THESE MINUTES ARE SUBJECT TO APPROVAL BY THE PUBLIC BUILDING AND SITE COMMISSION.

Minutes of the Regular Meeting of the Public Building and Site Commission held on Tuesday, March 28, 2017 at the Reed Intermediate School. Chairman Robert Mitchell called the meeting to order at 7:00 p.m.

PRESENT: Robert Mitchell, Rick Matschke, Bob Edwards, Mike Murphy, Roger Letso, Phil Clark

ABSENT: Tom Catalina, Anthony D'Angelo, Joseph Borst

ALSO PRESENT: Clerk of the Works Bill Knight, Geralyn Hoerauf from STV/Diversified Project Management, Rusty Malick & Kevin McFarland of Quisenberry Aracari Associates, Chuck Boos of Kaestle Boos, Kent McCoy of Smith Edwards McCoy Architects, Al Howat of Newfield Construction, First Selectman Pat Llodra, Michelle Hiscavich, 2 members of the public, one member of the press

PUBLIC PARTICIPATION: None.

APPROVAL OF MINUTES OF February 28, 2017.
Mr. Matschke moved to approve the minutes of the February 28, 2017 meeting. Second by Mr. Edwards. Motion passed.

Mr. Mitchell moved Community Center Status to first topic due to Legislative Council's meeting at 7:30 p.m. which Mrs. Llodra will be attending.

COMMUNITY CENTER
Status
Rusty Malick referred to what was discussed at last month's meeting. The design options were presented to the BOS and the key component of discussion was Site B and the presence of tunnels and utilities. Due to costs the discussion moved toward Site C. However, a slab and foundation still exists at that location after removal of Canaan House which would also be costly to remove for the new building. The BOS decided to stay with Site B.

The square footage was reviewed as follows:

Community Center Space	13,865
Pool & Supp.	14,200
Mech. & Circ.	5,170
Total Building Area:	33,235

Mr. Malick feels they are within the budget established; a presentation will be made at the April 3rd BOS meeting at which time Caldwell & Walsh will have more refined numbers. After the referendum, it will be clear whether to incorporate the future Senior

Center addition into the design. Mr. Mitchell asked whether a presentation was made to Sustainable Energy Commission to review possible use of solar panels. Mr. Malick said they will be meeting when a design option has been confirmed. Mr. Mitchell received an email regarding the sub-surface of the site and asked Mr. Malick to review it tomorrow.

Mrs. Llodra said that Public Works will do as much as possible on the site work to save some dollars on the project. She also stated that the intent is to develop a footprint including the Senior Center (whether that project is approved now or later).

Community Center Invoices:

Mr. Matschke moved to recommend approval of Brautigam Land Surveyors invoice #282438 in the amount of $5,347.50. Second by Mr. Edwards. Motion passed.

Mr. Matschke moved to recommend approval of Quisenberry Arcari invoice #9670 in the amount of $16,500.00. Second by Mr. Edwards. Motion passed.

Mr. Matschke moved to recommend approval of Caldwell Walsh invoice #CT2842-01 in the amount of $5,000.00. Second by Mr. Edwards. Motion passed.

Mr. Letso moved to recommend approval of DPM invoice #90008941 in the amount of $10,600.00. Second by Mr. Matschke. Motion passed.

NHS AUDITORIUM RENOVATIONS PROJECT

Status

Mr. Mitchell stated he will be going to the site every other week and demolition looks 99% complete other than ductwork. When ceiling was removed, it was discovered that the ductwork is fiberglass and not sheet metal. It is damaged with broken connections. The Facilities Department was aware of the condition of the existing ductwork; however, the budget did not allow for replacement/repairs at the time.

Mr. Howat presented a proposed change order to remove and replace the fiberglass supply ductwork which included a timeline with a completion date of 9/6/17. Mr. Mitchell said the work has to be completed by the end of July. Mr. Howat will work on the red items and shorten the timeline. Mr. Mitchell stated the key is to get firm numbers fast. In order to stay on schedule, the ductwork materials and equipment change order can be approved with a new cover letter from Mr. Howat adjusting the figures to include only materials.

Mr. Edwards moved to recommend approval of purchase of materials not to exceed $26,000.00 for fiberglass ductwork. Second by Mr. Matschke. Motion passed.

Mr. Mitchell asked Mr. McCoy about the status of the seating. The State requires us to offer 3 alternative manufacturers because it is a public bid. The Irwin Marquis seating was originally chosen as the preferred chair. Ms. Hiscavich stated that seating has

always been an issue along with acoustics. Alternate seating has been looked at and Mr. Mitchell asked Ms. Hiscavich to review it again. Specific documentation needs to be made if the alternate is not an appropriate substitution.

NHS Auditorium Renovations Invoices

Mr. Matschke moved to recommend approval of DPM invoice #90008936 in the amount of $4,575.00. Second by Mr. Edwards. Motion passed.

SANDY HOOK ELEMENTARY SCHOOL

Status

Mr. Mitchell reported that there is only one punch list item remaining; need to wait for warm weather to complete. Consigli still needs to submit the final financial accounting and Application for Payment. Once received, the close out documentation can be submitted to the state.

Sandy Hook School Invoices:

Mr. Matschke moved to recommend approval of DPM invoice #90008984 in the amount of $1,705.00. Second by Mr. Edwards. Motion passed.

Mr. Edwards moved to recommend approval of Brautigam Land Surveyors invoice #282522 in the amount of $150.00. Second by Mr. Matschke. Motion passed.

EDMOND TOWN HALL BOILER REPLACEMENT

Status

Mr. Boos reported that the door is in place but still waiting for kick plate. A final C.O. is in place.

STATUS OF NHS "ROOF" LEAKS & REPAIR OPTIONS

Mr. Boos reported that no mold was found during Fuss & O'Nell' testing of areas (see attached report). The water damage is limited to surface stains. Mr. Boos explained his project approach in detail as well as the estimated budget; Mr. Mitchell stated that there is a push from the BOS to get the project done this summer. This will eliminate any potential environmental remediation. Mr. Mitchell asked Mr. Boos to prepare a proposal that he can present to Pat Llodra and Bob Tait. Attorney Monte Frank can then review and the project can go forward. Funding sources will be established for this phase of the project.

COMMISSION OFFICERS SELECTION

Mr. Mitchell was named Chairman at last month's meeting; he requested that Bob Edwards be nominated for Vice Chairman.

Mr. Matschke moved to recommend nomination of Bob Edwards as Vice Chairman of the Public Building & Site Committee. Second by Mr. Letso. Motion passed.

The next meeting is scheduled for April 25, 2017.

ADJOURNMENT

Mr. Edwards made a motion to adjourn the meeting at 8:52 p.m. Second by Mr. Matschke. Meeting adjourned.

