain in full force and effect. The term title as used herein shall mean the estate of the Grantor subject to the lien of this mortgage.

22. This Mortgage and Security Agreement is expressly made subject and inferior to a Mortgage (FHA Form 4125-B) and to Security Agreement both of even date herewith executed and delivered by Grantor herein to Grantee herein encumbering the real and personal property herein described and securing a Mortgage Note (FHA Form 4125-d) of even date herewith in the amount of \$3,245,431.00, all of which documents are hereinafter collectively called the FHA Mortgage. Grantor herein shall perform, or cause to be performed, when due all obligations of the mortgagor under the terms

and provisions of the FHA Mortgage, specifically including prompt payment when due of all indebtedness secured and evidenced thereby. Should Grantor herein fail to comply with its obligations set forth in this paragraph 22, such failure shall constitute a default under the terms and provisions of this Mortgage and Security Agreement and, in addition to any other rights which the Grantee may have hereunder and by operation of law, the Grantee herein shall have the right, but not the obligation, to make all payments and to do all things to render said FHA Mortgage current, and all advances made for such purpose, including interest paid thereon at the rate specified in said FHA Mortgage Note, shall be payable by Grantor herein to Grantee herein upon demand by Grantee herein and, to the extent permitted by law, all such advances shall be secured by the lien of this Mortgage and Security Agreement.

23. That in the event of default in making any payment provided for herein or in the Note secured hereby, or in the event of a breach of any other stipulation, agreement, condition or covenant of this mortgage, including any transfer of title to the mortgaged premises without permission of Grantee as set forth in paragraph 21 hereof, and if such default or breach is not cured prior to the expiration of 90 days after the Secretary of Health, Education, and Welfare, aforesaid, receives notification from the holder of the loan of such default or breach then in any such event the whole principal sum of said Note shall, at the option of the Grantee, its successors and assigns, as such holder, be deemed to have become immediately due, and the same with interest thereon and with all other costs and charges, shall thereupon be collectible by foreclosure of this mortgage; provided, however, such notice to said Secretary of Health, Education, and Welfare and such 90 day period shall not be necessary should the guaranty of this mortgage indebtedness be terminated or become void pursuant to its terms and Grantee receives written notice thereof from said Secretary.

The covenants herein contained shall bind, and the benefits and advantages shall inure to, the respective successors and assigns of the parties hereto and to the extent permitted by law shall bind any future owner of the mortgaged premises or any part thereof. Whenever used, the singular number shall include the plural and the plural the singular, and the use of any gender shall include all genders.

IN WITNESS WHEREOF, the said Grantor has caused these presents to be signed in its name by JACK R. DYSON, its Treasurer, and its corporate seal to be hereunto affixed this 14th day of February, 1975.

Signed, Sealed and Delivered
in the Presence of:

MAINE MEDICAL CENTER, a Maine
corporation

Robert B. Patterson

BY Jack R. Dyson
Its Treasurer

(CORPORATE SEAL)

STATE OF MAINE
COUNTY OF CUMBERLAND, ss.

February 14, 1975

Then personally appeared the above-named Jack R. Dyson as Treasurer of Maine Medical Center, and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said corporation.

Before me.

[Signature]
Notary Public

MY COMMISSION EXPIRES
MAY 2, 1980

SCHEDULE A

GRANTOR: MAINE MEDICAL CENTER

GRANTEE: MAINE SAVINGS BANK

DATE : February 14, 1975

A certain lot or parcel of land together with the buildings and improvements thereon, located in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows: Beginning at a point at the intersection of the southeasterly side of Congress Street and the easterly side of Gilman Street, said point being marked by an iron pin; thence North $79^{\circ} 44\frac{1}{2}'$ East, four hundred twenty and seventy-nine hundredths (420.79) feet to a point marked by an iron; thence South $18^{\circ} 24'$ East by land now or formerly of Brophy, one hundred forty-eight and eighty-five hundredths (148.85) feet, more or less, to an iron; thence North $72^{\circ} 01'$ East by said Brophy land, seventy-four and eight tenths (74.8) feet, more or less, to Charles Street; thence by Charles Street, South $18^{\circ} 24'$ East, three hundred fifty-seven and twenty-three hundredths (357.23) feet to a point; thence South $18^{\circ} 04\frac{1}{2}'$ East, ninety-eight and eighty hundredths (98.80) feet to a point on the northwesterly terminus of Brackett Street; thence South $62^{\circ} 24'$ West by Brackett Street, thirty-eight and fifty-seven (38.57) feet to a point; thence South $33^{\circ} 29'$ East by said Brackett Street, sixty and thirty-two hundredths (60.32) feet to a point; thence South $57^{\circ} 21\frac{1}{2}'$ East by said Brackett Street, fifty and eighteen hundredths (50.18) feet to a point and land now or formerly of Gemma A. McKenzie et al; thence South $61^{\circ} 08\frac{1}{2}'$ West by said McKenzie land, forty-two and ninety-six hundredths (42.96) feet to a point; thence South $27^{\circ} 36'$ East by said McKenzie land, sixty-two and twenty-eight hundredths (62.28) feet, more or less, to the northerly side of Bramhall Street; thence South $61^{\circ} 00\frac{1}{2}'$ West by said Bramhall Street, five hundred nine and fifty-eight hundredths (509.58) feet to a point in the Western Promenade; thence North $50^{\circ} 49' 20''$ West, one hundred fifty-one and thirty-nine hundredths (151.39) feet to a point on the southeasterly line of Arsenal Street; thence North $62^{\circ} 24'$ East by Arsenal Street, fifty (50) feet to a point at the easterly terminus of Arsenal Street; thence North $27^{\circ} 36'$ West by said Arsenal Street and by land conveyed by the Maine Medical Center to the City of Portland by deed dated August 4, 1972, and recorded in Cumberland County Registry of Deeds in Book 3278, Page 212, one hundred (100) feet to a point; thence South $85^{\circ} 56'$ West by said City of Portland land, ninety-four and two hundredths (94.02) feet, more or less, to Gilman Street; thence North $04^{\circ} 04'$ West by said Gilman Street, six hundred ninety-five and twenty-five hundredths (695.25) feet, more or less, to said Congress Street and the point of beginning.

Being the same premises shown on a plan entitled "Plan of Property in Portland, Maine made for Maine Medical Center", H.I. & E.C. Jordan-Surveyors, dated May 31, 1966 and updated and certified on June 13, 1966, July 7, 1966, October 26, 1972, January 24, 1975 and February 12, 1975.

COPY

such default or breach then in any such event the entire unpaid principal balance of this mortgage note plus accrued interest, at the option of the holder hereof shall become immediately due and payable; provided, however, such notice to said Secretary and such 90 day period shall not be necessary should the guaranty of this mortgage note be terminated or become void pursuant to its terms and payee receives written notice thereof from said Secretary.

The payments due hereunder shall be made to Maine Savings Bank at its office at One Maine Savings Plaza, Portland, Maine 04111, unless another holder or address be given in writing to the parties liable herefor.

All parties to this mortgage note, whether principal, surety, guarantor, or endorser, hereby waive presentment for payment, demand, protest, notice of protest, and notice of dishonor.

Signed and Sealed the day and year first above written.

WITNESS:

Thomas J. Duchette
Robert B. Patterson, Jr.

MAINE MEDICAL CENTER, a Maine corporation

By Lois K. H. [Signature]
Its Treasurer

(CORPORATE SEAL)

THIS IS TO CERTIFY that this is the Note described in and secured by said Mortgage and Security Agreement of even date herewith and in the same principal amount as herein stated and secured by real estate and personal property situated in the City of Portland, Cumberland County, Maine.

Dated: February 14, 1975

Lois A. Wood
Notary Public

MY COMMISSION EXPIRES
MAY 2, 1980

COPY

3

MORTGAGE NOTE

\$1,799,569.00

Portland, Maine
February 14, 1975

FOR VALUE RECEIVED, the undersigned, MAINE MEDICAL CENTER, a Maine corporation located in the City of Portland, County of Cumberland and State of Maine, promises to pay to MAINE SAVINGS BANK, a Maine banking corporation, or order, at its principal place of business at One Maine Savings Plaza in the said City of Portland, County of Cumberland and State of Maine, the principal sum of ONE MILLION SEVEN HUNDRED NINETY-NINE THOUSAND FIVE HUNDRED SIXTY-NINE (\$1,799,569.00) DOLLARS, with interest from date at the rate of seven per centum (7%) per annum on the unpaid balance thereof until paid; which principal and interest shall be paid as follows: Interest only at said rate shall be paid on the first day of March, 1975; thereafter commencing on the first day of April, 1975, monthly installments of interest and principal shall be paid in the sum of Twelve Thousand Seven Hundred Eighteen and 98/100ths (\$12,718.98) Dollars each; such payments shall continue to be made monthly thereafter upon the first day of each succeeding month until the entire indebtedness has been paid in full; in any event, the balance of principal, if any, remaining unpaid, plus accrued interest at said rate, shall be paid on March 1, 2000. Said monthly installments of interest and principal shall be applied first to interest at said rate per annum upon the principal sum, or so much thereof as shall from time to time remain unpaid, and the balance thereof shall be applied to principal.

In the event any installment, or part of any installment, of principal or interest becomes delinquent for more than 15 days, there shall be due, at the option of the holder hereof, an additional sum equal to two cents (\$.02) for each dollar (\$1.00) of each installment so delinquent; provided, nevertheless, that as long as this mortgage note shall be guaranteed by the Secretary of the Department of Health, Education, and Welfare the amount of the monthly payment upon which such delinquency charge may be imposed shall be limited to the amount actually to be paid by the maker hereof and shall not include for such purpose any amount payable as an interest subsidy by said Secretary.

This note is secured by Mortgage and Security Agreement upon real estate and personal property situated in the City of Portland, Cumberland County, State of Maine.

Privilege is reserved to pay the debt in whole or in an amount equal to one or more monthly payments on principal next due, on the first day of any month prior to maturity upon at least thirty (30) days' prior written notice to the holder.

No default shall exist by reason of nonpayment of any required installment of principal so long as the amount of optional additional prepayments of principal already made pursuant to the privilege of prepayment set forth in this mortgage note equals or exceeds the amount of such required installment of principal.

In the event of default in the making of any payment provided for herein, including any delinquency charge, or in the event of a breach of any agreement, condition or covenant of the said Mortgage and Security Agreement given by the maker hereof to Maine Savings Bank, and if such default or breach is not cured prior to the expiration of 90 days after the Secretary of Health, Education, and Welfare, aforesaid, receives notification from the holder hereof of

Know All Men by These Presents, ②

That We, Henry H. Grant and Gladys H. Grant, both of Portland in the County of Cumberland and State of Maine,

in consideration of one (\$1.00) dollar and other valuable considerations

paid by Maine Medical Center, a corporation duly organized and existing under the laws of the State of Maine and located at said Portland,

the receipt whereof we do hereby acknowledge, do hereby grant, bargain, sell and convey unto the said Maine Medical Center, its successors

and assigns forever, a certain lot or parcel of land with the buildings thereon, situated in Portland in the County of Cumberland and State of Maine, on the northwesterly side of Bramhall Street, bounded and described as follows:

Commencing at the southwesterly corner of land, now or formerly, of James Miller and Charlotte Johnson on Bramhall Street; thence northwesterly by land of said James Miller and Charlotte Johnson, sixty (60) feet to land formerly of William J. Knowlton; thence southwesterly along said Knowlton land, parallel with said street, fifty-five (55) feet to a corner of land formerly of William J. Knowlton; thence parallel with first mentioned line sixty (60) feet, more or less, to said street; thence northeasterly by said street fifty-five (55) feet to the place of beginning.

Being the same premises conveyed to us by Russell Fanning by deed recorded in Cumberland County Registry of Deeds in Book 1833, Page 415, and are conveyed subject to the conditions contained in said deed.

The Grantee herein, as part of the consideration hereof, assumes and agrees to pay taxes for the taxable year 1961.



to have and to hold the aforegranted and bargained premises with all the
privileges and appurtenances thereof, to the said

Maine Medical Center, its successors

do give and assigns, to its and their use and behoof forever.

its successors

And we do warrant with the said Grantee, / ~~do~~ and assigns,
that we are lawfully seized in fee of the premises, that they are
free of all incumbrances;

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs shall and will warrant and defend the same to the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof We the said Henry H. Grant

and Gladys H. Grant, being husband and wife

joining in this deed as Grantors, and relinquishing and conveying all right by descent and all other rights in the above described premises, have hereunto set our hands and seals this *thirty-first* day of July in the year of our Lord one thousand nine hundred and sixty-one.

Signed, Sealed and Delivered in presence of

P. E. Jensen

Henry H. Grant

State of Maine, Cumberland, ME, July 31, 1961.

Personally appeared the above named Henry H. Grant

and acknowledged the foregoing instrument to be his free act and deed.

Before me,

P. E. Jensen
Justice of the Peace
~~Notary Public~~

AUG 4 1961

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE

Received at 10 H 27 M A M, and recorded in

BOOK *2619* PAGE *499* *Edward P. Jensen* Register

W. H. Lusk 1961 197

Marriage Deed

FROM

Henry H. Grant, et al

TO

Maine Medical Center

Dated July 31, 1961

State of Maine.

Mr. Registrar of Deeds

Received AUG 4 1961 1961

at H., M., M., and

recorded in Book Page

ATTEST:

REGISTRAR

FROM THE OFFICE OF

JENSEN & BAIRD
477 Congress Street
Portland, Maine

38

Know All Men by these Presents,

That I, DONALD D. McPHEE of Portland in the County of Cumberland and State of Maine,

in consideration of One Dollar (\$1) and other valuable considerations

paid by MAINE MEDICAL CENTER, a corporation duly organized and existing under the laws of the State of Maine and located at Portland in said County and State

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said MAINE MEDICAL CENTER, its

successors ~~Heirs~~ and Assigns forever,

the following described property:

A certain lot or parcel of land with the buildings thereon situated in said Portland and being the premises conveyed to me by Hope K. Fletcher by deed dated November 22, 1946 and recorded in Cumberland County Registry of Deeds in Book 1848, Page 160, in which deed said premises are described as follows:

Beginning at the Northeast corner of Sophia T. Jones lot, so-called, on Arsenal Street; thence Northeasterly on Arsenal Street fifty (50) feet to land of one Raymond; thence Southeasterly by line of Raymond forty-eight (48) feet, more or less, to land of one Haskell; thence Southwesterly along line of said Haskell land thirteen (13) feet and two (2) inches to a point; thence Northwesterly parallel to land of said Raymond three (3) feet to a point; thence Southwesterly along the line of said Haskell land thirty-six (36) feet, more or less, to land of said Jones; thence Northwesterly forty-six (46) feet, more or less to point of beginning.

Also conveying all my interest in and to said Arsenal Street, recently abandoned by the City of Portland.

Do have and in hold the aforegranted and bargained premises,
with all privileges and appurtenances thereof to the said
MAINE MEDICAL CENTER, its successors

~~XXXXX~~ and Assigns, to its and their use and behoof
forever.

And I do warrant with the said Grantee, ^{its successors} ~~XXXXX~~
and Assigns, that I am lawfully seized in fee of the premises;
that they are free of all incumbrances;

that I have good right to sell and convey the same to the said
Grantee to hold as aforesaid; and that I and my Heirs, shall
and will warrant and defend the same to the said Grantee, its successors

~~XXXXX~~ and Assigns forever, against the lawful claims and demands
of all persons.

In Witness Whereof, I the said DONALD D. McPHEE

and I, Lorraine J. McPhee wife of the said Donald D. McPhee

joining in this deed as Grantor, and relinquishing and conveying
MY rights by descent and all other rights in the above
described premises, have hereunto set OUR hands and seals this
9th day of May in the year of our Lord
one thousand nine hundred and fifty-three.

Signed, Sealed and Subscribed
in presence of

Edward F. Jones
to both

Donald D. McPhee
Lorraine J. McPhee



State of Maine,
Cumberland,

{ ss.

May 9, 1953.

Personally appeared the above named Donald D. McPhee

and acknowledged the above instrument to be his free act and
deed.



Before me,

Edward F. Jones
Justice of the Peace

Phillips

328

Warrant of Arrest.

FROM

DONALD D. MOFFEE

TO

MAINE MEDICAL CENTER

DATE: May 10 1953

State of Maine.

County of Cumberland and Registry of Deeds.

Received MAY 9 1953

at 7 11/11 M., 11, and

recorded in Book 2127, Page 320

Attest:

Robert C. ...

FROM THE OFFICE OF

VERRILL DANA WALKER PILLBRIK & WHITEHOUSE.

No. 106. ROBERTS OFFICE SUPPLY COMPANY
Portland - Maine - Tallinn

9-37

10

Know All Men by these Presents.

That We, Albert H. Tardif and M. Louise Tardif, both of Portland, County of Cumberland, State of Maine

in consideration of one dollar (\$1.00) and other valuable considerations

paid by Maine Medical Center, a Corporation established by law at said Portland

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Maine Medical Center

its successors Heirs and Assigns forever.

the following described property:

A certain lot or parcel of land with the buildings thereon situated on the northerly side of Bramhall Street in said Portland which was conveyed to the grantors by Wilhelmina M. Mantine, by deed dated September 16, 1935 and recorded in Cumberland County Registry of Deeds in Book 1478, Page 294 and therein described as follows: Beginning on the northerly side of Bramhall Street at the easterly corner of land formerly of James Miller; thence northeasterly by Bramhall Street twenty-one and seven twentieths (21-7/20) feet to a stake; thence northwesterly about one hundred eleven (111) feet to a point in the southerly side of Arsenal Street; thence southwesterly by Arsenal Street twenty-two and three quarters (22-3/4) feet to said Miller's land; thence southeasterly by said Miller's land one hundred eleven and four tenths (111-4/10) feet to the point of beginning.

Also all our right title and interest in and to Arsenal Street recently abandoned by the City of Portland.

On have and in hold the aforegranted and bargained premises,
with all privileges and appurtenances thereof to the said Maine
Medical Center, its successors

~~XXXX~~ and Assigns, to its and their use and behoof
forever.

And we do WARRANT with the said Grantee, its ~~XXXX~~ successors
and Assigns, that we are lawfully seized in fee of the premises;
that they are free of all incumbrances;

that we have good right to sell and convey the same to the said
Grantee to hold as aforesaid; and that we and ~~our~~ Heirs, shall
and will WARRANT and BIND the same to the said Grantee, its
successors

~~XXXX~~ and Assigns forever, against the lawful claims and demands
of all persons.

In Witness Whereof, We the said Albert N. Tardif
and M. Louise Tardif, the said Grantors, being Husband and Wife

~~and~~

~~the said~~

each
each joining in this deed as Grantors, and/ relinquishing and conveying our
respective rights by descent and all other rights in the above

described premises, have hereunto set our hands and seals this

11th day of June in the year of our Lord
one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered
in presence of

Edward J. Haug
to both

Albert N. Tardif
M. Louise Tardif

State of Maine,
Cumberland

{ as

June 11, 1953.

Personally appeared the above named Albert N. Tardif
and M. Louise Tardif:
and acknowledged the above instrument to be their free act and
deed.

Before me,

Edward J. Haug

Justice of the Peace



Philbrick

316

Warranty Book.

FROM

ALBERT N. TARDIF, et al.
TO

MAINE MEDICAL CENTER

DATE..... June 1953.

State of Maine.

Cumberland

no. 2133 of Book.

Received

JUN 12 1953

14

at 11 A.M., 5 A.M., 2 P.M., and

recorded in Book 2133, Page 310.

Attest

Robert P. Cannon

FROM THE OFFICE OF

Verrill Dana Walker Philbrick

& Whitehouse

No. 106. Rogers Office Supply Company
Portland - Maine - Lewiston

11-3

①

Know All Men by these Presents,

That WE, FRED A. PATTERSON and ELLA H. WEIDEN both of Derry in the County of Rockingham and State of New Hampshire, RUBY E. MCKENZIE of Raymond in said County and State and ALZO E. PATTERSON of Portland in the County of Cumberland and State of Maine

in consideration of One dollar (\$1.00) and other valuable considerations

paid by MAINE MEDICAL CENTER, a Corporation organized and existing under the laws of Maine and located at said Portland,

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Maine Medical Center, its Successors

~~HERE~~ and Assigns forever,

the following described property:

A certain lot or parcel of land with the buildings thereon, situated in said Portland on the northerly side of Bramhall Street and bounded and described as follows:

Beginning on the northerly side of Bramhall Street at the southwesterly corner of land formerly of Frederick A. Carle; thence running westerly by said Bramhall Street twenty-five (25) feet to a stake or point, and from these two points extending northerly adjoining said Carle land, keeping a width of twenty-five (25) feet, to Arsenal Street, being the premises conveyed to Daniel W. Patterson by Maria M. Jose by deed dated September 12, 1921 and recorded in Cumberland County Registry of Deeds in Book 1085, Page 228.

The said Daniel W. Patterson died intestate on September 3, 1952 leaving no widow and as his sole heirs-at-law, the Grantors herein.

The Grantee as part of the consideration hereof assumes and agrees to pay the taxes for the taxable year of 1953.

Also conveying all our right, title and interest in and to Arsenal Street recently abandoned by the City of Portland, Maine.

On have and to hold the aforegranted and bargained premises,
with all privileges and appurtenances thereof to the said
Maine Medical Center, its Successors and Assigns :

~~Heirs and Assigns~~, to its and their use and behoof
forever.

And we do WARRANT with the said Grantee, its / ~~Heirs~~ Successors
and Assigns, that we are lawfully seized in fee of the premises;
that they are free of all incumbrances; except as aforesaid.

that we have good right to sell and convey the same to the said
Grantee to hold as aforesaid; and that we and our Heirs, shall
and will WARRANT and BIND the same to the said Grantee, its Successors

~~Heirs~~ and Assigns forever, against the lawful claims and demands
of all persons.

In Witness Whereof,

We the said Fred A. Patterson and

Christine I. Patterson, wife of the said Fred A. Patterson; Ella H. Whidden and Charles F. Whidden, husband of the said Ella H. Whidden; Ruby E. McKenzie and Elmer W. McKenzie, husband of the said Ruby E. McKenzie, and Alzo F. Patterson and Bessie E. Patterson, wife of the said Alzo F. Patterson

~~and~~ ~~xxxxxxxxxxxxxxxxxxxx~~

joining in this deed as Grantors, and relinquishing and conveying our rights by descent and all other rights in the above described premises, have hereunto set our hands and seals this twenty day of May in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

R. E. Jensen
R. E. Jensen
Kenneth Phares
Kenneth Phares
Arthur K. Smith
Arthur K. Smith
P. J. Campbell
P. J. Campbell

Alzo F. Patterson
Bessie E. Patterson
Fred A. Patterson
Christine I. Patterson
Ella H. Whidden
Charles F. Whidden
Ruby E. McKenzie
Elmer W. McKenzie

State of Maine
Cumberland

{ ss

May 29 19 53

Personally appeared the above named Alzo F. Patterson

and acknowledged the above instrument to be his free act and deed.

Before me,

Royce E. Jensen
Justice of the Peace



Walden 112
9/1

Warranty Book.

FROM

ALZO F. PATTERSON, ET AL.,
TO

MAINE MEDICAL CENTER

DATE: 1953.

State of Maine.

Cumberland, ss: Registry of Deeds.

Received JUN 12 1953 19/

at 11 By J. M. and A. M. and

recorded in book 2133 Page 311.

Attest:

[Signature]
Clerk

FROM THE OFFICE OF
RAYMOND E. JENSEN
115 Congress Street
Portland, Maine

No. 104. **Rosses Office Supply Company**
Portland - Maine - Lewiston

11-5

6

Know All Men by these Presents,

That We, Leola J. Noyes and William H. Noyes, Jr., both of Portland,
County of Cumberland, State of Maine,

in consideration of one dollar (\$1.00) and other valuable considerations

paid by Maine Medical Center, a Corporation established by law in
said Portland

the receipt whereof we do hereby acknowledge, do hereby give, grant,
convey, sell and convey unto the said Maine Medical Center

its successors ~~heirs~~ and Assigns forever,

the following described property:

A certain lot or parcel of land with the buildings thereon situated
in said Portland between Bramhall and Arsenal Streets adjoining
land formerly belonging to Sophia P. Jones and conveyed to us by
Maud L. Pillsbury by deed dated October 2, 1951, recorded in
Cumberland County Registry of Deeds in Book 2060, Page 419, and
therein bounded and described as follows: Beginning on the northerly
side of Bramhall Street at the southwesterly corner of said Jones
land; thence running westerly by said Bramhall Street twenty-five
(25) feet to a stake and from these two points extending northerly
adjoining said Jones land keeping a width of twenty-five (25) feet,
a distance of sixty-eight feet and two inches (68'2"), which dis-
tances are marked by stakes and which stakes are twenty-six (26)
feet distant from the southerly boundary line of Arsenal Street.

To have and to hold the aforegranted and bargained premises,
with all privileges and appurtenances thereof to the said Maine
Medical Center, its successors

~~HEIR~~ and Assigns, to its and their use and behoof
forever.

And we do WARRANT with the said Grantee, its ^{SUCCESSORS}
~~HEIR~~ and Assigns, that we are lawfully seized in fee of the premises;
that they are free of all incumbrances;

that we have good right to sell and convey the same to the said
Grantee to hold as aforesaid; and that we and our Heirs, shall
and will WARRANT and ENFORCE the same to the said Grantee, its
successors
~~HEIR~~ and Assigns forever, against the lawful claims and demands
of all persons.

In Witness Whereof, We, the said Leola J. Noyes and William H. Noyes, Jr., the said grantors, both being unmarried

and

~~of the County of Cumberland~~

~~do hereby certify that the above named persons are the persons who have hereunto set their hands and seals this~~
~~12th~~ day of June in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered
in presence of

Edward F. Hans
to both

Leola J. Noyes
William H. Noyes, Jr.



State of Missouri
Cumberland

{
ss.

June 12, 1953

Personally appeared the above named Leola J. Noyes and William H. Noyes, Jr. and acknowledged the above instrument to be their free act and deed.

Before me,

Edward F. Hans

Justice of the Peace



Phillips

5/17

1953

Merrimack Beach,

FROM

LEOLA J. NOTES, et al
TO

MAINE MEDICAL CENTER

DATED June 1953

State of Maine,
Cumberland

do: Registry of Medicine.

Received JUN 12 1953

at 11, 44, M., M., and P. 19

recorded in Book 2133, Page 317.

ATTEST:

Richard W. Corbett

FROM THE OFFICE OF

Verrill Dana Walker Philbrick

& Whitehouse

No. 106, KOMPERS OPTICK SUPPLY COMPANY
Portland - Maine - Lewiston

1-117

Know All Men by these Presents,

I, HAZEL B. THERIO of Portland in the County of Cumberland and State of Maine

in consideration of One Dollar and other valuable considerations

paid by MAINE MEDICAL CENTER, a corporation duly organized and existing under the Laws of the State of Maine and located at said Portland

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said MAINE MEDICAL CENTER, its

successors ~~Heirs~~ and Assigns forever,

the following described property:

A certain lot or parcel of land with the buildings thereon situated on the Westerly side of Bramhall Street in said Portland, being more particularly described in deed from Hazel E. Skillings to the Grantor, dated September 18, 1945 and recorded in Cumberland County Registry of Deeds in Book 1790, Page 500, in which deed said premises are described as follows:

A certain lot or parcel of land, with the buildings thereon situated in said City of Portland, on the Northwestern side of Bramhall Street, bounded and described as follows: Beginning at the most easterly corner of land now or formerly of Sophia P. Jones; thence Northeasterly on said Bramhall Street fifty (50) feet to land now or formerly of one Raymond; thence Northwesterly by said Raymond land fifty-nine (59) feet; thence Southwesterly thirteen (13) feet two (2) inches, more or less, to a fence; thence Northwesterly by the line of the division fence three (3) feet two (2) inches; thence Southwesterly by said fence thirty-six (36) feet five (5) inches, more or less, to said Jones land; thence Southeasterly by said Jones land sixty-two (62) feet two (2) inches to the point begun at.

Also, all my right, title and interest in and to Arsenal Street recently abandoned by the City of Portland.

To have and to hold the aforegranted and bargained premises,
with all privileges and appurtenances thereof to the said
MAINE MEDICAL CENTER, its successors

~~Heirs~~ and Assigns, to its and their use and behoof
forever.

And I do warrant with the said Grantee, ^{its successors} ~~Heirs~~
and Assigns, that I am lawfully seized in fee of the premises;
that they are free of all incumbrances;

that I have good right to sell and convey the same to the said
Grantee to hold as aforesaid; and that I and my Heirs, shall
and will warrant and bind the same to the said Grantee, its successors

Heirs and Assigns forever, against the lawful claims and demands
of all persons.

In Witness Whereof,

I the said Hazel B. Therio,
being unmarried,

XXXXX

XXXXXXXXXXXX

~~joining in this deed as Grantor, and relinquishing and conveying~~
~~rights by descent and all other rights in the above~~
~~described premises,~~ have hereunto set my hand and seal this
16th day of May in the year of our Lord
one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered
in presence of

Edward F. Jones

Hazel B. Therio



State of Maine,
Cumberland

{ ss.

May 16, 1953.

Personally appeared the above named Hazel B. Therio

and acknowledged the above instrument to be her free act and
deed.

Before me,

Edward F. Jones

Justice of the Peace



Subd.

4/13

Merritt J. Reed.

FROM

HAZEL B. THERIO

TO

MAINE MEDICAL CENTER

Date: May 16, 1953.

State of Maine.

Cumberland, ss. Registry of Births.

Received MAY 16 1953

at 10:15, 535 N. R. M., and recorded in Book 8127, Page 443.

ATTEST:

Robert J. Casperson

FROM THE OFFICE OF

VERRILL DANA WALKER PHILBRICK

& WITTEHOUSE,

No. 100, Kenais Office Supply Company
Portland - Maine - London

10-85

8

~~Know All Men by These Presents.~~

~~That~~ I, John T. Lennon of Portland in the County of Cumberland and State of Maine

in consideration of One Dollar and other valuable considerations

paid by Maine Medical Center, a corporation organized and existing under the Laws of the State of Maine and located at said Portland

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine Medical Center, its

successors

heirs and assigns forever, a certain lots or parcels of land with the buildings thereon situated in said Portland and bounded and described as follows:

First:

Beginning on the northerly side of Bramhall Street at the southwesterly corner of land now or formerly of Thomas H. Pratt, running thence westerly by said Bramhall Street fifty (50) feet to land now or formerly of Sophia M. Knight, and from these two points extending northerly towards Arsenal Street, holding to said width of fifty feet, and adjoining said Pratt premises on one side and said Knight premises on the other for a distance of sixty (60) feet to land now or formerly of Edward T. Burrows. The said lot is the southerly portion of the premises conveyed to Albert B. Cole, Frank H. Cole and Warren W. Cole by Nettie E. Pierce by deed dated September 26, 1911 and recorded in the Registry of Deeds for said County of Cumberland in Book 832, Page 188. Said premises are numbered thirty (30) on said Bramhall Street.

Second:

A certain lot of land with the buildings thereon on the southerly side of Arsenal Street in said Portland bounded and described as follows:

Commencing at a point on the westerly line of land of Mauds E. Pratt at a point sixty (60) feet northerly from the northerly side of Bramhall Street, thence westerly on a line parallel with and sixty (60) feet from said Bramhall Street, fifty (50) feet, more or less, to land of Sophia M. Knight; thence northerly from these two points keeping a width of fifty (50) feet and bounded on the West by land of said Knight and on the East by land of said Pratt and George H. Fletcher, forty-nine (49) feet, more or less, to said Arsenal Street.

Being the same property conveyed to me by Harriet B. Foster by her warranty deed dated February 24, 1945 and recorded in the Cumberland County Registry of Deeds in Book 1771 Page 131.

Also conveying all my right, title and interest in and to Arsenal Street, recently abandoned by the City of Portland.

To have and to hold the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said Maine Medical Center, its

successors
heirs and assigns, to its and their use and behoof forever.

And I do covenant with the said Grantee, its ^{successors} heirs and assigns, that I ^{am} lawfully seized in fee of the premises, that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs shall and will warrant and defend the same to the said Grantee, its successors heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof I the said John T. Lennon

and Ann C. Lennon

wife of the said John T. Lennon

joining in this deed as Grantor, and relinquishing and conveying my right by descent and all other rights in the above described premises, have hereunto set our hand and seal this fifth day of May in the year of our Lord one thousand nine hundred and fifty three.

Signed, Sealed and Delivered in presence of

John J. Devine
to book

John T. Lennon
Ann C. Lennon

State of Maine, Cumberland ss. May 3, 19 53.

Personally appeared the above named John T. Lennon

and acknowledged the foregoing instrument to be his free act and deed.

Before me,

John J. Devine
Justice of the Peace
~~Notary Public~~



Willard

1954

Security Dept

FROM

John T. Jenson

TO

Malne Medical Center

Dated May 5th 1953

State of Michigan
Cumberland

vs. Registry of Deeds

Received MAY 5 1953

at 2:11, 30 M., C 191 M., and

recorded in Book 2127 Page 269

Attest,

Robert W. Co. Secretary

FROM THE OFFICE OF

Devine, Devine, Devine
102 Exchange St
Portland, Maine.

930

Know All Men by these Presents,

That I, CLARA G. READ, of Portland, in the County of Cumberland and State of Maine,

in consideration of one dollar and other valuable considerations

paid by MAINE MEDICAL CENTER, a Maine corporation having a place of business in said Portland, in said County and State,

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Maine Medical Center,

its Successors ~~heirs~~ and Assigns forever,

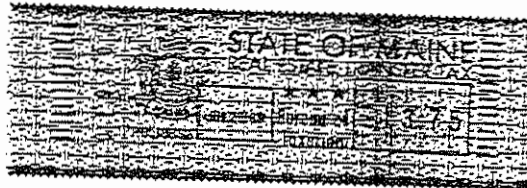
the following described property:

A certain lot or parcel of land, with the buildings thereon, situated on the southwesterly side of Charles Street in said Portland, bounded and described as follows:

Beginning on said southwesterly side of Charles Street at a point thirty (30) feet northwesterly by said Street from the northeasterly corner of land formerly of Charles A. Donnell; thence northwesterly by said Street thirty (30) feet; thence southwesterly parallel with the line of said Donnell land seventy-four and two-tenths (74.2) feet to land formerly known as the Arsenal property; thence southeasterly by said Arsenal lot thirty (30) feet; thence northeasterly parallel with said Donnell land seventy-four and two-tenths (74.2) feet to the point of beginning.

Being the same premises conveyed to this Grantor and Clarence D. Read, as joint tenants, by Grace R. Loomis by deed dated September 1, 1948 and recorded in Cumberland County Registry of Deeds in Book 1926, Page 336. The said Clarence D. Read having deceased and his estate is of record in the Registry of Probate for Cumberland County, Maine.

The Grantor herein shall have the right to occupy the premises hereby conveyed until September 15, 1969.



To have and to hold the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said Maine Medical Center, its Successors

~~Heirs~~ and Assigns, to them and their use and behoof forever.

And I do ~~indemnify~~ with the said Grantee, its ^{Successors} ~~Heirs~~ and Assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my Heirs, shall and will Warrant and Defend the same to the said Grantee, its Successors

~~Heirs~~ and Assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Clara G. Read, being a widow,

~~read~~ ~~with respect to the above~~
~~jointly and severally, and conveying~~
~~rights to the above named parties~~

have hereunto set my hand and seal this
day of July in the year of our Lord
one thousand nine hundred and sixty-nine.

Signed, Sealed and Delivered
in presence of

[Handwritten signatures]

State of Maine. }
CUMBERLAND } ss. July 23, 1969.

Personally appeared the above named
CLARA G. READ
and acknowledged the above instrument to be free act and
deed.

Before me, *[Signature]*
JUL 23 1969
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 10 H. 58 AM. and recorded in
BOOK 32 PAGE 34 *[Signature]* Register

KNOW ALL MEN BY THESE PRESENTS

THAT OLD COLONY TRUST COMPANY a Corporation located in Boston, County of Suffolk and Commonwealth of Massachusetts, sole surviving Trustee under a Trust Agreement created by ALICE A. BURKITT late of Portland and dated March 30, 1961 by virtue of the authority to it given by said Trust Agreement in its capacity of Trustee as aforesaid, and in consideration of One Dollar (\$1.00) and other valuable considerations to it paid by MAINE MEDICAL CENTER of Portland, Maine, the receipt whereof is hereby acknowledged, does hereby sell and convey unto the said Maine Medical Center its successors and assigns forever, the following described real estate, which was the property of Alice A. Burkitt late of Portland, situated in said Portland, Maine and bounded as follows:

a certain lot or parcel of land with the buildings thereon, situated in said Portland, bounded and described as follows: Beginning at a point on the easterly side of Western Promenade, which point is eighty-five (85) feet from the intersection of the northeasterly side line of said Promenade with the northwesterly side line of Bramhall Street; thence northerly by the line of said Promenade seventy-seven and five tenths (77.5) feet, more or less, to Arsenal Street; thence northeasterly by said Arsenal Street seventy-four and one tenths (74.1) feet, more or less, to land now or formerly of William J. Miller et al; thence southeasterly at right angles to Arsenal Street by said Miller land fifty-five and five tenths (55.5) feet, more or less, to land formerly of Hiram Knowlton; thence southwesterly parallel with said Arsenal Street one hundred and twenty-seven (127) feet, more or less, to the Western Promenade and point of beginning, containing fifty-six hundred (5600) square feet more or less.