Respectfully submitted,

Ann M. LoBosco, Clerk

Newtown Community Center Project
Project Status Update
March 22, 2017

Newtown Community Center

Status of Preconstruction Phase – Site Investigations

- Survey work is complete and a final survey drawing has been received from Brautigam
- Soil borings are complete and a geotechnical report has been received from Welti Geotechnical, PC
- R.W. Bartley Associates has provided abatement information for the buildings previously located on the project site.
- The structural engineer is reviewing all data and foundation design is underway

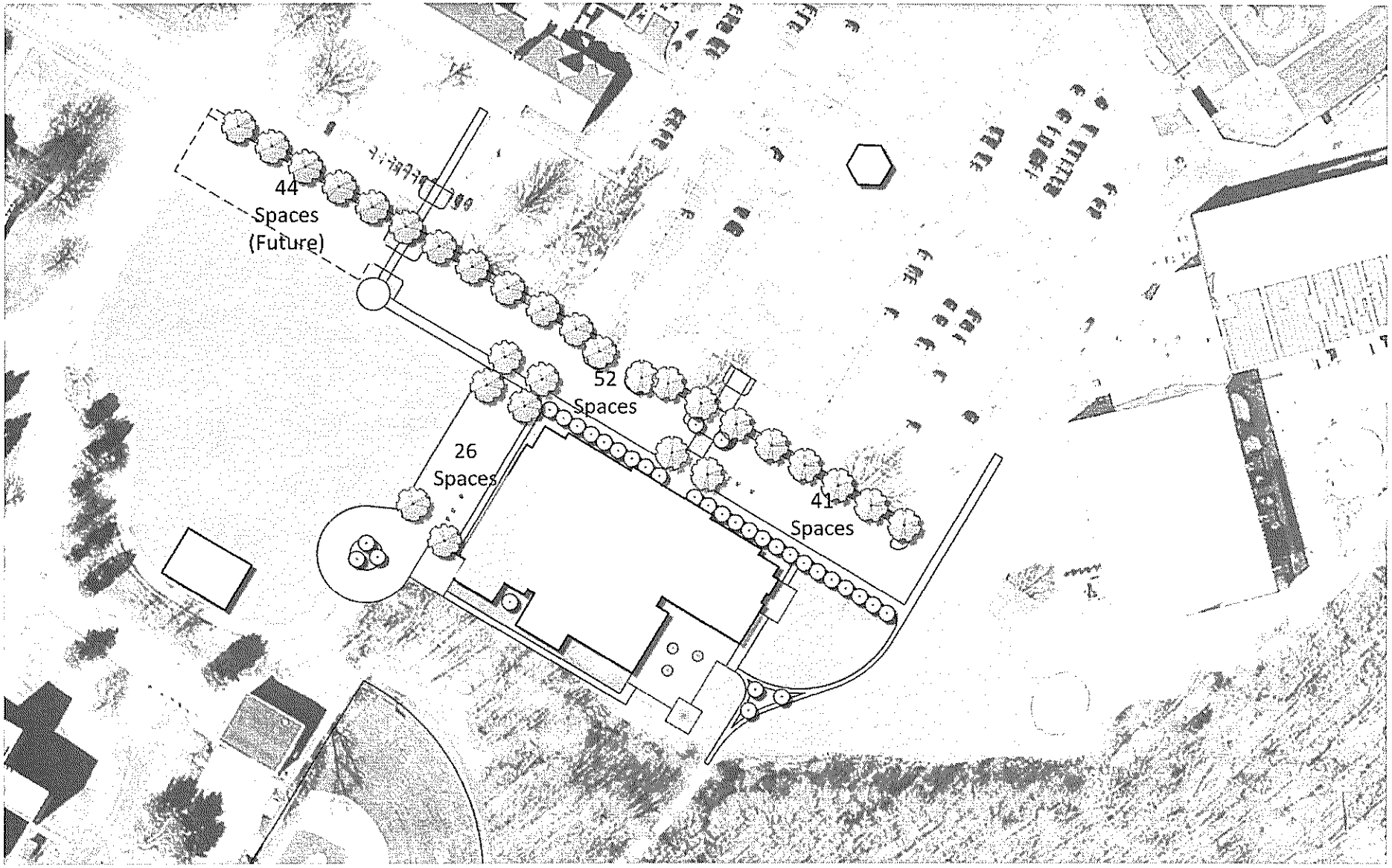
Status of Preconstruction Phase – Schematic Design

- The project team presented an early schematic design package to the Board of Selectmen on March 6. The designs presented included alternative floor plans for the community spaces, diagrammatic representations of pool alternatives and also a preliminary view of building elevations. A space program tabulation was also reviewed.
- The Space Program was approved and the team was directed to proceed with schematic design based on the types and sizes of spaces presented.
- A copy of the presentation materials is attached to this report.
- After analyzing the results of the site investigation work, the project team reviewed the site plan and proposed building location with the Board of Selectmen on March 20th to confirm that "Site B" is the designated location

Next Steps

- The project team continues to refine the schematic design package based on input from the BoS and a final Schematic Design will be presented to the BoS at the May 1st meeting. This package will be presented to the PBSC on April 25th for review and comment
- The Schematic Design package will include narratives describing proposed MEP, Life Safety, structural, pool filter/equipment systems and will be accompanied by a schematic design phase preliminary cost estimate to confirm that the project design is within the budget

- The project team continues to meet weekly to coordinate progress on the Schematic Design Phase; the Owner's Team participates on a bi-weekly basis or as needed
- A current project budget is attached



Proposed Site Plan

Town of Newtown | Newtown Community Center

Newtown Community Center

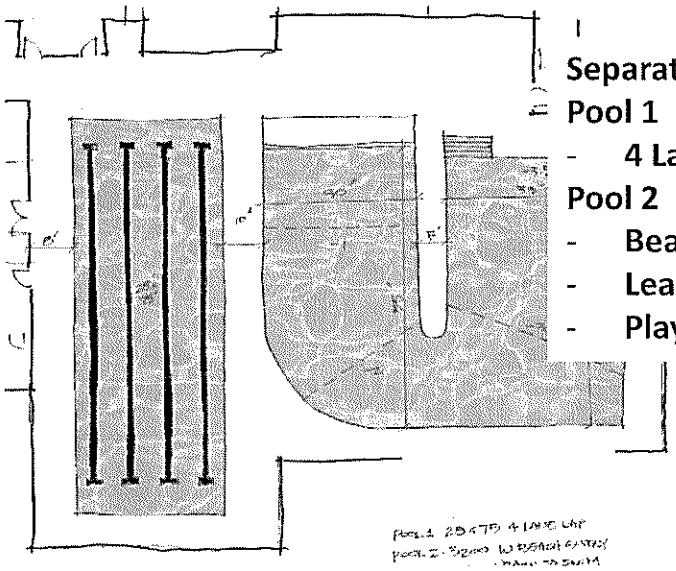
Master Program

Function	Suite	Room Name			Area (net)
	Space Needs				
Lobby	Community Center Main Lobby / Entry				
Lobby		Vestibule			100
Lobby		Lobby			500
Food		Café / Vending			200
Admin	Community Center Administrative Offices				
Admin		Reception Desk			75
Admin		Open Office			750
Admin			Sec./Receptionist		
Admin			Asst. Secretary		
Admin			P/T Asst.		
Admin			P/T Office Asst.		
Admin			Program Supervisors		
Admin			Copy/Files/Work Areas		
Admin		Director		Amy M.	160
Admin		Asst. Director		Roseann R.	125
Admin		Asst. Direstor - Aquatics		*CPO. Future*	125
Admin		Asst. Director - Marketting		*Future*	125
Admin		Admin. Asst. - Finance			125
Admin		Rec. Supervisor		*Future*	125
Admin		Sm. Conf. Room			175
Admin		Elec./Data Closet			50
Admin		Storage			50
Admin		Storage			100
MP Room	Multi-Purpose Room				
MP Room		Room A			1,000
MP Room		Room B			1,000
MP Room		Room C			1,000
MP Room		Room D	(Pool Party Room)		1,000
MP Room		Chair / Storage			150
MP Room		Chair / Storage			150
MP Room		Misc. Storage			100
Food	Kitchen				
Food		Kitchen			800
Food		Dry Storage			50
Food		Office			40
Classroom		General Classroom 1		CR1	800
Classroom		General Classroom 2		CR2	800
Classroom		Soft Classroom		CR3	500
Classroom		A/C Classroom 1			800
Classroom		A/C Storage			100
Classroom		A/C Storage / Future Kiln			50
Toilets	Toilets				
Toilets		Men's Toilet			200
Toilets		Women's Toilet			200
Toilets		Exterior Men's Toilet			125
Toilets		Exterior Women's Toilet			125