Also another parcel of land adjoining the above described lot, and bounded and described as follows: Commencing at a point on the northwesterly side of Bramhall Street, which point is the northeasterly corner of land of Frederick C. Hussey et al, and ninety-eight and two tenths (98.2) feet, more or less, from the intersection of said northwesterly side line of Bramhall Street with the easterly side line of the Western Promenade; thence northeasterly on said Bramhall Street thirty-three and five tenths (33.5) feet to a point and land formerly of Hiram Knowlton, and from these two points extending northwesterly keeping a width of thirty-three and five

tenths (33.5) feet a distance of sixty (60) feet to the first parcel herein conveyed, containing two thousand and ten (2010) square feet.

Meaning and intending to convey and hereby conveying the real estate acquired by Alice A. Burkitt by Warranty Deed of Good Will Home Association dated December 11, 1930 recorded in the Cumberland County Registry of Deeds Book 1361, page 373; said real estate having been devised to the Grantor as Trustee by the Will of Alice A. Burkitt duly probated in the Cumberland County Probate Court.

TO HAVE AND TO HOLD the above-granted premises unto the said Maine Medical Center its successors and assigns forever. And the said Old Colony Trust Company in its said capacity does hereby covenant to and with the said Maine Medical Center its successors and assigns that it is the sole surviving Trustee under said Trust Agreement; that it has power under said Trust Agreement to sell as aforesaid; and that in making this conveyance it has in all respects acted in pursuance of the authority granted in and by said Trust Agreement.

IN WITNESS WHEREOF, the 'said Old Colony Trust Company in its said capacity as Trustee as aforesaid has caused this instrument to be signed in its corporate name and sealed with its corporate seal by S. Vincent its Vice President thereunto duly authorized this 4th day of February 1969.

Witness:

OLD COLONY TRUST COMPANY
By S. Vincent
Its Vice President

COMMONWEALTH OF MASSACHUSETTS
SUFFOLK, SS.

February 4, 1969.

Then personally appeared the above-named S. Vincent who made oath that the foregoing instrument was his free act and deed and the free act and deed of the Grantor corporation in its said capacity as Trustee as aforesaid.

Before me,

Mary F. Archoska
Notary Public

Mary F. Archoska
NOTARY PUBLIC

My commission expires May 23, 1971



TAB 7

Maine Medical Center
22 Bramhall Street
Portland, Maine

Site Plan Application for Maine Medical Center
Bean Building Roof Addition
22 Bramhall Street, Portland

REQUIRED STATE AND FEDERAL PERMITS

The Bean Building Roof Addition consists entirely of a vertical expansion of an existing structure; no site work nor disturbance is associated with the project. The Bramhall Campus is subject to the conditions set forth by the currently held Maine DEP Site Location of Development permit . The City of Portland will process this modification to the campus under its delegated review authority to process this permit.

Maine Medical Center will also require notification of the Federal Aviation Administration prior to construction of the project.

Maine Medical Center Surgical Suite Addition 2013
 Zoning Compliance
 Comprehensive Plan Compliance

TAB B

General Overview:

Maine Medical Center (MMC) is requesting Site Plan approval for a +/- 40,000 s.f. addition to the Lower Bean Building (aka Bean2)) located at 22 Bramhall Street (in the vicinity of the MMC emergency department). The addition will both modernize, upgrade and enhance MMC's existing surgical facilities by enlarging existing ORs to meet standard of care requirements and adding four additional surgical suites. The addition will be located on the roof of the Bean 2, and, as a result, will have no impact on building footprint or impervious surface.

Zoning:

MMC is governed by a 2005 Conditional Rezoning Agreement, Order 172-04/05, C-41 (attached hereto). It governs the use, setback and height of buildings, among other things. The addition being proposed conforms in all respects with the zoning requirements of the Conditional Rezoning Agreement.

	<u>Allowed by Contract</u>	<u>Proposed</u>
Use	Institutional/hospital	Institutional/hospital
Height	Bean Building max height 111 feet	69 feet
Setbacks	0	No change/existing footprint

City's Comprehensive Plan:

The Portland Comprehensive Plan's Vision for the Future characterizes Portland as the "center for many **regional service institutions**, which offer high quality medical care, an extensive range of social services for those in need, and numerous higher education opportunities". This characteristic is one of several that the vision places under the heading of "Distinctive Features of Portland to Value and Build Upon" and the subheading, "A city that provides for people".

Under the heading, "Future Directions for Portland" and the subheading, "Serve the people", the Vision says "**Provide compassionate services** for the City's vulnerable citizens, while leading regional approaches to share the responsibility of caring for citizens in need" and "**Foster expanded opportunities, innovative solutions, and exemplary services** from Portland's institutions of higher learning, health care, and community services." And under the subheading of "Build a Vibrant Small City" the Vision says, "Support a **dynamic downtown** that embraces an intertwining of uses, including residential, business, retail, institutional, service, and arts and cultural uses." Under the subheading, "Provide

Zoning Compliance
Comprehensive Plan Compliance

High Quality Leadership", the Vision says, "Create a **sustainable community** with vital neighborhoods, high quality infrastructure, a strong economy, and a healthy environment, while keeping municipal taxes affordable" and "**Incorporate environmental, economic and neighborhood considerations** in municipal decision-making."

Stated Goal A: To encourage orderly growth and development in appropriate areas of each community, while protecting the State's rural character; making efficient use of public services and preventing development sprawl.

Comprehensive Plan Description of Maine Medical Center

Pages P-11 and P-12 of the Public Facilities and Services section of the Comprehensive Plan provides the following description of Maine Medical Center:

"Maine Medical Center is located at 22 Bramhall Street in Portland. It is the largest hospital in Maine with 598 beds. MMC is a fully accredited, community oriented teaching hospital serving Portland, and a referral center for the entire State and much of northern New England. MMC is widely known for its expanding cardiac diagnostic and open-heart surgery programs, renal dialysis and kidney transplant, oncology, nuclear medicine, physical medicine and rehabilitation. It maintains a graduate medical education program, has residency-training programs in major specialties and is a teaching affiliate of the University of Vermont College of Medicine. There are 35 separate outpatient clinics and a highly regarded research department, programs in community medicine, and a Community Mental Health Center. MMC has a substantial diagnostic facility, which provides space for the Pathology and Radiology departments. It is the home of the Barbara Bush Children's Hospital as well as the Southern Maine Radiation Therapy Institute, a cancer treating consortium of 17 Maine hospitals. MMC operates seven facilities throughout the region, including Spring Harbor Hospital (the former Jackson Brook Institute) in Scarborough, Maine's only private psychiatric hospital. MMC supports a staff of approximately 4,571 employees."

Compliance with City's Comprehensive Plan: The MMC addition presently before the Planning Board is consistent with a myriad of concepts contained within the City of Portland's Comprehensive Plan. First and foremost, it may be considered an in-fill development in that it is an expansion of a vertical nature. The addition creates no new footprint. But, rather attempts to achieve health care objectives by building within its existing campus, avoiding sprawl.

Zoning Compliance
Comprehensive Plan Compliance

Additionally, the proposed addition will promote economic development within the City. While the jobs to be created by the proposed addition is modest, at 49 employees, in today's economic environment all job creation is good job creation. MMC is proud to be an economic engine that fuels prosperity within the City of Portland and this current phase of development will continue to provide good jobs in a central location within the City.

The national reputation and respect for the medical providers at this teaching institution also lends itself to the promotion of the City as a great place to live, work and play. With this addition to the surgical suites within the Hospital, the abilities of renowned medical professions will be expanded and the education of the students and residents that are part of the MMC family will be enhanced. These attributes lend themselves to further recognition of Portland as a caring, creative and growing City.

MMC is a partner with the City in promoting it as a visionary community that cares for each and every member of it. The proposed addition of operating rooms at this health care agency complies with the overall objectives of the city's Comprehensive Plan.

General Overview:

Maine Medical Center (MMC) is requesting Site Plan approval for a +/- 40,000 s.f. addition to the Lower Bean Building (aka Bean2)) located at 22 Bramhall Street (in the vicinity of the MMC emergency department). The addition will both modernize, upgrade and enhance MMC's existing surgical facilities by enlarging existing ORs to meet standard of care requirements and adding four additional surgical suites. The addition will be located on the roof of the Bean 2, and, as a result, will have no impact on building footprint or impervious surface.

Zoning:

MMC is governed by a 2005 Conditional Rezoning Agreement, Order 172-04/05, C-41 (attached hereto). It governs the use, setback and height of buildings, among other things. The addition being proposed conforms in all respects with the zoning requirements of the Conditional Rezoning Agreement.

	<u>Allowed by Contract</u>	<u>Proposed</u>
Use	Institutional/hospital	Institutional/hospital
Height	Bean Building max height 111 feet	69 feet
Setbacks	0	No change/existing footprint

City's Comprehensive Plan:

The Portland Comprehensive Plan's Vision for the Future characterizes Portland as the "center for many **regional service institutions**, which offer high quality medical care, an extensive range of social services for those in need, and numerous higher education opportunities". This characteristic is one of several that the vision places under the heading of "Distinctive Features of Portland to Value and Build Upon" and the subheading, "A city that provides for people".

Under the heading, "Future Directions for Portland" and the subheading, "Serve the people", the Vision says "**Provide compassionate services** for the City's vulnerable citizens, while leading regional approaches to share the responsibility of caring for citizens in need" and "**Foster expanded opportunities, innovative solutions, and exemplary services** from Portland's institutions of higher learning, health care, and community services." And under the subheading of "Build a Vibrant Small City" the Vision says, "Support a **dynamic downtown** that embraces an intertwining of uses, including residential, business, retail, institutional, service, and arts and cultural uses." Under the subheading, "Provide

Zoning Compliance
Comprehensive Plan Compliance

High Quality Leadership", the Vision says, "Create a **sustainable community** with vital neighborhoods, high quality infrastructure, a strong economy, and a healthy environment, while keeping municipal taxes affordable" and "**Incorporate environmental, economic and neighborhood considerations** in municipal decision-making."

Stated Goal A: To encourage orderly growth and development in appropriate areas of each community, while protecting the State's rural character; making efficient use of public services and preventing development sprawl.

Comprehensive Plan Description of Maine Medical Center

Pages P-11 and P-12 of the Public Facilities and Services section of the Comprehensive Plan provides the following description of Maine Medical Center:

"Maine Medical Center is located at 22 Bramhall Street in Portland. It is the largest hospital in Maine with 598 beds. MMC is a fully accredited, community oriented teaching hospital serving Portland, and a referral center for the entire State and much of northern New England. MMC is widely known for its expanding cardiac diagnostic and open-heart surgery programs, renal dialysis and kidney transplant, oncology, nuclear medicine, physical medicine and rehabilitation. It maintains a graduate medical education program, has residency-training programs in major specialties and is a teaching affiliate of the University of Vermont College of Medicine. There are 35 separate outpatient clinics and a highly regarded research department, programs in community medicine, and a Community Mental Health Center. MMC has a substantial diagnostic facility, which provides space for the Pathology and Radiology departments. It is the home of the Barbara Bush Children's Hospital as well as the Southern Maine Radiation Therapy Institute, a cancer treating consortium of 17 Maine hospitals. MMC operates seven facilities throughout the region, including Spring Harbor Hospital (the former Jackson Brook Institute) in Scarborough, Maine's only private psychiatric hospital. MMC supports a staff of approximately 4,571 employees."

Compliance with City's Comprehensive Plan: The MMC addition presently before the Planning Board is consistent with a myriad of concepts contained within the City of Portland's Comprehensive Plan. First and foremost, it may be considered an in-fill development in that it is an expansion of a vertical nature. The addition creates no new footprint. But, rather attempts to achieve health care objectives by building within its existing campus, avoiding sprawl.

Zoning Compliance
Comprehensive Plan Compliance

Additionally, the proposed addition will promote economic development within the City. While the jobs to be created by the proposed addition is modest, at 49 employees, in today's economic environment all job creation is good job creation. MMC is proud to be an economic engine that fuels prosperity within the City of Portland and this current phase of development will continue to provide good jobs in a central location within the City.

The national reputation and respect for the medical providers at this teaching institution also lends itself to the promotion of the City as a great place to live, work and play. With this addition to the surgical suites within the Hospital, the abilities of renowned medical professions will be expanded and the education of the students and residents that are part of the MMC family will be enhanced. These attributes lend themselves to further recognition of Portland as a caring, creative and growing City.

MMC is a partner with the City in promoting it as a visionary community that cares for each and every member of it. The proposed addition of operating rooms at this health care agency complies with the overall objectives of the city's Comprehensive Plan.

May 28, 2013

Dear Neighbor :

Please join us for a neighborhood meeting to discuss Maine Medical Center's plans for a proposed two story addition on the roof of the LL Bean Building, located on the Bramhall Street Campus, 22 Bramhall Street.

Meeting Location : Dana Center Auditorium (Enter from Bramhall Street)

Meeting Date : June 17, 2013

Meeting Time : 7:00 PM

The City Code requires that property owners within 500 feet of the proposed development and residents on an "interested parties list", be invited to participate in a neighborhood meeting. A sign-in sheet will be circulated and minutes of the meeting will be taken. Both the sign-in sheet and minutes will be submitted to the Planning Board.

If you have any questions please feel free to call me at 200-2055.

Sincerely,

SEBAGO TECHNICS, INC.



William T. Conway, RLA, LEED AP
Vice President, Landscape Architecture

WTC:jsf

Neighborhood Meeting Certification

I, (applicant/consultant) hereby certify that a neighborhood meeting was held on (date) at (location) at (time).

I also certify that on (date at least seven days prior to the neighborhood meeting), invitations were mailed to all addresses on the mailing list provided by the Planning Division, including property owners within 500 feet of the proposed development or within 1000 feet of a proposed industrial subdivision or industrial zone change and the residents on the "interested parties" list.

Signed,

_____ (date)

Attached to this certification are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes

Will Conway

From: Marshall W. Bartlett [BARTLM@mmc.org]
Sent: Thursday, May 23, 2013 12:42 PM
To: Penelope St. Louis
Cc: Will Conway
Subject: FW: Neighborhood Meeting labels
Attachments: ATT00001.gif; A Guide to Holding Neighborhood Meetings 1-2013.doc

Hi Penny,

Barbara mentions submitting by 10:00 A.M., Tuesday.

We will be submitting by 4:00 P.M. Tuesday, as discussed, correct?

Thanks,
Marshall

From: Barbara Barhydt [BAB@portlandmaine.gov]
Sent: Thursday, May 23, 2013 12:35 PM
To: Kelly, Desiree; Penelope E. St Louis; Yeaton, Jennifer
Cc: Conway', 'Will; Fraser, Jean; Walter Pochebit; Marshall W. Bartlett
Subject: Re: Neighborhood Meeting labels

Hi Penny:

Thank you for your inquiry to Desiree.

We need to have the Maine Medical application submitted, in order to conduct a completion check and input the project into our computer system. Once that is complete, we can generate labels for the receipt of application notice and for the neighborhood meeting. I know we discussed that you would submit the application by 10 a.m. on May 28th. Assuming everything is complete, we can provide you with the mailing labels by the end of the day on the 28th. You note in your e-mail that the neighborhood meeting is scheduled for June 11th. That is the tentative date for the Planning Board workshop on MMC's addition. As noted in the Guide to Holding Neighborhood meeting (attached), we advise applicants not to schedule neighborhood meetings on the same day as scheduled Planning Board or City Council meetings. I recommend that you find an alternate date for the neighborhood meeting. Under the updated site plan ordinance, the neighborhood meeting is to be held either within 30 days from submission of a preliminary plan or within 21 days from submitting a final plan. Notices must be sent 10 days in advance of the meeting. The requirement to hold a neighborhood meeting prior to a workshop has been eliminated.

We look forward to receiving the application.

Thank you.
Barbara

Barbara Barhydt
Development Review Services Manager
Planning Division
389 Congress Street 4th Floor
Portland, ME 04101
(207) 874-8699
Fax: (207) 756-8256

TAB 12

Maine Medical Center and Subsidiaries

Consolidated Financial Statements as of and for the
Years Ended September 30, 2012 and 2011,
Supplemental Consolidating Information as of and
for the Year Ended September 30, 2012, and
Independent Auditors' Report

MAINE MEDICAL CENTER AND SUBSIDIARIES

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INDEPENDENT AUDITORS' REPORT

To the Board of Trustees of
Maine Medical Center

We have audited the accompanying consolidated balance sheets of Maine Medical Center (a subsidiary of MaineHealth) and subsidiaries (the "Medical Center") as of September 30, 2012 and 2011, and the related consolidated statements of operations, changes in net assets, and cash flows for the years then ended. These consolidated financial statements are the responsibility of the Medical Center's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Medical Center's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, and assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall consolidated financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, such consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Medical Center at September 30, 2012 and 2011, and the consolidated results of its operations, consolidated changes in net assets, and consolidated cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America.

Our audits were conducted for the purpose of forming an opinion on the consolidated financial statements as a whole. The supplemental consolidating information on pages 40–43 is presented for the purpose of additional analysis of the consolidated financial statements rather than to present the financial position, results of operations, and cash flows of the individual entities, and is not a required part of the consolidated financial statements. This supplemental consolidating information is the responsibility of the Medical Center's management and was derived from and relates directly to the underlying accounting and other records used to prepare the consolidated financial statements. Such supplemental consolidating information has been subjected to the auditing procedures applied in our audits of the consolidated financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the consolidated financial statements or to the consolidated financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, based on our audits and the reports of other auditors, such supplemental consolidating information is fairly stated in all material respects in relation to the consolidated financial statements as a whole.

Deloitte & Touche LLP

February 8, 2013

MAINE MEDICAL CENTER AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS AS OF SEPTEMBER 30, 2012 AND 2011 (In thousands)

	2012	2011		2012	2011
ASSETS			LIABILITIES		
CURRENT ASSETS:			CURRENT LIABILITIES:		
Cash and cash equivalents	\$ 21,142	\$ 5,081	Current portion of long-term debt	\$ 11,247	\$ 14,193
Investments	204,718	215,887	Accounts payable and other current liabilities	32,102	30,532
Patient accounts receivable — net	86,565	67,834	Accrued payroll, payroll taxes, and amounts withheld	26,959	20,550
Current portion of investments whose use is limited	5,743	5,716	Accrued earned time	24,466	22,189
Inventories, prepaid expenses, and other current assets	19,390	19,350	Accrued interest payable	423	319
Estimated amounts receivable under reimbursement regulations	2,898	3,450	Estimated amounts payable under reimbursement regulations	37,585	32,208
Current portion of notes and amounts receivable from affiliated entities	<u>5,149</u>	<u>5,872</u>	Self-insurance reserves	1,601	1,795
	<u>345,605</u>	<u>323,190</u>	Current portion of notes and amounts payable to affiliated entities	<u>8,522</u>	<u>1,249</u>
Total current assets			Total current liabilities	142,905	123,035
INVESTMENTS WHOSE USE IS LIMITED BY:			ACCRUED RETIREMENT BENEFITS	232,708	231,417
Debt agreements	4,142	3,921	SELF-INSURANCE RESERVES	16,766	15,293
Board designation	76,486	63,690	LONG-TERM DEBT — Less current portion	109,658	117,209
Self-insurance trust agreements	21,445	21,871	OTHER LIABILITIES	<u>34,185</u>	<u>33,321</u>
Specially designated specific purpose funds	36,273	34,403	Total liabilities	<u>536,222</u>	<u>520,275</u>
Plant replacement funds	19,276	16,086	CONTINGENCIES (Note 19)		
Funds functioning as endowment funds	98,013	88,818	NET ASSETS:		
Pooled life income funds	<u>2,635</u>	<u>2,146</u>	Unrestricted	540,462	531,808
Less current portion	<u>258,270</u>	<u>230,935</u>	Temporarily restricted	78,093	76,034
	<u>5,743</u>	<u>5,716</u>	Permanently restricted	<u>25,019</u>	<u>23,560</u>
PROPERTY, PLANT, AND EQUIPMENT — Net	252,527	225,219	Total net assets	643,574	631,402
ESTIMATED AMOUNTS RECEIVABLE UNDER REIMBURSEMENT REGULATIONS	465,418	462,648			
NOTES AND AMOUNTS RECEIVABLE FROM AFFILIATED ENTITIES — Less current portion	50,277	51,989			
PREPAID PENSION COSTS	5,568	5,587			
OTHER ASSETS	<u>60,401</u>	<u>44,282</u>			
TOTAL	<u>\$1,179,796</u>	<u>\$1,151,677</u>	TOTAL	<u>\$1,179,796</u>	<u>\$1,151,677</u>

See notes to consolidated financial statements

MAINE MEDICAL CENTER AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF OPERATIONS FOR THE YEARS ENDED SEPTEMBER 30, 2012 AND 2011

(In thousands)

	2012	2011
UNRESTRICTED REVENUE AND OTHER SUPPORT:		
Net patient service revenue	\$899,103	\$853,071
Direct research revenue	13,493	17,832
Indirect research revenue	4,380	4,732
Other revenue	<u>66,437</u>	<u>44,602</u>
Total unrestricted revenue and other support	<u>983,413</u>	<u>920,237</u>
EXPENSES:		
Salaries	431,702	391,320
Employee benefits	121,701	117,987
Supplies	137,269	136,465
Professional fees and purchased services	111,287	106,351
Facility and other costs	36,309	30,941
State taxes	14,992	14,944
Interest	3,907	4,851
Depreciation and amortization	54,487	55,899
Provision for bad debts	<u>40,714</u>	<u>39,119</u>
Total expenses	<u>952,368</u>	<u>897,877</u>
INCOME FROM OPERATIONS	<u>31,045</u>	<u>22,360</u>
NONOPERATING GAINS (LOSSES):		
Gifts and donations — net of related expenses	2,752	4,166
Interest and dividends	9,965	12,601
Recognized gain (loss) on cash flow hedge instruments	988	(1,564)
Equity in earnings of joint ventures	4,960	3,713
Other	<u> </u>	<u>(527)</u>
Total nonoperating gains — net	<u>18,665</u>	<u>18,389</u>
EXCESS OF REVENUE OVER EXPENSES BEFORE INCREASE IN FAIR VALUE OF INVESTMENTS	49,710	40,749
INCREASE IN FAIR VALUE OF INVESTMENTS	<u>13,983</u>	<u>430</u>
EXCESS OF REVENUE OVER EXPENSES	63,693	41,179
NET ASSETS RELEASED FROM RESTRICTIONS FOR PROPERTY, PLANT, AND EQUIPMENT	2,029	186
EQUITY TRANSFER TO AFFILIATES	(3,148)	(2,286)
RETIREMENT BENEFIT PLAN ADJUSTMENTS	(53,504)	(50,741)
CHANGE IN NET UNREALIZED LOSS ON CASH FLOW HEDGE INSTRUMENTS	<u>(416)</u>	<u>(758)</u>
INCREASE (DECREASE) IN UNRESTRICTED NET ASSETS	<u>\$ 8,654</u>	<u>\$ (12,420)</u>

See notes to consolidated financial statements.

MAINE MEDICAL CENTER AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CHANGES IN NET ASSETS FOR THE YEARS ENDED SEPTEMBER 30, 2012 AND 2011 (In thousands)

	2012	2011
UNRESTRICTED NET ASSETS:		
Excess of revenue over expenses	\$ 63,693	\$ 41,179
Net assets released from restrictions for property, plant, and equipment	2,029	186
Equity transfer to affiliates	(3,148)	(2,286)
Retirement benefit plan adjustments	(53,504)	(50,741)
Change in net unrealized loss on cash flow hedge instruments	<u>(416)</u>	<u>(758)</u>
Increase (decrease) in unrestricted net assets	<u>8,654</u>	<u>(12,420)</u>
TEMPORARILY RESTRICTED NET ASSETS:		
Gifts and donations	636	1,281
Interest and dividends	604	432
Realized and unrealized gains (losses) on investments	11,147	(2,107)
Change in present value of pooled life and charitable remainder trusts	(257)	(357)
Net assets released from restrictions for operations	(8,042)	(1,264)
Net assets released from restrictions for property, plant, and equipment	<u>(2,029)</u>	<u>(186)</u>
Increase (decrease) in temporarily restricted net assets	<u>2,059</u>	<u>(2,201)</u>
PERMANENTLY RESTRICTED NET ASSETS — Gifts and donations	<u>1,459</u>	<u>541</u>
INCREASE (DECREASE) IN NET ASSETS	12,172	(14,080)
NET ASSETS — Beginning of year	<u>631,402</u>	<u>645,482</u>
NET ASSETS — End of year	<u>\$ 643,574</u>	<u>\$ 631,402</u>

See notes to consolidated financial statements.

MAINE MEDICAL CENTER AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS FOR THE YEARS ENDED SEPTEMBER 30, 2012 AND 2011 (In thousands)

	2012	2011
CASH FLOWS FROM OPERATING ACTIVITIES:		
Increase (decrease) in net assets	\$ 12,172	\$ (14,080)
Adjustments to reconcile change in net assets to net cash provided by operating activities:		
Depreciation and amortization	54,487	55,899
Provision for bad debts	40,714	39,119
Accretion of bond discounts	8	13
Equity transfers to affiliates	3,148	2,286
Equity in earnings of joint ventures	(4,960)	(3,713)
Net realized and change in unrealized (gain) loss on investments	(25,130)	1,677
Net (gain) loss on cash flow hedge instruments	(572)	2,324
Gain on sale of property, plant, and equipment	(73)	(560)
Restricted contributions and investment income	(2,442)	(1,897)
Retirement benefit plan adjustments	53,504	50,741
(Decrease) increase in cash resulting from a change in:		
Patient accounts receivable	(59,445)	(41,806)
Inventories, prepaid expenses and other current assets	345	(12,070)
Other assets	(15,620)	(17,803)
Accounts payable and other current liabilities	11,999	617
Amounts receivable/payable under reimbursement regulations	7,641	(39,411)
Self-insurance reserves	1,279	
Other liabilities	(12,400)	499
Net cash provided by operating activities	<u>64,655</u>	<u>21,835</u>
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchases of investments	(654,426)	(644,270)
Proceeds from the sales of investments	663,390	675,192
Distributions from joint ventures	4,400	2,500
Payments received (paid) on notes and amounts receivable/payable to affiliated entities	8,015	(8,548)
Purchases of property, plant, and equipment	(58,782)	(50,973)
Proceeds from sale of property, plant, and equipment	389	936
Net cash used in investing activities	<u>(37,014)</u>	<u>(25,163)</u>
CASH FLOWS FROM FINANCING ACTIVITIES:		
Payments of long-term debt	(10,874)	(28,942)
Proceeds from issuance of long-term debt		19,123
Restricted contributions and investment income	2,442	1,897
Equity transfers to affiliates	(3,148)	(2,286)
Net cash used in financing activities	<u>(11,580)</u>	<u>(10,208)</u>
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	16,061	(13,536)
CASH AND CASH EQUIVALENTS — Beginning of year	5,081	18,617
CASH AND CASH EQUIVALENTS — End of year	\$ 21,142	\$ 5,081
SUPPLEMENTAL INFORMATION:		
Interest paid on long-term debt	<u>\$ 3,803</u>	<u>\$ 5,077</u>
Issuance of capital leases	<u>\$ 369</u>	<u>\$ 244</u>

See notes to consolidated financial statements.

MAINE MEDICAL CENTER AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS AS OF AND FOR THE YEARS ENDED SEPTEMBER 30, 2012 AND 2011

1. REPORTING ENTITY

Organization — Maine Medical Center and subsidiaries consists of Maine Medical Center (MMC) and its wholly owned subsidiaries, which include Maine Medical Partners (MMP) and MMC Realty Corporation (MMCRC). These entities are collectively referred to as the “Medical Center.” The consolidated financial statements include the accounts of MMC and its controlled subsidiaries. Upon consolidation, intercompany transactions and balances have been eliminated. Such controlled affiliates are disclosed in the supplemental consolidating information using the cost method of accounting.

MCC is a wholly owned subsidiary of MaineHealth. The purpose of MaineHealth, a tax-exempt corporation, is to lead a community care network that provides a broad range of integrated health care services for populations in Maine and northern New England. Through MaineHealth’s subsidiaries and affiliated organizations, the network’s mission is to provide services along the full continuum of care as necessary to improve the health status of the population it serves in a cost-effective manner.

MMC is a 637-bed, not-for-profit, major teaching hospital providing community and tertiary health care services. It is affiliated with the Tufts University School of Medicine undergraduate medical education program. MMC also supports clinical, translational, and bench research programs, but focuses on translational research due to its more immediate benefit to patients.

MMP is a multispecialty physician group, which includes a variety of primary care and specialty disciplines. In addition to providing clinical care, the practices develop and promote educational and teaching programs and research activities.

MMCRC was formed for the purpose of acquiring, holding, managing, maintaining, developing, and disposing of real property for the benefit of and in support of MMC.

2. SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation — The accompanying consolidated financial statements have been presented in conformity with accounting principles generally accepted in the United States of America (GAAP) consistent with the Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) 954, *Health Care Entities*, and other pronouncements applicable to health care organizations.

Use of Estimates — The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements. Estimates also affect the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates. Significant estimates are made in the areas of patient accounts receivable, the fair value of financial instruments, amounts receivable and payable under reimbursement regulations, asset retirement obligations (AROs), retirement benefits, and self-insurance reserves.

Cash and Cash Equivalents — Cash and cash equivalents include investments in highly liquid debt securities with a maturity at the date of purchase of three months or less, excluding amounts classified as investments whose use is limited.

Investments — Investments are stated at fair value. The recorded value of investments in hedge funds and limited partnerships is based on fair value as estimated by management using information provided by external investment managers. As a practical expedient, the Medical Center measures the fair value of these investments on the basis of the net asset value (NAV) per share (or its equivalent). The Medical Center believes that these valuations are a reasonable estimate of fair value as of September 30, 2012 and 2011, but are subject to uncertainty and, therefore, may differ from the value that would have been used had a market for the investments existed. Such differences could be material. Certain of the hedge fund and limited partnership investments have restrictions on the withdrawal of the funds. Investments are classified as current assets based on the availability of funds for current operations. The accounting for the pension plan assets is disclosed in Note 13. Investment income or loss (including realized and unrealized gains and losses on investments, interest, and dividends) is included in the excess of revenue over expenses, unless the income or loss is restricted by donor or law.

As provided for under ASC Section 825, *Financial Instruments*, the Medical Center made the irrevocable election to report investments and investments whose use is limited at fair value with changes in value reported in the excess of revenue over expenses. As a result of this election, the Medical Center reflects changes in the fair value, including both increases and decreases in value whether realized or unrealized, in its excess of revenue over expenses.

Investments, in general, are exposed to various risks, such as interest rate, credit, and overall market volatility. As such, it is reasonably possible that changes in the values of investments will occur in the near term and that such changes could materially affect the amounts reported in the consolidated balance sheets and the consolidated statements of operations and changes in net assets.

Investments Whose Use is Limited — Investments whose use is limited primarily include investments held by trustees under debt agreements, self-insurance trust agreements, and designated investments set aside by the Board of Trustees (the “Board”) for purposes over which the Board retains control and may at its discretion subsequently use for other purposes. In addition, investments whose use is limited include investments restricted by donors for specific purposes or periods, investments restricted by donors to be held in perpetuity by the Medical Center, and the related appreciation on those investments. Amounts required to meet current liabilities of the Medical Center have been classified as current assets.

Property, Plant, and Equipment — Property, plant, and equipment are recorded at cost. The carrying value is reviewed if facts and circumstances suggest that an impairment may exist. Depreciation is provided over the estimated useful life of each class of depreciable assets and is computed using the straight-line method. Interest costs incurred on borrowed funds during the period of construction of capital assets are capitalized as a component of the cost of acquiring those assets. The Medical Center recorded capitalized interest of \$160,000 and \$94,000 for the years ended September 30, 2012 and 2011, respectively.

Gifts of long-lived assets, such as land, building, or equipment, are reported as increases in unrestricted net assets and are excluded from the excess of revenue over expenses. Gifts of long-lived assets with explicit restrictions that specify how the assets are to be used and gifts of cash or other assets that must be used to acquire long-lived assets are reported as restricted support. Absent explicit donor stipulations about how long those long-lived assets must be maintained, expirations of donor restrictions are reported when the donated or acquired long-lived assets are placed in service.

Impairment of Long-Lived Assets — Long-lived assets to be held and used are reviewed for impairment whenever circumstances indicate that the carrying amount of an asset may not be recoverable. Long-lived assets to be disposed of are reported at the lower of carrying amount or fair value, less cost to sell.

Asset Retirement Obligations — AROs are legal obligations associated with the retirement of long-lived assets. These liabilities are initially recorded at fair value and the related asset retirement costs are capitalized by increasing the carrying amount of the related assets by the same amount as the liability. Asset retirement costs are subsequently depreciated over the useful lives of the related assets. Subsequent to initial recognition, the Medical Center records period-to-period changes in the ARO liability resulting from the passage of time in interest expense and revisions to either the timing or the amount of the original expected cash flows to the related assets.

Accounting for Defined Benefit Pension and Other Postretirement Plans — The Medical Center recognizes the overfunded or underfunded status of its defined benefit and postretirement plans as an asset or liability in its consolidated balance sheets. Changes in the funded status of the plans are reported as a change in unrestricted net assets presented below the excess of revenue over expenses in its consolidated statements of operations and changes in net assets in the year in which the changes occur.

The measurement of benefit obligations and net periodic benefit cost is provided by third-party actuaries based on estimates and assumptions approved by the Medical Center's management. These valuations reflect the terms of the plans and use participant-specific information, such as compensation, age, and years of service, as well as certain assumptions, including estimates of discount rates, expected long-term rate of return on plan assets, rate of compensation increases, interest crediting rates, and mortality rates.

Temporarily and Permanently Restricted Net Assets — Temporarily restricted net assets are those whose use by the Medical Center has been limited by donors or law to a specific time period or purpose. Permanently restricted net assets reflect the original value of gifts that have been restricted by donors to be maintained by the Medical Center in perpetuity.

Excess of Revenue over Expenses — The consolidated statements of operations include excess of revenue over expenses. Changes in unrestricted net assets, which are excluded from excess of revenue over expenses, consistent with industry practice, include the effective portion of changes in the fair value of cash flow hedge instruments, permanent transfers of assets to and from affiliates for other than goods and services, retirement benefit plan adjustments, and contributions of long-lived assets (including assets acquired using contributions which by donor restriction were to be used for the purposes of acquiring such assets).

Consolidated Statements of Operations — For purpose of display, transactions deemed by management to be ongoing, major, or central to the provision of health care and related services are reported as operating revenue and expenses. Peripheral or incidental transactions are reported as nonoperating gains and losses.

Net Patient Service Revenue — Net patient service revenue is reported at estimated net realizable amounts from patients, third-party payors, and others for services rendered and includes estimated retroactive revenue adjustments due to future audits, reviews, and investigations. Retroactive adjustments are considered in the recognition of revenue on an estimated basis in the period the related services are rendered, and such amounts are adjusted in future periods as adjustments become known or as years are no longer subject to such audits, reviews, and investigations. Contracts, laws, and regulations governing the Medicare and Medicaid programs are complex and subject to interpretation. As a result, there is at least a reasonable possibility that recorded estimates will change by a material amount in the near term.

Free Care — The Medical Center provides care without charge or at amounts less than its established rates to patients who meet certain criteria under its Board-established free care policy. Because the Medical Center does not pursue collection of amounts determined to qualify as free care, they are not reported as net patient service revenue.

Direct and Indirect Research Revenue and Related Expenses — Revenue related to research grants and contracts is recognized as the related costs are incurred. Indirect costs relating to certain government grants and contracts are reimbursed at fixed rates negotiated with the government agencies. Research grants and contracts are accounted for as exchange transactions. Amounts received in advance of incurring the related expenditures are recorded as unexpended research grants and are included in accrued expenses.

Other Revenue — Revenue, which is not related to patient medical care and which is central to the day-to-day operations of the Medical Center, is included in other revenue. This revenue includes cafeteria sales, medical school revenue, administrative shared services revenue, temporary restricted gifts, grants revenue, rental revenue, and other support services revenue.

Meaningful Use — The Medical Center is in the process of fully implementing Electronic Health Record Technology (EHR). During 2012, the Medical Center qualified and applied for meaningful use incentive payments from Medicare and Medicaid related to the implementation of EHR as provided for under the Health Information Technology for Economic and Clinical Health Act. As a result, the Medical Center recognized \$4,265,000 of other revenue associated with these payments.

Gifts and Donations — Unconditional promises to give cash and other assets to the Medical Center are reported at fair value at the date the promise is received. Unconditional promises to give that are expected to be collected in future years are recorded at the present value of estimated future cash flows. The discounts on those amounts are computed using a risk-free rate applicable to the year in which the promise is received. Amortization of the discount is included in contribution revenue. Conditional promises to give are recognized when the conditions are substantially met. The gifts are reported as either temporarily or permanently restricted net assets if they are received with donor stipulations that limit the use of the donated assets. When a donor restriction expires, that is, when a stipulated time restriction ends or purpose restriction is accomplished, temporarily restricted net assets are reclassified as unrestricted net assets and reported in the consolidated statements of operations as net assets released from restrictions. Donor-restricted contributions whose restrictions are met within the same year received are reported as unrestricted contributions in the accompanying consolidated financial statements.

Self-Insurance Reserves — The liabilities for outstanding losses and loss-related expenses and the related provision for losses and loss-related expenses include estimates for losses incurred, but not reported as well as losses pending settlement. Such liabilities are necessarily based on estimates and, while management believes the amounts provided are adequate, the ultimate liability may be greater than or less than the amounts provided. As a result, there is at least a reasonable possibility that recorded estimates will change by a material amount in the near term. The methods for making such estimates and the resulting liability are actuarially reviewed on an annual basis, and any necessary adjustments are reflected in current operations.

Income Tax Status — The Internal Revenue Service (IRS) has previously determined that MMC and its subsidiaries (except MMP) are organizations as described in Section 501(c)(3) of the Internal Revenue Code (IRC) and are exempt from federal income taxes on related income pursuant to Section 501(a) of the IRC. MMP had significant net operating loss carryovers at September 30, 2012 and 2011. A valuation allowance has been provided for the entire deferred tax benefit for the net operating losses, due to uncertainty of realization. MMP did not have taxable income in 2012 or 2011. Accordingly, no provision for income taxes has been made in the accompanying consolidated financial statements.

Recently Issued Accounting Pronouncements — In August 2010, the FASB issued Accounting Standards Update (ASU) No. 2010-24, *Health Care Entities (Topic 954), Presentation of Insurance Claims and Related Insurance Recoveries*, which clarifies that a health care entity should not net insurance recoveries against a related claim liability. Additionally, the amount of the claim liability should be determined without consideration of insurance recoveries. The provisions of ASU No. 2010-24 were adopted by the Medical Center on October 1, 2011. The adoption of ASU No. 2010-24 increased assets and liabilities in the amount of \$1,133,000 as of September 30, 2012. There was no impact on the consolidated statements of operations and changes in net assets for the year ended September 30, 2012.

In July 2011, the FASB issued ASU No. 2011-07, *Health Care Entities (Topic 954), Presentation and Disclosure of Patient Service Revenue, Provision for Bad Debts, and the Allowance for Doubtful Accounts for Certain Health Care Entities*, which requires reclassifying the provision for bad debts associated with patient service revenue from an operating expense to a deduction from patient service revenue. It also requires enhanced disclosure about the policies for recognizing revenue and assessing bad debts, disclosures of patient service revenue, as well as qualitative and quantitative information about changes in the allowance for doubtful accounts. The provisions of ASU No. 2011-07 are effective for the Medical Center beginning October 1, 2012. The Medical Center has not determined the impact of ASU No. 2011-07 on its consolidated financial statements.

In May 2011, the FASB issued ASU No. 2011-04, *Amendments to Achieve Common Fair Value Measurement and Disclosure Requirements in U.S. GAAP and IFRSs*, which amends ASC 820. ASU No. 2011-04 also requires the categorization by level for items that are only required to be disclosed at fair value and information about transfers between Level 1 and Level 2. In addition, ASU No. 2011-04 provides guidance on measuring the fair value of financial instruments managed within a portfolio and the application of premiums and discounts on fair value measurements. ASU No. 2011-04 requires additional disclosure for Level 3 measurements regarding the sensitivity of fair value to changes in unobservable inputs and any interrelationships between those inputs. The new guidance is effective for reporting periods beginning after December 15, 2011. The adoption will not have a material effect on the consolidated financial statements. The Medical Center has not determined the impact on the disclosures in the consolidated financial statements.

Subsequent Events — The Medical Center has evaluated subsequent events through February 8, 2013, which is the date the consolidated financial statements were issued.

3. COMMUNITY BENEFIT PROGRAMS

As a nonprofit institution dedicated to community service, the Medical Center provides many health-related services that benefit the community. These services include coordinating access to care, free care programs, teaching programs, and research activities. Examples of these programs include CarePartners, a health care program for those who cannot afford to buy insurance but are above the guidelines for government programs; the Ah! Asthma Health program, which improves the care of children with asthma; Raising Readers, a MaineHealth initiative, which aims to provide all Maine children between

ages zero and five years with books; and Vocational Services programs that leverage approximately \$368,000 in federal funds in 2012 to integrate people with physical and psychological disabilities into the community. The Medical Center also operates an International Clinic for Portland's growing immigrant and refugee population, the AIDS Consultation Service, and the Northern New England Poison Center.

The Medical Center provides free care to anyone whose income falls below 175% of the Federal Poverty Level and also has a sliding scale beyond that to assist patients whose income is up to 225% of the Federal Poverty Level.

Maine Medical Center has an active teaching program that teaches medical students, resident physicians, practicing physicians, nursing students, allied health professions students, and the public. These programs are a significant source of health care manpower for the State of Maine as well as providing a higher level of patient care. The Medical Center has entered into a partnership with the Tufts University School of Medicine to train medical students focusing on Maine residents and providing them with a rural, integrated experience in order to encourage them ultimately to practice in Maine. The Medical Center provides a free Certified Nursing Assistant (CNA) program that produces much needed CNAs for health care providers throughout the State of Maine (the "State"), including the Medical Center. Maine Medical Center sponsors a number of programs from childbirth education to heart health to smoking cessation in order to improve overall community health.

The research programs of Maine Medical Center Research Institute (MMCRI), which operates within MMC, are focused around three specialties: cardiovascular disease, cancer, and bone and mineral disease. Core strengths are molecular biology and genetics, outcomes and health services, cytometry, and clinical research. Research at MMCRI has a strong connection to clinical problems through a translational approach. MMCRI's goal is to apply the latest scientific advances to the problems that patients and physicians face in Maine. The state-of-the-art equipment and facilities at MMCRI enable highly technical research and provide services for other academic and research centers throughout Maine. In cooperation with the University of Maine and The Jackson Laboratory, graduate degree programs have been established to provide rigorous basic research training to students in Maine. MMCRI also provides a summer student internship to a number of pre-college and college students who are interested in an opportunity to explore biomedical research as a possible career. All of these programs are done in an effort to enhance advanced educational activities in Maine.

Most of the support for MMCRI is derived from sources outside the State of Maine. This positive flow of funds into Maine is expended on salaries and services that directly support the local economy. MMCRI produces biomedical technology that is used to develop new companies, and its scientists serve as magnets to attract other biomedical technology companies, thereby encouraging additional local economic development.

4. NET PATIENT SERVICE REVENUE

The Medical Center has agreements with third-party payors that provide for payments to the Medical Center at amounts different from its established rates. A summary of the payment arrangements with major third-party payors follows:

Medicare and MaineCare — Inpatient acute care services rendered to each program's beneficiaries are paid at prospectively determined rates per discharge. These rates vary according to a patient classification system that is based on clinical diagnosis and other factors. Outpatient services are paid based on a prospective rate per ambulatory visit/procedure. The Medical Center is reimbursed for cost-reimbursable items at an interim rate with final settlement determined after submission of annual cost reports by the Medical Center and audits thereof by the Medicare Fiscal Intermediary and the State of Maine.

In 2004, the State of Maine, facing significant budget deficits, passed legislation establishing several health care provider taxes (“State taxes”). The enactment of the State taxes allowed the State of Maine to add revenues to the State of Maine General Fund, while minimizing the potential of lost federal matching funds in the MaineCare program. The hospital-specific portion of the State taxes for 2012 and 2011 was based on a percentage of MMC’s net patient service revenue in 2008. On July 1, 2012, the State of Maine passed a special onetime tax assessment of 0.39% on MMC’s net patient service revenue. As a result, for the years ended September 30, 2012 and 2011, the Medical Center recorded State taxes of approximately \$14,992,000 and \$14,944,000, respectively. For the three months ended September 30, 2012, the Medical Center recorded \$628,000 for this assessment. Concurrent with the implementation of the State tax, the State of Maine increased the MaineCare reimbursement rates. Management estimates that the changes in the MaineCare reimbursement rates yielded payments to the Medical Center for the years ended September 30, 2012 and 2011, of approximately \$11,149,000 and \$11,751,000, respectively. The net impact of the State tax and the change in reimbursement rates were a decrease in income from operations of \$3,843,000 and \$3,193,000 for the years ended September 30, 2012 and 2011, respectively.

In 2003, the State of Maine enacted legislation to provide affordable health insurance to small businesses and individuals and to control health care costs. This legislation became known as Dirigo Health. The law provides for the development of an affordable health care plan with sliding scale premium subsidies while further increasing access to health care coverage through the expansion of eligibility for the MaineCare program. The law also covers quality and cost-containment strategies, such as the development of a State Health Plan, voluntary caps on the cost and operating margins of hospitals and insurers, and revised Certificate of Need (CON) regulations, including a Capital Investment Fund (CIF). In 2011, the CON regulations were significantly revised, and the CIF was repealed.

In 2005, the Dirigo Health law was supplemented by additional legislation titled “An Act to Implement Certain Recommendations of the Commission to Study Maine’s Community Hospitals.” The law requested hospitals to voluntarily hold their consolidated operating margins to 3% and to voluntarily restrain their increases in expense per case-mix-adjusted discharge to less than 110% of the forecasted increase in the Centers for Medicare and Medicaid hospital services market basket index for the coming federal fiscal year. This law also addressed the jurisdiction of Dirigo Health, called for the standardization of the reporting of hospital financial information, and established a workgroup to identify opportunities to streamline hospital administrative costs.

The consolidated balance sheets at September 30, 2012 and 2011, include amounts due from the State of Maine under the MaineCare program of \$65,644,000 and \$54,405,000, respectively, which represents a concentration of credit risk. Although the State of Maine’s current budget does not provide for amounts due to the Medical Center, the amounts recorded have been determined based upon applicable regulations, and the Medical Center expects that these amounts will ultimately be paid in full. Due to the complex nature of such regulations, there is at least a reasonable possibility that recorded estimates will change by a material amount.

Nongovernmental Payors — The Medical Center has also entered into payment agreements with certain commercial insurance carriers, health maintenance organizations, and preferred provider organizations. The basis for payment to the Medical Center under these agreements includes prospectively determined rates per discharge, discounts from established charges, and prospectively determined daily rates.

Net patient service revenue for the years ended September 30, 2012 and 2011, consists of the following (in thousands):

	2012	2011
Gross charges:		
Inpatient services	\$ 276,430	\$ 271,362
Inpatient ancillary services	656,492	635,865
Outpatient services	<u>684,926</u>	<u>581,355</u>
	<u>1,617,848</u>	<u>1,488,582</u>
Deductions from gross charges:		
Contractual adjustments	673,637	594,196
Free care	<u>45,108</u>	<u>41,315</u>
	<u>718,745</u>	<u>635,511</u>
Total net patient service revenue	<u>\$ 899,103</u>	<u>\$ 853,071</u>

The Medical Center provides care without charge or at amounts less than its established rates to patients, who meet certain criteria under its Board-established free care policy. Because the Medical Center does not pursue collection of amounts determined to qualify as free care, they are not reported as net patient service revenue. The Medical Center estimates the costs associated with providing charity care by calculating a ratio of total cost to total gross charges, and then multiplying that ratio by the gross uncompensated charges associated with providing care to patients eligible for free care. The estimated cost of caring for charity care patients for the years ended September 30, 2012 and 2011, was \$19,530,000 and \$19,187,000, respectively. Funds received from gifts and grants to subsidize charity services provided for the years ended September 30, 2012 and 2011, were \$245,000 and \$297,000, respectively.

Net patient service revenue in 2012 and 2011 increased by approximately \$13,000,000 and \$11,935,000, respectively, primarily as a result of favorable settlements with third-party payors regarding prior years.

5. PATIENT ACCOUNTS RECEIVABLE

Patient accounts receivable consists of the following at September 30, 2012 and 2011 (in thousands):

	2012	2011
Patient accounts receivable	\$ 280,681	\$ 247,822
Less:		
Allowances for contractual adjustments and advance payments from third-party reimbursing agencies	145,199	136,130
Allowances for bad debts	41,125	34,662
Allowances for free care	<u>7,792</u>	<u>9,196</u>
Patient accounts receivable — net	<u>\$ 86,565</u>	<u>\$ 67,834</u>

6. INVESTMENTS AND INVESTMENTS WHOSE USE IS LIMITED

The composition of investments and investments whose use is limited at September 30, 2012 and 2011, is set forth in the following table (in thousands):

	2012	2011
Investments (current assets)	\$ 204,718	\$ 215,887
Investments whose use is limited	<u>258,270</u>	<u>230,935</u>
Total	<u>\$ 462,988</u>	<u>\$ 446,822</u>
Temporary cash investments	\$ 9,661	\$ 10,411
Bonds and notes	198,507	236,208
Marketable equity securities	43,597	37,424
Mutual funds	162,672	125,079
Hedge funds, limited partnerships, and other	<u>48,551</u>	<u>37,700</u>
Total	<u>\$ 462,988</u>	<u>\$ 446,822</u>

Investments whose use is limited include amounts required by debt agreements and amounts restricted by donors. The Board of Trustees also segregates certain unrestricted net assets as Board designated in order to make provision for future capital improvements, to fund self-insured professional and general liability and workers' compensation risks, and to provide for other specific purposes.

Investments whose use is limited by debt agreements include debt service funds, which are comprised of semiannual deposits to fund principal and interest payments. These investments are held pursuant to the requirements of the outstanding Revenue and Revenue Refunding Bond Indentures.

The current portion of investments whose use is limited at September 30, 2012 and 2011, is comprised of the following (in thousands):

	2012	2011
Trusted under debt agreements	\$ 4,142	\$ 3,921
Trusted self-insurance trusts	<u>1,601</u>	<u>1,795</u>
Total	<u>\$ 5,743</u>	<u>\$ 5,716</u>

Investment income and gains (losses) on investments and investments whose use is limited, cash equivalents, and other investments for the years ended September 30, 2012 and 2011, consist of the following (in thousands):

	2012	2011
Unrestricted net assets:		
Interest and dividends	\$ 9,965	\$ 12,601
Increase in fair value of investments	<u>13,983</u>	<u>430</u>
	<u>23,948</u>	<u>13,031</u>
Temporarily restricted net assets:		
Interest and dividends	604	432
Realized and unrealized gains (losses) on investments	<u>11,147</u>	<u>(2,107)</u>
	<u>11,751</u>	<u>(1,675)</u>
Total	<u>\$ 35,699</u>	<u>\$ 11,356</u>

7. FAIR VALUE OF FINANCIAL INSTRUMENTS

Fair Value of Financial Instruments — GAAP establishes a fair value hierarchy that distinguishes between market participant assumptions based on market data obtained from sources independent of the reporting entity (observable inputs that are classified within Levels 1 and 2 of the hierarchy) and the reporting entity's own assumptions about market participant assumptions (unobservable inputs classified within Level 3 of the hierarchy).

The following tables present information as of September 30, 2012 and 2011, about the Medical Center's financial assets that are measured at fair value on a recurring basis (in thousands):

	September 30, 2012			Total
	Active Markets for Identical Assets (Level 1)	Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	
Temporary cash investments	\$ 9,561	\$ 100	\$ -	\$ 9,661
Bonds and notes:				
U.S. government and agency	61,602	20,832		82,434
Corporate		114,853		114,853
Municipal government — United States		350		350
Foreign government		870		870
Total bonds and notes	<u>61,602</u>	<u>136,905</u>	<u>-</u>	<u>198,507</u>
Marketable equity securities:				
Consumer discretionary	10,570			10,570
Energy	4,095			4,095
Financial services	5,111			5,111
Health care	5,170			5,170
Industrials	4,625			4,625
Information technology	8,811			8,811
Materials	3,291			3,291
Telecommunications	1,383			1,383
Utilities	541			541
Total marketable equity securities	<u>43,597</u>	<u>-</u>	<u>-</u>	<u>43,597</u>
Mutual funds:				
Equity funds	67,003			67,003
Fixed-income funds	65,065			65,065
International equity funds	20,761			20,761
Closed-end international equity funds	9,843			9,843
Total mutual funds	<u>162,672</u>	<u>-</u>	<u>-</u>	<u>162,672</u>
Other funds:				
Common/collective trusts		123		123
Exchange-traded funds	10,221			10,221
Hedge funds		31,635		31,635
Limited partnerships			6,572	6,572
Total other funds	<u>10,221</u>	<u>31,758</u>	<u>6,572</u>	<u>48,551</u>
Total	<u>\$287,653</u>	<u>\$168,763</u>	<u>\$6,572</u>	<u>\$462,988</u>

	September 30, 2011			
	Active Markets for Identical Assets (Level 1)	Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Temporary cash investments	\$ 10,285	\$ 126	\$ -	\$ 10,411
Bonds and notes:				
U.S. government and agency	79,138	26,534		105,672
Corporate		127,555		127,555
Municipal government — United States		788		788
Foreign government		2,193		2,193
Total bonds and notes	79,138	157,070	-	236,208
Marketable equity securities:				
Consumer discretionary	8,994			8,994
Energy	3,655			3,655
Financial services	4,514			4,514
Health care	4,127			4,127
Industrials	3,992			3,992
Information technology	7,346			7,346
Materials	2,404			2,404
Telecommunications	1,595			1,595
Utilities	797			797
Total marketable equity securities	37,424	-	-	37,424
Mutual funds:				
Equity funds	34,686			34,686
Fixed-income funds	63,707			63,707
International equity funds	17,343			17,343
Closed-end international equity funds	9,343			9,343
Total mutual funds	125,079	-	-	125,079
Other funds:				
Common/collective trusts		93		93
Exchange-traded funds	8,706			8,706
Hedge funds		23,293		23,293
Limited partnerships		5,608		5,608
Total other funds	8,706	28,994	-	37,700
Total	\$260,632	\$186,190	\$ -	\$446,822

The following tables provide information regarding the fair value measurements of the assets held by the Medical Center's defined benefit pension plan (see Note 13) at September 30, 2012 and 2011 (in thousands):

	September 30, 2012			Total
	Active Markets for Identical Assets (Level 1)	Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	
Temporary cash investments	\$ 814	\$ 4,341	\$ -	\$ 5,155
Bonds and notes:				
Federal agency bonds	6,396	11,722		18,118
Corporate bonds		25,094		25,094
Total bonds and notes	6,396	36,816	-	43,212
Marketable equity securities:				
Consumer discretionary	19,378			19,378
Energy	7,206			7,206
Financial services	8,776			8,776
Health care	9,063			9,063
Industrials	7,525			7,525
Information technology	15,196			15,196
Materials	6,331			6,331
Telecommunications	3,440			3,440
Utilities	982			982
Total marketable equity securities	77,897	-	-	77,897
Mutual funds:				
Fixed-income funds	69,987			69,987
International equity funds	50,558			50,558
Closed-end international equity funds	35,533			35,533
Total mutual funds	156,078	-	-	156,078
Other funds:				
Common/collective trusts		8,022	21,010	29,032
Exchange-traded funds	30,230			30,230
Hedge funds		78,159		78,159
Limited partnerships		6,159		6,159
Total other funds	30,230	92,340	21,010	143,580
Total	\$271,415	\$133,497	\$21,010	\$425,922

	September 30, 2011			
	Active Markets for Identical Assets (Level 1)	Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Temporary cash investments	\$ 2,214	\$ 1	\$ -	\$ 2,215
Bonds and notes:				
Federal agency bonds	10,353	1,729		12,082
Corporate bonds		8,789		8,789
Total bonds and notes	<u>10,353</u>	<u>10,518</u>	<u>-</u>	<u>20,871</u>
Marketable equity securities:				
Consumer discretionary	14,467			14,467
Energy	6,118			6,118
Financial services	6,552			6,552
Health care	6,729			6,729
Industrials	5,958			5,958
Information technology	12,191			12,191
Materials	4,602			4,602
Telecommunications	3,039			3,039
Utilities	1,226			1,226
Total marketable equity securities	<u>60,882</u>	<u>-</u>	<u>-</u>	<u>60,882</u>
Mutual funds:				
Fixed-income funds	66,281			66,281
International equity funds	40,428			40,428
Closed-end international equity funds	28,444			28,444
Total mutual funds	<u>135,153</u>	<u>-</u>	<u>-</u>	<u>135,153</u>
Other funds:				
Common/collective trusts		24,526	17,476	42,002
Exchange-traded funds	19,964			19,964
Hedge funds		61,176	7,297	68,473
Limited partnerships		5,718		5,718
Total other funds	<u>19,964</u>	<u>91,420</u>	<u>24,773</u>	<u>136,157</u>
Total	<u>\$228,566</u>	<u>\$101,939</u>	<u>\$ 24,773</u>	<u>\$355,278</u>

The Medical Center uses the following fair value hierarchy to present its fair value disclosures:

Level 1 — Quoted (unadjusted) prices for identical assets or liabilities in active markets. Active markets are those in which transactions for the asset or liability occur with sufficient frequency and volume to provide pricing information on an ongoing basis.

Level 2 — Other observable inputs, either directly or indirectly, including:

- Quoted prices for similar assets in active markets;
- Quoted prices for identical or similar assets in nonactive markets (few transactions, limited information, noncurrent prices, high variability over time, etc.);

- Inputs other than quoted process that are observable for the asset (interest rates, yield curves, volatilities, default rates, etc.); and
- Inputs that are derived principally from or corroborated by other observable market data.

Level 3 — Unobservable inputs that cannot be corroborated by observable market data.

The following is a description of the valuation methodologies used for assets and liabilities measured at fair value:

Temporary Cash Investments — The carrying value of cash investments approximates fair value as maturities are less than three months and/or include money market funds that are based on quoted prices and actively traded.

Bonds and Notes — The estimated fair values of debt securities are based on quoted market prices and/or other market data for the same or comparable instruments and transactions in establishing the prices. The debt securities classified as Level 2 were classified as such due to the usage of observable market prices for similar securities that are traded in less active markets or when observable market prices for identical securities are not available, marketable debt instruments are priced using nonbinding market consensus prices that are corroborated with observable market data; quoted market prices for similar instruments; or pricing models, such as a discounted cash flow model, with all significant inputs derived from or corroborated with observable market data.

Marketable Equity Securities — The fair values of marketable equity securities are principally based on quoted market prices.

Mutual Funds — The fair values of mutual funds are based on quoted market prices.

Common Collective Trusts — As a practical expedient, the fair value of a common collective trust is based on the NAV of the fund, representing the fair value of the underlying investments, which are generally securities that are traded on an active market. Such investments are classified as Level 2 because the Medical Center has the ability to redeem its investment in the fund at the NAV per share (or its equivalent) at the measurement date or within the near term and there are no other potential liquidity restrictions. Common collective trusts, categorized as Level 3, are subject to a minimum holding period and a redemption period in excess of 90 days.

Exchange-Traded Funds — These funds are valued based on quoted market prices.

Hedge Funds and Limited Partnerships — The estimated fair values of limited partnerships and hedge funds, for which no quoted market process are readily available, are determined based upon information provided by the fund managers. Such information is generally based on NAV of the fund, which approximates fair value. The Medical Center has classified certain of its investments reported at NAV as Level 2 because the Medical Center has the ability to redeem its investment in the fund at the NAV per share (or its equivalent) at the measurement date or within the near term and there are no other potential liquidity restrictions. Funds categorized within Level 3 are subject to a minimum holding period or lockup, are in liquidation, cannot be redeemed at the measurement date or within 90 days thereof, are subject to redemption notice periods in excess of 90 days, or have the ability to limit the aggregate amount of shareholder redemptions.

Interest Rate Swaps — The Medical Center uses inputs other than quoted prices that are observable to value the interest rate swaps. The Medical Center considers these inputs to be Level 2 inputs in the context of the fair value hierarchy. The fair value of the net interest rate swap liability was \$15,017,000 and \$15,589,000 at September 30, 2012 and 2011, respectively. These values represent the estimated amounts the Medical Center would receive or pay to terminate agreements, taking into consideration current interest rates and the current creditworthiness of the counterparty.

The following methods and assumptions were used by the Medical Center in estimating the fair value of the Medical Center's financial instruments that are not measured at fair value on a recurring basis for disclosures in the financial statements:

Receivables and Payables — The carrying value of the Medical Center's receivables and payables approximates fair value, as maturities are very short term.

Pledges Receivable — The current yields for one- to 10-year U.S. Treasury notes are used to discount contributions receivable. The Medical Center considers these yields to be a Level 2 input in the context of the fair value hierarchy. Pledges received were discounted at rates ranging from 0.17% to 4% in 2012 (0.13% to 4.00% in 2011). Pledges received in 2012, which have been recorded at fair value, totaled approximately \$2,693,000 (\$2,007,000 in 2011).

Long-Term Debt — The fair value of the bonds and notes payable is estimated based on discounted cash flow with interest at current rates based on similar issues. The fair market value of the Medical Center's long-term debt payable at September 30, 2012 and 2011, approximates the recorded value.

The following tables set forth a summary of the Medical Center's investments valued using a reported NAV at September 30, 2012 and 2011, including investments held in the Medical Center's defined benefit pension plan (in thousands):

Investment	Fair Value Estimated Using NAV per Share				
	September 30, 2012				
	Pension	Endowment and Operating	Redemption Frequency	Other Redemption Restrictions	Redemption Notice Period
Collective U.S. Gov. STIF (f)	\$ 8,022	\$ -	Monthly	None	5 days
Weatherlow Offshore Fund II Ltd. (a)	18,223	9,240	Quarterly	None	45 days
Genesis (b)	21,010		Quarterly	Up to 15-day settlement period	60–120 days
Genesis (b)		6,572	Quarterly	Up to 15-day settlement period	60–120 days
Wellington Trust (c)	42,872	13,058	Monthly	None	10 days
Nyes Ledge (e)	9,460	9,336	December 31	None	90 days
Adamas (d)	6,159		December 31	None	92 days
Avenue Strategic Partners (g)	<u>7,604</u>		Quarterly	None	60 days
Total (h)	<u>\$113,350</u>	<u>\$38,206</u>			

Fair Value Estimated Using NAV per Share
September 30, 2011

Investment	Pension	Endowment and Operating and	Redemption Frequency	Other Redemption Restrictions	Redemption Notice Period
Collective U.S. Gov. STIF (f)	\$ 24,526	\$ -	Monthly	None	5 days
Weatherlow Offshore Fund II Ltd. (a)	17,868	6,477	Quarterly	None	45 days
Genesis (b)	17,476		Quarterly	Up to 15-day settlement period	60 days
Genesis (b)		5,608	Quarterly	Up to 15-day settlement period	60 days
Wellington Trust (c)	35,716	10,749	Monthly	None	10 days
Nyes Ledge (e)	7,592	6,067	December 31	None	90 days
Adamas (d)	5,718		December 31	None	92 days
Avenue Strategic Partners (g)	7,297		Quarterly	5% redemption charge for redeeming prior to the 18-month anniversary of a subscription	60 days
Total (h)	<u>\$116,193</u>	<u>\$28,901</u>			

- (a) Under a master-feeder structure, the fund seeks to achieve its objective by investing all or substantially all of its assets in the Weatherlow Fund I L.P. The Weatherlow Fund I L.P. invests predominately in limited partnerships and similar investment vehicles.
- (b) The Emerging Markets Fund has been established under the Genesis Group Trust for Employee Benefit Plans, a tax-exempt pooled trust designed to permit qualified employee benefit plans and certain government plans to commingle a portion of their investment. The Genesis Emerging Markets, Limited Partnership Endowment objective is to achieve capital appreciation over the medium to long term through investments in securities emerging markets. The objective of the fund is to provide participants with a broadly diversified means of investing in developing countries and immature stock markets, and thus to provide access to superior returns offered by high rates of economic and corporate growth, whilst limiting individual country risk.
- (c) The fund's objective is long-term total return in excess of a customized blended benchmark over a full business cycle. The index is defined as 40% MSCI Energy \$3 B and above/15% MSCI Metals and Mining \$3 B and above/25% Equal Sector Weighted S&P GSCI/and 20% Barclays Capital TIPS one to 10 years' index.
- (d) The purpose of the Partnership is to seek capital appreciation and income by investing its assets in investment pools, investment partnerships, and similar entities (the Investment Funds), which in turn, invest in publicly traded equity and debt securities of U.S. and foreign issuers and may also invest in some illiquid investments including, but not limited to, real estate and derivatives.
- (e) The fund's investment objective is to provide investors with attractive, absolute, and relative returns that exhibit moderate volatility and a low correlation to overall stock and bond markets. The fund attempts to achieve this objective by investing primarily with a diversified group of hedge fund managers that Nyes Ledge Capital Management, LLC believes to be the best available, while carefully diversifying across varying styles and strategies.
- (f) The Government Short-Term Investment Fund (STIF) seeks to provide a reasonable rate of return by investing in securities that are either issued or guaranteed by the U.S. Treasury and/or U.S. government agencies.
- (g) The Avenue U.S. Strategy seeks to achieve attractive risk-adjusted returns, primarily by focusing on the distressed debt and undervalued securities of U.S. companies. In addition, the Avenue U.S. Strategy may invest in real estate debt or equity.
- (h) There are no unfunded commitments for additional investments.

The following table presents the changes in fair value measurements for investments with unobservable inputs for the years ended September 30, 2012 and 2011 (in thousands):

	2012	2011
Balance — beginning of year	\$ -	\$ -
Transfers from Level 2	5,608	
Unrealized gains	<u>964</u>	<u> </u>
Balance — end of year	<u>\$ 6,572</u>	<u>\$ -</u>
The amount of total gains included in changes in net assets attributable to the change in unrealized gains relating to assets still held at the reporting date.	<u>\$ 964</u>	<u>\$ -</u>

The following table presents the changes in fair value measurements for the Medical Center's defined benefit pension plan investments with unobservable inputs for the years ended September 30, 2012 and 2011 (in thousands):

	2012	2011
Balance — beginning of year	\$ 24,773	\$ 20,253
Transfers to Level 2	(7,604)	
Purchases/sales		7,600
Unrealized gains (losses)	<u>3,841</u>	<u>(3,080)</u>
Balance — end of year	<u>\$ 21,010</u>	<u>\$ 24,773</u>
The amount of total gains (losses) included in changes in net assets attributable to the change in unrealized gains (losses) relating to assets still held at the reporting date.	<u>\$ 3,534</u>	<u>\$ (3,080)</u>

The valuation methods as described in above may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. Furthermore, although the Medical Center believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

8. PROPERTY, PLANT, AND EQUIPMENT

Property, plant, and equipment at September 30, 2012 and 2011, consist of the following (in thousands):

	2012	2011
Land	\$ 21,852	\$ 21,910
Land improvements	6,234	5,729
Buildings	545,661	531,993
Equipment	323,853	294,249
Construction in progress	40,896	30,327
	<u>938,496</u>	<u>884,208</u>
Less accumulated depreciation	<u>473,078</u>	<u>421,560</u>
Total	<u>\$ 465,418</u>	<u>\$ 462,648</u>

Depreciation expense for the years ended September 30, 2012 and 2011, was approximately \$54,426,000 and \$55,823,000, respectively. At September 30, 2012, the remaining commitment on construction contracts approximated \$2,857,000. The value of property, plant, and equipment acquisitions in accounts payable at September 30, 2012 and 2011, was approximately \$1,554,000 and \$655,000, respectively.

9. OTHER ASSETS

Other assets consist of the following at September 31, 2012 and 2011 (in thousands):

	2012	2011
Prepaid capital costs	\$ 33,847	\$ 18,861
Grants, notes, and pledges receivable	6,374	6,110
Investments in joint ventures	5,678	5,177
Goodwill and intangible assets	1,694	1,694
Insurance receivables	970	
Other	<u>11,838</u>	<u>12,440</u>
Total	<u>\$ 60,401</u>	<u>\$ 44,282</u>

The Medical Center's investments in joint ventures are approximately \$5,678,000 and \$5,177,000 at September 30, 2012 and 2011, respectively. The Maine Heart Center and the MMC Physician-Hospital Organization, Inc., ventures are physician and hospital collaborations, which manage risk and provide incentives to deliver high-quality, cost-effective patient care. New England Rehabilitation Hospital of Portland (NERH) is an acute care rehabilitation facility. Maine Molecular Imaging, LLC provides mobile PET/CT imaging services. The MaineGeneral Cardiac Cath Lab, LLC provides cardiac catheterization services to the population of central Maine. The Medical Center's investments in these joint ventures are accounted for using the equity method of accounting as its ownership in each joint venture is greater than 20% and less than or equal to 50%.

Summary financial information for NERH for 2012 and 2011, consists of the following (in thousands):

	2012	2011
Percentage of ownership	50 %	50 %
Assets	\$ 20,440	\$ 21,200
Liabilities	13,992	14,047
Shareholders' equity	6,448	7,153
Net revenue	34,171	31,527
Operating expense	25,076	25,274
Total net earnings	9,094	6,253
MMC's share of net earnings	4,548	3,127
Charges to NERH for rent and other services	3,901	3,845

10. LONG-TERM DEBT

Long-term debt as of September 30, 2012 and 2011, consists of the following (in thousands):

	2012	2011
Maine Health and Higher Educational Facilities Authority:		
Revenue refunding bonds — Series 2011A Serial Bonds; payable in various installments of principal and interest through 2030, interest rates ranging from 2% to 5%.	\$ 15,128	\$ 15,883
Revenue refunding bonds — Series 2011B Serial Bonds; payable in various installments of principal and interest through 2015, interest rates ranging from 1.50% to 2.30%.	1,660	2,525
Revenue bonds — Series 2008A Revenue Bonds; payable in various installments of principal through 2036; variable rate demand obligations; the average interest rate in effect for the years ended September 30, 2012 and 2011, was 0.18% and 0.28%, respectively. The interest rate at September 30, 2012 and 2011, was 0.20% and 0.29%, respectively. Interest is set weekly by the remarketing agent and may be changed to a different period or converted to a fixed rate.	87,490	90,324
Revenue bonds — Series 2008B Revenue Bonds; payable in various installments of principal through 2014; variable rate demand obligations; the average interest rate in effect for the years ended 2012 and 2011 was 0.16% and 0.28%, respectively. The interest rate at September 30, 2012 and 2011, was 0.18% and 0.29%, respectively. Interest is set weekly by the remarketing agent and may be changed to a different period or converted to a fixed rate.	6,701	11,102
Add unaccreted original issue premium.	636	712
Promissory note payable to a bank, interest at 5.99% with a maturity date of October 1, 2027.	2,565	2,660
Promissory note payable to a bank, interest at LIBOR, plus 1% (1.22% and 1.23% at September 30, 2012 and 2011, respectively) with a maturity date of November 15, 2015.	1,041	1,330
Promissory note payable to a bank, interest at LIBOR, plus 0.75% (0.97% and 0.98% at September 30, 2012 and 2011, respectively) with a maturity date of March 1, 2020.	577	653

(Continued)

	2012	2011
Promissory note payable to a bank, interest at LIBOR, plus 1% (1.22% and 1.23% at September 30, 2012 and 2011, respectively) with a maturity date of March 1, 2020.	\$ 1,070	\$ 1,211
Promissory note payable to a bank, interest at LIBOR, plus 0.75% (0.97% and 1.23% at September 30, 2012 and 2011) with a maturity date of March 1, 2017.	2,132	2,369
Other — including capital lease obligations	<u>1,905</u>	<u>2,633</u>
	120,905	131,402
Less current portion of long-term debt	<u>11,247</u>	<u>14,193</u>
Total	<u>\$ 109,658</u>	<u>\$ 117,209</u>

(Concluded)

Annual principal maturities of long-term debt for the five fiscal years after September 30, 2012, and the years thereafter are as follows (in thousands):

Years Ending September 30	Bonds and Notes	Capital Lease Obligations
2013	\$ 10,113	\$ 1,146
2014	7,783	505
2015	4,999	208
2016	4,878	100
2017	4,746	59
Years thereafter	<u>85,845</u>	<u> </u>
	<u>\$ 118,364</u>	2,018
Less amount representing interest under capital lease obligations		<u>113</u>
		<u>\$ 1,905</u>

The Series 2008A and 2008B bondholders have the option to put the bonds back to the Medical Center. Such bonds would be subject to remarketing efforts by the remarketing agent. To the extent that such remarketing efforts were to be unsuccessful, the nonmarketable bonds would be purchased from the proceeds from two letter of credit agreements with a bank, which expire on October 3, 2018, and July 2, 2014, respectively. If the letter of credit agreements are not extended or replaced, the bonds must either be tendered or converted to long-term fixed-rate bonds. If tendered, MMC, pursuant to the loan agreement, would be precluded from instructing the remarketing agent to conduct an auction with the bonds to be sold on a variable rate basis, and the bonds would be purchased from the proceeds of the letter of credit agreements. Bonds purchased from the proceeds of the letter of credit agreements are converted to "Bank Bonds" and are payable over nine years. The Series 2008A and 2008B bonds have been classified in accordance with the repayment provisions contained in the letter of credit agreements in the accompanying consolidated balance sheets. The Series 2008A and 2008B bonds have been

reported in accordance with the scheduled maturities contained in the bond agreements in the table of annual principal payments above.

If all the Series 2008A and 2008B bonds were put back to the Medical Center on September 30, 2012, and not remarketed, the required repayments of all long-term debt (excluding capital lease obligations), after giving effect to the terms of the related letter of credit agreement, would be as follows (in thousands):

**Years Ending
September 30**

2013	\$ 2,581
2014	14,324
2015	13,556
2016	13,306
2017	13,047
Years thereafter	61,550

The Board of Trustees of the Medical Center adopted a System Funding Agreement and a Corporate Model Master Trust Indenture (the "Indenture") and the Board of Trustees of MaineHealth adopted a System Funding Agreement and a Parent Model Master Trust Indenture. These actions resulted in the creation of an Obligated Group for the MaineHealth system. MaineHealth subsidiaries that are Designated Affiliates of the Obligated Group have access to lower cost capital and less restrictive debt covenants. The Designated Affiliates are indirectly liable for the debt service on the obligations issued under the Indenture for each participant. The Medical Center must remain a part of the Obligated Group, but has approval authority over new subsidiaries of MaineHealth requesting participation in the Obligated Group. On September 30, 2012 and 2011, the Obligated Group has obligations totaling approximately \$180,845,000 and \$192,798,000, respectively, that are covered under the Master Trust Indenture. The Medical Center is indirectly liable for debt service payments on obligations of approximately \$68,189,000 and \$70,923,000 at September 30, 2012 and 2011, respectively.