Newtown Community Center

Master Program

Function	Suite	Room Name			Area (net)
	Space Needs				
Service	Building Services				
Service		Electric Room			100
Service		IT/Data Closet			100
Service		Mechanical Room			175
Service		Water / Fire Service			50
Service		Custrodial Office/Work Room/Building Storage			250
Service		Custodial Closet		Remote	50
Pool	Natatorium				
Pool		Lap Pool		4 Lanes (7' x 75')	2,100
Pool		Recreational Pool			4,000
Pool		Deck Space			2,500
Pool		Life Guard Station			50
Pool		Life Guard Office			100
Pool		Pool Eq. Storage			150
Pool		Small Eq. Storage			100
Pool		Pool Mech. Room.			400
Pool		Family Locker Room		75	1,100
Pool		Men's Locker Room		60	850
Pool		Women's Locker Room		60	850
Fitness		Dance/Exersize 1			600
Fitness		Dance/Exersize 2			600
Fitness		Storage			100
Fitness		Storage			100
				Subtotal - Phase 1	26,100
				Phase 1 (w/ Gross-up)	32,625

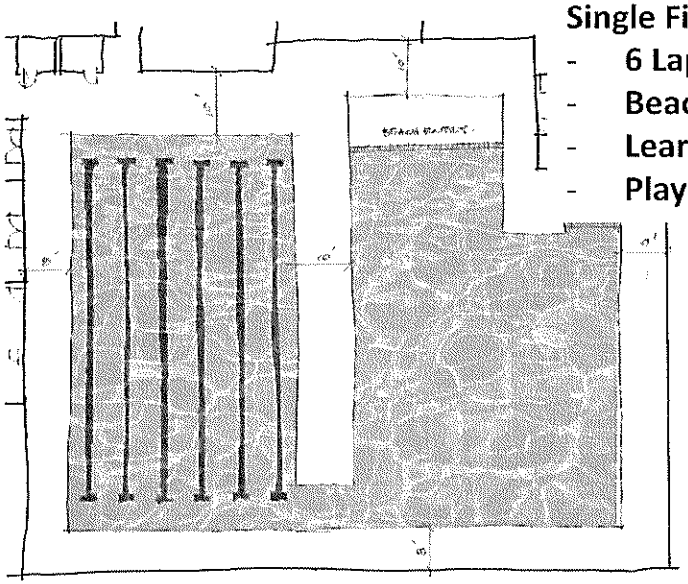


Separate Filtration
Pool 1
- 4 Lap Lanes

Pool 2
- Beach Entry
- Learn to Swim
- Play Features

Separate Filtration
Pool 1
- Toddler "Beach"

Pool 2
- 6 Lap Lanes
- Beach Entry
- Larger Play Area
- ADA Lift or Ramp



Single Filtration
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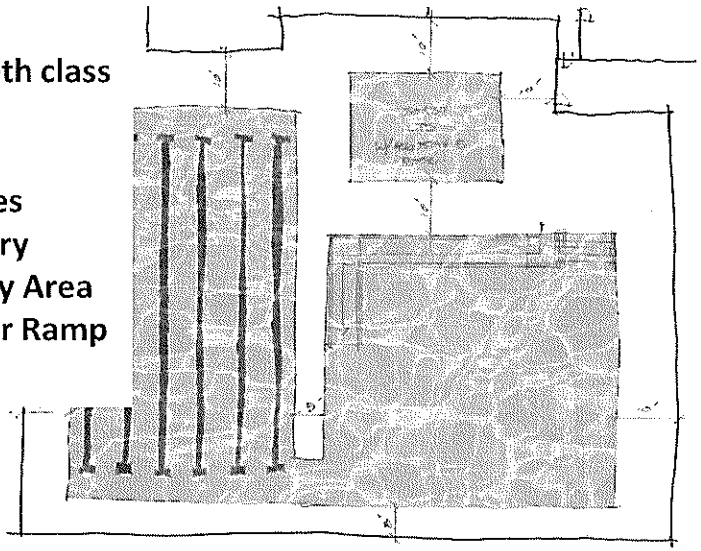
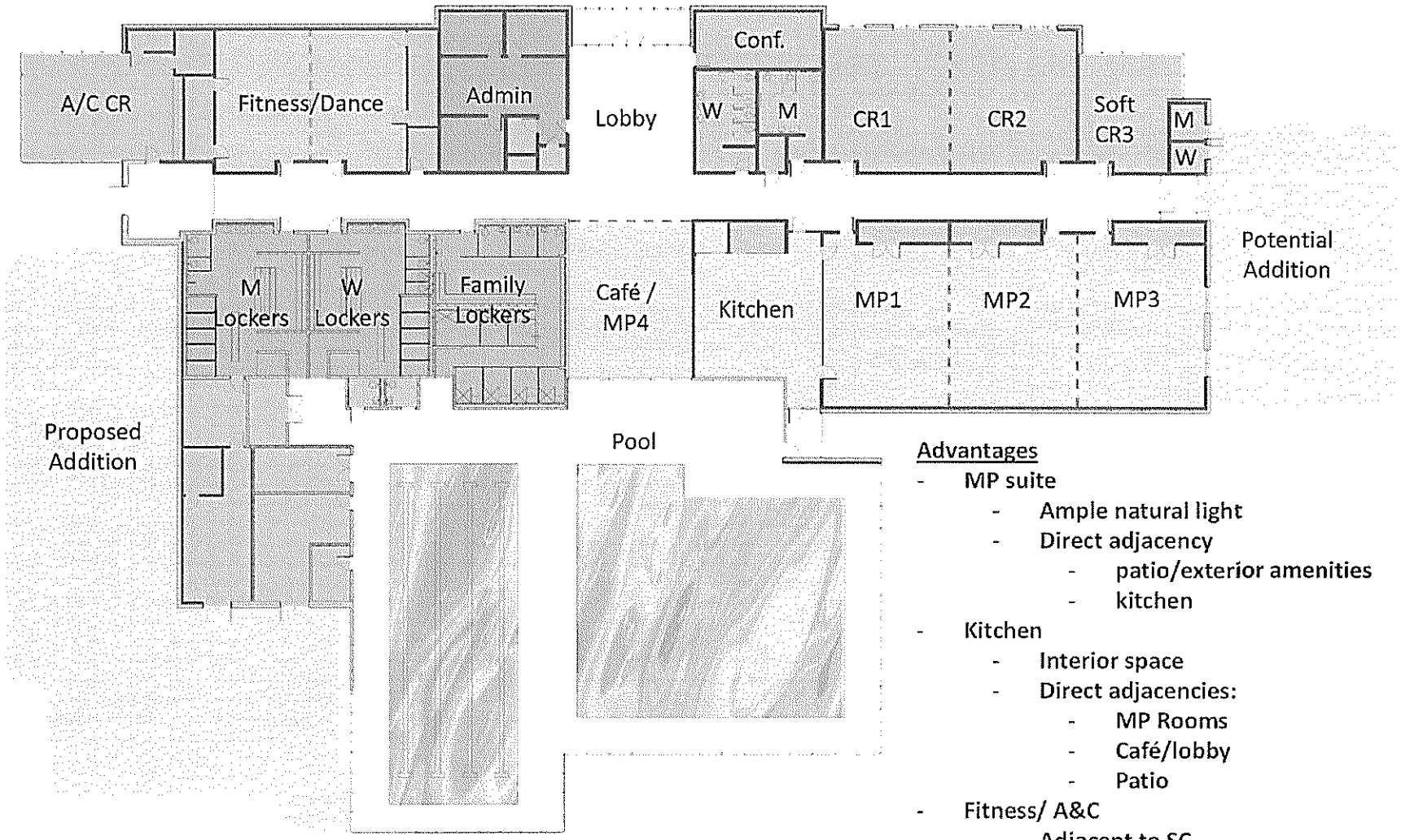