Interest Rate Swaps — The estimated fair values of the interest rate swap agreements at September 30, 2012 and 2011, and the change in their fair values for the years then ended are as follows (in thousands):

Instrument	Estimated Fair Value		Change in Net Unrealized Loss Recognized in Net Assets (Effective Portion)		Gain (Loss) Recognized in Excess of Revenue over Expenses		Outstanding Notional Amount	
	2012	2011	2012	2011	2012	2011	2012	2011
Nonhedged contracts	\$(12,339)	\$(12,503)	\$ -	\$ -	\$163	\$(1,642)	\$ 72,408	\$ 78,154
Nonhedged contracts	1,275	474			801	120	25,000	25,000
Hedged contracts	<u>(3,953)</u>	<u>(3,560)</u>	<u>(416)</u>	<u>(758)</u>	<u>24</u>	<u>(42)</u>	<u>16,000</u>	<u>16,000</u>
Total	<u>\$(15,017)</u>	<u>\$(15,589)</u>	<u>\$(416)</u>	<u>\$(758)</u>	<u>\$988</u>	<u>\$(1,564)</u>	<u>\$113,408</u>	<u>\$119,154</u>

The fair values of the interest rate swap agreements are reported in other long-term assets (liabilities). The change in fair value of the effective portion of the interest rate swap agreements that qualify for hedge accounting are reported as a change in unrestricted net assets. The change in fair value of the interest rate swap agreements that do not qualify for hedge accounting (including any ineffective portion of qualifying hedge instruments) are reported as a nonoperating activity. The Medical Center has reported the net periodic interest rate settlement on the interest rate swaps as a component of interest expense in the consolidated statements of operations.

The primary risk managed by the Medical Center's derivative instruments is interest rate risk. The Medical Center uses interest rate swaps to modify its exposure to interest rate risk by converting a portion of its variable rate borrowings to a fixed-rate basis, thus reducing the impact of interest rate changes on future interest expense. The Medical Center also uses other interest rate swaps to restructure its interest rate exposure by utilizing swaps with different maturity and basis techniques.

These interest rate, basis, and constant maturity swaps involve counterparty credit risk exposure. The counterparties are major financial institutions that at one time met the Medical Center's criteria for financial stability and creditworthiness. In each interest rate swap agreement, the counterparty is required to provide a credit support amount. If the counterparty's debt is rated below certain levels and there is a counterparty liability, the counterparty is required to post collateral.

Certain of the Maine Health and Higher Educational Facilities Authority Revenue Bonds and Revenue Refunding Bonds were issued under the terms of a Master Trust Indenture Agreement. Under the terms of the bonds, the Medical Center is required to maintain certain deposits with a trustee. Such deposits are included with investments whose use is limited in the consolidated financial statements. The bonds also require that the members of the Obligated Group satisfy certain measures of financial performance (including a minimum debt service coverage ratio) as long as the bonds are outstanding. Management is not aware of any noncompliance with such covenants at September 30, 2012.

Deferred financing costs of \$662,000 in 2012 and \$723,000 in 2011 are reported as a component of other assets and represent the costs incurred in connection with the issuance of the bonds. These costs are being amortized over the term of the bonds. Amortization expense for the years ended September 30, 2012 and 2011, was approximately \$61,000 and \$74,000, respectively. The original issue discount/premium is accreted over the term of the related bonds using the effective interest method.

The Medical Center has a \$15,000,000 revolving line of credit with a bank, which expires in March 2013. The line is uncollateralized and shall bear interest at a per annum rate equal to one and one-half percent (1.5%) above the one-month London InterBank Offered Rate (LIBOR). The interest rate on this line is limited by a floor as follows: the minimum interest rate (i.e., floor) is 2% per annum. No balance was outstanding on this line of credit at September 30, 2012.

11. SELF-INSURANCE TRUSTS AND RESERVES

The Medical Center is partially self-insured for professional and general liability risks. The Medical Center shares risk above certain amounts with an insurance company for all claims related to the partially self-insured plans. The Medical Center maintains separate trusts for professional and general liability insurance. The Medical Center funds these trusts based upon actuarial valuations and historical experience. Self-insurance reserves for self-insured unpaid claims and incidents are estimated using actuarial valuations, historical payment patterns, and current trends. Self-insurance reserves are recorded in the period the claim or incident occurs and adjusted in future periods as additional data become known.

The Medical Center provides health and dental insurance for its employees through a self-insured plan administered by MaineHealth, the parent corporation of the Medical Center. For financial reporting purposes, the Medical Center is allocated its pro rata share of plan expenses based on its number of employees and dependents. Self-insurance reserves for unpaid claims and incidents are carried at MaineHealth. The difference between actual and projected plan expenses is reflected in the future premiums charged to the Medical Center by MaineHealth.

The Medical Center provides workers' compensation insurance for its employees through a self-insured plan administered by MaineHealth. Employees covered under this plan include all current employees, as well as employees with work injury claims incurred after December 31, 1995. For financial reporting purposes, the Medical Center is charged a pro rata share based on payroll classifications. Self-insurance reserves are carried at MaineHealth for unpaid claims and settlements are estimated using actuarial valuations. Self-insurance reserves are recorded in the period the incident occurs and adjusted in future periods as additional data become known. Four claim-related incidents, which occurred in 1985, 1992, 1993, and 1994, continue to be administered through the Medical Center. Self-insurance reserves for these claims are carried at the Medical Center. The amounts reserved for unpaid claims and settlements are estimated using actuarial valuations.

12. CONDITIONAL ASSET RETIREMENT OBLIGATIONS

The Medical Center has previously recognized a liability for the fair value of its conditional asset retirement obligations. The liability is related to the estimated costs to remove the asbestos contained within the Medical Center's facilities. The conditional asset retirement obligation is reported with other liabilities.

A reconciliation of the liabilities for asset retirement obligations at September 30, 2012 and 2011, is as follows (in thousands):

	2012	2011
Asset retirement obligations — beginning of year	\$ 16,559	\$ 16,220
Accretion expense	439	571
Remediation	<u>(114)</u>	<u>(232)</u>
Asset retirement obligations — end of year	<u>\$ 16,884</u>	<u>\$ 16,559</u>

13. RETIREMENT BENEFITS

Defined Benefit Pension Plan — The Medical Center sponsors a defined benefit pension plan (the "Plan") covering all employees that work 750 or more hours in a plan year. The Plan was amended effective January 1, 2011, to change the basis of a participant's accrued benefit. Prior to January 1, 2011, accrued benefits were based on final average pay. Effective January 1, 2011, for participants hired on or before December 31, 2009, there is a benefit based on the participant's final average pay through December 31, 2020, and years of service through December 31, 2010. For participants currently employed or hired on or after January 1, 2010, accrued benefits are based on a cash balance formula that became effective January 1, 2011. A participant's cash balance account is increased by an annual cash balance contribution for participants with 750 hours of service, and interest credits in accordance with the terms of the amended Plan document. The annual cash balance contribution is determined by applying a rate based on age and years of service to the participant's annual compensation. Interest credits are equal to a percentage of the participant's cash balance account on the first day of the Plan year and are credited on the last day of the Plan year prior to payment of the annual cash balance contribution. Except for certain instances, the rate of interest used to determine the interest credit for a Plan year is 5%. Retiring or terminating employees have the option to receive a lump-sum payment, annuity, or transfer to another qualified plan in accordance with the terms of the amended Plan document, an amount that was earned subsequent to January 1, 2011.

The Medical Center's funding policy is to contribute amounts to fund current service cost and to fund over 30 years the estimated accrued benefit cost arising from qualifying service prior to the establishment of the Medical Center's plan. The assets of the plan are held in trust and are invested in a diversified portfolio that includes temporary cash investments, marketable equity securities, mutual funds, U.S. Treasury notes, corporate bonds and notes, hedge funds, and other funds.

Defined Benefit Postretirement Medical Plan — The Medical Center offers its employees who retire from the Medical Center prior to age 65 the option to continue their participation in the Employee Health Plan until age 65. Retirees pay 100% of the cost. The retiree must terminate from the plan upon age 65 (the age for Medicare eligibility). In addition, the Medical Center offers a Retiree Group Companion Plan benefit to a limited group of employees if certain special eligibility requirements are met. To be eligible to access this benefit, an employee must have attained age 55 with five years of pension service as of September 30, 2004, and be enrolled in the Employee Health Plan at the time of their retirement. If under 65 when retiring, the retirees must continue their enrollment in the active employee plan until they turn 65 at 100% of the active rate. The retiree may then enroll in the Retiree Group Companion Plan at age 65 once they have first enrolled in Medicare.

The activity in the defined benefit pension plan and postretirement medical plan using valuation dates of September 30, 2012 and 2011, consists of the following (in thousands):

	Defined Benefit Pension Plan		Postretirement Medical Plan	
	2012	2011	2012	2011
Net periodic benefit cost:				
Service cost	\$ 22,682	\$ 20,796	\$ -	\$ -
Interest cost	26,307	25,206	439	444
Expected return on plan assets	(33,418)	(30,340)		
Amortization of:				
Actuarial loss	13,084	10,142	118	92
Prior service (credit) cost	<u>(1,462)</u>	<u>(1,462)</u>	<u>(23)</u>	<u>(23)</u>
Net periodic benefit cost	<u>\$ 27,193</u>	<u>\$ 24,342</u>	<u>\$ 534</u>	<u>\$ 513</u>
Change in benefit obligation:				
Benefit obligation — beginning of year	\$ 537,677	\$ 489,454	\$ 9,196	\$ 8,675
Service cost	22,682	20,796		
Interest cost	26,307	25,206	439	444
Actuarial loss	80,823	25,758	1,356	531
Benefits paid	(20,378)	(22,711)	(408)	(454)
Expenses paid	<u>(834)</u>	<u>(826)</u>		
Benefit obligation — end of year	<u>\$ 646,277</u>	<u>\$ 537,677</u>	<u>\$ 10,583</u>	<u>\$ 9,196</u>
Change in plan assets:				
Net assets of plan — beginning of year	\$ 355,543	\$ 343,542	\$ -	\$ -
Actual return on plan assets	50,369	(2,862)		
Employer contribution	41,030	38,400	407	454
Benefits paid	(20,379)	(22,711)	(407)	(454)
Expenses paid	<u>(834)</u>	<u>(826)</u>		
Net assets of plan — end of year	<u>\$ 425,729</u>	<u>\$ 355,543</u>	<u>\$ -</u>	<u>\$ -</u>
Net amount recognized	<u>\$ (220,548)</u>	<u>\$ (182,134)</u>	<u>\$ (10,583)</u>	<u>\$ (9,196)</u>

The additional defined benefit pension plan and postretirement medical plan disclosure information for the years ended September 30, 2012 and 2011, is as follows (in thousands):

	Defined Benefit Pension Plan		Postretirement Medical Plan	
	2012	2011	2012	2011
Amounts recognized in the consolidated balance sheets:				
Prepaid pension costs	\$ -	\$ 38,762		
Accrued retirement benefits	<u>(220,548)</u>	<u>(220,896)</u>	<u>\$(10,583)</u>	<u>\$(9,196)</u>
Net amounts recognized in the consolidated balance sheets	<u>\$ (220,548)</u>	<u>\$ (182,134)</u>	<u>\$ (10,583)</u>	<u>\$ (9,196)</u>
Additional information — accumulated benefit obligation	<u>\$ (602,897)</u>	<u>\$ (494,176)</u>		

Unrestricted net assets at September 30, 2012 and 2011, include unrecognized losses of \$285,681,000 and \$234,893,000, respectively, related to the defined pension benefit plan. Of this amount, \$21,889,000 is expected to be recognized in net periodic pension cost in 2013. The loss in 2012 and 2011 is primarily due to a decrease in the discount rate used to determine the benefit obligation, changes in other actuarial assumptions, and variances in demographic experience compared to prior assumptions.

The assumptions of the Plan as of September 30, 2012 and 2011, are as follows (in thousands):

	2012	2011
Measurement date	September 30	September 30
Census date	January 1	January 1
Used to determine net periodic pension cost:		
Discount rate	5.00 %	5.25 %
Rate of compensation increase	3.00	2.00
Expected long-term rate of return on plan assets	8.00	8.00
Used to determine benefit obligation:		
Discount rate	4.25	5.00
Rate of compensation increase for 2012 and 2013	2.00	3.00
Rate of compensation increase for 2014 and 2015	2.75	3.00
Rate of compensation increase for 2016 and after	3.00	3.00

The expected long-term rate of return on plan assets for the Pension Plan reflects the plan sponsor's estimate of future investment returns (expressed as an annual percentage) taking into account the allocation of plan assets among different investment classes and long-term expectations of future returns on each class.

The targeted allocation for the Pension Plan investments are: Debt Securities — 30.0%, U.S. Equity Securities — 22.5%, International Equity Securities — 17.5%, Emerging Market Equity Securities — 5.0%, Natural Resources — 10.0%, and Alternative Investments — 15.0%. The Pension Plan's investments as of September 30, 2012 and 2011, are disclosed in Note 7.

The Pension Plan's overall financial objective is to provide sufficient assets to satisfy the retirement benefit requirements of the Pension Plan's participants. This objective is to be met through a combination of contributions to the Pension Plan and investment returns. The long-term investment objective for the plan is to attain a total return (net of investment management fees) of at least 5% per year in excess of the rate of inflation measured by the Consumer Price Index. The nature and duration of benefit obligations, along with assumptions concerning asset class returns and return correlations, are considered when determining an appropriate asset allocation to achieve the investment objectives.

Investment policies and strategies governing the assets of the plan are designed to achieve the financial objectives within prudent risk parameters. Risk management practices include the use of external investment managers, the maintenance of a portfolio diversified by asset class, investment approach, and security holdings, and the maintenance of sufficient liquidity to meet benefit obligations as they come due.

The medical inflation assumption used for measurement purposes in the per capita cost of covered health care benefits for the Postretirement Medical Plan were 7.5% and 8.0% annual rates of increase for the years ended September 30, 2012 and 2011, respectively. These rates were assumed to gradually decrease to 5% over a period of years and remain at that level thereafter. A 1% change in the medical inflation rate would cause an approximately \$1,424,000 change in the benefit obligation.

The weighted-average discount rates used in determining the accumulated postretirement medical benefit obligation were 4.25% and 5.00% for the years ended September 30, 2012 and 2011, respectively. The weighted-average discount rates used in determining the net periodic postretirement medical benefit cost were 5.00% for fiscal 2012 and 5.25% for fiscal 2011. As the postretirement medical plan is unfunded, no assumption was required as to the long-term rate of return on assets.

Future benefits are expected to be paid as follows at September 30, 2012 (in thousands):

Years Ending September 30	Defined Benefit Pension Plan	Postretirement Medical Plan (Net of Retiree Contributions)
2013	\$ 28,910	\$ 665
2014	32,255	690
2015	34,776	694
2016	37,719	746
2017	41,591	799
2018–2022	266,263	4,637

The estimated expected contribution to be made during 2013 is \$62,000,000.

Defined Contribution Pension Plans — The Medical Center also sponsors a 403(b) retirement plan for all employees. The Medical Center provides a 50% match of each dollar contributed by the employee up to a maximum contribution of 2% of their gross earnings. The employees are eligible to receive the employee match after one year of service. The expense recognized for the Medical Center's match was approximately \$5,733,000 and \$5,283,000 in 2012 and 2011, respectively.

14. NET ASSETS

Temporarily Restricted Net Assets — Temporarily restricted net assets are restricted primarily for health care services and consist of the following at September 30, 2012 and 2011 (in thousands):

	2012	2011
Donor-restricted specific purpose funds	\$ 4,885	\$ 5,940
Accumulated appreciation on permanently restricted net assets	70,763	66,123
Plant replacement funds	362	602
Pooled life and charitable remainder trusts	<u>2,083</u>	<u>3,369</u>
	<u>\$ 78,093</u>	<u>\$ 76,034</u>

Permanently Restricted Net Assets — Permanently restricted net assets at September 30, 2012 and 2011, consist of investments to be held in perpetuity, the income from which is expendable primarily to support the care of patients (in thousands):

	2012	2011
Permanently restricted net assets	<u>\$ 25,019</u>	<u>\$ 23,560</u>

Endowment Funds — The Medical Center's endowment consists of funds established for a variety of purposes. For the purposes of this disclosure, endowment funds include donor-restricted endowment funds. As required by GAAP, net assets associated with endowment funds are classified and reported based on the existence or absence of donor-imposed restrictions.

Interpretation of Relevant Law — The Medical Center has interpreted state law as requiring realized and unrealized gains on permanently restricted net assets to be retained in a temporarily restricted net asset classification until appropriated by the Board of Trustees (the "Board") and expended. State law allows the Board to appropriate as much of the net appreciation of permanently restricted net assets as is prudent considering the Medical Center's long- and short-term needs, present and anticipated financial requirements, and expected total return on its investments, price level trends, and general economic conditions. The amount appropriated related to the net appreciation of permanently restricted net assets in 2012 was approximately \$6 million. There were no amounts appropriated in 2011.

As a result of this interpretation, the Medical Center classifies as permanently restricted net assets (a) the original value of the gifts donated to the permanent endowment when explicit donor stipulations requiring permanent maintenance of the historical fair value are present and (b) the original value of the subsequent gifts to the permanent endowment when explicit donor stipulations requiring permanent maintenance of the historical fair value are present. The remaining portion of the donor-restricted endowment fund comprised of accumulated gains not required to be maintained in perpetuity is classified as temporarily restricted net assets until those amounts are appropriated for expenditure in a manner consistent with the donor's stipulations. The Medical Center considers the following factors in making a determination to appropriate or accumulate donor-restricted endowment funds: duration and preservation of funds, purposes of the donor-restricted endowment funds, general economic conditions, the possible effect of inflation and deflation, the expected total return from income and the appreciation of investments, other resources of the Medical Center, and the investment policies of the Medical Center.

Endowment Investment Return Objectives — The Medical Center has adopted investment policies for endowment assets that attempt to provide a predictable stream of funding to the programs supported by its endowment, while seeking to maintain the purchasing power of the endowment assets. Endowment assets include those assets of donor-restricted funds that the organization must hold in perpetuity or for a donor-specified period(s), as well as Board-designated funds. Under this policy, the endowment assets are invested in a manner to attain a total return (net of investment management fees) of at least 5.5% per year in excess of inflation, as measured by the Consumer Price Index. To satisfy its long-term rate-of-return objectives, the Medical Center targets a diversified asset allocation that places a greater emphasis on equity-based investments within prudent risk constraints.

Endowment Net Asset Composition — The following is a summary of the endowment net asset composition by type of fund at September 30, 2012 and 2011, and the changes therein for the years then ended (in thousands):

	Temporarily Restricted	Permanently Restricted	Total
Endowment net assets — October 1, 2010	\$ 68,001	\$ 23,019	\$ 91,020
Investment return — net depreciation	(1,878)		(1,878)
Gifts, donations, and other	<u> </u>	<u>541</u>	<u>541</u>
Endowment net assets — September 30, 2011	66,123	23,560	89,683
Investment return — net appreciation	10,664		10,664
Appropriation of endowment assets for expenditure	(6,024)		(6,024)
Gifts, donations, and other	<u> </u>	<u>1,459</u>	<u>1,459</u>
Endowment net assets — September 30, 2012	<u>\$ 70,763</u>	<u>\$ 25,019</u>	<u>\$ 95,782</u>

Funds with Deficiencies — From time to time, the fair value of assets associated with individual donor-restricted endowment funds may fall below the level that the donor requires the Medical Center to retain as a fund of perpetual duration. There were no material deficiencies of this nature as of September 30, 2012 or 2011.

15. CONCENTRATION OF CREDIT RISK

Financial instruments, which potentially subject the Medical Center to concentration of credit risk, consist of patient accounts receivable, estimated amounts receivable under reimbursement regulations, and certain investments. Investments, which include government and agency securities, stocks, and corporate bonds, are not concentrated in any corporation or industry. The Medical Center grants credit without collateral to its patients, most of whom are insured under third-party payor agreements. The mix of receivables from patients and third-party payors at September 30, 2012 and 2011, was as follows:

	2012	2011
Medicare	31 %	29 %
MaineCare	16	18
Anthem Blue Cross	6	7
Other third-party payors	36	36
Patients	<u>11</u>	<u>10</u>
	<u>100 %</u>	<u>100 %</u>

16. OPERATING LEASES

The Medical Center leases equipment and office space under various noncancelable operating leases. Future minimum payments due under noncancelable operating leases with a term of one year or more as of September 30, 2012, are as follows (in thousands):

Years Ending September 30	
2013	\$ 6,122
2014	5,619
2015	4,567
2016	2,951
2017	1,869
Thereafter	<u>3,660</u>
	<u>\$ 24,788</u>

Payments made under operating leases amounted to approximately \$6,255,000 in 2012 and \$6,400,000 in 2011.

17. RELATED-PARTY TRANSACTIONS

For the years ended September 30, 2012 and 2011, the Medical Center charged affiliates \$27,736,000 and \$17,905,000, respectively, for services provided. For the years ended September 30, 2012 and 2011, MaineHealth charged the Medical Center \$31,619,000 and \$14,377,000, respectively, for management, legal, and audit services. For the years ended September 30, 2012 and 2011, MaineHealth charged the Medical Center \$54,615,000 and \$58,784,000, respectively, for health insurance (see Note 11). For the

years ended September 30, 2012 and 2011, MaineHealth charged the Medical Center \$2,927,000 and \$2,927,000, respectively, for workers' compensation insurance (see Note 11). The Medical Center maintains an agreement with NorDx, a subsidiary of MaineHealth, to receive substantially all laboratory services. For the years ended September 30, 2012 and 2011, NorDx charged the Medical Center \$22,264,000 and \$21,824,000, respectively, for the laboratory services.

The Medical Center invests monies for MaineHealth and certain MaineHealth subsidiaries in commingled investment accounts. These amounts are excluded from the investments held and reported by the Medical Center.

The MaineHealth's Board of Trustees has approved \$106 million in capital expenditures to acquire and implement an enterprise-wide software solution to include inpatient clinical information systems, revenue cycle management, financial management systems, supply chain, and human resource management systems. These systems will be implemented over four years. The Medical Center's allocated portion of this expenditure is estimated at \$60 million, which has been recorded by the Medical Center as a long-term other asset. The total paid by the Medical Center for its allocated portion amounted to approximately \$34,000,000 and \$19,000,000 at September 30, 2012 and 2011, respectively. It is anticipated that the Medical Center's allocated share will be applied to the capital portion of amounts that MaineHealth will charge to the Medical Center when the systems are in use.

The following table sets forth a summary of the Medical Center's due to/from affiliated entities balances at September 30, 2012 and 2011, respectively (in thousands):

	2012		2011	
	Due From	Due to	Due From	Due to
Current:				
MaineHealth	\$ -	\$ 168	\$ 927	\$ 518
NorDx		1,881		236
Western Maine Health Care Corporation	306		331	
Southern Maine Medical Center	1,057		1,091	
Waldo County Healthcare	270		441	
HomeHealth-Visiting Nurses of Southern Maine		3,152	85	
Maine Mental Health Partners	221		768	
Pen Bay Healthcare	1,722		814	
Synernet	132		125	
Lincoln County Health Care	341		202	
ACO	22			
Other	1,078	3,321	1,088	495
	<u>\$ 5,149</u>	<u>\$ 8,522</u>	<u>\$ 5,872</u>	<u>\$ 1,249</u>
Noncurrent:				
MaineHealth	\$ 5,564	\$ -	\$ 5,564	\$ -
Other	4		23	
	<u>\$ 5,568</u>	<u>\$ -</u>	<u>\$ 5,587</u>	<u>\$ -</u>

18. FUNCTIONAL EXPENSES

The Medical Center provides health care services through its acute care, specialty care, and ambulatory care facilities. Expenses relating to providing these services are as follows (in thousands):

	2012	2011
Professional care of patients	\$ 611,526	\$ 550,029
Dietary	10,078	10,260
Household and property	38,081	37,394
Administrative services	76,596	78,458
Research	21,085	25,020
State taxes	14,992	14,944
General services and employee benefits	80,902	81,903
Interest	3,907	4,851
Depreciation and amortization	54,487	55,899
Provision for bad debts	40,714	39,119
	<u>\$ 952,368</u>	<u>\$ 897,877</u>

19. CONTINGENCIES

The Medical Center is subject to complaints, claims, and litigation that have arisen in the normal course of business. In addition, the Medical Center is subject to compliance with laws and regulations of various governmental agencies. Recently, governmental review of compliance with these laws and regulations has increased, resulting in fines and penalties for noncompliance by individual health care providers. Compliance with these laws and regulations is subject to future government review, interpretation, or actions, which are unknown and unasserted at this time.

* * * * *

SUPPLEMENTAL CONSOLIDATING INFORMATION

MAINE MEDICAL CENTER AND SUBSIDIARIES

CONSOLIDATING BALANCE SHEET INFORMATION

AS OF SEPTEMBER 30, 2012

(In thousands)

	Maine Medical Center	Maine Medical Partners	MMC Realty	Eliminations	Consolidated
ASSETS					
CURRENT ASSETS:					
Cash and cash equivalents	\$ 19,538	\$ 1,604	\$ -	\$ -	\$ 21,142
Investments	204,718				204,718
Patient accounts receivable — net	74,423	12,142			86,565
Current portion of investments whose use is limited	5,743				5,743
Inventories, prepaid expenses, and other current assets	16,730	2,474	186		19,390
Estimated amounts receivable under reimbursement regulations	2,898				2,898
Current portion of notes and amounts receivable from affiliated entities	6,308		11,720	(12,879)	5,149
Total current assets	<u>330,358</u>	<u>16,220</u>	<u>11,906</u>	<u>(12,879)</u>	<u>345,605</u>
INVESTMENTS WHOSE USE IS LIMITED BY:					
Debt agreements	4,142				4,142
Board designation	76,486				76,486
Self-insurance trust agreements	21,445				21,445
Specially designated specific purpose funds	36,273				36,273
Plant replacement funds	19,276				19,276
Funds functioning as endowment funds	98,013				98,013
Pooled life income funds	2,635				2,635
	258,270	-	-	-	258,270
Less current portion	<u>5,743</u>				<u>5,743</u>
	252,527	-	-	-	252,527
PROPERTY, PLANT, AND EQUIPMENT — Net	433,033	2,086	30,299		465,418
ESTIMATED AMOUNTS RECEIVABLE UNDER REIMBURSEMENT REGULATIONS	50,277				50,277
NOTES AND AMOUNTS RECEIVABLE FROM AFFILIATED ENTITIES — Less current portion	5,568				5,568
OTHER ASSETS	<u>49,518</u>	<u>10,883</u>			<u>60,401</u>
TOTAL	<u>\$ 1,121,281</u>	<u>\$ 29,189</u>	<u>\$ 42,205</u>	<u>\$ (12,879)</u>	<u>\$ 1,179,796</u>

(Continued)

MAINE MEDICAL CENTER AND SUBSIDIARIES

CONSOLIDATING BALANCE SHEET INFORMATION

AS OF SEPTEMBER 30, 2012

(In thousands)

	Maine Medical Center	Maine Medical Partners	MMC Realty	Eliminations	Consolidated
LIABILITIES AND NET ASSETS					
CURRENT LIABILITIES:					
Current portion of long-term debt	\$ 10,190	\$ -	\$ 1,057	\$ -	\$ 11,247
Accounts payable and other current liabilities	31,475	566	61		32,102
Accrued payroll, payroll taxes, and amounts withheld	20,427	6,532			26,959
Accrued earned time	21,968	2,498			24,466
Accrued interest payable	423				423
Estimated amounts payable under reimbursement regulations	37,585				37,585
Self-insurance reserves	1,601				1,601
Current portion of notes and amounts payable to affiliated entities	20,243		1,158	(12,879)	8,522
Total current liabilities	143,912	9,596	2,276	(12,879)	142,905
ACCRUED RETIREMENT BENEFITS	232,708				232,708
SELF-INSURANCE RESERVES	16,766				16,766
LONG-TERM DEBT — Less current portion	103,543		6,115		109,658
OTHER LIABILITIES	33,702		483		34,185
Total liabilities	530,631	9,596	8,874	(12,879)	536,222
NET ASSETS:					
Unrestricted	487,538	19,593	33,331		540,462
Temporarily restricted	78,093				78,093
Permanently restricted	25,019				25,019
Total net assets	590,650	19,593	33,331	-	643,574
TOTAL	\$ 1,121,281	\$ 29,189	\$ 42,205	\$ (12,879)	\$ 1,179,796

(Concluded)

MAINE MEDICAL CENTER AND SUBSIDIARIES

CONSOLIDATING STATEMENT OF OPERATIONS INFORMATION FOR THE YEAR ENDED SEPTEMBER 30, 2012 (In thousands)

	Maine Medical Center	Maine Medical Partners	MMC Realty	Eliminations	Consolidated
UNRESTRICTED REVENUE AND OTHER SUPPORT:					
Net patient service revenue	\$818,120	\$ 80,983	\$ -	\$ -	\$899,103
Direct research revenues	13,493				13,493
Indirect research revenues	4,380				4,380
Other revenue	<u>83,283</u>	<u>33,785</u>	<u>5,818</u>	<u>(56,449)</u>	<u>66,437</u>
Total unrestricted revenue and other support	<u>919,276</u>	<u>114,768</u>	<u>5,818</u>	<u>(56,449)</u>	<u>983,413</u>
EXPENSES:					
Salaries	348,614	83,088			431,702
Employee benefits	110,025	11,676			121,701
Supplies	136,625	583	61		137,269
Professional fees and purchased services	126,795	6,332	535	(22,375)	111,287
Facility and other costs	32,660	35,946	1,777	(34,074)	36,309
State taxes	14,992				14,992
Interest	3,502		405		3,907
Depreciation and amortization	52,610	501	1,376		54,487
Provision for bad debts	<u>36,389</u>	<u>4,325</u>			<u>40,714</u>
Total expenses	<u>862,212</u>	<u>142,451</u>	<u>4,154</u>	<u>(56,449)</u>	<u>952,368</u>
INCOME (LOSS) FROM OPERATIONS	<u>57,064</u>	<u>(27,683)</u>	<u>1,664</u>	<u>-</u>	<u>31,045</u>
NONOPERATING GAINS:					
Gifts and other — net of expenses	2,752				2,752
Interest and dividends	9,965				9,965
Recognized loss on cash flow hedge instruments	879		109		988
Equity in earnings of joint ventures	<u>498</u>	<u>4,462</u>			<u>4,960</u>
Total nonoperating gains — net	<u>14,094</u>	<u>4,462</u>	<u>109</u>	<u>-</u>	<u>18,665</u>
EXCESS (DEFICIENCY) OF REVENUE OVER EXPENSES BEFORE INCREASE IN FAIR VALUE OF INVESTMENTS	71,158	(23,221)	1,773		49,710
INCREASE IN FAIR VALUE OF INVESTMENTS	<u>13,983</u>				<u>13,983</u>
EXCESS (DEFICIENCY) OF REVENUE OVER EXPENSES	85,141	(23,221)	1,773	-	63,693
NET ASSETS RELEASED FROM RESTRICTIONS FOR PROPERTY, PLANT, AND EQUIPMENT	2,029				2,029
EQUITY TRANSFER (TO) FROM AFFILIATES	(29,739)	26,591			(3,148)
RETIREMENT BENEFIT PLAN ADJUSTMENTS	(53,504)				(53,504)
CHANGE IN NET UNREALIZED LOSS ON CASH FLOW HEDGE INSTRUMENTS	<u>(416)</u>				<u>(416)</u>
INCREASE IN UNRESTRICTED NET ASSETS	<u>\$ 3,511</u>	<u>\$ 3,370</u>	<u>\$ 1,773</u>	<u>\$ -</u>	<u>\$ 8,654</u>

AKF

TAB 13

May 28, 2013

Susanna M. Baker, AIA, LEED AP BD+C
Associate
Senior Project Manager
Perkins+Will,
225 Franklin Street, Suite 1100
Boston, MA 02110

Re: Maine Medical Center – Bean Roof Addition
Utility Capacity – Tab 13
AKF Project No. B120229-000

Dear Susanna,

The new Maine Medical Center – Bean Roof Addition project will have minimal impact on the utilities serving the existing campus. These existing utilities have sufficient capacity to support the addition.

There will be no additional utility infrastructure work required for the following systems:

- Domestic and Fire Water
- Sanitary Sewer
- Storm Drainage
- Natural Gas
- Electric Service

Please feel free to call with any questions or comments regarding this matter or if you wish to discuss this further.

AKF



Peter J. Reilly, P.E.
Partner
PJR/sv

Cc Dennis Kaiser – P+W
Dieter Gartner – P+W
BMM, RAC

PERKINS
- WILL

TAB 14

Fire Safety Summary

Per the Code Report prepared for the Bean 2 Roof Addition on December 19, 2012 (and enclosed with this submission), the project complies with the requirements of NFPA.



RWS

HVAC

Electrical

Plumbing

Fire Protection

Code

**R.W. Sullivan
Engineering**

The Schrafft Center
529 Main Street
Suite 203
Boston, MA 02129

617-523-8227

www.rwsullivan.com

Bean Addition Maine Medical Center Portland, Maine

Code Report

December 19, 2012

Prepared By: Andrew P. Schwalbenberg
Reviewed By: Don E. Contois, P.E.



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Introduction

The project includes renovations and an addition to the second floor of the Bean Building at Maine Medical Center in Portland, Maine. The following code summary report is based on the plans received December 10, 2012 and the Statement of Conditions plans received November 4, 2011. The following is a list of applicable codes:

Code Type	Applicable Code (Model Code Basis)
Building	2009 International Building Code
Fire Prevention	NFPA 101: Life Safety Code, 2009 Edition
Accessibility	Maine Human Rights Commission
Electrical	2011 National Electrical Code
Mechanical	ASHRAE 62.1 – 2007 ASHRAE 62.2 - 2007
Plumbing	2009 Uniform Plumbing Code (with State Amendments)
Energy Conservation	2009 International Energy Conservation Code

For the purpose of this report, the building is assumed to be fully sprinklered in accordance with the International Building Code (IBC) Section 903.

1. Occupancy Classification:

IBC Occupancy Classifications (Section 302)

- I-2 (Hospital)

NFPA 101 Occupancy Classifications (Section 6.1)

- Health Care

2. Min. Construction Type:

- IBC – Type IB (noncombustible, 2 hour rated)
- NFPA 101 – Type I (2,2,2) (noncombustible, 2 hour rated)

3. Height and Area Limitations:

Since the existing construction type of Bean and Richard is IB, the allowable area for this building (Bean and Richard) is unlimited; therefore, the addition does not exceed the area limitation for this building (IBC Table 503).

The addition will be separated from the adjacent existing building by two hour fire barriers; this separation permits the existing portions of the building to remain as-is without requiring full compliance with NFPA 101 (NFPA 101 Section 19.1.1.4.1).

4. Fire Resistance Ratings:

The following fire resistance ratings are required in accordance with IBC Table 601 and various sections of the code.

New Building Elements	Fire Resistance Rating (Hrs)	Opening Protectives (Hrs)
Structural Frame	2 ^A	-
Exterior Bearing Walls	2 ^A	-
Interior Bearing Walls	2 ^A	-
Exterior Non-Bearing Walls	Based on FSD	-
Interior Non-Bearing Walls	0	-
Floor Construction	2 ^A	-
Roof Construction	1	-
Exit Access Corridors (IBC 407.2 & 407.3)	Smoke Resistant	Positive-latching
Stair Shafts (IBC 1022.1)	2	1½
Other Shafts (IBC 708.4)	2	1½
Trash Room Greater than 100 ft ² in Area (IBC Table 508.2.5)	Smoke Resistant	Self Closing
Rooms With Equipment Greater than 400,000 Btuh Input Capacity (IBC Table 508.2.5)	Smoke Resistant	Self Closing

^A Not less than the rating supported (IBC 707.5, 709.4, and 712.4).

Fire walls, fire barriers, fire partitions, smoke barriers, and smoke partitions, or any other wall required to have protected openings or penetrations must be identified with signs or stenciling within accessible concealed spaces (i.e. floor-ceiling, attic spaces) at 30 ft intervals with at least 0.5" letters stating: "FIRE AND/OR SMOKE BARRIER – PROTECT ALL OPENINGS" or similar wording (IBC 703.6).

5. Exterior Wall Openings & Fire Resistance Rating:

The exterior wall rating requirements and opening limitations are based on the fire separation distance for each wall. The fire separation distance is measured perpendicular to the exterior wall to the centerline of a public street, an interior lot line, or an imaginary lot line between two buildings on the same lot (IBC 702.0). Since the fire separation distance of the new exterior walls is more than 30 ft, the walls are not required to be rated and the allowable area of openings is not limited (IBC Table 602 and Section 705.8.1 Exc. 2).

6. Vertical Floor Openings

The current plans do not indicate any unenclosed floor openings on the second floor of the building.

7. Finishes:

New Interior Finish

The new interior finish of walls, ceilings and floors must comply with the code for new construction as shown in the table below.

Building Component	Walls & Ceilings (IBC 803.9)	Floors (IBC 804.4.1)
Exit Enclosures and Passageways	Class B	Class II
Corridors	Class B	Class II
Rooms & Enclosed Spaces	Class B	DOCF-1

Exterior Finish

Exterior wall finishes must fully comply with the requirements of 2009 IBC 14. Combustible materials are permitted to be used as an exterior wall finish for this building in accordance with 2009 IBC Section 1406.0; however, all exterior wall finishes and architectural trim located greater than 40 feet above grade plane must be constructed of approved noncombustible materials and must be secured to the wall with metal or other approved noncombustible brackets (2009 IBC Section 1406.2.2). Additionally, combustible exterior wall finish is limited to 10% of the exterior wall surface area where the fire separation distance is 5 ft or less.

The use of plastic materials as part of the exterior wall assembly (i.e. foam plastic insulation, exterior coatings and facings) must comply with 2009 IBC 26 (2009 IBC 1404.8). The wall assembly must be tested in accordance with NFPA 285 (2009 IBC 2603.5.5). Note that this test standard is a full scale assembly test. We recommend confirming with the manufacturer that the foam plastic insulation is part of an approved NFPA 285 assembly.

8. Smoke Compartments:

Smoke compartments are provided in the existing Bean building. The addition must also comply with the following smoke compartment requirements:

- Every story containing inpatients for sleeping or treatment, or an occupant load greater than 50 of any use, must be divided into not less than two smoke compartments (NFPA 101 Section 18.3.7.1(1) & (2)).

The design is compliant.

- The size of each smoke compartment must not exceed 22,500 SF unless the area is an atrium separated in accordance with NFPA 101 Section 8.6.7 (NFPA 101 Section 18.3.7.1(3)).

The addition to the Bean building will be considered a separate smoke compartment as shown on the attached plans.

- The travel distance from any point to reach a door in the required smoke barrier must be limited to 200 ft or less (NFPA 101 Section 18.3.7.1(4)).

The design is compliant.

- The smoke barrier is required to be 1 hour rated except where an atrium is used and the smoke barrier terminates at an atrium wall and not less than two separate smoke compartments are provided on each floor. Smoke dampers are not required in duct penetrations of smoke barriers in fully ducted heating, ventilation, and air-conditioning systems where the systems serve a single smoke compartment (NFPA 101 Section 18.3.7.3 & 2009 IBC 716.5.5).

The addition is being separated from the existing building by two hour fire barriers.

- Not less than 30 net SF per patient must be provided within the aggregate area of corridors, patient rooms, treatment rooms, lounge or dining areas, and other low hazard areas on each side of the smoke barrier (NFPA 101 Section 18.3.7.5.1).

If appears that a non-sleeping suite will be included within the addition to the Bean Building. The non-sleeping suite exceeds 2,500 SF as currently shown on the plans. The suite complies with the following provisions:

Non-sleeping Suites

- Since the suite is more than 2,500 SF a minimum of two exit access doors are required (NFPA 101 Section 18.2.5.7.3.2).
- One exit must be directly to an exit access corridor, the second exit is permitted to be through a suite if the suite is separated by the same construction as corridors (NFPA 101 Section 18.2.5.7.3.2).
- The maximum suite size is 10,000 SF (NFPA 101 Section 18.2.5.7.3.2).
- Travel distance between any point in the non-sleeping suite to an exit access door must not exceed 100 ft where the suite is arranged with one intervening room. Travel distance between any point in the non-sleeping suite to an exit must not exceed 50 ft where the suite is arranged with two intervening rooms. Travel distance between any point in the non-sleeping suite to an exit must not exceed 200 ft (NFPA 101 Section 18.2.5.7.3.4).

9. Means of Egress:

The calculated occupant load for the proposed floor plans, the corresponding required number of exits, the provided number of exits, and the provided egress capacity are summarized below (IBC Tables 1004.1.1, 1021.1 & 1005.1 and NFPA 101 Tables 7.3.1.2 & 7.3.3.1). See Appendix A of this report for detailed egress calculations.

Means of Egress

Floor	Occupant Load	Number of Exits		Exit Capacity (persons)
		Required	Provided	
2	459	2	4	660

General Egress Requirements:

- Maximum exit access travel distance must be less than 200 ft (IBC Table 1016.1, NFPA 101 Table A7.6.1). The travel distance from any point in a smoke compartment to a smoke barrier door must not exceed 200 ft (IBC 407.4).
- Maximum dead-end corridor length must be less than 20 ft (IBC 1018.4).
- All stair doors must swing in the direction of egress travel (NFPA 101 Section 7.2.1.4.3).
- Doors must swing in the direction of egress travel when serving an occupant load of 50 or more persons (IBC 1008.1.2).
- All means of egress lighting and exit signs throughout the building must be provided with an emergency power supply to assure continued illumination for not less than 1.5 hours in case of primary power loss (IBC 1006.1 & 1011.1).
- Remote means of egress must be separated by $\frac{1}{2}$ of the diagonal dimension of the room or space they serve (IBC 1015.2.1). The distance between exits must be measured in a straight line between exit doors.
- At least 30 net SF per patient must be provided within the aggregate area of patient rooms, corridors, treatment rooms, lounge, dining, and other low-hazard areas on each side of the smoke barrier (IBC 407.4.1).
- A means of egress must be provided from every smoke compartment without requiring an occupant to return through the smoke compartment from which means of egress originated (IBC 407.4.2).
- Sleeping rooms more than 1,000 SF and non-sleeping rooms more than 2,500 SF must be provided with at least two remote means of egress (NFPA 101 Section 18.2.5.5.1 & 18.2.5.5.2).
- Every habitable room must have direct access to an exit access corridor unless the rooms are located in a suite (NFPA 101 Section 18.2.5.6.1).
- Corridor walls are not required to have a fire-resistance rating but must be smoke-resistant by forming a barrier to limit the transfer of smoke (NFPA 101 Section 18.3.6.2).

- Corridor doors must be constructed to resist the passage of smoke and be self-latching and provided with positive-latching hardware (NFPA 101 Section 18.3.6.3.1 & 18.3.6.3.5). Doors to toilet rooms, bathrooms, sink closets and similar auxiliary rooms that do not contain flammable or combustible materials are not required to comply with these requirements (NFPA 101 Section 18.3.6.3.1(3) & 18.3.6.3.6).
- Every corridor must provide access to not less than two approved exits without passing through intervening rooms or spaces other than corridors or lobbies (NFPA 101 Section 18.2.5.4).
- Travel distance from any point in a health care sleeping room and an exit access door in that room must not exceed 50 ft (NFPA 101 Section 18.2.6.2.3).

10. Required Fire Protection Systems:

- NFPA 13 sprinkler system (2009 IBC 407.5)
- Fire alarm system (2009 IBC 407.6)
- Standpipe system (2009 IBC 905.3.1)
- Fire extinguishers (2009 IBC 906.1)

11. Accessibility for Persons with Disabilities

This facility is open to and used by the general public. The new building must therefore comply in full with the provisions of the Maine Human Rights Commission (Americans with Disabilities Act Accessibility Guidelines).

APPENDIX: Egress Plans

TAB 15

build
smart

BUFFOLK

Construction Management Plan
Maine Medical Center Bean 2 Roof Addition
22 Bramhall Street, Portland, ME

1. Hours of Construction

- Construction activities are restricted to the hours from 7:00 a.m. to 6:00 p.m. on weekdays.
- Start-up and warm-up hours of equipment will not commence before 6:00 a.m.
- If construction activity is required outside these hours, Suffolk will coordinate with Maine Medical Center for approval.

2. Worker Access and Parking

- Suffolk will require that workers at the Maine Medical Center parking area on 995 Congress Street.

3. Pedestrian Access

- The project boundaries are within the Maine Medical Center campus. Suffolk will implement the necessary measures to ensure safe pedestrian flow around the site, including the use of temporary sidewalks and lighting, protective barriers, redirection of pedestrians and directional signage.

4. Snow Removal

- Suffolk will be responsible for the removal of snow within the project area.
- Maine Medical Center will service any on campus roads, including the service road.

5. Noise

- The Bean 2 Roof Addition project will work to minimize any excessive noise impacts. Suffolk will employ the following best management practices on site and make every effort to prevent nuisance noise conditions:
 - The use of mufflers, including vehicle or equipment turn off whenever possible.
 - Usage of existing power for temporary electricity to minimize use of on-site generators.
 - Suffolk will pre-notify Maine Medical Center departments affected by unavoidable construction noise with the MMC Project Manager.
 - Suffolk will identify in advance activities that may generate unavoidable excessive noise and use all reasonable efforts to minimize emission levels.

6. Construction Safety, Security and Access

- Construction safety is a top priority on the Bean 2 Roof Addition project site; full-time on-site supervision will be provided by Suffolk.
- All subcontractors, vendors, and visitors shall be required to adhere to Suffolk's Project Safety Program. All subcontractors and vendors will be required to attend Maine Medical Center Contractor Site & Safety Orientation.
- Access to the site is restricted to construction personnel.
- Visitors will not be allowed on site unescorted and must sign in at Suffolk's on-site field office.
- Signage shall be posted at site access points indicating that visitors must check in at the field office; that the area is a construction site and is a hard hat area; and that access to the site is limited to authorized personnel only.
- Security on the site is established by a separation fence.

- Gates will be provided at the locations where access will be required and shall be kept locked during nonworking hours.
- Construction area lighting shall be provided in accordance with OSHA requirements for safety and security.
- Emergency contact list shall be provided.

7. Waste Disposal and Recycling

- Suffolk shall utilize a licensed waste hauler will be used for disposal of all waste and implement recycling when appropriate.
- Suffolk shall maintain the site in a clean and orderly manner and free from accumulation of waste materials or rubbish.

8. Fire and Emergency Vehicle Access and Suppression

- Fire Department and emergency vehicles will access the site via the service road which will remain open at all times. Access gates will be provided at each end of the site.
- Suffolk will meet with the City of Portland Fire Department to review site access once
- Suffolk will extend the existing fire standpipes as building construction progresses. Locations and requirement will be reviewed with the Fire Department.

9. Construction Truck Routes

- Suffolk will manage deliveries and materials entering and leaving the site (reference Sheet SLP.05 for specifics).

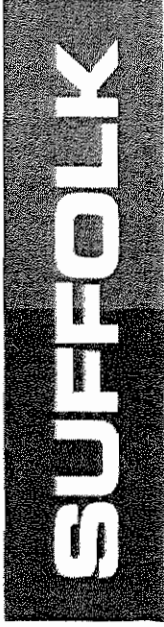
10. Delivery Time and Routes

- Suffolk will manage deliveries to the site during morning and afternoon peak hours in a manner that minimizes disruption to traffic flow on adjacent streets.

- It is anticipated that project trucks will access that site via Gilman Street.
- Deliveries will be restricted between 6:00 a.m. and 6:00 p.m.
- It is Suffolk's intention to bring all major deliveries via Gilman through MMC Loading Dock area.

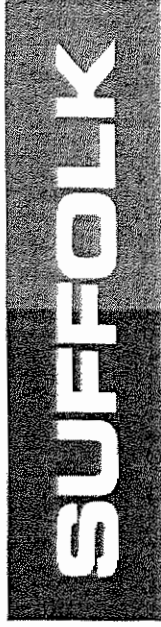
11. Truck Queuing/Lay-Down Areas

- Construction truck queuing will take place on the Maine Medical Center campus at the large turnaround at the Gilman Street entrance.
- Temporary construction fences will be installed to segregate construction areas from Maine Medical Center employees and visitors.
- All material lay down and deliveries will be within temporary fence area on the service road.
- All major deliveries shall be directed to a local rigger's yard until the site is ready to take the delivery.
- All deliveries shall be planned and scheduled with Suffolk to ensure an efficient process.



Emergency Contact Phone Numbers
Maine Medical Center – Bean 2 Roof Addition

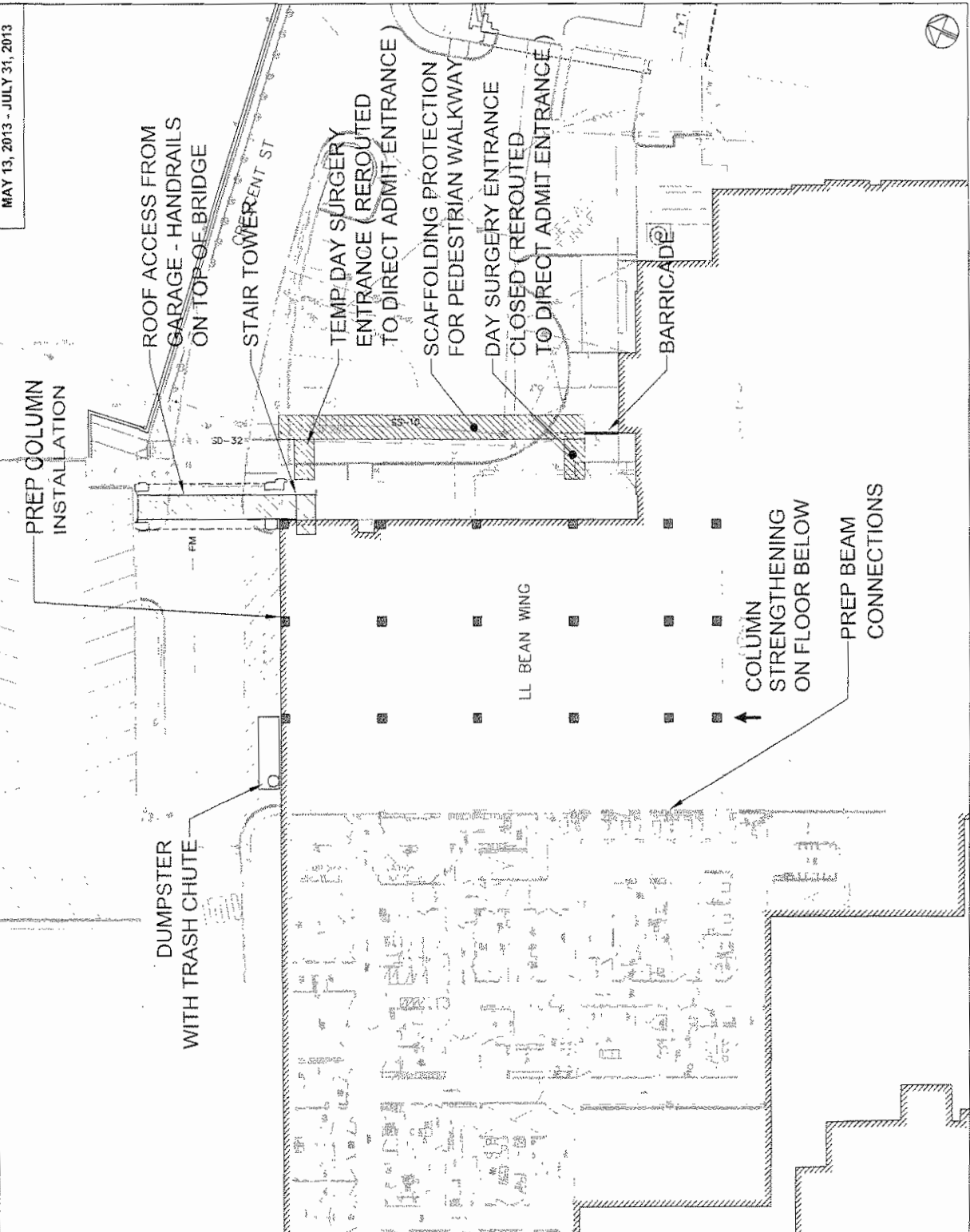
Name	Title	Office Phone Number	Emergency Phone Number
David Sundelin	Senior Superintendent	-	(617) 212-9491
Joel Perry	Project Manager	(978) 774-1057	(617) 963-9992
Sharon Jozokos	Project Executive	(978) 774-1057	(978) 273-1510



Emergency Response Phone Numbers
Maine Medical Center – Bean 2 Roof Addition

Company	Name	Office Phone Number	Emergency Phone Number
Police Department	Portland		911
Fire Department	Portland		911
Emergency Medical Services	Portland		911
Nearest Medical Facility	Maine Med.	207-662-2345	
Maine State Police		800-228-0857	
Poison Control System	Maine Med.	800-222-1222	
Maine DEP		207-822-6300	
OSHA – Augusta		207-626-9160	
Dig Smart		207-749-7231	
Portland Water District		207-761-8300	
CMP – Electrical Emergency		800-696-1000	
Unitil – Gas Emergency		866-900-4460	
Maine Medical Center Security	Maine Med.	207-662-2124	
Chemical Spills – MMC Safety	Maine Med.	207-662-2513	
Portland Inspectional Services Dept.		207-874-8703	

MAY 13, 2013 - JULY 31, 2013

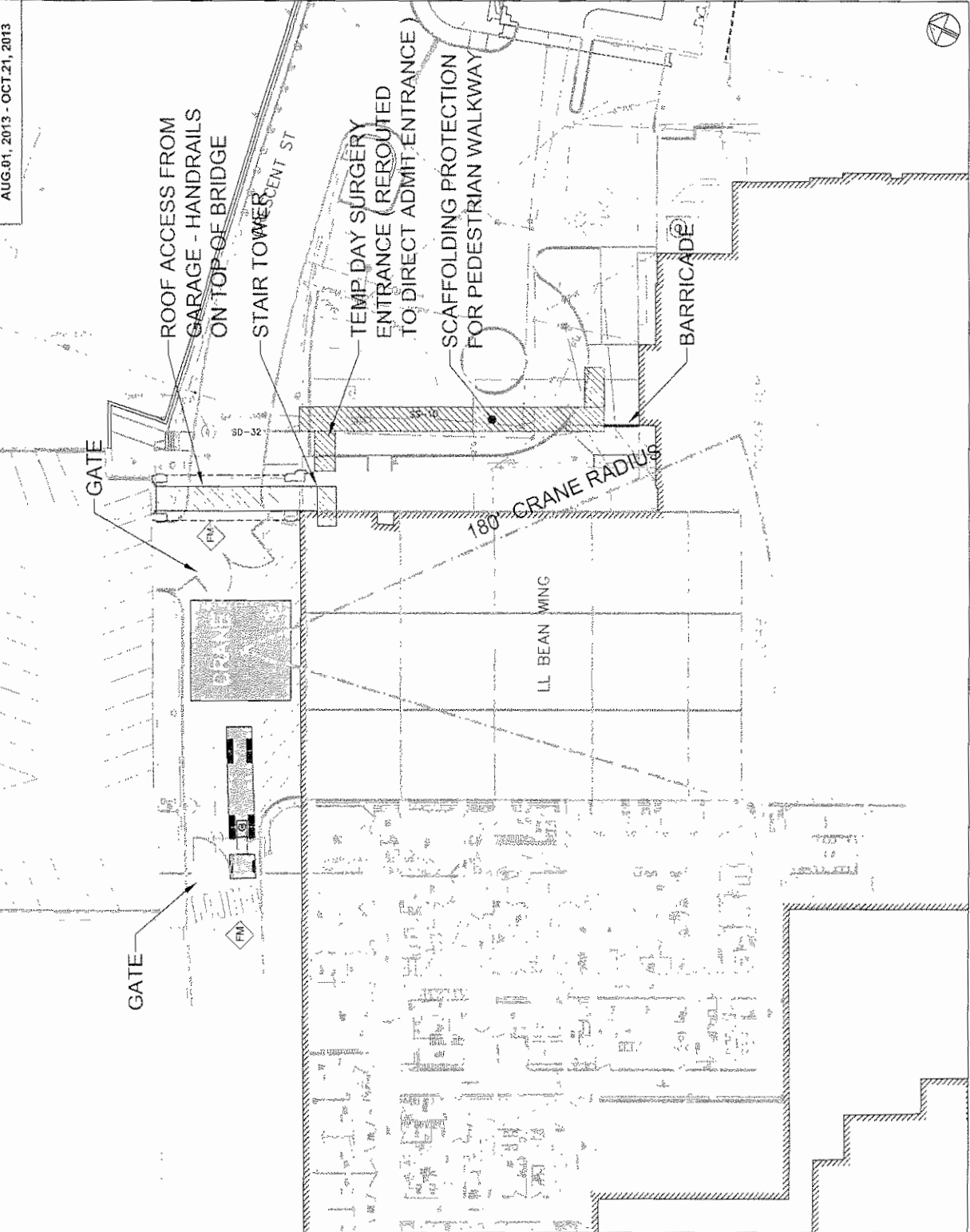



- SCHEDULED ACTIVITIES**
- MOBILIZE
 - SELECTIVE DEMO
 - CANOPY DEMO
 - RELOCATE EXISTING RTUS AND EQUIPMENT
 - **PREP COLUMN INSTALLATION**
 - STEEL STRENGTHENING
 - FOUNDATION WORK

SUFFOLK
 build smart
 60 CENTER HILL DRIVE
 PORTLAND, ME 04107
 TEL: (978) 774-1107
 FAX: (978) 774-1107

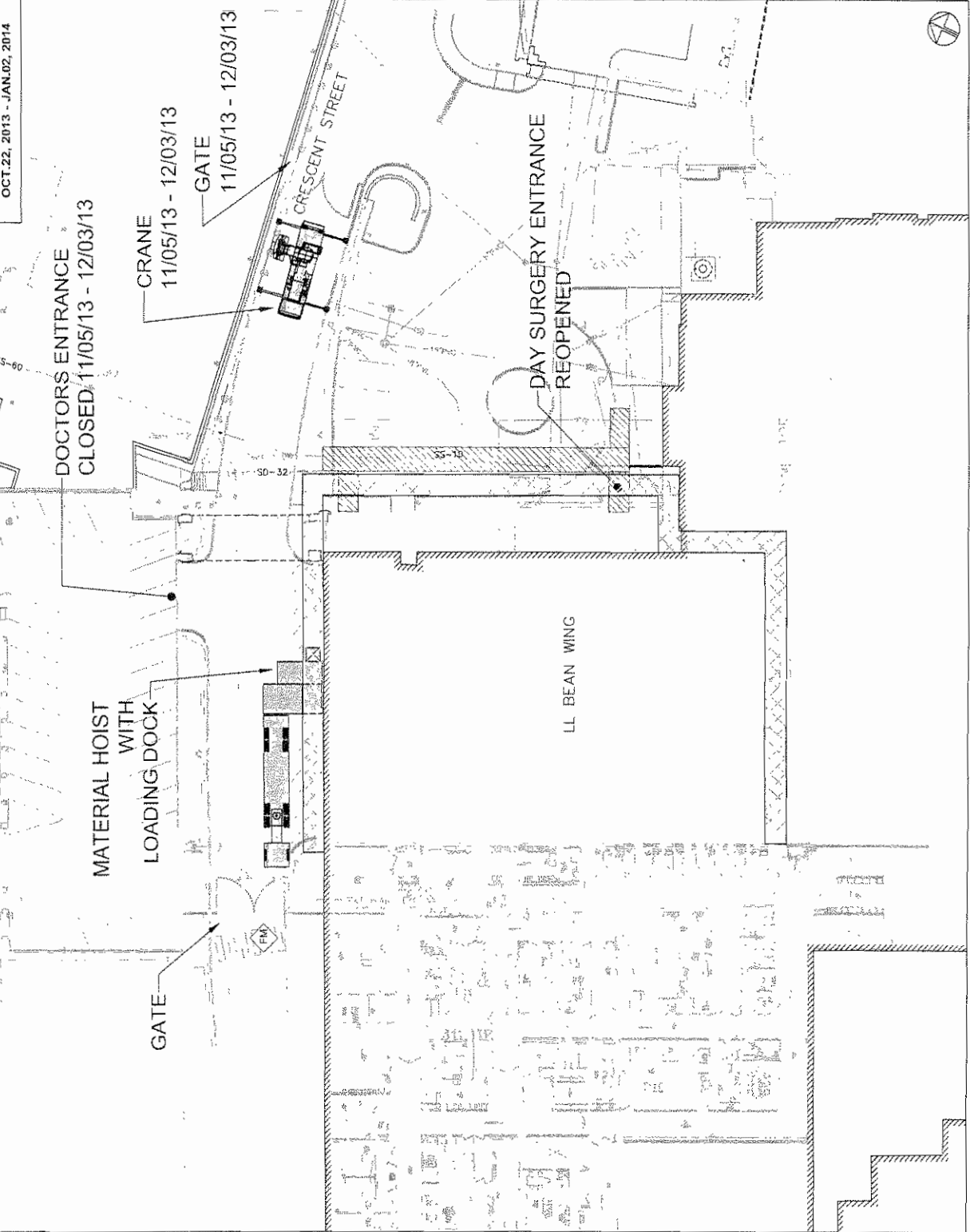
DESIGNER: J.P.C.	CHECKED BY: K.F.R.
SCALE: 1/8" = 1'-0"	DATE: 04-08-13
PROJECT: MAINE MEDICAL CENTER BEAM ROOF UPGRADES	
TITLE: PROPOSED SITE LOGISTIC PLAN	
DRAWING NO: SLP.01	

AUG.01, 2013 - OCT.21, 2013



 <p>Maine Medical Center</p>	SCHEDULED ACTIVITIES		<p>SITE FENCE</p> <p>SCAFFOLDING PROTECTION</p> <p>FLAGMAN</p>  <p>build smart 99 CONNERS HILL PARK DARRENS, MA 01927 TEL (978) 774-1057 E-MAIL: CONSTRUCTION@SUFFOLK.COM</p>
	● SET-UP CRANE		
	● ERECT STEEL		
	● DECKING AND DETAILS		
	● CONCRETE SLABS		
● FIRE PROOFING			
<p>DRAWN BY: JWC CHECKED BY: VHC</p> <p>SCALE: 1/8" = 1'-0" DATE: 08.08.13</p> <p>PROJECT: MAINE MEDICAL CENTER BFAN ROOF UPGRADES</p> <p>TITLE: PROPOSED SITE LOGISTIC PLAN</p> <p>DRAWING NO: SLP.02</p>			

OCT.22, 2013 - JAN.02, 2014



- SCHEDULED ACTIVITIES
- EXTERIOR ENVELOPE
 - ROOFING
 - ROUGH MEPs
 - O.R. EQUIPMENT

- OVERHEAD PROTECTION
- SITE FENCE
- SCAFFOLDING PROTECTION
- FLAGMAN

SUFFOLK

build smart

99 CONIFER WAY, SUITE
DANVERS, MA 01923
TEL: (978) 374-1057
E-MAIL: SALES@SUFFOLKCONSTRUCTION.COM

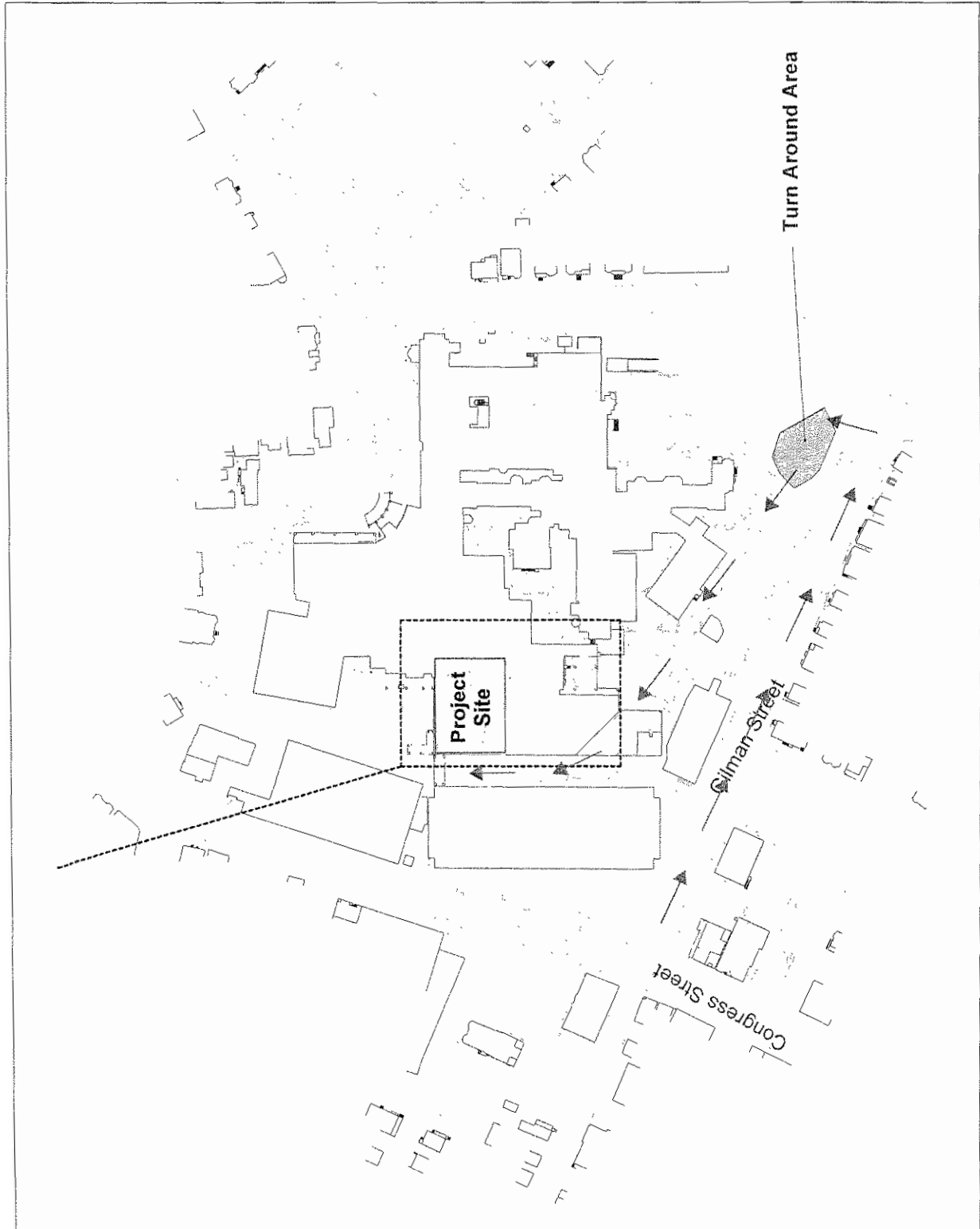
DESIGN BY: JWG	CHECKED BY: KFH
SCALE: NTS	DATE: 04/01/13
PROJECT: MAINE MEDICAL CENTER BFAM ROOF UPGRADES	
TITLE: PROPOSED SITE LOGISTIC PLAN	
DRAWING NO: SLP.03	



Maine Medical Center

supra
build smart
 80 CONNERS HILL DRIVE
 DANVERS, MA 01923
 TEL: (978) 774-1027
 E-MAIL: CONSTRUCTION@CONSTRUCTION.COM

DESIGN BY: J.P.C.	CHECKED BY: J.P.
SCALE: 1/8" = 1'-0"	DATE: 08/06/07
PROJECT: MAINE MEDICAL CENTER BEAN ROOF UPGRADES	
TITLE: CONSTRUCTION DELIVERIES	
DRAWING NO: SLP.05	





Maine Medical Center

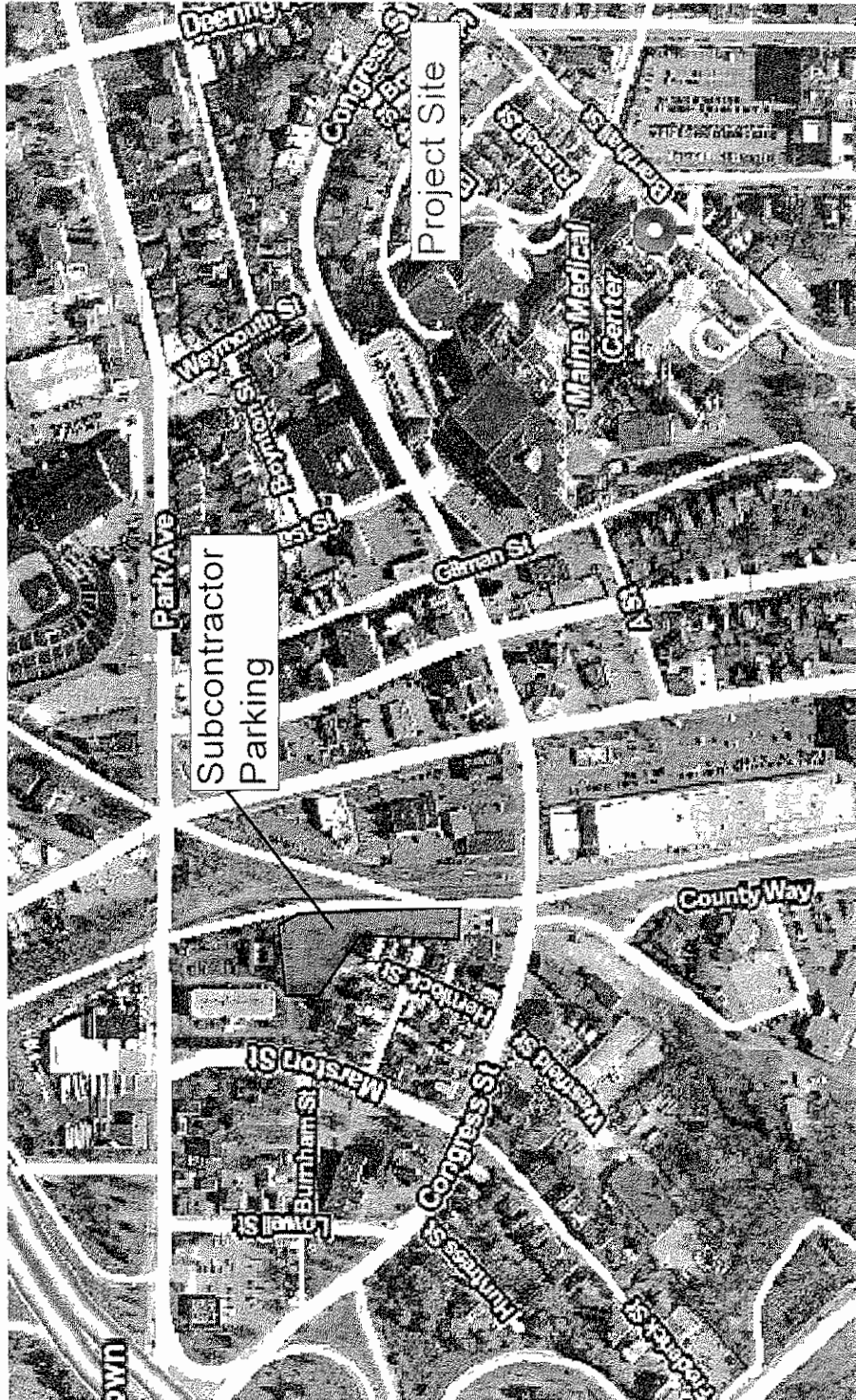
SUFFOLK
build smart
99 CORSETS HILL ROAD
BOSTON, MA 01524
TEL: (978) 774-1377
E-MAIL: CONSTRUCTION@SUFFOLK.COM

DRAWN BY: T.W.G. CHECKED BY: J.H.
SCALE: NTS DATE: 04-09-13
PROJECT:

MAINE MEDICAL CENTER
BEAN ROOF UPGRADES

TITLE:
SUBCONTRACTOR PARKING

DRAWING NO:
SLP.06



TAB 16

Maine Medical Center
22 Bramhall Street
Portland, Maine

Site Plan Application for Maine Medical Center
Bean Building
22 Bramhall Street, Portland

Provide written summary of solid waste, trash and recycling management.
See Attached MMC Hazardous Materials and Waste Plan

All solid waste/trash, recyclables, medical waste and hazardous material waste will be incorporated into our existing procedures and services. Existing site locations will be used...no new site locations required.

Contracts with following Vendors in place for next two+ years.

1. **Solid Waste and Trash** - Troiano Waste Services
PO Box 3541
Portland, ME 04104
Picked up daily, 7:00 and per "on call as needed"

2. **Recycling** - Casella Pine Tree Waste
87 Pleasant Hill Road
Scarborough, ME 04074-9306
Picked up 7:00 Am every Tuesday and Thursday AM

3. **Medical Waste Management** – OXUS Environmental
167 Seabasticook Street

Picked up every other Thursday 7:30 AM

4. **Hazardous and Environmental Waste** EQ NorthEast Inc.
185 Industrial Road
Wrentham, Ma.

Picked up Bi-Monthly as arranged by MMC Department of Safety and also per
"On Call basis/as needed"

MAINE MEDICAL CENTER HAZARDOUS MATERIALS AND WASTE PLAN

PURPOSE:

The purpose of Maine Medical Center's (MMC) Hazardous Materials and Waste Plan is to assure that the entire institution complies with all applicable rules and regulations defined by the United States Environmental Protection Agency (EPA) and the Maine Department of Environmental Protection (DEP). This management plan will also assure that all hazardous materials and waste that are used by MMC employees are handled in a manner that is safe to them and the environment

SCOPE:

The Hazardous Materials and Waste Management Plan applies to all employees and departments of Maine Medical Center including all offsite facilities. By following this plan MMC will minimize the risks to patients, visitors, personnel, and the environment to hazardous materials and waste. The plan also ensures that wastes are handled and disposed of in accordance with the EPA, Department of Transportation (DOT), and state and local regulations.