TOWN OF NEWTOWN · DESIGN · STVI · DPM

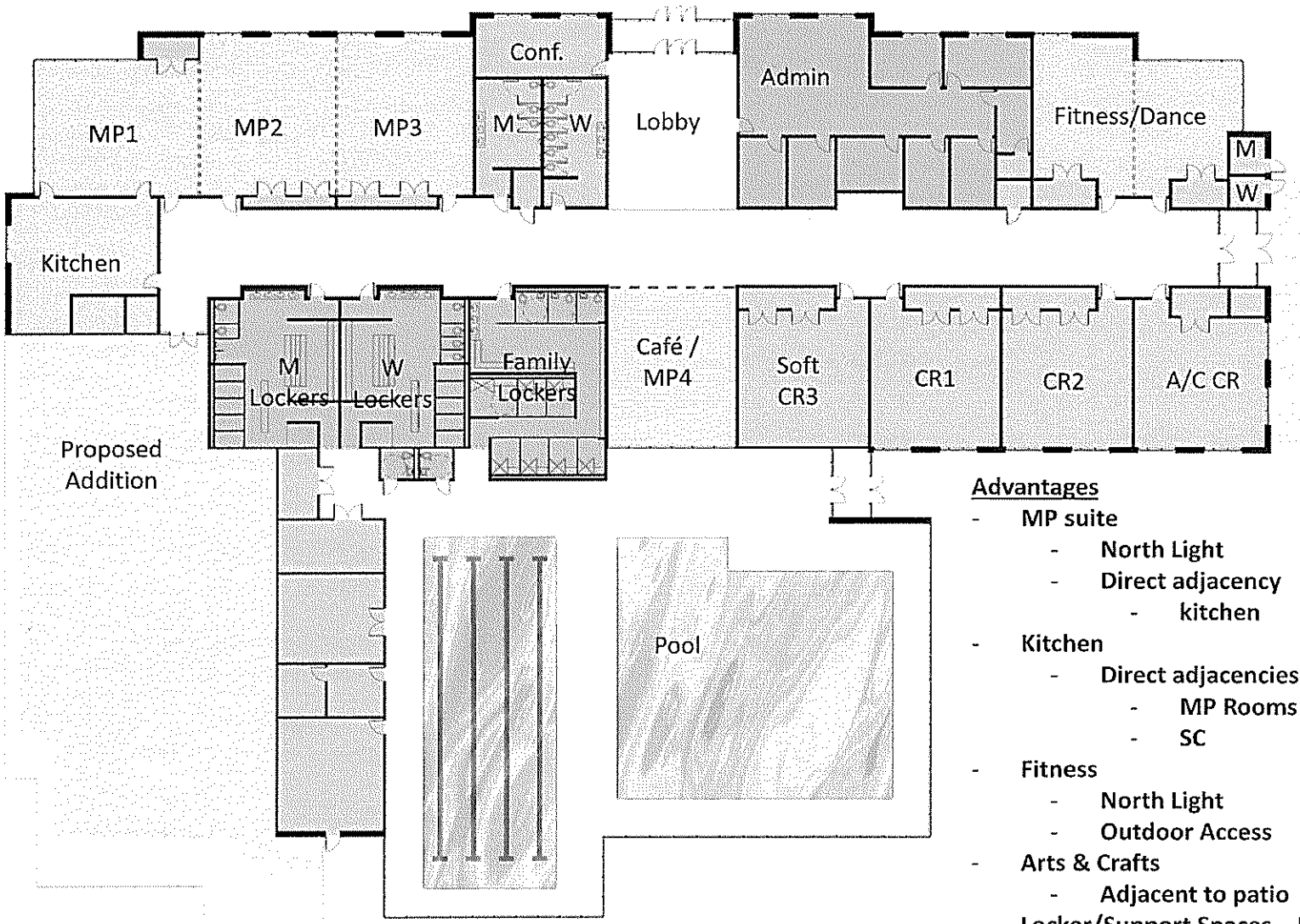
Natatorium



Advantages

- MP suite
  - Ample natural light
  - Direct adjacency
    - patio/exterior amenities
    - kitchen
- Kitchen
  - Interior space
  - Direct adjacencies:
    - MP Rooms
    - Café/lobby
    - Patio
- Fitness/ A&C
  - Adjacent to SC
  - North Light
  - Outdoor Access
- Locker/Support Spaces – Interior to building

Concept Floor Plan – Option A



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- Arts & Crafts
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Concept Floor Plan – Option C

Town of Newtown CT

Newtown Community Center

Preliminary Project Budget

February 28, 2017

ITEM DESCRIPTION	BUDGET	CURRENT TOTAL BUDGET		Notes
Pre-Project Costs		$ 210,922		
2016 Project				
Consultants		$ 1,402,600		
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Architect	$ 857,500			
Commissioning Agent	$ 35,000			
CM Preconstruction Services	$ 35,000			
Clerk of the Works	$ 48,000			
Legal	$ 5,000			
Special Inspections & Testing	$ 50,000			
Fees		$ 73,500		
Bond Costs	$ 30,000			
Permits	$ 3,500			
Builders Risk Insurance	$ 15,000			
Utility Connections	$ 20,000			
Bid/Advertising/Repro	$ 5,000			
Construction		$ 11,650,000		
CM-R GMP	$ 11,650,000			
Furniture & Equipment		$ 400,000		
Furniture	$ 275,000			
Technology	$ 75,000			
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Project Contingency	10%	$ 1,262,978		
Total Project Budget		**$ 15,000,000**		

Newtown Community Center Project
Project Status Update
March 22, 2017

Newtown Community Center

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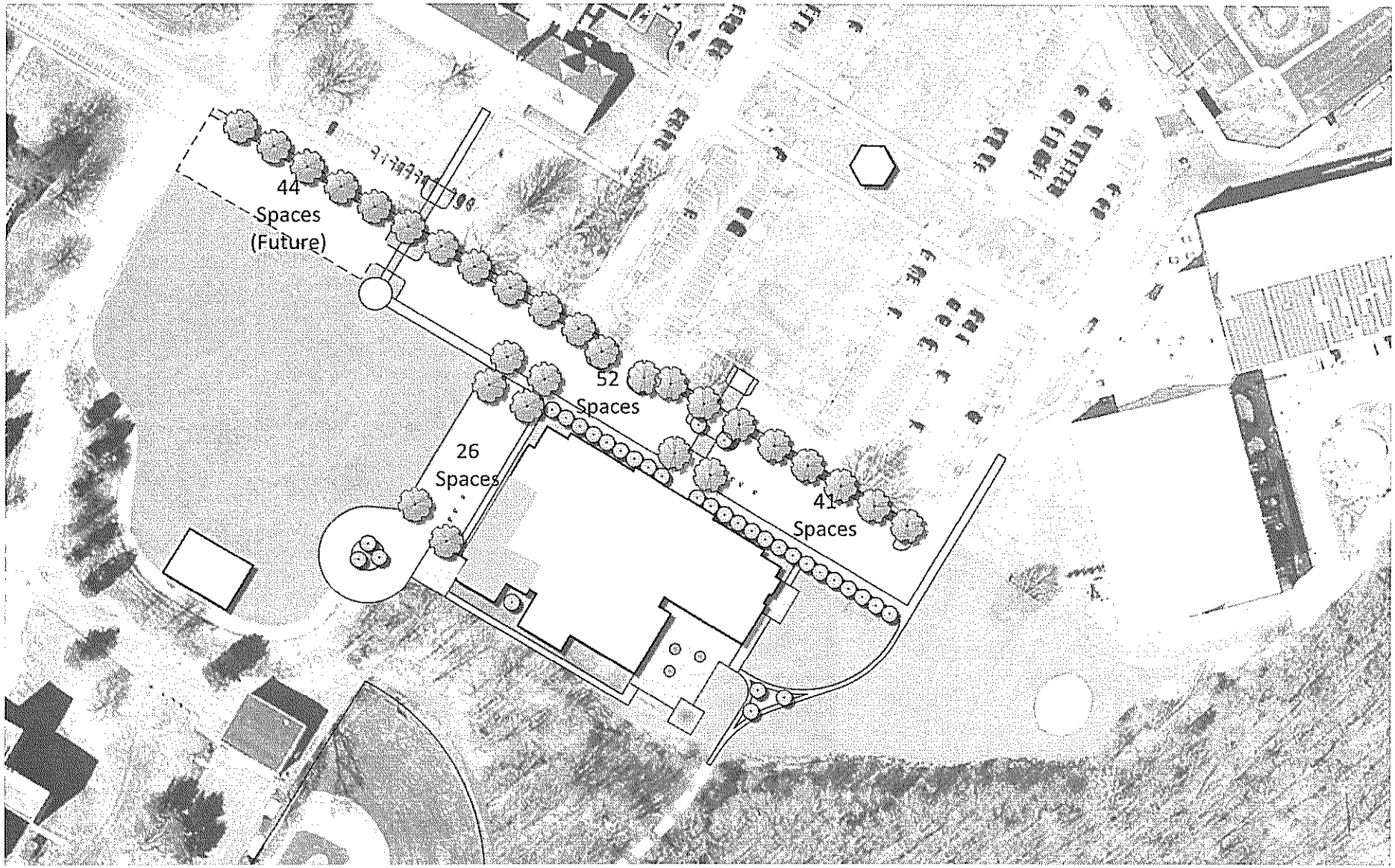

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Town of Newtown | Newtown Community Center

Newtown Community Center

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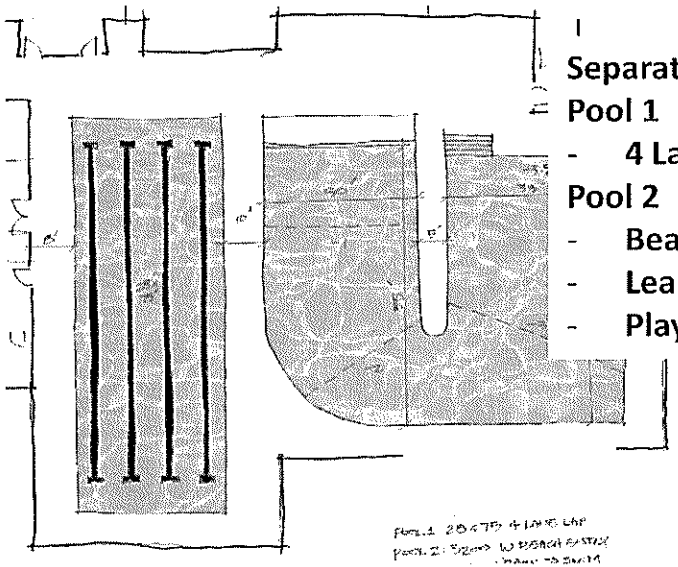

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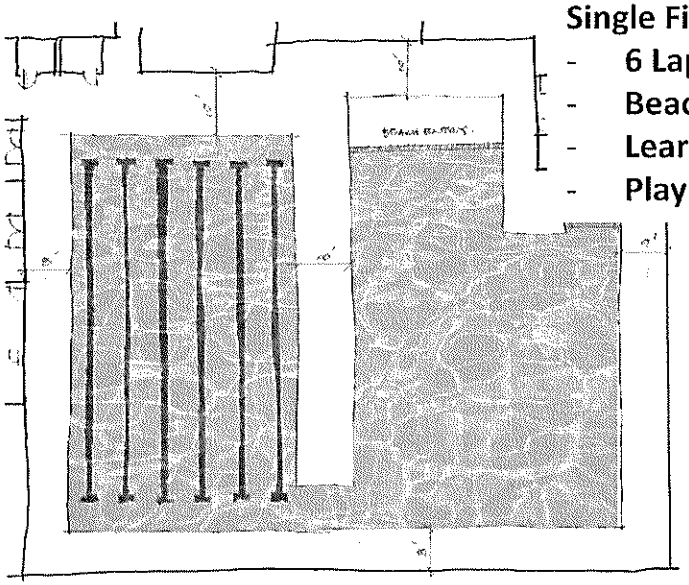

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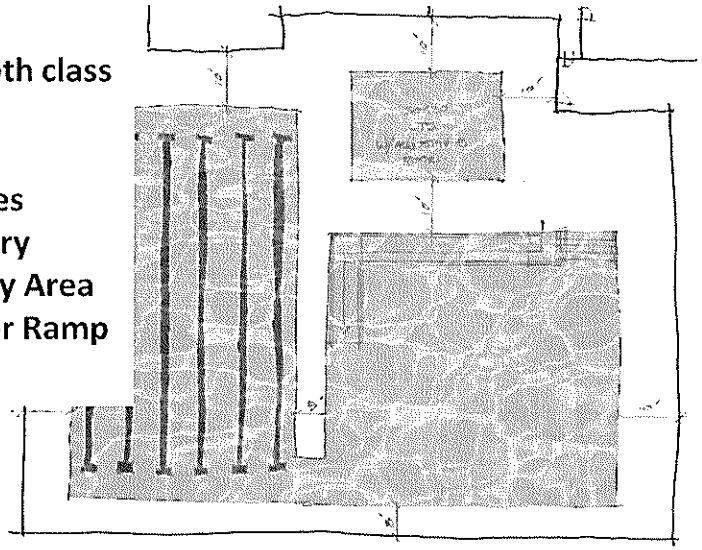
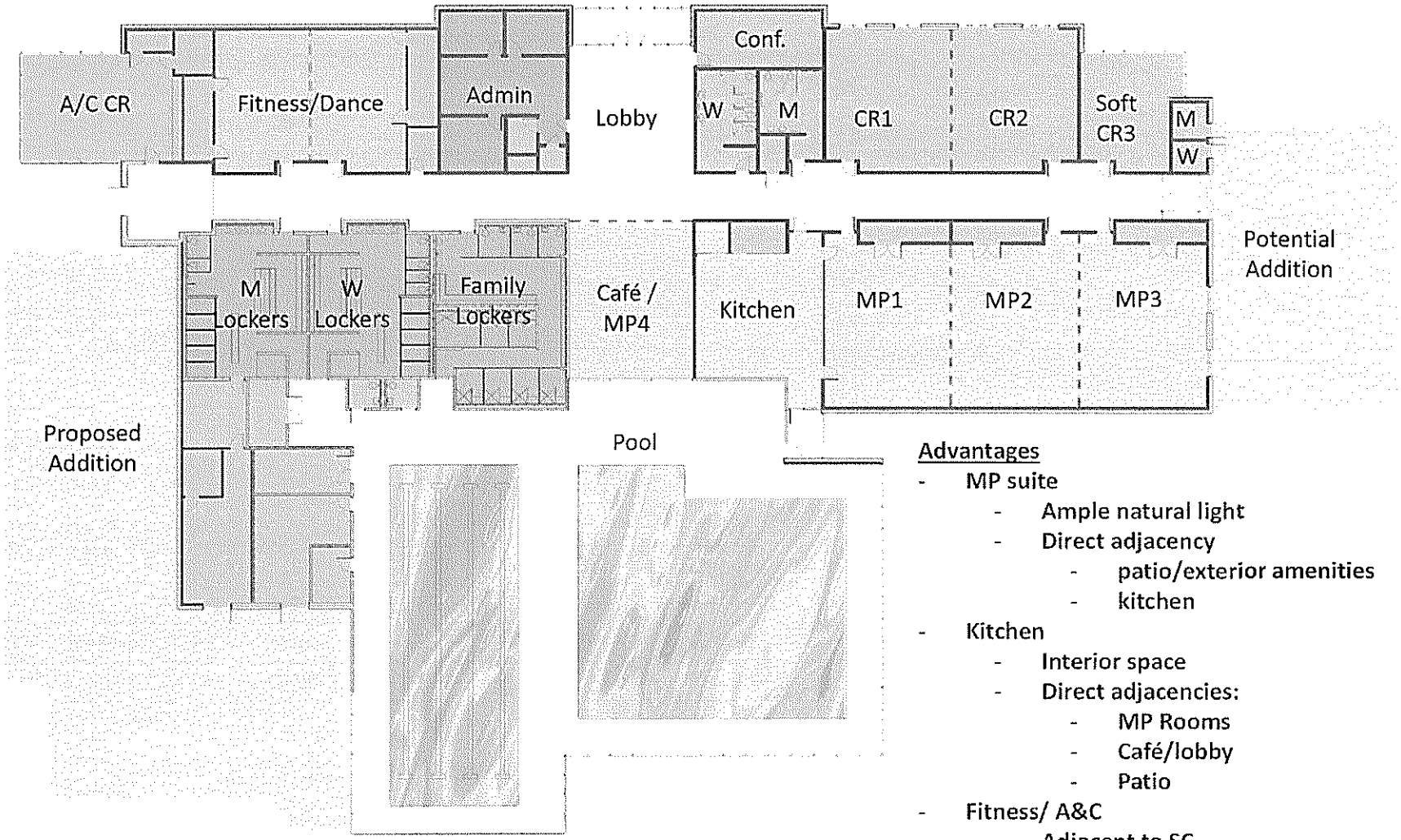


TOWN OF NEWTOWN

TO DESIGN

STV | DPM

Natatorium



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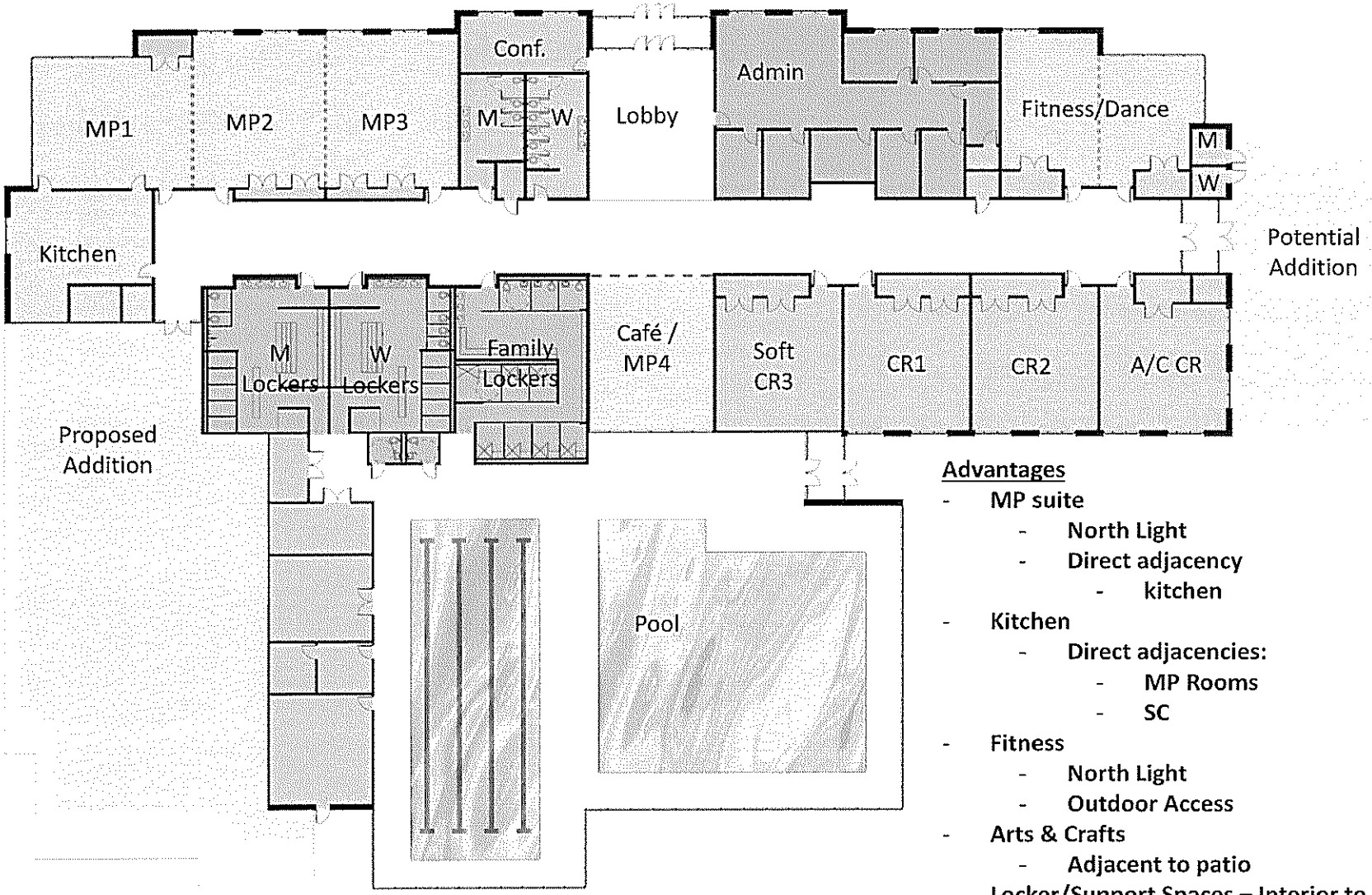
- Locker/Support Spaces – Interior to building

Concept Floor Plan – Option A



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- Arts & Crafts
  - Adjacent to patio
- Locker/Support Spaces – Interior to building

Concept Floor Plan – Option C

Town of Newtown CT

Newtown Community Center

Preliminary Project Budget

February 28, 2017

ITEM DESCRIPTION	BUDGET	CURRENT TOTAL BUDGET		Notes
Pre-Project Costs		$ 210,922		
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CM Preconstruction Services	$ 35,000			
Clerk of the Works	$ 48,000			
Legal	$ 5,000			
Special Inspections & Testing	$ 50,000			
Fees		$ 73,500		
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Aquatic Equipment	$ 50,000			
Project Contingency	10%	$ 1,262,978		
Total Project Budget		**$ 15,000,000**		

Newtown High School Auditorium Renovation Project
Project Status Update
March 22, 2017

Newtown High School Auditorium Renovation

Status of current work

- Mechanical, electrical and general building permits have been issued by the Newtown Building Department
- Demolition of seats, floor coverings, and auditorium ceiling are complete
- Demolition of mechanical systems and equipment above the stage is ongoing and scheduled for completion by 3/24/17
- Submittal review and approval is proceeding

Issues with potential to impact schedule or cost

- When the auditorium ceiling was removed, it was discovered that the existing ductwork over the seating areas, which was intended to remain:
    - Is fiberglass and not sheet metal, as the engineers assumed
    - Is damaged, with many broken connections
    - In some locations was unsupported so that lengths of ductwork came down with the ceiling
- CES, the consulting engineer, is scheduled to visit the site on 3/23/17, examine the issues and make a recommendation as to resolution
- The condition of the existing ductwork was known to the Facilities Department and the District had previously developed proposals to replace the fiberglass ductwork with sheet metal ducts.
- All mechanical coordination drawings and shop drawings are on hold until this issue is resolved

Requisitions

- Requisition for the period ending March 31st is under review and will be presented at the April PBSC meeting