This plan has specific topic appendices which cover:

- A. Chemical Hazards covered by a specific OSHA regulation
 - 1. Ethylene Oxide
 - 2. Glutaraldehyde
 - 3. Lead
- B. Pharmaceuticals covered by EPA and or DEP regulations
 - 1. Chemotherapy and surveillance of the potentially exposed employee
 - 2. Anti neoplastics
 - 3. Narcotics
- C. Radioactive Materials and Radioactive Wastes
- D. Bio-hazardous Materials and Bio-hazardous Wastes
- E. Recyclables
 - 1. Universal Wastes (electronics, batteries, fluorescent light bulbs)
 - 2. Paper & Cardboard
 - 3. Vegetable Oil

RESPONSIBILITY:

Administration

Administration of Maine Medical Center is ultimately responsible for regulatory compliance of hazardous materials and waste management at MMC owned facilities or for any hazardous materials or wastes generated by MMC employees or processes while working at any facility leased by MMC.

Safety Director

The Safety Director of Maine Medical Center is responsible for the overall implementation of this plan. The Safety Director is also responsible for the overall compliance with the program relative to all local, state and federal regulations governing the use, storage and disposing of hazardous materials and wastes.

Department Directors

Department Directors are responsible for:

1. Assess the compliance risks represented by the use of chemicals in departmental operations.
2. Develop, maintain and implement department-wide and job specific chemical safety procedures.
3. Implement a department specific hazard communication program including an annual review of the department's chemical inventory.
4. Provide job specific safety training prior to initial exposure to a chemical hazard and annually thereafter.
5. Provide employee with appropriate personal protective safety equipment (PPE) at no cost to the employee as determined by a PPE Hazard Analysis. Assure that employees are instructed on the proper use and care of the safety equipment and that such equipment is utilized when the job activities require it.

Employees

Employees are responsible for:

1. Following safe practices as outlined in established operating procedures/policies.
2. Attending all mandated training programs.
3. Asking for clarification when unsure of proper procedure.
4. Using prescribed equipment for the job, using it in accordance with all safety instructions and training.
5. Wearing PPE when applicable.
6. Abiding by all safety rules and practices, and taking an an active part in fulfilling your role in the safety program.

PROGRAM COMPONENTS - GENERAL APPLICATION

1. **Selecting, ordering, receiving, labeling, handling, storing, using, and disposing of hazardous materials and waste from receipt or generation through use or final disposal.**

The following processes will be utilized to carry out the above components of the Hazardous Materials and Waste Management Program:

- a. **Selecting:** Materials will be selected for inclusion in the Hazardous Materials and Waste Management Program based on need, the hazards of the material and departmental approval.
- b. **Ordering, Receiving, Labeling and Containers:**
The Materials Management Department will be responsible for receiving, identifying, labeling, and delivering all hazardous materials used in the hospital, if ordered through the Materials Management Department.

Hospital departments ordering hazardous materials directly and receiving shipment of these materials directly will be responsible for identifying and labeling their own hazardous materials and waste. This procedure is also outlined in MMC's Hazard Communication Program. Maine Medical Center has adopted the National Fire Protection Agency (NFPA) hazard warning label system. The labels must contain the identity of the hazardous chemical or material and an appropriate hazard warning that contains the nature of the hazard (i.e. poison, corrosive, flammable, etc.).

- c. **Handling, Storage, and Use:** Hazardous materials will be stored in specified labeled containers. Regular Hazardous Materials and Waste Management surveys will be conducted to see that hazardous materials and waste are labeled, handled, stored, used, and disposed properly.

Examples:

1. Flammable materials should be stored in a cool, dry, well-ventilated storage area, away from combustible materials and in approved flammable storage cabinets.
2. The storage area for flammables will be supplied with fire extinguishers.
3. Acids and alkalines will be stored separately in well-ventilated areas.
4. Corrosive materials will be stored separately in well-ventilated areas and in approved cabinets.
5. Staff using hazardous materials will be educated on the potential hazards of use and appropriate spill procedures.
6. Staff will be educated on the location of Safety Data Sheets (SDS) sheets and the use of protective equipment available, as appropriate.

- d. **Disposing:** The disposal of all hazardous materials will be by one of the following methods:
1. Unused materials are to be returned to provider (when applicable)
 2. Hazardous waste/universal waste is to be removed by a licensed hazardous waste contractor.
 3. Infectious/Biomedical Waste is to be labeled and removed by a licensed Bio-Waste hauler.

Environmental services will provide approved containers that contain Occupational Safety and Health Agency's (OSHA) biohazard symbol (see symbol below). All areas that store biohazards will also have biohazard symbol affixed in clear view at entrance. OSHA designates fluorescent orange or orange-red as the color to identify blood borne pathogens.



NOTE:

Nursing staff will be responsible for chemotherapy labeling, see Chemotherapy Safe Handling & Disposal policy.

- e. **Chemical Inventory:** A chemical inventory will be kept current for each department as part of the hospital's **Hazard Communication Program** retained in the Safety Office. The chemical inventory will contain all hazardous chemicals found in the hospital. Safety Data Sheet's (SDS) will be acquired for all chemicals on the inventory. Copies of prior inventories will be maintained for 30 years.
- f. **SDS:** SDS sheets are to be obtained for every identified hazardous material and chemical used in the hospital. All chemicals are to be ordered through MMC's Materials Management Department to assure that the facility will receive an SDS. All contractors conducting work on MMC property are to have a current copy of all SDS's for chemical products used onsite. A current copy of SDS's will be available on the intranet to employees.
2. **Identify, evaluate, and inventory hazardous materials and wastes used or generated.**
- Establish written criteria, consistent with applicable law and regulation
 - The following criteria will be utilized in defining hazardous materials:
 - NOTE: See separate plans for each waste listed below

- a. **Hazardous Chemical Material:** Any material which may be explosive, flammable, poisonous, corrosive, oxidizing, irritating, or otherwise harmful and is likely to cause internal or external injury to humans or the environment.
 - b. **Hazardous Gaseous and Vaporous Material:** Any substance which may be dispersed through the air and act as a poison, irritant, or asphyxiate.
 - c. **Infectious Waste Material:** Regulated medical or infectious waste is defined as any human tissue, organ(s), or material that has become soaked or saturated with blood or an Other Potentially Infectious Material (OPIM) as defined by OSHA. Sharps are any instrument or object that could puncture the skin and potentially be contaminated with pathogens, see Institutional Exposure Plan.
 - d. **Radioactive Hazardous Material:** Any material capable of giving off radiant energy in the form of particles or rays, such as alpha, beta, or gamma rays.
3. **Managing chemical wastes, chemotherapeutic wastes (chemotherapy), radioactive wastes, and regulated medical or infectious waste, including sharps.**

Implementation:

Chemical and infectious wastes will be managed in the following ways:

- a. **Chemical Wastes:** Hazardous chemical waste is defined as any chemical that is explosive, flammable, poisonous, corrosive, oxidizing, irritating, or otherwise harmful and is likely to cause internal or external injury to humans or the environment.

Each department that generates or handles chemical waste will have written policies and procedures for handling and using that chemical.

- b. **Chemotherapeutic Wastes:** Chemotherapeutic or antineoplastic waste is defined as a chemotherapy chemical that remains in containers, vials, tubes, or waste due to an accident or spillage.

Each department that generates chemotherapeutic waste will have written policies and procedures for safe handling, admixtures, transportation, administration, and disposal of the waste.

- c. **Radioactive Wastes:** Radioactive waste is defined as waste from any material which is capable of giving off radiant energy in the form of particles or rays, such as alpha, beta, or gamma rays.

All federal, state, and local regulations governing the use of radiation will be met.

Each department that generates radioactive waste will have written policies and procedures for safe handling, admixtures, transportation, administration, and disposal of the waste.

- d. **Regulated Medical or Infectious Wastes, Including Sharps:** Regulated medical or infectious waste is defined as any human tissue, organ(s), or material that has become soaked or saturated with blood or an Other Potentially Infectious Material (OPIM) as defined by OSHA. Sharps are any instrument or object that could puncture the skin and potentially be contaminated with pathogens.

Each department that generates or handles infectious waste will have written policies and procedures for identification, safe handling, packaging, storage, transportation, and disposal of the waste. The policies and procedures from these departments will be reviewed and approved by the Infection Control Department.

4. **Providing adequate and appropriate space and equipment for safe handling and storage of hazardous materials and waste.**

Appropriate space that eliminates or minimizes access to the public, especially small children, and equipment is provided for the safe handling and storage of all hazardous materials and waste based on all applicable federal, state, and local regulating agency requirements.

5. **Reporting and investigating all hazardous materials or waste spills, exposures or other incidents.**

All occurrences involving hazardous materials and waste that affect patients, visitors, personnel, or property will be reported first to the employee's immediate supervisor. After the situation is contained and emergency response, if applicable, is complete, an incident report is then to be completed and given to the Risk Manager and then the Safety Director. It is the joint responsibility of the Department Directors, the Safety Director and Risk Manager to ensure that adequate investigation and proper procedures are followed in the event of a spill, exposure, or incident.

6. **Monitoring and disposal of hazardous gases and vapors.**

Hazardous Gases and Vapors: Any substance which may be dispersed through the air and act as a poison, irritant, or asphyxiate (includes waste gas anesthesia, xylene, formaldehyde, ethylene oxide, and glutaraldehyde).

An environmental exposure monitoring plan has been developed according to applicable OSHA regulations and is implemented in the prescribed time period. Applicable periodic personal monitoring is done for Ethylene Oxide and Nitrous Oxide. Elevated levels will

be reported to Employee Health Services and Safety Office.

All other environmental results are reviewed by the hospital's Industrial Hygienist and action taken if the results are above the acceptable exposure limit.

7. **Emergency security procedures that describe the specific precautions, procedures, and protective equipment used during hazardous material and waste spills or exposures.**

Spill Procedures:

See Emergency Procedures on MMC's homepage or call emergency response number for your location announce Code Orange.

Occupational exposures: Post-exposure personal monitoring is done if medically indicated for any suspected or bona fide occupational exposure to a hazardous chemical. The Safety Office will consult with Employee Health Services regarding medical surveillance requirements post exposure to hazardous substances.

If an employee suspects occupational exposure to a hazardous substance, (s)he follows the Indoor Air Quality process. In addition, the employee is offered a copy of the applicable current SDS form for her/his personal files. In addition, a copy of the SDS is secured in the individual's Employee Health Medical Record in accordance with OSHA's recordkeeping standard.

8. **Orientation/education program for personnel who manage or have contact with hazardous materials and waste that addresses:**

- a. Procedures and precautions for selecting, handling, storing, using, and disposing of hazardous materials and waste.
- b. Emergency procedures for hazardous material and waste spills or exposure.
- c. Health hazards of mishandling hazardous materials or waste.
- d. Procedures for reporting hazardous materials and waste incidents, spills or exposures.

All employees will be provided education regarding hazardous materials and waste management at the facility and departmental level. It will be accomplished in the following manner:

1. All new employees will be provided with facility hazardous materials and waste management education during New Employee Orientation. They will also be oriented to departmental hazardous materials and waste management responsibilities during their first thirty days of employment in the department.

2. All employees will receive at least annual hospital-wide hazardous materials and waste management education.
3. The departmental programs will be based on employee needs, either requested or assessed, and are coordinated by the respective department Directors. The Safety Director will assist in providing information for departmental programs.
9. **Ongoing monitoring of performance regarding actual or potential risks related to one or more of the following:**

Performance improvement standards for Hazardous Materials and Waste Management will be monitored on an ongoing basis and reported to the EOC Committee periodically and will include at least one of the following:

 - a. Staff knowledge and skills
 - b. Level of staff participation
 - c. Monitoring and inspection activities
 - d. Emergency and incident reporting
 - e. Inspection, preventive maintenance, and testing of equipment

ANNUAL EVALUATION

The EOC Hazardous Materials and Waste Committee will annually review the Hazardous Materials Management Plan objectives, scope, and effectiveness in meeting current established objectives. Recommended performance improvements in the plan based on the review will be submitted to the EOC Committee for approval.

Original Date: 2/2002

Revision Date: 8/2012

- References:
1. State of Maine Hazardous Waste Rules Chapter 850, EPA Regulations 40 Code of Federal Regulations
 2. Department of Transportation 49 CFR 173
 3. Hazard Communication Standard 29 CFR 1910. 1200
 4. MMC's Spill Contingency Plan
 5. National Fire Protection Association Standards
 6. Occupational Safety & Health Administration Regulations

Plan Sponsor: _____
Signature Safety Manager Date

Administrative Approval: _____
Signature SVP Human Resources Date

Conformity with Design Standards for the Bean 2 Roof Addition Project

The Bean 2 Roof Addition Project design intent is meant to be a light, modern addition on the Maine Medical Center Campus with a massing that maximizes the expansion of level two including an eight foot cantilever to the East. The exterior construction materials include white metal panel, a curtain wall system, clear and fritted glass and opaque white spandrel panels.

The glazed perimeter provides controlled natural light for staff, patients and families. Fritted glass at the east elevation mitigates morning sun in the summer and provides a veil of privacy for occupants inside as well as avoidance of the glass looking dark in the daytime as clear glass does. There is no lighting proposed for the exterior of the project.

The Mechanical Level massing angles back to minimize the building height above the Emergency Department Courtyard. Mechanical louvers integrate into the wall system to provide a simple and clean exterior. All mechanical and electrical building systems equipment is located within the building on the Mechanical Level. Equipment that must be on the exterior is recessed in a well or areaway to screen the view. As a result, there is no mechanical equipment visible on the exterior of the project.

AKF

TAB 18

May 28, 2013

Susanna M. Baker, AIA, LEED AP BD+C
Associate
Senior Project Manager
Perkins+Will.
225 Franklin Street, Suite 1100
Boston, MA 02110

Re: Maine Medical Center – Bean Roof Addition
HVAC Emissions-Tab 18
AKF Project No. B120229-000

Dear Susanna,

As requested, we are writing to confirm that the HVAC emissions for the Maine Medical Center – Bean 2 Roof Addition Project meet applicable state and federal emissions requirements. The existing central steam boiler plant will provide all the steam required for heating, humidification and sterilization for the project and there will be no new sources of emissions for the project.

Please feel free to call with any questions or comments regarding this matter or if you wish to discuss this further.

AKF



David P. Roberts, P.E.
Mechanical Project Engineer
DPR/sv

Cc Dennis Kaiser – P+W
Dieter Gartner – P+W
BMM, RAC

TAB 19

SECTION 04 20 00 - UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Building (common) brick.
2. Steel reinforcing bars.
3. Masonry joint reinforcement.
4. Embedded flashing.
5. Miscellaneous masonry accessories.

B. Related Requirements:

1. Section 03 30 00 "Cast-in-Place Concrete" for installing dove-tail slots for masonry anchors.
2. Section 05 12 00 "Structural Steel Framing" for installing anchor sections of adjustable masonry anchors for connecting to structural steel frame.
3. Section 05 50 00 "Metal Fabrications" for furnishing steel lintels and shelf angles for unit masonry.
4. Section 07 62 00 "Sheet Metal Flashing and Trim" for exposed sheet metal flashing and for furnishing manufactured reglets installed in masonry joints.

1.2 DEFINITIONS

- A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.3 PREINSTALLATION MEETINGS

- A. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination."

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

B. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
2. Stone Trim Units: Show sizes, profiles, and locations of each stone trim unit required.

3. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement." Show elevations of reinforced walls.
4. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

1.5 INFORMATIONAL SUBMITTALS

- A. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.
 1. Submittal is for information only. Neither receipt of list nor approval of mockup constitutes approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.
- B. Qualification Data: For testing agency.
- C. Material Certificates: For each type and size of the following:
 1. Masonry units.
 - a. Include material test reports substantiating compliance with requirements.
 - b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
 2. Cementitious materials. Include brand, type, and name of manufacturer.
 3. Pre-blended, dry mortar mixes. Include description of type and proportions of ingredients.
 4. Grout mixes. Include description of type and proportions of ingredients.
 5. Reinforcing bars.
 6. Joint reinforcement.
 7. Anchors, ties, and metal accessories.
- D. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
 1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91 for air content.
 2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.
- E. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive

strength of masonry determined according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

- F. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.
- A. Preconstruction Testing Service: Owner will engage a qualified independent testing agency to perform preconstruction testing indicated below. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
 - 1. Mortar Test (Property Specification): For each mix required, according to ASTM C 780 for compressive strength.
 - 2. Prism Test: For each type of construction required, according to ASTM C 1314.
- B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.
- D. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver pre-blended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store pre-blended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.

- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 FIELD CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches (600 mm) down both sides of walls and hold cover securely in place.
 - 2. Where one wythe of multi-wythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches (600 mm) down face next to unconstructed wythe and hold cover in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.
 - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.

1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.
2. Determine net-area compressive strength of masonry by testing masonry prisms according to ASTM C 1314.

2.2 MORTAR AND GROUT MATERIALS

- A. Regional Materials: Aggregate for mortar and grout, cement, and lime shall be extracted, harvested, or recovered, as well as manufactured, within 500 miles (800 km) of Project site.
- B. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- C. Hydrated Lime: ASTM C 207, Type S.
- D. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

2.3 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60 (Grade 420).
- B. Masonry Joint Reinforcement for Single-Wythe Masonry: Either ladder or truss type with single pair of side rods.

2.4 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.
 1. Stainless-Steel Sheet: ASTM A 666, Type 316.
 2. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
 3. Stainless-Steel Bars: ASTM A 276 or ASTM a 666, Type 304.
- B. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
 1. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch (25 mm) of masonry face, made from 0.25-inch- (6.35-mm-) diameter, stainless-steel wire. Mill-galvanized wire may be used at interior walls unless otherwise indicated.
- C. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.109-inch- (2.78-mm-) thick, stainless-steel sheet.
 - a. 0.108-inch- (2.74-mm-) thick, galvanized sheet may be used at interior walls unless otherwise indicated.

2.5 MISCELLANEOUS ANCHORS

- A. Unit Type Inserts in Concrete: Cast-iron or malleable-iron wedge-type inserts.
- B. Dovetail Slots in Concrete: Furnish dovetail slots with filler strips, of slot size indicated, fabricated from 0.034-inch (0.86-mm), galvanized steel sheet.

2.6 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:
 1. Stainless Steel: ASTM A 240/A 240M, Type 304, 0.016 inch (0.40 mm) thick.
 2. Metal Drip Edge: Fabricate from stainless steel. Extend at least 3 inches (76 mm) into wall and 1/2 inch (13 mm) out from wall, with outer edge bent down 30 degrees and hemmed.
 3. Metal Sealant Stop: Fabricate from stainless steel. Extend at least 3 inches (76 mm) into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch (19 mm) and down into joint 1/4 inch (6 mm) to form a stop for retaining sealant backer rod.
 4. Metal Expansion-Joint Strips: Fabricate from stainless steel to shapes indicated.
- B. Application: Unless otherwise indicated, use the following:
 1. Where flashing is indicated to receive counter flashing, use metal flashing.
 2. Where flashing is indicated to be turned down at or beyond the wall face, use metal flashing.
 3. Where flashing is partly exposed and is indicated to terminate at the wall face, use metal flashing with a hemmed drip edge
 4. Where flashing is fully concealed, use metal flashing.
- C. Single-Wythe CMU Flashing System: System of CMU cell flashing pans and interlocking CMU web covers made from high-density polyethylene incorporating chemical stabilizers that prevent UV degradation. Cell flashing pans have integral weep spouts that are designed to be built into mortar bed joints and weep collected moisture to the exterior of CMU walls and that extend into the cell to prevent clogging with mortar.
 1. Products: Subject to compliance with requirements, provide the following:
 - a. Mortar Net USA, Ltd.; Blok-Flash.

Maine Medical Center
Bean 2 Roof Addition
CD Pricing Set
Not for Construction

PERKINS+WILL
C140135461 (MMC) /152168.00 (P+W)
05/23/13

- D. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Pre-molded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.
- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

2.8 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Diedrich Technologies, Inc.
 - b. EaCo Chem, Inc.
 - c. ProSoCo, Inc.

2.9 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Use portland ceme mortar.
 - 3. For exterior masonry, use portland cement-lime mortar.
 - 4. For reinforced masonry, use portland cement-lime mortar.
 - 5. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.

1. For masonry below grade or in contact with earth, use Type S.
 2. For interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.
- C. Grout for Unit Masonry: Comply with ASTM C 476.
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
 2. Proportion grout in accordance with ASTM C 476, paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi (14 MPa)].
 3. Provide grout with a slump of 10 to 11 inches (254 to 279 mm) as measured according to ASTM C 143/C 143M.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
 2. Verify that foundations are within tolerances specified.
 3. Verify that reinforcing dowels are properly placed.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, un-chipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

- D. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
 - 1. Mix units from several pallets or cubes as they are placed.
- E. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

3.3 TOLERANCES

- A. Dimensions and Locations of Elements:
 - 1. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch (6 mm) in a story height or 1/2 inch (12 mm) total.
- B. Lines and Levels:
 - 1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2 inch (12 mm) maximum.
 - 2. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2 inch (12 mm) maximum.
 - 3. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2 inch (12 mm) maximum.
 - 4. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch (1.5 mm) except due to warpage of masonry units within tolerances specified for warpage of units.
- C. Joints:
 - 1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm).
 - 2. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm). [Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch (3 mm).]

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.

- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches (50 mm). Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- H. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
 - 1. Install compressible filler in joint between top of partition and underside of structure above.
 - 2. Fasten partition top anchors to structure above and build into top of partition.
 - 2. Wedge non-load-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
 - 3. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 07 84 46 "Fire-Resistive Joint Systems."

3.5 MORTAR BEDDING AND JOINTING

- A. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- B. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

3.6 MASONRY JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcement a minimum of 6 inches (150 mm).
 - 1. Space reinforcement not more than 8 inches (203 mm) o.c. in foundation walls and parapet walls.

- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.
- E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.7 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

- A. Anchor masonry to structural steel and concrete where masonry abuts or faces structural steel or concrete to comply with the following:
 - 1. Provide an open space not less than 1/2 inch (13 mm) wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
 - 2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
 - 3. Space anchors as indicated, but not more than 24 inches (610 mm) o.c. vertically and 36 inches (915 mm) o.c. horizontally.

3.8 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

3.9 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
 - 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.

3.10 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Inspections: Level 1 special inspections according to the "International Building Code."
 - 1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
 - 2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
 - 3. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Prior to Construction: One set of tests.
- D. Testing Frequency: One set of tests for each 5000 sq. ft. (464 sq. m) of wall area or portion thereof.
- E. Clay Masonry Unit Test: For each type of unit provided, according to ASTM C 67 for compressive strength.
- F. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C 780.
- G. Mortar Test (Property Specification): For each mix provided, according to ASTM C 780. Test mortar for mortar air content and compressive strength.
- H. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.
- I. Prism Test: For each type of construction provided, according to ASTM C 1314 at 7 days and at 28 days.

3.11 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
 6. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
 7. Clean stone trim to comply with stone supplier's written instructions.
 8. Clean limestone units to comply with recommendations in ILI's "Indiana Limestone Handbook."

3.12 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
1. Crush masonry waste to less than 4 inches (100 mm) in each dimension.
 2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Section 31 20 00 "Earth Moving."
 3. Do not dispose of masonry waste as fill within 18 inches (450 mm) of finished grade.
- C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION

SECTION 06 16 00 - SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wall sheathing.
2. Roof sheathing.
3. Composite nail base insulated roof sheathing.
4. Sheathing joint and penetration treatment.

B. Related Requirements:

1. Section 06 10 53 "Miscellaneous Rough Carpentry" for plywood backing panels.
2. Section 07 25 00 "Weather Barriers" for water-resistive barrier applied over wall sheathing.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preserved treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Include physical properties of treated materials.
3. For fire-retardant treatments, include physical properties of treated plywood both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5516.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.3 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For following products, from ICC-ES:

1. Preservative-treated plywood.

2. Fire-retardant-treated plywood.
3. Foam-plastic sheathing.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
 1. Fire-Resistance Ratings: Indicated by design designations from "NFPA 101: Life Safety Coded, 2009 Edition.

2.2 PRESERVATIVE-TREATED PLYWOOD

- A. Preservative Treatment by Pressure Process: AWWA U1; Use Category UC2 for interior construction not in contact with the ground,
 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.
- C. Application: Treat all plywood unless otherwise indicated.

2.3 FIRE-RETARDANT-TREATED PLYWOOD

- A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having

jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

- B. Fire-Retardant-Treated Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.
 - 1. Use treatment that does not promote corrosion of metal fasteners.
 - 2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
 - 3. Design Value Adjustment Factors: Treated lumber plywood shall be tested according ASTM D 5516 and design value adjustment factors shall be calculated according to ASTM D 6305. Span ratings after treatment shall be not less than span ratings specified. For roof sheathing and where high-temperature fire-retardant treatment is indicated, span ratings for temperatures up to 170 deg F (76 deg C) shall be not less than span ratings specified.
- C. Kiln-dry material after treatment to a maximum moisture content of 15 percent. Do not use material that is warped or does not comply with requirements for untreated material.
- D. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.
- E. Application: Treat all plywood unless otherwise indicated.

2.4 WALL SHEATHING

- A. Glass-Mat Gypsum Wall Sheathing: ASTM C 1177/1177M.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. CertainTeed Corporation; GlasRoc.
 - b. G-P Gypsum Corporation; Dens-Glass Gold.
 - c. National Gypsum Company; Gold Bond e(2)XP.
 - d. Temple-Inland Inc.; GreenGlass
 - e. United States Gypsum Co.; Securock.
 - 2. Type and Thickness: Type X, 5/8 inch (15.9 mm) thick.
 - 3. Size: 48 by 120 inches (1219 by 3048 mm) for vertical installation.

2.5 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - 1. For roof and wall sheathing, provide fasteners of Type 304 stainless steel.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Screws for Fastening Gypsum Sheathing to Cold-Formed Metal Framing: Steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.
 - 1. For steel framing less than 0.0329 inch (0.835 mm) thick, use screws that comply with ASTM C 1002.
 - 2. For steel framing from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick, use screws that comply with ASTM C 954.
- F. Screws for Fastening Oriented-Strand-Board-Surfaced, Polyisocyanurate-Foam Sheathing to Metal Roof Deck: Steel drill screws, in type and length recommended by sheathing manufacturer for thickness of sheathing to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117. Provide washers or plates if recommended by sheathing manufacturer.

2.6 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

- A. Sealant for Glass-Mat Gypsum Sheathing: Silicone emulsion sealant complying with ASTM C 834, compatible with sheathing tape and sheathing and recommended by tape and sheathing manufacturers for use with glass-fiber sheathing tape and for covering exposed fasteners.
 - 1. Sheathing Tape: Self-adhering glass-fiber tape, minimum 2 inches (50 mm) wide, 10 by 10 or 10 by 20 threads/inch (390 by 390 or 390 by 780 threads/m), of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing and with a history of successful in-service use.

2.7 MISCELLANEOUS MATERIALS

- A. Adhesives for Field Gluing Panels to Framing: Formulation complying with ASTM D 3498 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

1. Adhesives shall have a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:
 1. NES NER-272 for power-driven fasteners.
 2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."
 3. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's "International Residential Code for One- and Two-Family Dwellings."
- D. Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.
- E. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.
- G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 GYPSUM SHEATHING INSTALLATION

- A. Comply with GA-253 and with manufacturer's written instructions.
 1. Fasten gypsum sheathing to cold-formed metal framing with screws.
 2. Install boards with a 3/8-inch (9.5-mm) gap where non-load-bearing construction abuts structural elements.
 3. Install boards with a 1/4-inch (6.4-mm) gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.

- B. Apply fasteners so heads bear tightly against face of sheathing, but do not cut into facing.
- C. Horizontal Installation: Install sheathing with V-grooved edge down and tongue edge up. Interlock tongue with groove to bring long edges in contact with edges of adjacent boards without forcing. Abut ends of boards over centers of studs, and stagger end joints of adjacent boards not less than one stud spacing. Attach boards at perimeter and within field of board to each steel stud.
 - 1. Space fasteners approximately 8 inches (200 mm) o.c. and set back a minimum of 3/8 inch (9.5 mm) from edges and ends of boards.
 - 2. For sheathing under stucco cladding, boards may be initially tacked in place with screws if overlying self-furring metal lath is screw-attached through sheathing to studs immediately after sheathing is installed.
- D. Seal sheathing joints according to sheathing manufacturer's written instructions.
 - 1. Apply elastomeric sealant to joints and fasteners and trowel flat. Apply sufficient amount of sealant to completely cover joints and fasteners after troweling. Seal other penetrations and openings.
 - 2. Apply glass-fiber sheathing tape to glass-mat gypsum sheathing joints and apply and trowel silicone emulsion sealant to embed entire face of tape in sealant. Apply sealant to exposed fasteners with a trowel so fasteners are completely covered. Seal other penetrations and openings.

3.3 CEMENTITIOUS BACKER UNIT INSTALLATION

- A. Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated.

END OF SECTION

SECTION 07 16 16 - CRYSTALLINE WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes crystalline waterproofing.
- B. Related Requirements:

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, and installation instructions.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Applicator.
- B. Product Certificates: For each type of waterproofing, patching, and plugging material.
- C. Product Test Reports: For each product formulation, for tests performed by manufacturer and witnessed by a qualified testing agency.
- D. Field quality-control reports.

1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm experienced in applying crystalline waterproofing similar in material, design, and extent to that indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Build mockup of typical vertical and horizontal surfaces as shown on Drawings.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.6 FIELD CONDITIONS

- A. Weather Limitations: Proceed with application only when existing and forecasted weather conditions permit crystalline waterproofing to be performed according to manufacturer's written instructions.
- B. Proceed with waterproofing work only after pipe sleeves, vents, curbs, inserts, drains, and other projections through the substrate to be waterproofed have been completed. Proceed only after substrate defects, including honeycombs, voids, and cracks, have been repaired to provide a sound substrate free of forming materials, including reveal inserts.
- C. Ambient Conditions: Proceed with waterproofing work only if temperature is maintained at 40 deg F (4.4 deg C) or above during work and cure period, and space is well ventilated and kept free of water.

PART 2 - PRODUCTS

2.1 WATERPROOFING MATERIALS

- A. Crystalline Waterproofing: Prepackaged, gray-colored proprietary blend of portland cement, specially treated sand, and active chemicals that, when mixed with water and applied, penetrates into concrete and concrete unit masonry and reacts chemically with the byproducts of cement hydration in the presence of water to develop crystalline growth within substrate capillaries to produce an impervious, dense, waterproof substrate; with properties complying with or exceeding the criteria specified below.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Anti-Hydro International, Inc.; A-H Hydrocap.
 - b. AQUAFIN, Inc.; AQUAFIN-1C.
 - c. BASF Building Systems; Tegraproof.
 - d. Conproco Corporation; Conpro Super Seal.
 - e. Euclid Chemical Company (The), an RPM company; HEY'DI K-11.
 - f. Gemite Products Inc.; Cem-Kote CW Plus.
 - g. ICS Penetron International Ltd.; Penetron.
 - h. International Chem-Crete, Inc.; Chem-Cretex Cem 600.
 - i. IPA Systems, Inc.; Drycon.
 - j. KOSTER American Corporation; KOSTER NB 1 Grey.
 - k. Kryton International Inc.; Krystoi T1 & T2 Waterproofing System.
 - l. Tremco Incorporated, an RPM company; Permaquik Crystalline Waterproofing.
 - m. Xypex Chemical Corporation; Xypex Concentrate.

2. Water Permeability: Maximum zero for water at 30 feet (9 m) when tested according to COE CRD-C 48.
3. Compressive Strength: Minimum 4000 psi (27.6 MPa) at 28 days when tested according to ASTM C 109/C 109M.

2.2 ACCESSORY MATERIALS

- A. Patching Compound: Factory-premixed cementitious repair mortar, crack filler, or sealant recommended by waterproofing manufacturer for filling and patching tie holes, honeycombs, reveals, and other imperfections; and compatible with substrate and other materials indicated.
- B. Plugging Compound: Factory-premixed cementitious compound with hydrophobic properties and recommended by waterproofing manufacturer; resistant to water and moisture but vapor permeable for all standard applications (vertical, overhead, and horizontal surfaces not exposed to vehicular traffic); and compatible with substrate and other materials indicated.
- C. Water: Potable.

2.3 MIXES

- A. Crystalline Waterproofing: Add prepackaged dry ingredients to water according to manufacturer's written instructions. Mix together with mechanical mixer or by hand to required consistency.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for suitable conditions where waterproofing is to be applied.
- B. Proceed with application only after unsatisfactory conditions have been corrected.
- C. Notify Architect in writing of active leaks or defects that would affect system performance.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions.
- B. Protect other work from damage caused by cleaning, preparation, and application of waterproofing. Provide temporary enclosure to confine spraying operation and to ensure adequate ambient temperatures and ventilation conditions for application.

- C. Do not allow waterproofing, patching, and plugging materials to enter reveals or annular spaces intended for resilient sealants or gaskets, such as joint spaces between pipes and pipe sleeves.
- D. Stop active water leaks with plugging compound.
- E. Repair damaged or unsatisfactory substrate with patching compound.
 - 1. At holes and cracks 1/16 inch (1.6 mm) wide or larger in substrate, remove loosened chips and cut reveal with sides perpendicular to surface, not tapered, and minimum 1 inch (25 mm) deep. Fill reveal with patching compound flush with surface.
- F. Surface Preparation: Remove efflorescence, chalk, dust, dirt, mortar spatter, grease, oils, paint, curing compounds, and form-release agents to ensure that waterproofing bonds to surfaces.
 - 1. Clean concrete surfaces according to ASTM D 4258.
 - a. Scratch- and Float-Finished Concrete: Etch with 10 percent muriatic acid solution according to ASTM D 4260.
 - b. Smooth-Formed and Trowel-Finished Concrete: Prepare by mechanical abrading or abrasive-blast cleaning according to ASTM D 4259.
 - 2. Clean concrete unit masonry surfaces according to ASTM D 4261.
 - a. Lightweight Concrete Unit Masonry: Etch with 10 percent muriatic acid solution or abrade surface by wire brushing. Remove acid residue until pH readings of water after rinse are not more than 1.0 pH lower or 2.0 pH higher than pH of water before rinse.
 - b. Medium- and Normal-Weight Concrete Unit Masonry: Sandblast or bushhammer to a depth of 1/16 inch (1.6 mm).
 - 3. Concrete Joints: Clean reveals.

3.3 APPLICATION

- A. General: Comply with waterproofing manufacturer's written instructions for application and curing.
 - 1. Saturate surface with water for several hours and maintain damp condition until applying waterproofing. Remove standing water.
 - 2. Apply waterproofing to surfaces, and extend waterproofing onto adjacent surfaces as follows:
 - a. Onto columns integral with treated walls.
 - b. Onto interior nontreated walls intersecting exterior treated walls, for a distance of 24 inches (600 mm) for cast-in-place concrete and 48 inches (1200 mm) for masonry.
 - c. Onto exterior walls and onto both exterior and interior columns, for a height of 12 inches (300 mm), where floors, but not walls, are treated.

- d. Onto every substrate in areas indicated for treatment, including pipe trenches pipe chases pits sumps and similar offsets and features.
 3. Number of Coats: Number required for specified water permeability.
 4. Application Method: Apply to ensure that each coat fills voids and is in full contact with substrate or previous coat.
 5. Dampen surface between coats.
- B. Final Coat Finish: Smooth.
- C. Curing: Moist-cure waterproofing for three days immediately after final coat has set, followed by air drying, unless otherwise recommended in writing by manufacturer.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed application of waterproofing.
- B. Prepare test and inspection reports.

END OF SECTION

SECTION 07 21 00 - THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Mineral-wool board insulation.
2. Mineral-wool blanket insulation.

B. Related Requirements:

1. Section 06 16 00 "Sheathing" for foam-plastic board sheathing over wood or steel framing.
2. Section 09 21 16.23 "Gypsum Board Shaft Wall Assemblies", Section 09 26 13 "Gypsum Veneer Plastering" for installation in metal-framed assemblies of insulation specified by referencing this Section.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

1.3 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.
- B. Research/Evaluation Reports: For foam-plastic insulation, from ICC-ES.

1.4 QUALITY ASSURANCE

- A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Protect foam-plastic board insulation as follows:
1. Do not expose to sunlight except to necessary extent for period of installation and concealment.

2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site before installation time.
3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 - PRODUCTS

2.1 MINERAL-WOOL BOARD INSULATION

- A. Basis-of-Design Product: Subject to compliance with requirements, provide **Roxul, Inc, CurtainRock 80 RFF** or comparable product by one of the following:
- B.
 1. Fibrex Insulations Inc.
 2. Isolatek International.
 3. Owens Corning.
 4. Thermafiber.
- C. Recycled Content: Postconsumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.
- D. Un-faced, Mineral-Wool Board Insulation: ASTM C 612; with maximum flame-spread and smoke-developed indexes of 15 and zero, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
 1. Nominal density of 8 lb/cu. ft. (128 kg/cu. m), Type III, thermal resistivity of 4.35 deg F x h x sq. ft./Btu x in. at 75 deg F (30.2 K x m/W at 24 deg C).
 2. Fiber Color: Darkened.
- E. Foil-Faced, Mineral-Wool Board Insulation: ASTM C 612; ASTM e96, with permeance (WVTR) 0.02%; faced on one side with foil-scrim or foil-scrim-polyethylene vapor barrier; with maximum flame-spread and smoke-developed indexes of 25 and 35, respectively, per ASTM E 84.
 1. Nominal density of 8 lb/cu. ft. (128 kg/cu. m), Type III, thermal resistivity of 4.35 deg F x h x sq. ft./Btu x in. at 75 deg F (30.2 K x m/W at 24 deg C).

2.2 MINERAL-WOOL BLANKET INSULATION

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Fibrex Insulations Inc.
 2. Owens Corning.
 3. Roxul Inc.
 4. Thermafiber.
- B. Recycled Content: Postconsumer recycled content plus one-half of pre-consumer recycled content not less than percent.

- C. Un-faced, Mineral-Wool Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
- D. Reinforced-Foil-Faced, Mineral-Wool Blanket Insulation: ASTM C 665, Type III (reflective faced), Class A (faced surface with a flame-spread index of 25 or less per ASTM E 84); Category 1 (membrane is a vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene.

2.3 INSULATION FASTENERS

- A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position indicated with self-locking washer in place.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. AGM Industries, Inc.; Series T TACTOO Insul-Hangers.
 - b. Gemco; Spindle Type.
 - 2. Plate: Perforated, galvanized carbon-steel sheet, 0.030 inch (0.762 mm) thick by 2 inches (50 mm) square.
 - 3. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch (2.67 mm) in diameter; length to suit depth of insulation indicated.
- B. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch- (0.41-mm-) thick galvanized-steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches (38 mm) square or in diameter.
 - 1. Products: Subject to compliance with requirements, provide[one of] the following:
 - a. AGM Industries, Inc.; SC150.
 - b. Gemco; Dome-Cap S-150.
 - 2. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of the cap.
- C. Insulation Standoff: Spacer fabricated from galvanized mild-steel sheet for fitting over spindle of insulation anchor to maintain air space of 1 inch (25 mm) between face of insulation and substrate to which anchor is attached.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Gemco; Clutch Clip.

- D. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates indicated without damaging insulation, fasteners, and substrates.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. AGM Industries, Inc.; TACTOO Adhesive.
 - b. Gemco; Tuff Bond Hanger Adhesive.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean substrates of substances that are harmful to insulation or vapor barriers, including removing projections capable of puncturing vapor barriers, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.3 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

3.4 INSTALLATION OF INSULATION IN CEILINGS FOR SOUND ATTENUATION

- A. Where mineral wool blankets are indicated for sound attenuation above ceilings, install blanket insulation over entire ceiling area in thicknesses indicated. Extend insulation 48 inches (1219 mm) up either side of partitions.

3.5 INSTALLATION OF INSULATION FOR CONCRETE SUBSTRATES

- A. Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors as follows:
1. Fasten insulation anchors to concrete substrates with insulation anchor adhesive according to anchor manufacturer's written instructions. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application indicated.
 2. Apply insulation standoffs to each spindle to create cavity width indicated between concrete substrate and insulation.
 3. After adhesive has dried, install board insulation by pressing insulation into position over spindles and securing it tightly in place with insulation-retaining washers, taking care not to compress insulation below indicated thickness. First course of insulation to be mechanically fastened to the concrete substrate with subsequent insulation section to be applied as stated here-in.
 4. Where insulation will not be covered by other building materials, apply capped washers to tips of spindles.

3.6 INSTALLATION OF CURTAIN-WALL INSULATION

- A. Install board insulation in curtain-wall construction as specified within the Design Development Specifications, according to curtain-wall manufacturer's written instructions.
1. Hold insulation in place by securing to metal curtain-wall backpans within window frames, secured at intervals recommended in writing by insulation manufacturer to hold insulation securely in place against backpan. Maintain cavity width of dimension indicated between backpan, insulation and glass.
 2. Install insulation where it contacts perimeter fire-containment system to prevent insulation from bowing under pressure from perimeter fire-containment system.

3.7 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION

SECTION 07 27 13 - MODIFIED BITUMINOUS SHEET AIR BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes self-adhering, vapor-retarding, modified bituminous sheet air barriers.
- B. Related Requirements:
 - 1. Section 06 16 00 "Sheathing" for wall sheathings and wall sheathing joint-and-penetration treatments.

1.2 DEFINITIONS

- A. Air-Barrier Material: A primary element that provides a continuous barrier to the movement of air.
- B. Air-Barrier Accessory: A transitional component of the air barrier that provides continuity.
- C. Air-Barrier Assembly: The collection of air-barrier materials and accessory materials applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review air-barrier requirements and installation, special details, mockups, air-leakage and bond testing, air-barrier protection, and work scheduling that covers air barriers.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties of products.
- B. Shop Drawings: For air-barrier assemblies.

1. Show locations and extent of air barrier. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
2. Include details of interfaces with other materials that form part of air barrier.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer. Include list of ABAA-certified installers and supervisors employed by the Installer, who work on Project.
- B. Product Certificates: From air-barrier manufacturer, certifying compatibility of air barriers and accessory materials with Project materials that connect to or that come in contact with air barrier.
- C. Product Test Reports: For each air-barrier assembly, for tests performed by a qualified testing agency.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
 1. Installer shall be licensed by ABAA according to ABAA's Quality Assurance Program and shall employ ABAA-certified installers and supervisors on Project.
- B. Mockups: Build mockups to set quality standards for materials and execution and for preconstruction testing.
 1. Build integrated mockups of exterior wall assembly as shown on Drawings, incorporating backup wall construction, external cladding, window, storefront, door frame and sill, insulation, ties and other penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of air barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.
 - a. Coordinate construction of mockups to permit inspection by Owner's testing agency of air barrier before external insulation and cladding are installed.
 - b. Include junction with roofing membrane and building corner condition.
 - c. If Architect determines mockups do not comply with requirements, reconstruct mockups and apply air barrier until mockups are approved.
 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

Maine Medical Center
Bean 2 Roof Addition
CD Pricing Set
Not for Construction

PERKINS+WILL
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1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Owner will engage a qualified testing agency to perform preconstruction testing on field mockups.
- B. Mockup Testing: Air-barrier assemblies shall comply with performance requirements indicated, as evidenced by reports based on mockup testing by a qualified testing agency.
 - 1. Qualitative Air-Leakage Testing: Mockups will be tested for evidence of air leakage according to ASTM E 1186, chamber pressurization or depressurization with smoke tracers .
 - 2. Quantitative Air-Leakage Testing: Mockups will be tested for air leakage according to ASTM E 783.
 - 3. Adhesion Testing: Mockups will be tested for minimum air-barrier adhesion of 16 lbf/sq. in. (110 kPa) according to ASTM D 4541.
 - 4. Notify Architect seven days in advance of the dates and times when mockups will be tested.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Remove and replace liquid materials that cannot be applied within their stated shelf life.
- B. Protect stored materials from direct sunlight.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended by air-barrier manufacturer.
 - 1. Protect substrates from environmental conditions that affect air-barrier performance.
 - 2. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Source Limitations: Obtain primary air-barrier materials and air-barrier accessories from single source from single manufacturer.
- B. VOC Content: 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and complying with VOC content limits of authorities having jurisdiction.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Air barrier shall be capable of performing as a continuous vapor-retarding air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, tie-ins to installed waterproofing, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.
- B. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft. (0.2 L/s x sq. m of surface area at 75 Pa) ASTM E 283.

2.3 SELF-ADHERING SHEET AIR BARRIER

- A. Modified Bituminous Sheet: 40-mil- (1.0-mm-) thick, self-adhering sheet consisting of 36 mils (0.9 mm) of rubberized asphalt laminated to a 4-mil- (0.1-mm-) thick, cross-laminated polyethylene film with release liner on adhesive side and formulated for application with primer that complies with VOC limits of authorities having jurisdiction.

1. Products: Subject to compliance with requirements, provide one of the following:

- a. Carlisle Coatings & Waterproofing Inc.; CCW-705.
- b. Grace, W. R. & Co. - Conn.; Perm-A-Barrier Wall Membrane.
- c. Henry Company; Blueskin SA.
- d. Meadows, W. R., Inc.; SealTight Air-Shield.
- e. Tremco Incorporated, an RPM company; ExoAir 110/110LT.

2. Physical and Performance Properties:

- a. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. (0.02 L/s x sq. m of surface area at 75-Pa) pressure difference; ASTM E 2178.
- b. Tensile Strength: Minimum 250 psi (1.7 MPa); ASTM D 412, Die C.
- c. Ultimate Elongation: Minimum 200 percent; ASTM D 412, Die C.
- d. Puncture Resistance: Minimum 40 lbf (180 N); ASTM E 154.
- e. Water Absorption: Maximum 0.15 percent weight gain after 48-hour immersion at 70 deg F (21 deg C); ASTM D 570.
- f. Vapor Permeance: Maximum 0.05 perm (2.9 ng/Pa x s x sq. m) ASTM E 96/E 96M, Water Method.

2.4 ACCESSORY MATERIALS

- A. General: Accessory materials recommended by air-barrier manufacturer to produce a complete air-barrier assembly and compatible with primary air-barrier membrane.

- B. Primer: Liquid waterborne primer recommended for substrate by air-barrier material manufacturer.
- C. Counterflashing Strip: Modified bituminous 40-mil- (1.0-mm-) thick, self-adhering sheet consisting of 32 mils (0.8 mm) of rubberized asphalt laminated to an 8-mil- (0.2-mm-) thick, cross-laminated polyethylene film with release liner backing.
- D. Butyl Strip: Vapor retarding, 30 to 40 mils (0.76 to 1.0 mm) thick, self-adhering; polyethylene-film-reinforced top surface laminated to layer of butyl adhesive, with release liner backing.
- E. Modified Bituminous Strip: Vapor retarding, 40 mils (1.0 mm) thick, smooth surfaced, self-adhering; consisting of 36 mils (0.9 mm) of rubberized asphalt laminated to a 4-mil- (0.1-mm-) thick, cross-laminated polyethylene film with release liner backing.
- F. Termination Mastic: Air-barrier manufacturer's standard cold fluid-applied elastomeric liquid; trowel grade.
- G. Substrate-Patching Membrane: Manufacturer's standard trowel-grade substrate filler.
- H. Adhesive and Tape: Air-barrier manufacturer's standard adhesive and pressure-sensitive adhesive tape.
- I. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, 0.0187 inch (0.5 mm) thick, and Series 300 stainless-steel fasteners.
- J. Sprayed Polyurethane Foam Sealant: One- or two-component, foamed-in-place, polyurethane foam sealant, 1.5- to 2.0-lb/cu. ft. (24- to 32-kg/cu. m) density; flame-spread index of 25 or less according to ASTM E 162; with primer and noncorrosive substrate cleaner recommended by foam sealant manufacturer.
- K. Modified Bituminous Transition Strip: Vapor retarding, 40 mils (1.0 mm) thick, smooth surfaced, self-adhering; consisting of 36 mils (0.9 mm) of rubberized asphalt laminated to a 4-mil- (0.1-mm-) thick polyethylene film with release liner backing.
- L. Elastomeric Flashing Sheet: ASTM D 2000, minimum 50- to 65-mil- (1.3- to 1.6-mm-) thick, cured sheet neoprene with manufacturer-recommended contact adhesives and lap sealant with stainless-steel termination bars and fasteners.
- M. Preformed Silicone-Sealant Extrusion: Manufacturer's standard system consisting of cured low-modulus silicone extrusion, sized to fit opening widths, with a single-component, neutral-curing, Class 100/50 (low-modulus) silicone sealant for bonding extrusions to substrates.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 123 Silicone Seal.
 - b. Momentive Performance Materials Inc.; US11000 UltraSpan.

- c. Pecora Corporation; Sil-Span.
 - d. Tremco Incorporated, an RPM company; Spectrem Simple Seal.
- N. Joint Sealant: ASTM C 920, single-component, neutral-curing silicone; Class 100/50 (low modulus), Grade NS, Use NT related to exposure, and, as applicable to joint substrates indicated, Use O. Comply with Section 07 92 00 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
 - 1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
 - 2. Verify that concrete has cured and aged for minimum time period recommended by air-barrier manufacturer.
 - 3. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
 - 4. Verify that masonry joints are flush and completely filled with mortar.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Clean, prepare, and treat substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for air-barrier application.
- B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.
- C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching membrane.
- E. Remove excess mortar from masonry ties, shelf angles, and other obstructions.
- F. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D 4258.
 - 1. Install modified bituminous strips and center over treated construction and contraction joints and cracks exceeding a width of 1/16 inch (1.6 mm).
- G. Bridge and cover isolation joints, expansion joints, and discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints with overlapping modified bituminous strips.

- H. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.
- I. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

3.3 INSTALLATION

- A. General: Install modified bituminous sheets and accessory materials according to air-barrier manufacturer's written instructions and according to recommendations in ASTM D 6135.
 - 1. When ambient and substrate temperatures range between 25 and 40 deg F (minus 4 and plus 5 deg C), install self-adhering, modified bituminous air-barrier sheet produced for low-temperature application. Do not install low-temperature sheet if ambient or substrate temperature is higher than 60 deg F (16 deg C).
- B. Corners: Prepare, prime, and treat inside and outside corners according to ASTM D 6135.
 - 1. Install modified bituminous strips centered over vertical inside corners. Install 3/4-inch (19-mm) fillets of termination mastic on horizontal inside corners.
- C. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations with termination mastic and according to ASTM D 6135.
- D. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier sheet on same day. Reprime areas exposed for more than 24 hours.
 - 1. Prime glass-fiber-surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.
- E. Apply and firmly adhere modified bituminous sheets horizontally over area to receive air barrier. Accurately align sheets and maintain uniform 2-1/2-inch- (64-mm-) minimum lap widths and end laps. Overlap and seal seams, and stagger end laps to ensure airtight installation.
 - 1. Apply sheets in a shingled manner to shed water without interception by any exposed sheet edges.
 - 2. Roll sheets firmly to enhance adhesion to substrate.
- F. Apply continuous modified bituminous sheets over modified bituminous strips bridging substrate cracks, construction, and contraction joints.
- G. CMU: Install air-barrier sheet horizontally against the CMU beginning at base of wall. Align top edge of air-barrier sheet immediately below protruding masonry ties or joint reinforcement or ties, and firmly adhere in place.

1. Overlap horizontally adjacent sheets a minimum of 2 inches (50 mm) and roll seams.
 2. Apply overlapping sheets with bottom edge slit to fit around masonry reinforcing or ties. Roll firmly into place.
 3. Seal around masonry reinforcing or ties and penetrations with termination mastic.
 4. Continue the membrane into all openings in the wall, such as doors and windows, and terminate at points to maintain an airtight barrier that is not visible from interior.
- H. Seal top of through-wall flashings to air-barrier sheet with an additional 6-inch- (150-mm-) wide, modified bituminous strip.
- I. Seal exposed edges of sheet at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.
- J. Install air-barrier sheet and accessory materials to form a seal with adjacent construction and to maintain a continuous air barrier.
1. Coordinate air-barrier installation with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
 2. Install butyl strip on roofing membrane or base flashing so that a minimum of 3 inches (75 mm) of coverage is achieved over each substrate.
- K. Connect and seal exterior wall air-barrier membrane continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.
- L. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply modified bituminous transition strip so that a minimum of 3 inches (75 mm) of coverage is achieved over each substrate. Maintain 3 inches (75 mm) of full contact over firm bearing to perimeter frames with not less than 1 inch (25 mm) of full contact.
1. Modified Bituminous Transition Strip: Roll firmly to enhance adhesion.
 2. Elastomeric Flashing Sheet: Apply adhesive to wall, frame, and flashing sheet. Install flashing sheet and termination bars, fastened at 6 inches (150 mm) o.c. Apply lap sealant over exposed edges and on cavity side of flashing sheet.
 3. Preformed Silicone-Sealant Extrusion: Set in full bed of silicone sealant applied to walls, frame, and membrane.
- M. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, doors, and miscellaneous penetrations of air-barrier membrane with foam sealant.
- N. At end of each working day, seal top edge of air-barrier material to substrate with termination mastic.

- O. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- P. Repair punctures, voids, and deficient lapped seams in air barrier. Slit and flatten fishmouths and blisters. Patch with air-barrier sheet extending 6 inches (150 mm) beyond repaired areas in all directions.
- Q. Do not cover air barrier until it has been tested and inspected by Owner's testing agency.
- R. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Inspections: Air-barrier materials, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:
 - 1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
 - 2. Continuous structural support of air-barrier system has been provided.
 - 3. Masonry and concrete surfaces are smooth, clean, and free of cavities, protrusions, and mortar droppings.
 - 4. Site conditions for application temperature and dryness of substrates have been *maintained*.
 - 5. Maximum exposure time of materials to UV deterioration has not been exceeded.
 - 6. Surfaces have been primed.
 - 7. Laps in sheet materials have complied with the minimum requirements and have been shingled in the correct direction (or mastic applied on exposed edges), with no fishmouths.
 - 8. Termination mastic has been applied on cut edges.
 - 9. Air barrier has been firmly adhered to substrate.
 - 10. Compatible materials have been used.
 - 11. Transitions at changes in direction and structural support at gaps have been provided.
 - 12. Connections between assemblies (membrane and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
 - 13. All penetrations have been sealed.
- C. Tests: As determined by Owner's testing agency from among the following tests:
 - 1. Qualitative Air-Leakage Testing: Air-barrier assemblies will be tested for evidence of air leakage according to ASTM E 1186, smoke pencil with pressurization or depressurization.

2. Quantitative Air-Leakage Testing: Air-barrier assemblies will be tested for air leakage according to ASTM E 783.
 3. Adhesion Testing: Air-barrier assemblies will be tested for minimum air-barrier adhesion of 16 lbf/sq. in. (110 kPa) according to ASTM D 4541 for each 600 sq. ft. (56 sq. m) of installed air barrier or part thereof.
- D. Air barriers will be considered defective if they do not pass tests and inspections.
1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.
 2. Remove and replace deficient air-barrier components for retesting as specified above.
- E. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.

3.5 CLEANING AND PROTECTION

- A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
1. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer. If exposed to these conditions for more than 30> days, remove and replace air barrier or install additional, full-thickness, air-barrier application after repairing and preparing the overexposed membrane according to air-barrier manufacturer's written instructions.
 2. Protect air barrier from contact with incompatible materials and sealants not approved by air-barrier manufacturer.
- B. Clean spills, stains, and soiling from construction that would be exposed in the completed Work, using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

SECTION 07 42 13.23 - METAL COMPOSITE MATERIAL WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes metal composite material wall panels.

1.2 COORDINATION

- A. Coordinate metal composite material panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, metal composite material panel Installer, structural-support Installer, and installers whose work interfaces with or affects metal composite material panels, including installers of doors, windows, and louvers.
 - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review methods and procedures related to metal composite material panel installation, including manufacturer's written instructions.
 - 4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
 - 5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect metal composite material panels.
 - 6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
 - 7. Review temporary protection requirements for metal composite material panel assembly during and after installation.
 - 8. Review procedures for repair of panels damaged after installation.
 - 9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal composite material panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment assembly, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim and anchorage, at a scale of not less than 1-1/2 inches per 12 inches (1:10).

C. Samples for Initial Selection: For each type of metal composite material panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.

1. Metal Composite Material Panels: 12 inches (305 mm) long by actual panel width. Include fasteners, closures, and other metal composite material panel accessories.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each product, tests performed by a qualified testing agency.
- C. Field quality-control reports.
- D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal composite material panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
 1. Build mockup of typical metal composite material panel assembly 4'-0"x8'-0", including corner, soffits, supports, attachments, and accessories.

2. Water-Spray Test: Conduct water-spray test of mockup of metal composite material panel assembly, testing for water penetration according to AAMA 501.2.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, metal composite material panels, and other manufactured items so as not to be damaged or deformed. Package metal composite material panels for protection during transportation and handling.
- B. Unload, store, and erect metal composite material panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal composite material panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal composite material panels to ensure dryness, with positive slope for drainage of water. Do not store metal composite material panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal composite material panels during installation.
- E. Copper Panels: Wear gloves when handling to prevent fingerprints and soiling of surface.

1.9 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal composite material panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal composite material panel systems that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Structural failures including rupturing, cracking, or puncturing.
 - b. Deterioration of metals and other materials beyond normal weathering.
 2. Warranty Period: Two years from date of Substantial Completion.

- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal composite material panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 2. Finish Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal composite material panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 330:
1. Wind Loads: As indicated on Drawings.
 2. Other Design Loads: As indicated on the structural Drawings.
 3. Deflection Limits: For wind loads, no greater than 1/240 of the span.
- B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) when tested according to ASTM E 283 at the following test-pressure difference:
1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa).
- C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 331 at the following test-pressure difference:
1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa).
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
- E. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 CWP, METAL COMPOSITE MATERIAL WALL PANELS

- A. Metal Composite Material Wall Panel Systems: Provide factory-formed and -assembled, metal composite material wall panels fabricated from two metal facings that are bonded to a solid, extruded thermoplastic core; formed into profile for installation method indicated. Include attachment assembly components, panel stiffeners, and accessories required for weathertight system.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide CENTRIA Architectural Systems; Formabond Wall System or comparable product by one of the following:
 - b. 3A Composites USA, Inc.; Alucobond Plus.
 - c. Alcoa Inc.; Reynobond PE.
 - d. CENTRIA Architectural Systems; Formabond Wall System.
 - e. Citadel Architectural Products, Inc.; Envelope 2000 RS.
 - f. Firestone Metal Products, LLC; UNA-FAB Series 1500.
 - g. Protean Construction Products, Inc.; ACM 100.

- B. CWP-1 , Aluminum-Faced Composite Wall Panels: Formed with 0.020-inch- (0.50-mm-) thick, coil-coated aluminum sheet facings.

1. Panel Thickness: 0.236 inch (6 mm).
2. Core: Fire retardant.
3. Exterior Three-coat fluoro-polymer.
 - a. Color: As selected by Architect from manufacturer's full range.

- C. Attachment Assembly Components: Formed from material compatible with panel facing.

- D. Attachment Assembly: Manufacturer's standard.

2.3 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Sub-framing and Furring: ASTM C 645, cold-formed, metallic-coated steel sheet ASTM A 653/A 653M, G90 (Z275 hot-dip galvanized) coating designation or ASTM A 792/A 792M, Class AZ50 (Class AZM150) aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal composite material panel system.

- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips,

flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal composite material panels unless otherwise indicated.

- C. Flashing and Trim: Provide flashing and trim formed from same material as metal composite material panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, end-walls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal composite material panels.
- D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal composite material panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.
- E. Panel Sealants: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal composite material panels and remain weathertight; and as recommended in writing by metal composite material panel manufacturer.

2.4 FABRICATION

- A. General: Fabricate and finish metal composite material panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Fabricate metal composite material panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
 - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 - 2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
 - 3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
 - 4. Sealed Joints: Form non-expansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
 - 5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
 - 6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

- a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Aluminum Panels and Accessories:
 1. Three-Coat Fluoro-polymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal composite material panel supports, and other conditions affecting performance of the Work.
 1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal composite material wall panel manufacturer.
 2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal composite material wall panel manufacturer.
 - a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Examine roughing-in for components and assemblies penetrating metal composite material panels to verify actual locations of penetrations relative to seam locations of metal composite material panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Miscellaneous Supports: Install sub-framing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal composite material panel manufacturer's written recommendations.

3.3 METAL COMPOSITE MATERIAL PANEL INSTALLATION

- A. General: Install metal composite material panels according to manufacturer's written instructions in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to supports unless otherwise indicated. Anchor metal composite material panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 - 1. Shim or otherwise plumb substrates receiving metal composite material panels.
 - 2. Flash and seal metal composite material panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistant barriers and flashings that will be concealed by metal composite material panels are installed.
 - 3. Install screw fasteners in predrilled holes.
 - 4. Locate and space fastenings in uniform vertical and horizontal alignment.
 - 5. Install flashing and trim as metal composite material panel work proceeds.
 - 6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
 - 7. Align bottoms of metal composite material panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
 - 8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.
- B. Fasteners:
 - 1. Aluminum Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.
 - 2. Copper Panels: Use copper, stainless-steel or hardware-bronze fasteners.
- C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal composite material panel manufacturer.
- D. Attachment Assembly, General: Install attachment assembly required to support metal composite material wall panels and to provide a complete weathertight wall system, including sub-girts, perimeter extrusions, tracks, drainage channels, panel clips, and anchor channels.
 - 1. Include attachment to supports, panel-to-panel joinery, panel-to-dissimilar-material joinery, and panel-system joint seals.

- E. Installation: Attach metal composite material wall panels to supports at locations, spacings, and with fasteners recommended by manufacturer to achieve performance requirements specified.
 - 1. Wet Seal Systems: Seal horizontal and vertical joints between adjacent metal composite material wall panels with sealant backing and sealant. Install sealant backing and sealant according to requirements specified in Section 07 92 00 "Joint Sealants."
 - 2. composite material
 - 3. Rain-screen Systems: Do not apply sealants to joints unless otherwise indicated.

- F. Clip Installation: Attach panel clips to supports at locations, spacings, and with fasteners recommended by manufacturer. Attach routed-and-returned flanges of wall panels to panel clips with manufacturer's standard fasteners.
 - 1. Seal horizontal and vertical joints between adjacent panels with sealant backing and sealant. Install sealant backing and sealant according to requirements specified in Section 07 92 00 "Joint Sealants."
 - 2. Seal horizontal and vertical joints between adjacent metal composite material wall panels with manufacturer's standard gaskets.

- G. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
 - 1. Install components required for a complete metal composite material panel assembly including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal composite material panel manufacturer; or, if not indicated, provide types recommended in writing by metal composite material panel manufacturer.

- H. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.
 - 1. Install exposed flashing and trim that is without buckling and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof performance.
 - 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (605 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

3.4 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align metal composite material wall panel units within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m), non-accumulative, on level, plumb, and location lines as indicated, and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing agency to perform field tests and inspections.
- B. Water-Spray Test: After installation, test area of assembly as directed by Architect for water penetration according to AAMA 501.2.
- C. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed metal composite material wall panel installation, including accessories.
- D. Metal composite material wall panels will be considered defective if they do not pass test and inspections.
- E. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- F. Prepare test and inspection reports.

3.6 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal composite material panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal composite material panel installation, clean finished surfaces as recommended by metal composite material panel manufacturer. Maintain in a clean condition during construction.
- B. After metal composite material panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
- C. Replace metal composite material panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

SECTION 07 54 23 - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fully adhered TPO membrane roofing system.
2. Vapor retarder.
3. Roof insulation.

- B. Section includes the installation of acoustical roof deck rib insulation strips furnished under Section 05 31 00 "Steel Decking."

C. Related Requirements:

1. Section 06 10 53 "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
2. Section 06 16 00 "Sheathing" for wood-based, structural-use roof deck panels.
3. Section 07 21 00 "Thermal Insulation" for insulation beneath the roof deck.
4. Section 07 62 00 "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counter-flashings.
5. Section 07 71 29 "Manufactured Roof Expansion Joints" for proprietary manufactured roof expansion-joint assemblies.
6. Section 07 92 00 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.
7. Section 22 14 23 "Storm Drainage Piping Specialties" for roof drains.

1.2 DEFINITIONS

- A. TPO: Thermoplastic polyolefin.

- B. Roofing Terminology: See ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

1.3 PREINSTALLATION MEETINGS

- A. Consider retaining first paragraph below if roofing installation is large and complicated. A preliminary roofing conference would precede a preinstallation conference and focus on roof deck construction and planning activities of roofing Installer.

Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review deck substrate requirements for conditions and finishes, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

Pre-installation Roofing Conference: Conduct conference at Project site.

10. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.

11. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
12. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
13. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
14. Review structural loading limitations of roof deck during and after roofing.
15. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
16. Review governing regulations and requirements for insurance and certificates if applicable.
17. Review temporary protection requirements for roofing system during and after installation.
18. Review roof observation and repair procedures after roofing installation.

1.4 ACTION SUBMITTALS

Product Data: For each type of product indicated.

Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.

1. Base flashings and membrane terminations.
2. Tapered insulation, including slopes.
3. Roof plan showing orientation of steel roof deck and orientation of for fully adhered membrane roofing.
4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

Samples for Verification: For the following products:

5. Sheet roofing, of color specified, including T-shaped side and end lap seam.
6. Roof insulation.
7. Walkway pads or rolls.
8. Metal termination bars.
9. Battens.
10. Six insulation fasteners of each type, length, and finish.
11. Six roof cover fasteners of each type, length, and finish.

1.5 INFORMATIONAL SUBMITTALS

Qualification Data: For qualified Installer and manufacturer.

Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

1. Submit evidence of compliance with performance requirements.

Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.

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Research/Evaluation Reports: For components of membrane roofing system, from the 2009 International Building Code.
Field quality-control reports.
Warranties: Sample of special warranties.

1.6 CLOSEOUT SUBMITTALS

Maintenance Data: For roofing system to include in maintenance manuals.

1.7 QUALITY ASSURANCE

Manufacturer Qualifications: A qualified manufacturer that is FM Approvals approved for membrane roofing system identical to that used for this Project.

Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

Exterior Fire-Test Exposure: ASTM E 108, Class B; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

Fire-Resistance Ratings: Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1.8 DELIVERY, STORAGE, AND HANDLING

Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.9 FIELD CONDITIONS

Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

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1.10 WARRANTY

Special Warranty: Manufacturer's standard or customized form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period.

1. Special warranty includes membrane roofing, base flashings, roof insulation, fasteners, cover boards, substrate board, roofing accessories, roof pavers, and other components of membrane roofing system.
2. Warranty Period: 15 years from date of Substantial Completion.

Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of membrane roofing system such as membrane roofing, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, roof pavers, and walkway products, for the following warranty period:

3. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 TPO MEMBRANE ROOFING

Fabric-Reinforced Thermoplastic Polyolefin Sheet: ASTM D 6878, internally fabric or scrim reinforced, uniform, flexible fabric backed TPO sheet.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Carlisle SynTec Incorporated.
 - b. Custom Seal Roofing.
 - c. Firestone Building Products Company.
 - d. GAF Materials Corporation.
 - e. GenFlex Roofing Systems.
 - f. Johns Manville.
 - g. Mule-Hide Products Co., Inc.
 - h. Stevens Roofing Systems; Division of JPS Elastomerics.
 - i. Versico Incorporated.
2. Thickness: 60 mils (1.5 mm), nominal.
3. Exposed Face Color: Gray.

Source Limitations: Obtain components including roof insulation, fasteners for membrane roofing system from same manufacturer as membrane roofing or approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure

due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.

Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7.

1. Corner Uplift Pressure: -107.7 lbf/sq. ft. (kPa/sq. m)>.
2. Perimeter Uplift Pressure: -71.5 lbf/sq. ft. (kPa/sq. m)>.
3. Field-of-Roof Uplift Pressure: -42.6 lbf/sq. ft. (kPa/sq. m)>.

FM Approvals Listing: Provide membrane roofing, base flashings, and component materials that comply with requirements in FM Approvals 4450 and FM Approvals 4470 as part of a membrane roofing system, and that are listed in FM Approvals' "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals markings.

4. Fire/Windstorm Classification: Class 1A-120.
5. Hail Resistance: SH.

Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.

Energy Performance: Provide roofing system that is listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.

Energy Performance: Provide roofing system with initial solar reflectance not less than 0.80 and emissivity not less than 0.90 when tested according to CRRC-1.

2.3 AUXILIARY MEMBRANE ROOFING MATERIALS

General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Plastic Foam Adhesives: 50 g/L.
 - b. Gypsum Board and Panel Adhesives: 50 g/L.
 - c. Multipurpose Construction Adhesives: 70 g/L.
 - d. Fiberglass Adhesives: 80 g/L.
 - e. Single-Ply Roof Membrane Adhesives: 250 g/L.
 - f. Other Adhesives: 250 g/L.
 - g. Single-Ply Roof Membrane Sealants: 450 g/L.
 - h. Non-membrane Roof Sealants: 300 g/L.
 - i. Sealant Primers for Nonporous Substrates: 250 g/L.
 - j. Sealant Primers for Porous Substrates: 775 g/L.

Sheet Flashing: Manufacturer's standard unreinforced thermoplastic polyolefin sheet flashing, 55 mils (1.4 mm) thick, minimum, of same color as sheet membrane.

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Bonding Adhesive: Manufacturer's standard, water based.

Slip Sheet: Manufacturer's standard, of thickness required for application.

Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.

Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch thick (25 mm wide by 1.3 mm thick), pre-punched.

Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.

Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.4 SUBSTRATE BOARDS

Substrate Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, Type X, 5/8 inch (16 mm) thick.

1. Products: Subject to compliance with requirements, provide the following:

- a. Georgia-Pacific Corporation; Dens Deck.

Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate board to roof deck.

2.5 VAPOR RETARDER

- A. Reinforced-Polyethylene Vapor Retarders: Two outer layers of polyethylene film laminated to an inner reinforcing layer consisting of either nylon cord or polyester scrim and weighing not less than 25 lb/1000 sq. ft. (12 kg/100 sq. m), with maximum permeance rating of 0.0507 perm (2.9 ng/Pa x s x sq. m).

1. Products: Subject to compliance with requirements, provide the following:

- a. Reef Industries, Inc.; Griffolyn T-65.

2.6 ROOF INSULATION

General: Preformed roof insulation boards manufactured or approved by TPO membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Approvals-approved roof insulation.

Extruded-Polystyrene Board Insulation: ASTM C 578, Type IV, 1.6-lb/cu. ft. (26-kg/cu. m)

Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48) minimum, unless otherwise indicated.

Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

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2.7 INSULATION ACCESSORIES

General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.

Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.

Full-Spread Applied Insulation Adhesive: Insulation manufacturer's recommended spray-applied, low-rise, two-component urethane adhesive formulated to attach roof insulation to substrate or to another insulation layer.

Cover Board: ASTM C 1278/C 1278M, cellulosic-fiber-reinforced, water-resistant gypsum substrate, 5/8 inch (16 mm) thick.

1. Products: Subject to compliance with requirements, provide the following:
 - a. USG Corporation; Securock.

2.8 ASPHALT MATERIALS

Roofing Asphalt: ASTM D 312, Type III or Type IV.

Asphalt Primer: ASTM D 41.

2.9 WALKWAYS

Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch (5 mm) thick, and acceptable to membrane roofing system manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 05 31 00 "Steel Decking."
4. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
5. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
6. Verify that concrete curing compounds that will impair adhesion of roofing components to roof deck have been removed.

Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

Install acoustical roof deck rib insulation strips, specified in Section 05 31 00 "Steel Decking," according to acoustical roof deck manufacturer's written instructions, immediately before installation of overlying construction and to remain dry.

3.3 SUBSTRATE BOARD

Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.

1. Fasten substrate board to top flanges of steel deck according to recommendations in FM Approvals' "RoofNav" and FM Global Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification.

3.4 VAPOR-RETARDER INSTALLATION

Polyethylene Film: Loosely lay polyethylene-film vapor retarder in a single layer over area to receive vapor retarder, side and end lapping each sheet a minimum of 2 inches (50 mm) and 6 inches (150 mm), respectively.

Apply adhesive at rate recommended by vapor-retarder manufacturer. Seal laps with adhesive.

Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into membrane roofing system.

3.5 INSULATION INSTALLATION

Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.

Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

Mechanically Fastened and Adhered Insulation: Install each layer of insulation and secure first layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.

1. Fasten first layer of insulation according to requirements in FM Approvals' "RoofNav" for specified Windstorm Resistance Classification.

2. Fasten first layer of insulation to resist uplift pressure at corners, perimeter, and field of roof.
3. Set each subsequent layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction. Loosely butt cover boards together and fasten to roof deck.

4. Fasten cover boards according to requirements in FM Approvals' "RoofNav" for specified Windstorm Resistance Classification.

Install slip sheet over cover board and immediately beneath membrane roofing.

3.6 ADHERED MEMBRANE ROOFING INSTALLATION

Adhere membrane roofing over area to receive roofing and install according to membrane roofing system manufacturer's written instructions.

Start installation of membrane roofing in presence of membrane roofing system manufacturer's technical personnel.

Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.

In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeter of roofing.

Apply membrane roofing with side laps shingled with slope of roof deck where possible.

Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

Install membrane roofing and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition and to not void warranty for existing membrane roofing system.

3.7 BASE FLASHING INSTALLATION

Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.

Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

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Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.8 WALKWAY INSTALLATION

Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.9 FIELD QUALITY CONTROL

Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.10 PROTECTING AND CLEANING

Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.11 ROOFING INSTALLER'S WARRANTY

AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
 - a. Lightning;
 - b. Peak gust wind speed exceeding 120 mph (m/sec);
 - c. Fire;
 - d. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
 - e. Faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
 - f. Vapor condensation on bottom of roofing; and
 - g. Activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of

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the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

END OF SECTION

SECTION 07 71 00 - ROOF SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Preformed copings.
2. Preformed roof-edge flashings.
3. Preformed roof-edge drainage systems.
4. Preformed reglets and counterflashings.

B. Related Sections:

1. Section 06 10 00 "Rough Carpentry" for wood nailers, curbs, and blocking.
- 2.
3. Section 07 92 00 "Joint Sealants" for field-applied sealants between roof specialties and adjacent materials.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For roof specialties. Include plans, elevations, expansion-joint locations, keyed details, and attachments to other work. Distinguish between plant- and field-assembled work. Include the following:

1. Details for expansion and contraction; locations of expansion joints, including direction of expansion and contraction.
2. Pattern of seams and layout of fasteners, cleats, clips, and other attachments.
3. Details of termination points and assemblies, including fixed points.
4. Details of special conditions.

C. Samples for Initial Selection: For each type of roof specialty indicated with factory-applied color finishes.

D. Samples for Verification: For copings, roof-edge flashings, roof-edge drainage systems, reglets and counterflashings made from 12-inch (300-mm) lengths of full-size components including fasteners, cover joints, accessories, and attachments.

1.3 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for copings and roof-edge flashings.

1. Submit evidence that manufactured copings and roof edge flashings proposed for this Project have passed SPRI tests RE-2 and RE-3.