Change Orders

- None presented this period

End-user concerns

- Fine Arts Department and theater staff are re-examining the preference for two rows of demountable seating directly in front of the stage
    - There is a question as to where they might store the seats when not being used
    - Seat count currently totals 915 (866 fixed seats, 41 demountable seats, 8 loose seats in the boxes) with an additional 10 spaces for wheelchairs

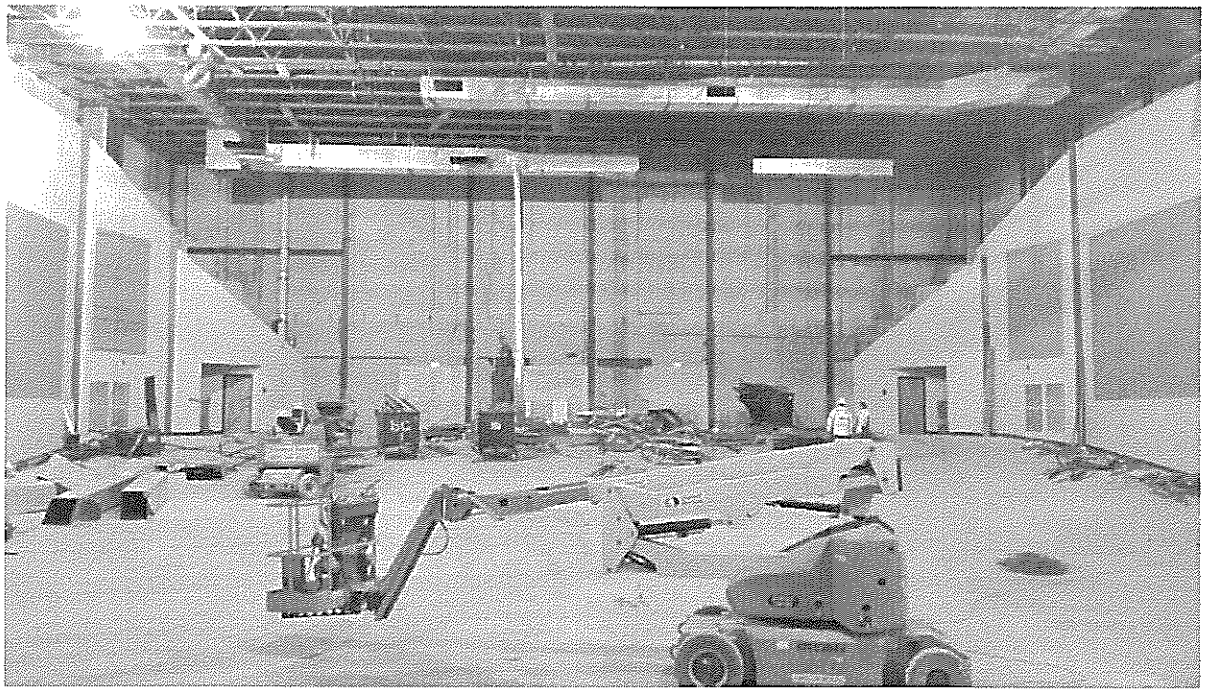
Attachments

- Project Budget
- Progress Photos

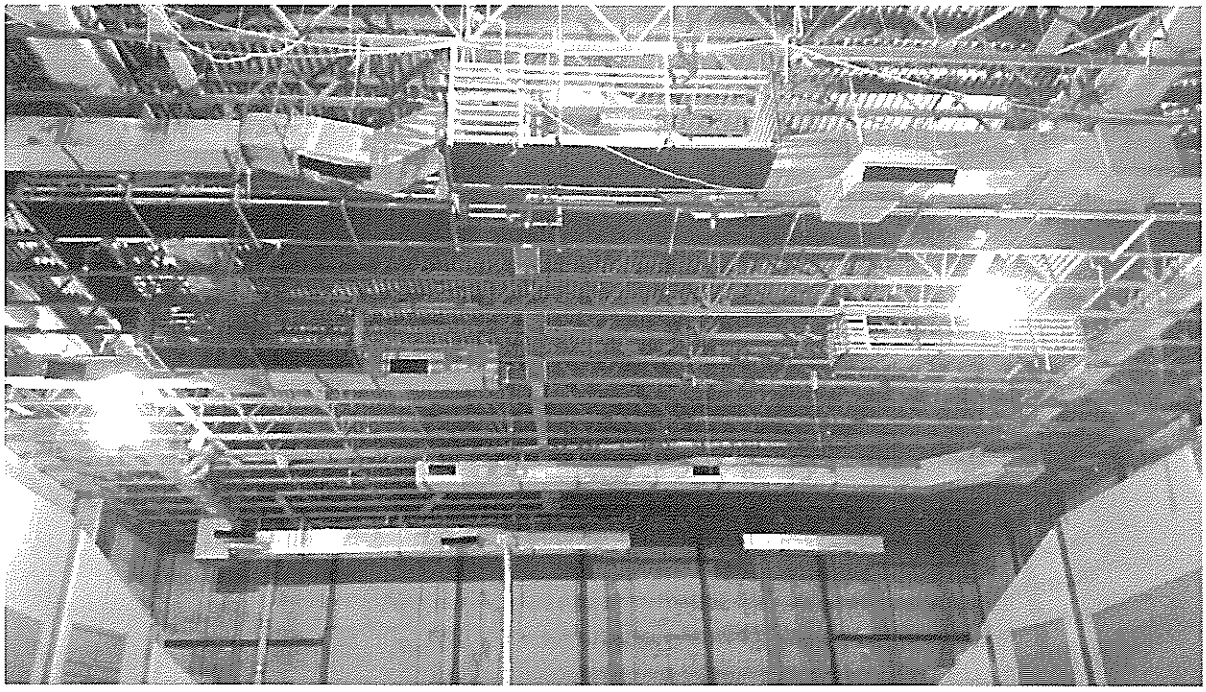
Newtown High School Auditorium Renovation
Progress Photos

Auditorium Demolition 3/7/2017

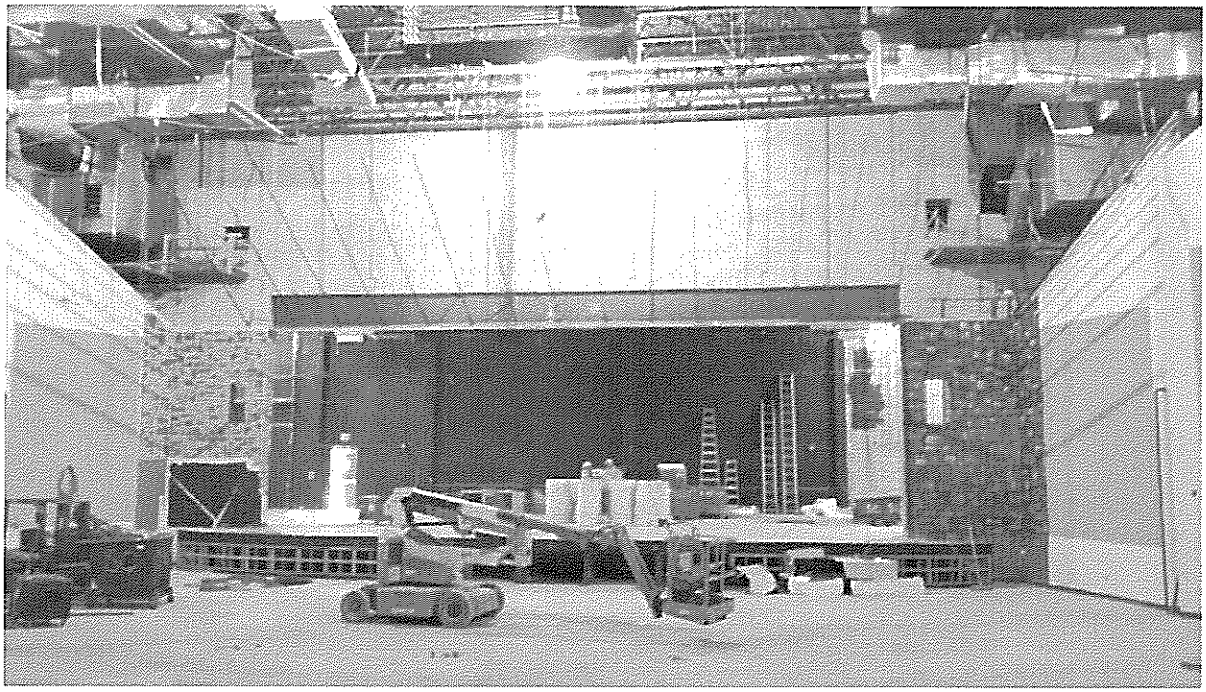
Stage Demolition 3/7/2017



Auditorium Demolition 3/16/2017



Auditorium Ceiling Area, with existing ductwork exposed 3/16/2017



Auditorium Demolition 3/16/2017

Town of Newtown, CT
Newtown High School Auditorium Renovation
Project Detail Budget
March 22, 2017

STV | DPM

ITEM DESCRIPTION	BUDGET		CONFIRMED CONTRACT VALUE	PROPOSED ADDITIONAL COSTS	CURRENT TOTAL BUDGET		Notes
Professional Fees					$ 597,670		
Consultants		$ 583,670					
Architect/Engineers	$ 385,000						
Add Services - A/E Team	$ 25,000						
Hazardous Testing	$ 5,000						
Owners Project Manager Fee	$ 127,000						
Add Services - OPM	$ 30,000						
Clerk of the Works	$ 10,000						
Legal Fees	$ 2,500						
Cost Estimate for State Approval	$ 3,850						
LEED Commissioning Fee	$ 45,000						
Fees		$ 14,000					
Special Inspections & Testing	$ 10,000						
Builders Risk Insurance	$ 4,000						
Construction					$ 2,872,824		
Construction GMP		$ 2,872,824					
Subtotal					$3,470,494		
Owner's Contingency					$129,506		4% of total Project Budget
Total Project Budget					$3,600,000		

Newfield CONSTRUCTION
EXPERIENCE. WE BUILD ON IT.

,

Phone:
Fax:

PROPOSED CHANGE ORDER
No. 00001

TITLE: Repair/Replace fiberglass ductwork

DATE: 28/03/2017

PROJECT: 826 - Newtown High School Auditorium

JOB: 826

TO: Attn: Bob Tate
Town of Newtown
Purchasing Dept
Town of Newtown
Newtown, CT 06470
Phone: Fax:

CONTRACT NO: 1

DESCRIPTION OF PROPOSAL

Per Revised Drawing M1.01 & MD1.01, the budget cost to remove and replace the fiberglass supply ductwork and replace with sheet metal supply duct. The price includes an allowance of $3500 to repair the existing fiberglass return ductwork. The revised schedule is attached and represents a 6 week delay. The schedule will need to be reviewed to possibly shorten the critical path. We will perform this review within the next week. The budget numbers do not include the costs of any extended general conditions.

Item	Description	Stock#	Quantity	Units	Unit Price	Net Amount
00001	Crest Mechanical: Provide new sheetmetal and fabric supply ductwork per revised drawing M1.01. This is a budget number and will be adjusted for actual costs.		1.000		$70,969.23	$70,969.23
00002	CM Fee @ 3.5%		1.000		$2,483.92	$2,483.92

Unit Cost: **$73,453.15**

Total: **73,453.15**

APPROVAL:

By: _____
Bob Tate

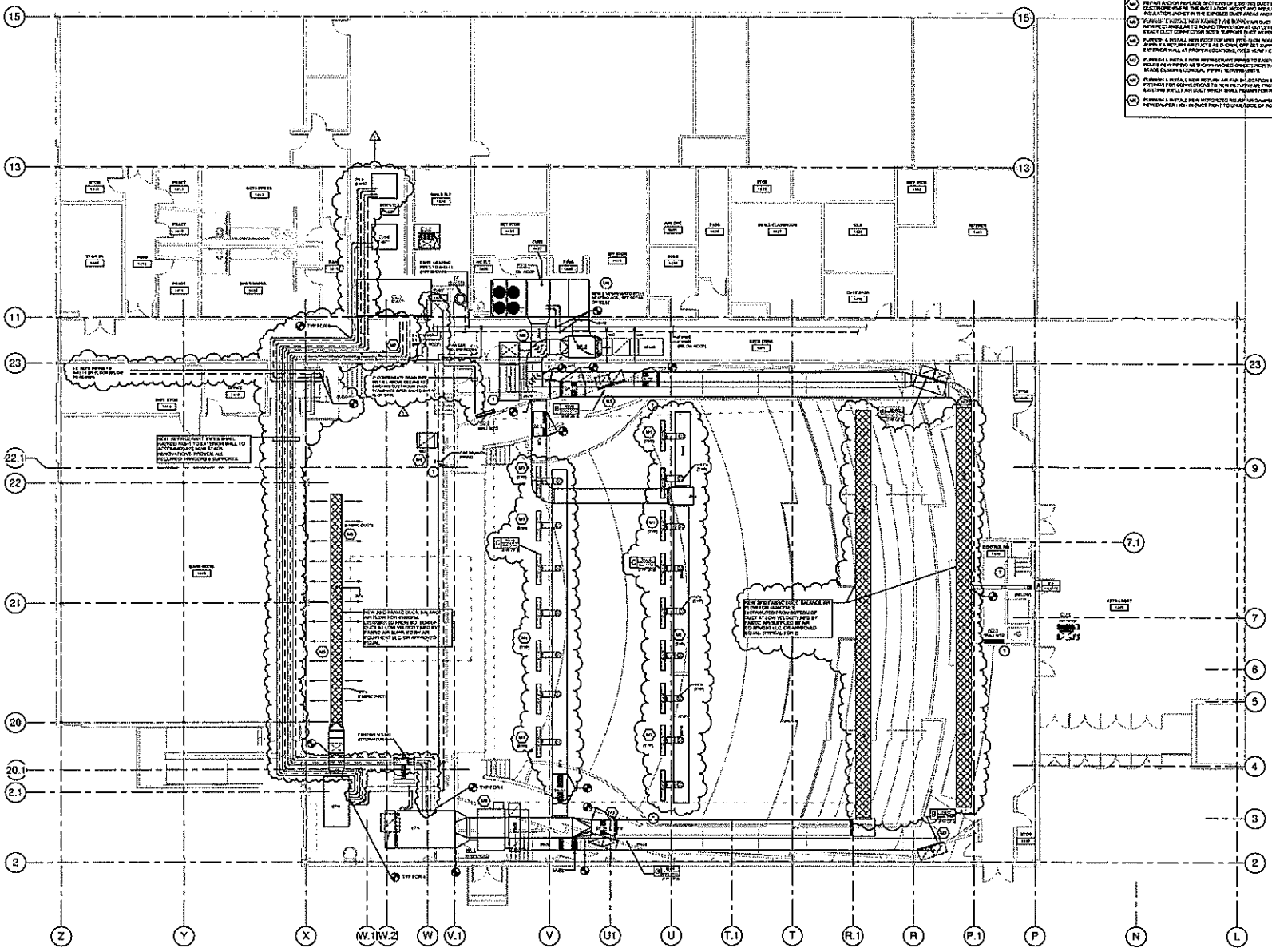
Date: _____

By: _____
Al Howat

Date: _____

Primavera ®

BINDING AREA - DO NOT USE



1 