B. Warranty: Sample of special warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing specialties to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
 - 1. Build mockup of typical roof edge, including fascia gutter and downspout, approximately 10 feet (3.0 m) long, including supporting construction, seams, attachments, underlayment, and accessories.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- B. Preinstallation Conference: Conduct conference at Project site.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, Installer, and installers whose work interfaces with or affects roof specialties including installers of roofing materials and accessories.
 - 2. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
 - 3. Review special roof details, roof drainage, and condition of other construction that will affect roof specialties.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not store roof specialties in contact with other materials that might cause staining, denting, or other surface damage. Store roof specialties away from uncured concrete and masonry.
- B. Protect strippable protective covering on roof specialties from exposure to sunlight and high humidity, except to extent necessary for the period of roof specialties installation.

1.7 WARRANTY

- A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Roof specialties shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.
- B. FM Approvals' Listing: Manufacture and install copings and roof-edge flashings that are listed in FM Approvals' "RoofNav" and approved for windstorm classification, Class 1-60. Identify materials with FM Approvals' markings.
- C. SPRI Wind Design Standard: Manufacture and install copings and roof-edge flashings tested according to SPRI ES-1 and capable of resisting the following design pressures:
 - 1. Design Pressure: As indicated within related Roofing Section.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. [Architectural Products Company.](#)
 - 2. [ATAS International, Inc.](#)
 - 3. [Cheney Flashing Company.](#)
 - 4. [Hickman Company, W. P.](#)
 - 5. [Johns Manville.](#)
 - 6. [Metal-Fab Manufacturing, LLC.](#)
 - 7. [MM Systems Corporation.](#)
 - 8. [Petersen Aluminum Corporation.](#)

2.3 EXPOSED METALS

- A. Aluminum Sheet: ASTM B 209 (ASTM B 209M), alloy as standard with manufacturer for finish required, with temper to suit forming operations and performance required.
 - 1. Surface: Smooth, flat finish.
 - 2. Mill Finish: As manufactured.
 - 3. Exposed Coil-Coated Finishes: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

- a. Three-Coat Fluoropolymer: AAMA 620. System consisting of primer, fluoropolymer color coat, and clear fluoropolymer topcoat, with both color coat and clear topcoat containing not less than 70 percent PVDF resin by weight.
- b. Concealed Surface: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).
4. Clear Anodic Finish, Coil Coated: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.
5. Color to match structural glazed curtain wall.

2.4 CONCEALED METALS

- A. Aluminum Sheet: ASTM B 209 (ASTM B 209M), alloy and temper recommended by manufacturer for type of use and structural performance indicated, mill finished.
- B. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy and temper recommended by manufacturer for type of use and structural performance indicated, mill finished.

2.5 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils (0.76 to 1.0 mm) thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
 1. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F (116 deg C).
 2. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F (29 deg C).
 3. Products: Subject to compliance with requirements, provide one of the following:
 - a. Carlisle Coatings & Waterproofing; CCW WIP 300HT.
 - b. Grace Construction Products, a unit of W. R. Grace & Co.; Ultra.
 - c. Henry Company; Blueskin PE200 HT.
 - d. Metal-Fab Manufacturing, LLC; MetShield.
 - e. Owens Corning; WeatherLock Metal High Temperature Underlayment.

2.6 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.
- B. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:
 1. Exposed Penetrating Fasteners: Gasketed screws with hex washer heads matching color of sheet metal.
 2. Fasteners for Aluminum: Aluminum or Series 300 stainless steel.
 3. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.

4. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A 153/A 153M or ASTM F 2329.
- C. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane or silicone polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.
- D. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- E. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.
- F. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.7 COPINGS

- A. Copings: Manufactured coping system consisting of formed-metal coping cap in section lengths not exceeding 12 feet (3.6 m), concealed anchorage; corner units, end cap units, and concealed splice plates with same finish as coping caps.
 1. Coping-Cap Material: Formed aluminum, thickness as required to meet performance requirements with a minimum thickness of 0.050 inch (1.27 mm).
 - a. Finish: Three-coat fluoropolymer.
 - b. Color: Match structural glazed curtain wall.
 2. Corners: Factory mitered and mechanically clinched and sealed watertight.
 3. Special Fabrications: Radiussed sections Arched sections Bullnose face leg Two-way sloped coping cap.
 4. Coping-Cap Attachment Method: Snap-on, fabricated from coping-cap material.
 5. Snap-on-Coping Anchor Plates: Concealed, galvanized-steel sheet, 12 inches (300 mm) wide, with integral cleats.
 - a. Color: As selected by Architect from manufacturer's full range.
 6. Corners: Factory mitered and mechanically clinched and sealed watertight.

2.8 ROOF-EDGE FLASHINGS

- A. Canted Roof-Edge, Fascia and Gravel Stop: Manufactured, two-piece, roof-edge fascia consisting of snap-on metal fascia cover in section lengths not exceeding 12 feet (3.6 m) and a continuous formed galvanized-steel sheet cant, 0.028 inch (0.71 mm) thick, minimum, with extended vertical leg terminating in a drip-edge cleat. Provide matching corner units.
 1. Fascia Cover: Fabricated from the following exposed metal:
 - a. Formed Aluminum: Thickness as required to meet performance requirements with a minimum thickness of 0.050 inch (1.27 mm).
 2. Fascia Accessories: Fascia extenders with continuous hold-down cleats, Wall cap, Soffit trim, Overflow scuppers, Overflow scuppers with perforated screens.

- B. Roof-Edge Fascia: Manufactured, two-piece, roof-edge fascia consisting of snap-on metal fascia cover in section lengths not exceeding 12 feet (3.6 m) and a continuous formed- or extruded-aluminum anchor bar with integral drip-edge cleat to engage fascia cover. Provide matching corner units.
 - 1. Fascia Cover: Fabricated from the following exposed metal:
 - a. Formed Aluminum: Thickness as required to meet performance requirements with a minimum thickness of 0.050 inch (1.27 mm).
- C. One-Piece Gravel Stops: Manufactured, one-piece, metal gravel stop in section lengths not exceeding 12 feet (3.6 m), with a horizontal flange and vertical leg, drain-through fascia terminating in a drip edge, and concealed splice plates of same material, finish, and shape as gravel stop. Provide matching corner units.
 - 1. Fabricate from the following exposed metal:
 - a. Formed Aluminum: Thickness as required to meet performance requirements with a minimum thickness of 0.032 inch (0.81 mm).
- D. Aluminum Finish: Three-coat fluoropolymer.
 - 1. Color: As selected by Architect from manufacturer's full range.

2.9 REGLETS AND COUNTERFLASHINGS

- A. Reglets: Manufactured units formed to provide secure interlocking of separate reglet and counterflashing pieces, from the following exposed metal:
 - 1. Formed Aluminum: 0.024 inch (0.61 mm) thick.
 - 2. Surface-Mounted Type: Provide reglets with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
- B. Counterflashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches (100 mm) and in lengths not exceeding 12 feet (3.6 m) designed to snap into reglets and compress against base flashings with joints lapped, from the following exposed metal:
 - 1. Formed Aluminum: 0.024 inch (0.61 mm) thick.
- C. Accessories:
 - 1. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where reglet is provided separate from metal counterflashing.
 - 2. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.

2.10 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if

they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Examine walls, roof edges, and parapets for suitable conditions for roof specialties.
- C. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 FABRICATION

- A. Cutting and Forming Radiussed Copings / Roof Edges:
 - 1. Cut curved shapes using templates to produce uniform smooth and consistent edges. Optional method of cutting may be a computer guided plasma arc (water jet) cutter.
 - 2. Form and bend fabrications with curved surfaces in jigs or formed using CNC rolling machines which produce smooth consistent surfaces which show no surface irregularities or other imperfections. Fabricate units to produce uniform sightlines which are level, plumb and in the same plane as adjacent units.

3.3 UNDERLAYMENT INSTALLATION

- A. Self-Adhering Sheet Underlayment: Install wrinkle free. Apply primer if required by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer rather than nails for installing underlayment at low temperatures. Apply in shingle fashion to shed water. Overlap edges not less than 3-1/2 inches (90 mm). Roll laps with roller. Cover underlayment within 14 days.

3.4 INSTALLATION, GENERAL

- A. General: Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete roof-specialty systems.
 - 1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
 - 2. Provide uniform, neat seams with minimum exposure of solder and sealant.
 - 3. Install roof specialties to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.

4. Torch cutting of roof specialties is not permitted.
 5. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
1. Coat concealed side of uncoated aluminum and stainless-steel roof specialties with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
 2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of self-adhering, high-temperature sheet underlayment.
 3. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof specialties for waterproof performance.
- C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.
1. Space movement joints at a maximum of 12 feet (3.6 m) with no joints within 18 inches (450 mm) of corners or intersections unless otherwise shown on Drawings.
 2. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.
- D. Fastener Sizes: Use fasteners of sizes that will penetrate wood blocking or sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
- E. Seal joints as required for watertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F (4 deg C).

3.5 COPING INSTALLATION

- A. Install cleats, anchor plates, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor copings to meet performance requirements.
1. Interlock face and back leg drip edges of snap-on coping cap into cleated anchor plates anchored to substrate at 30-inch (760-mm) centers.
 2. Interlock face leg drip edge into continuous cleat anchored to substrate at 24-inch (600-mm) centers. Anchor back leg of coping with screw fasteners and elastomeric washers at 24-inch (600-mm) centers.
- C. Coping Seam locations:
1. Locate seams as indicted.
 2. Fabricate corners as one unit with seams a minimum of two-feet from corner in each direction. Divide space between corner units evenly into lengths of 12 foot maximum.

3.6 ROOF-EDGE FLASHING INSTALLATION

- A. Install cleats, cants, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor roof edgings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.
- C. Roof-Edge Seam locations:
 - 1. Locate seams as indicated.
 - 2. Fabricate corners as one unit with seams a minimum of two-feet from corner in each direction. Divide space between corner units evenly into lengths of 12 foot maximum.

3.7 REGLET AND COUNTERFLASHING INSTALLATION

- A. General: Coordinate installation of reglets and counterflashings with installation of base flashings.
- B. Embedded Reglets: See Section 03 30 00 "Cast-in-Place Concrete" and Section 04 20 00 "Unit Masonry" for installation of reglets.
- C. Surface-Mounted Reglets: Install reglets to receive flashings where flashing without embedded reglets is indicated on Drawings. Install at height so that inserted counterflashings overlap 4 inches (100 mm) over top edge of base flashings.
- D. Counterflashings: Insert counterflashings into reglets or other indicated receivers; ensure that counterflashings overlap 4 inches (100 mm) over top edge of base flashings. Lap counterflashing joints a minimum of 4 inches (100 mm) and bed with elastomeric sealant. Fit counterflashings tightly to base flashings.

3.8 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder and sealants.
- C. Remove temporary protective coverings and strippable films as roof specialties are installed. On completion of installation, clean finished surfaces including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain roof specialties in a clean condition during construction.
- D. Replace roof specialties that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION

SECTION 08 44 23 - STRUCTURAL-SEALANT-GLAZED CURTAIN WALLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Factory-glazed, four-sided structural-sealant-glazed curtain-wall assemblies.

B. Related Requirements:

1. Section 08 44 13 "Glazed Aluminum Curtain Walls" for conventionally glazed curtain walls.
2. Section 08 80 00 - "Glazing"

1.2 ALLOWANCES

- ##### A. Preconstruction laboratory mockup, Source quality-control and field quality-control testing is part of testing and inspecting allowance.

1.3 PREINSTALLATION MEETINGS

- ##### A. Pre-installation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For structural-sealant-glazed curtain walls. Include plans, elevations, sections, full-size details, and attachments to other work.

1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
2. Include full-size isometric details of each vertical-to-horizontal intersection of structural-sealant-glazed curtain walls, showing the following:
 - a. Joinery, including concealed welds.
 - b. Anchorage.

- c. Expansion provisions.
 - d. Glazing.
 - e. Flashing and drainage.
 - 3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
 - C. Samples for Initial Selection: For units with factory-applied color finishes.
 - D. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.
 - E. Fabrication Sample: Of each vertical-to-horizontal intersection of assemblies, made from 12-inch (300-mm) lengths of full-size components and showing details of the following:
 - 1. Joinery, including concealed welds.
 - 2. Anchorage.
 - 3. Expansion provisions.
 - 4. Glazing.
 - 5. Flashing and drainage.
 - F. Delegated-Design Submittal: For structural-sealant-glazed curtain walls indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- 1.5 INFORMATIONAL SUBMITTALS
- A. LEED Submittals:
 - 1. Product Data for Credit IEQ 4.1: For glazing sealants used inside the weatherproofing system, documentation including printed statement of VOC content.
 - 2. Laboratory Test Reports for Credit IEQ 4.1: For glazing sealants used inside the weatherproofing system, documentation indicating that products comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
 - B. Preconstruction Laboratory Mockup Testing Submittals:
 - 1. Testing Program: Developed specifically for Project.

2. Test Reports: Prepared by a qualified preconstruction testing agency for each mockup test.
 3. Record Drawings: As-built drawings of preconstruction laboratory mockups showing changes made during preconstruction laboratory mockup testing.
- C. Qualification Data: For Installer and laboratory mockup testing agency and field testing agency.
- D. Energy Performance Certificates: For structural-sealant-glazed curtain walls, accessories, and components from manufacturer.
1. Basis for Certification: NFRC-certified energy performance values for each structural-sealant-glazed curtain wall.
- E. Product Test Reports: For structural-sealant-glazed curtain walls, for tests performed by a qualified testing agency.
- F. Quality-Control Program: Developed specifically for Project, including fabrication and installation, according to recommendations in ASTM C 1401. Include periodic quality-control reports.
- G. Source quality-control reports.
- H. Field quality-control reports.
- I. Sample Warranties: For special warranties.
- 1.6 CLOSEOUT SUBMITTALS
- A. Maintenance Data: For structural-sealant-glazed curtain walls to include in maintenance manuals.
 - B. Maintenance Data for Structural Sealant: For structural-sealant-glazed curtain walls to include in maintenance manuals. Include ASTM C 1401 recommendations for postinstallation-phase quality-control program.
- 1.7 QUALITY ASSURANCE
- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
 - B. Laboratory Mockup Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated and accredited by IAS or ILAC Mutual Recognition Arrangement as complying with ISO/IEC 17025.
 - C. Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated and accredited by IAS or ILAC Mutual Recognition Arrangement as complying with ISO/IEC 17025.

- D. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.
- E. Structural-Sealant Glazing: Comply with ASTM C 1401 for design and installation of curtain-wall assemblies.
- 1.8 MOCKUPS
- A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
1. Build mockup of typical wall area as shown on Drawings.
 2. Testing shall be performed on mockups according to requirements in "Field Quality Control" Article.
 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- 1.9 PRECONSTRUCTION LABORATORY MOCKUPS
- A. Preconstruction Testing Service: Engage a qualified testing agency to perform testing on preconstruction laboratory mockups.
- B. Build preconstruction laboratory mockups at testing agency facility; use personnel, products, and methods of construction that will be used at Project site.
1. Size and Configuration: As indicated within the MMC bean 2 Roof Interim Progress set dated March 15, 2013 and the final Construction documents dated May 3, 2013.
 2. Notify Architect seven days in advance of the dates and times when preconstruction laboratory mockups will be constructed and tested.
- C. Preconstruction Laboratory Mockup Testing Program: Test preconstruction laboratory mockups according to requirements in "Performance Requirements" Article. Perform the following tests in the following order:

1. Structural: ASTM E 330 at 50 percent of positive test load.
2. Air Infiltration: ASTM E 283.
3. Water Penetration under Static Pressure: ASTM E 331.
4. Water Penetration under Dynamic Pressure: AAMA 501.1.
5. Structural: ASTM E 330 at 100 percent of positive and negative test loads. Repeat the following:
 - a. Air Infiltration: ASTM E 283.
 - b. Water Penetration under Static Pressure: ASTM E 331.
6. Interstory Drift: AAMA 501.4 at 100 percent of design displacement. Repeat the following:
 - a. Air Infiltration: ASTM E 283.
 - b. Water Penetration under Static Pressure: ASTM E 331.
7. Vertical Interstory Movement: AAMA 501.7. Repeat the following:
 - a. Air Infiltration: ASTM E 283.
 - b. Water Penetration under Static Pressure: ASTM E 331.
8. Thermal Cycling: According to AAMA 501.5. Repeat the following:
 - a. Air Infiltration: ASTM E 283.
 - b. Water Penetration under Static Pressure: ASTM E 331.
9. Structural: ASTM E 330 at 100 and 150 percent of positive and negative test loads. Repeat the following:
 - a. Air Infiltration: ASTM E 283.
 - b. Water Penetration under Static Pressure: ASTM E 331.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of glazed aluminum curtain wall that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
 - a. Structural failures including, but not limited to, excessive deflection.

- b. Noise or vibration created by wind and thermal and structural movements.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - d. Water penetration through fixed glazing and framing areas.
 - e. Failure of operating components.
2. Warranty Period: 10 years from date of Substantial Completion.
- B. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.
1. Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design structural-sealant-glazed curtain walls.
- B. General Performance: Comply with performance requirements specified, as determined by testing of structural-sealant-glazed curtain walls representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
 1. Structural-sealant-glazed curtain walls shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
 2. Failure also includes the following:
 - a. Thermal stresses transferring to building structure.

- b. Glass breakage.
 - c. Noise or vibration created by wind and thermal and structural movements.
 - d. Loosening or weakening of fasteners, attachments, and other components.
 - e. Failure of operating units.
- C. Structural Loads:
- 1. Wind Loads: As indicated on Drawings.
 - 2. Other Design Loads: As indicated within MMC bean 2 roof project interim progress set dated March 15, 2013.
- D. Deflection of Framing Members: At design wind pressure, as follows:
- 1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans up to 13 feet 6 inches (4.1 m) and to 1/240 of clear span plus 1/4 inch (6.35 mm) for spans greater than 13 feet 6 inches (4.1 m) or an amount that restricts edge deflection of individual glazing lites to 3/4 inch (19.1 mm), whichever is less.
 - 2. Cantilever Deflection: Where framing members overhang an anchor point, as follows:
 - a. Perpendicular to Plane of Wall: No greater than 1/240 of clear span plus 1/4-inch (6.35-mm) for spans greater than 11 feet 8-1/4 inches (3.6 m) and/or 1/175 times span, for spans less than 11 feet 8-1/4 inches (3.6 m).
- E. Structural: Test according to ASTM E 330 as follows:
- 1. When tested at positive and negative wind-load design pressures, assemblies do not evidence deflection exceeding specified limits.
 - 2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
 - 3. Test Durations: As required by design wind velocity, but not less than 240 seconds.
- F. Air Infiltration: Test according to ASTM E 283 for infiltration as follows:
- 1. Fixed Framing and Glass Area:
 - a. Maximum air leakage of 0.06 cfm/sq. ft. (0.30 L/s per sq. m) at a static-air-pressure differential of 6.24 lbf/sq. ft. (300 Pa) Water

Penetration under Static Pressure: Test according to ASTM E 331 as follows:

2. No evidence of water penetration through fixed glazing and framing areas when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 15 lbf/sq. ft. (720 Pa).
- G. Water Penetration under Dynamic Pressure: Test according to AAMA 501.1 as follows:
1. No evidence of water penetration through fixed glazing and framing areas when tested at dynamic pressure equal to 20 percent of positive wind-load design pressure, but not less than 15 lbf/sq. ft. (720 Pa).
 2. Maximum Water Leakage: No uncontrolled water penetrating assemblies or water appearing on assemblies' normally exposed interior surfaces from sources other than condensation. Water leakage does not include water controlled by flashing and gutters, or water that is drained to exterior.
- H. Interstory Drift: Accommodate design displacement of adjacent stories indicated.
1. Design Displacement: As indicated on the MMC Bean 2 roof project interim progress set dated March 15, 2013.
 2. Test Performance: Complying with criteria for passing based on building occupancy type when tested according to AAMA 501.4 at design displacement and 1.5 times the design displacement.
- I. Seismic Performance: Structural-sealant-glazed curtain walls shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
1. Seismic Drift Causing Glass Fallout: Complying with criteria for passing based on building occupancy type when tested according to AAMA 501.6 at design displacement and 1.5 times the design displacement.
 2. Vertical Interstory Movement: Complying with criteria for passing based on building occupancy type when tested according to AAMA 501.7 at design displacement and 1.5 times the design displacement.
- J. Energy Performance: Certify and label energy performance according to NFRC as follows:
1. Thermal Transmittance (U-factor): Fixed glazing and framing areas shall have U-factor of not more than 0.69 Btu/sq. ft. x h x deg F (3.92 W/sq. m x K) as determined according to NFRC 100.
 2. Solar Heat Gain Coefficient: Fixed glazing and framing areas shall have a solar heat gain coefficient of no greater than 0.35 as determined according to NFRC 200.

3. Condensation Resistance: Fixed glazing and framing areas shall have an NFRC-certified condensation resistance rating of no less than 15 as determined according to NFRC 500.
- K. Noise Reduction: Test according to ASTM E 90, with ratings determined by ASTM E 1332, as follows.
 1. Outdoor-Indoor Transmission Class: Minimum 26.
- L. Blast Resistance:
 1. Hazard Rating: No Break per ASTM F 1642.
 2. Performance Condition: 5 per GSA-TS01.
- M. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes:
 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
 2. Thermal Cycling: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5.
 - a. High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of 180 deg F (82 deg C).
 - b. Low Exterior Ambient-Air Temperature: -10 deg F (minus 28 deg C).
- N. Structural-Sealant Joints:
 1. Designed to carry gravity loads of glazing.
 2. Designed to produce tensile or shear stress of less than 20 psi (138 kPa).
- O. Structural Sealant: Capable of withstanding tensile and shear stresses imposed by structural-sealant-glazed curtain walls without failing adhesively or cohesively. When tested for preconstruction adhesion and compatibility, cohesive failure of sealant shall occur before adhesive failure.
 1. Adhesive failure occurs when sealant pulls away from substrate cleanly, leaving no sealant material behind.
 2. Cohesive failure occurs when sealant breaks or tears within itself but does not separate from each substrate because sealant-to-substrate bond strength exceeds sealant's internal strength.

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2.2 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Kawneer North America the 225 system 4 sided SSG system or comparable product by one of the following:
1. Oldcastle, Inc.
 2. YKK AP America Inc.

2.3 FRAMING

- A. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
1. Glazing System: Retained with structural sealant on four sides.
 2. Finish: High-performance organic finish.
 3. Fabrication Method: Factory-fabricated system.
- B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with non-staining, nonferrous shims for aligning system components.
- C. Materials:
1. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - a. Sheet and Plate: ASTM B 209 (ASTM B 209M).
 - b. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).
 - c. Extruded Structural Pipe and Tubes: ASTM B 429/B 429M.
 - d. Structural Profiles: ASTM B 308/B 308M.
 2. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM, and prepare surfaces according to applicable SSPC standard.
 - a. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
 - b. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
 - c. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

2.4 GLAZING

- A. Glazing: Comply with Section 08 80 00 "Glazing."
- B. Structural Glazing Sealants: ASTM C 1184, chemically curing silicone formulation that is compatible with system components with which it comes in contact, specifically formulated and tested for use as structural sealant and approved by structural-sealant manufacturer for use in curtain-wall assembly indicated.
 - 1. Color: As selected by Architect from manufacturer's full range of colors.
- C. Weather-seal Sealants: ASTM C 920 for Type S; Grade NS; Class 25; Uses NT, G, A, and O; chemically curing silicone formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weather-seal-sealant, and structural-sealant-glazed curtain-wall manufacturers for this use.
 - 1. Color: Match structural sealant.
- D. Glazing Gaskets: Comply with Section 08 80 00 "Glazing."
- E. Glazing Sealants: Comply with Section 08 80 00 "Glazing."
- F. Sealants used inside the weatherproofing system shall have a VOC content of 250 g/L or less.
- G. Sealants used inside the weatherproofing system shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.5 ACCESSORIES

- A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories compatible with adjacent materials.
 - 1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
 - 2. Reinforce members as required to receive fastener threads.
 - 3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.
- B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch (25.4 mm) that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.

1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123/A 123M or ASTM A 153/A 153M requirements.
- C. Concealed Flashing: Dead-soft, 0.018-inch- (0.457-mm-) thick stainless steel, ASTM A 240/A 240M of type recommended by manufacturer.
- D. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

2.6 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- C. Fabricate components that, when assembled, have the following characteristics:
 1. Profiles that are sharp, straight, and free of defects or deformations.
 2. Accurately fitted joints with ends coped or mitered.
 3. Physical and thermal isolation of glazing from framing members.
 4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 5. Provisions for field replacement of glazing from exterior.
 6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
 7. Components curved to indicated radii.
- D. Factory-Assembled Frame Units:
 1. Rigidly secure non-movement joints.
 2. Prepare surfaces that are in contact with structural sealant according to sealant manufacturer's written instructions, to ensure compatibility and adhesion.
 3. Preparation includes, but is not limited to, cleaning and priming surfaces.
 4. Seal joints watertight unless otherwise indicated.
 5. Install glazing to comply with requirements in Section 08 80 00 "Glazing."

- E. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.7 ALUMINUM FINISHES

- A. High-Performance Organic Finish: Four-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF or FEVE resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - 1. Color and Gloss: As selected by Architect from manufacturer's full range.

2.8 SOURCE QUALITY CONTROL

- A. Structural Sealant: Perform quality-control procedures complying with ASTM C 1401 recommendations including, but not limited to, assembly material qualification procedures, sealant testing, and assembly fabrication reviews and checks.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare surfaces that are in contact with structural sealant according to sealant manufacturer's written instructions to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.

3.3 INSTALLATION

- A. General:
 - 1. Comply with manufacturer's written instructions.
 - 2. Do not install damaged components.
 - 3. Fit joints to produce hairline joints free of burrs and distortion.
 - 4. Rigidly secure non-movement joints.

5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
 6. Where welding is required, weld components in concealed locations to minimize distortion or discoloration of finish. Protect glazing surfaces from welding.
 7. Seal joints watertight unless otherwise indicated.
- B. Metal Protection:
1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with primer, applying sealant or tape, or installing nonconductive spacers as recommended by manufacturer for this purpose.
 2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- C. Install components plumb and true in alignment with established lines and grades.
- D. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.
- E. Install glazing as specified in Section 08 80 00 "Glazing."
1. Prepare surfaces that are in contact with structural sealant according to sealant manufacturer's written instructions, to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.
- F. Install weather-seal sealant according to Section 07 92 00 "Joint Sealants" and according to sealant manufacturer's written instructions, to produce weatherproof joints. Install joint filler behind sealant as recommended by sealant manufacturer.

3.4 ERECTION TOLERANCES

- A. Erection Tolerances: Install structural-sealant-glazed curtain walls to comply with the following maximum tolerances:
1. Plumb: 1/8 inch in 10 feet (3.2 mm in 3 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
 2. Level: 1/8 inch in 20 feet (3.2 mm in 6 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
 3. Alignment:

- a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch (12.7 mm) wide, limit offset from true alignment to 1/16 inch (1.6 mm).
 - b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch (12.7 to 25.4 mm) wide, limit offset from true alignment to 1/8 inch (3.2 mm).
 - c. Where surfaces are separated by reveal or protruding element of 1 inch (25.4 mm) wide or more, limit offset from true alignment to 1/4 inch (6 mm).
4. Location: Limit variation from plane to 1/8 inch in 12 feet (3.2 mm in 3.6 m); 1/2 inch (12.7 mm) over total length.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Test Area: Perform tests on one bay at least 30 feet (9.1 m), by one story representative areas of structural-sealant-glazed curtain walls.
- C. Field Quality-Control Testing: Perform the following test on representative areas of structural-sealant-glazed curtain walls.
 1. Water-Spray Test: Before installation of interior finishes has begun, areas designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration.
 - a. Perform a minimum of three tests in areas as directed by Architect.
 - b. Perform tests in each test area as directed by Architect. Perform at least three tests, prior to 10, 35 and 70 percent completion.
 2. Air Infiltration: ASTM E 783 at 1.5 times the rate specified for laboratory testing in "Performance Requirements" Article but not more than 0.50 cfm/sq. ft. (2.25 L/s per sq. m).
 - a. Perform a minimum of three tests in areas as directed by Architect.
 - b. Perform tests in each test area as directed by Architect. Perform at least three tests, prior to 10, 35 and 70 percent completion.
 3. Water Penetration: ASTM E 1105 at a minimum uniform and cyclic static-air-pressure differential of 0.67 times the static-air-pressure differential specified for laboratory testing in "Performance Requirements" Article, but not less than 6.24 lbf/sq. ft. (300 Pa), and shall not evidence water penetration.

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- D. Structural-Sealant Adhesion: Test structural sealant according to recommendations in ASTM C 1401, Destructive Test Method A, "Hand Pull Tab (Destructive)," Appendix X2.
 - 1. Test a minimum of eight areas on each building facade.
 - 2. Repair installation areas damaged by testing.
- E. Structural-sealant-glazed curtain walls will be considered defective if they do not pass tests and inspections.
- F. Prepare test and inspection reports.

END OF SECTION

SECTION 08 80 00 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
 - 1. Windows.
 - 2. Doors.
 - 3. Glazed curtain walls.
 - 4. Interior borrowed lites.
 - 5. Clerestory lites
- B. Related Sections:
 - 1. Section 08 42 29.33 "Swinging Automatic Entrances."
 - 2. Section 08 44 23 "Structural Sealant Glazed Curtain Walls".
 - 3. Section 08 83 00 "Mirrors."

1.2 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.
- C. Interspace: Space between lites of an insulating-glass unit.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
 - 1. Design Snow Loads: As indicated on the Structural Drawings.
 - 2. Vertical Glazing: For glass surfaces sloped 15 degrees or less from vertical, design glass to resist design wind pressure based on glass type factors for short-duration load.
 - 3. Sloped Glazing: For glass surfaces sloped more than 15 degrees from vertical, design glass to resist each of the following combinations of loads:

- a. Outward design wind pressure minus the weight of the glass. Base design on glass type factors for short-duration load.
 - b. Inward design wind pressure plus the weight of the glass plus half of the design snow load. Base design on glass type factors for short-duration load.
 - c. Half of the inward design wind pressure plus the weight of the glass plus the design snow load. Base design on glass type factors for long-duration load.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

1.4 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glazing material type, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
1. Testing will not be required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.
 2. Use ASTM C 1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
 3. Test no fewer than eight Samples of each type of material, including joint substrates, shims, sealant backings, secondary seals, and miscellaneous materials.
 4. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
 5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including the use of specially formulated primers.

1.5 ACTION SUBMITTALS

- A. Product Data: For each glass product and glazing material indicated.
- B. Samples: For each type of the following products; 12 inches (300 mm) square.
1. Patterned glass.
 2. Insulating glass.
- C. Glazing Accessory Samples: For gaskets, sealants and colored spacers, in 12-inch (300-mm) lengths. Install sealant Samples between two strips of material representative in color of the adjoining framing system.
- D. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

- E. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For glass testing agency and sealant testing agency.
- B. Product Certificates: For glass and glazing products, from manufacturer.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for insulating glass, glazing sealants and glazing gaskets.
 - 1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.
- D. Preconstruction adhesion and compatibility test report.
- E. Warranties: Sample of special warranties.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.
- B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.
- C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.
- D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
- E. Source Limitations for Glass: Obtain insulating glass from single source from single manufacturer for each glass type.
- F. Basis-of-Design Product: Subject to compliance with requirements, provide Viracon 800 Park Drive Owatonna, MN 55060 company Source Limitations for Glazing and Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.
- G. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - 1. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

- H. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
 - I. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.
 - J. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Install glazing in mockups specified in Section 08 44 13 "Glazed Aluminum Curtain Walls" to match glazing systems required for Project, including glazing methods.
 - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
 - K. Pre-installation Conference: Conduct conference at Project site.
 - 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 2. Review temporary protection requirements for glazing during and after installation.
- 1.8 DELIVERY, STORAGE, AND HANDLING
- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
 - B. Comply with insulating-glass manufacturer's written recommendations for venting and sealing units to avoid hermetic seal ruptures due to altitude change.
- 1.9 PROJECT CONDITIONS
- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
 - 1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or below 40 deg F (4.4 deg C).
- 1.10 WARRANTY
- A. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which insulating-glass manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is

defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GLASS PRODUCTS, GENERAL

- A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.
 1. Minimum Glass Thickness for Exterior Lites: Not less than 6.0 mm thick.
 2. Thickness of Tinted Glass: Provide same thickness for each tint color indicated throughout Project.
- B. Strength: Where float glass is indicated, provide annealed float glass, Kind HS heat-treated float glass, or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened glass is indicated, provide Kind HS heat-treated float glass or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where fully tempered glass is indicated, provide Kind FT heat-treated float glass.
- C. Windborne-Debris-Impact Resistance: Provide exterior glazing that passes enhanced-protection testing requirements in ASTM E 1996 for Wind Zone 3 when tested according to ASTM E 1886. Test specimens shall be no smaller in width and length than glazing indicated for use on the Project and shall be installed in same manner as glazing indicated for use on the Project.
 1. Large-Missile Test: For all glazing, regardless of height above grade.
- D. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
 1. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
 2. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).
 3. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
 4. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.2 GLASS PRODUCTS

- A. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.

2.3 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190, and complying with other requirements specified.
 - 1. Sealing System: Dual seal, with polyisobutylene and polyurethane primary and secondary.
 - 2. Spacer: Polypropylene covered stainless steel in color selected by Architect .
 - 3. Desiccant: Molecular sieve or silica gel, or blend of both.
- B. Glass: Comply with applicable requirements in "Glass Products" Article as indicated by designations in "Insulating-Glass Types" Article and in "Insulating-Laminated-Glass Types" Article.

2.4 GLAZING GASKETS

- A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:
 - 1. Thermoplastic polyolefin rubber complying with ASTM C 1115.
- B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned thermoplastic polyolefin rubber gaskets complying with ASTM C 509, Type II, black; of profile and hardness required to maintain watertight seal.
 - 1. Application: Use where soft compression gaskets will be compressed by inserting dense compression gaskets on opposite side of glazing or pressure applied by means of pressure-glazing stops on opposite side of glazing.

2.5 GLAZING SEALANTS

- A. General:
 - 1. Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 - 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 - 3. Sealants used inside the weatherproofing system, shall have a VOC content of not more than 250 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 4. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.
- B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BASF Building Systems; Omniseal 50.

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- b. Dow Corning Corporation; 795
- c. GE Advanced Materials - Silicones; UltraPruf II SCS2900.
- d. May National Associates, Inc.; Bondaflex Sil 295.
- e. Pecora Corporation; 895.
- f. Polymeric Systems, Inc.; PSI-641.
- g. Sika Corporation, Construction Products Division; SikaSil-C995.
- h. Tremco Incorporated; Spectrem 2

2.6 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.
- G. Perimeter Insulation for Fire-Resistive Glazing: Product that is approved by testing agency that listed and labeled fire-resistant glazing product with which it is used for application and fire-protection rating indicated.

2.7 FABRICATION OF GLAZING UNITS

- A. Basis of Design for exterior glass is per VIRCON VE1-85
- B. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
- C. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.
- D. Grind smooth and polish exposed glass edges and corners.

2.8 INSULATING-GLASS TYPES

- A. Glass Type GL-01: Ceramic-coated, insulating HS/HS Silkscreen vision glass.
1. Overall Unit Thickness: 1 inch (25 mm).
 2. Thickness of Each Glass Lite: 6.0 mm.
 3. Outdoor Lite: Fully tempered float glass.
 4. Interspace Content: Argon.
 5. V175 - High Opacity White Viraspan #2 VE-40 Screen #2030
 6. Indoor Lite: Fully tempered float glass
 7. Coating Location: Second surface.
 8. VLT: 59%
 9. R Out: 18%
 10. SHGC: 0.44
 11. LSG: 1.34
 12. Winter Nighttime U-Factor: .31 maximum.
 13. Summer Daytime U-Factor: .29 maximum.
 14. Solar Heat Gain Coefficient: .44 maximum.
 15. Provide safety glazing labeling.
- B. Glass Type GL-02: Ceramic-coated, insulating spandrel glass.
1. Overall Unit Thickness: 1 inch (25 mm).
 2. Thickness of Each Glass Lite: 6.0 mm.
 3. Outdoor Lite: Fully tempered Clear Monolithic HS Spandrel glass. V175 - High Opacity white Viraspan
 4. Interspace Content: Argon.
 5. Interior Lite: Fully tempered float glass.
 6. Low-E Coating: Pyrolytic or sputtered on third surface.
 7. Opaque Coating Location: Second surface.
 8. Winter Nighttime U-Factor: .31 maximum.
 9. Summer Daytime U-Factor: .29 maximum.
 10. Provide safety glazing labeling.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 2. Presence and functioning of weep systems.
 3. Minimum required face and edge clearances.
 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that will leave visible marks in the completed work.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.
- C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch (3-mm) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

- J. Set glass lites with proper orientation so that coatings face exterior or interior as specified.
 - K. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
 - L. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.
- 3.4 SEALANT GLAZING (WET)
- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
 - B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
 - C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.
- 3.5 LOCK-STRIP GASKET GLAZING
- A. Comply with ASTM C 716 and gasket manufacturer's written instructions. Provide supplementary wet seal and weep system unless otherwise indicated.
- 3.6 CLEANING AND PROTECTION
- A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.
 - B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.
 - C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.
 - D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

Maine Medical Center
Bean 2 Roof Addition
CD Pricing Set
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- E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION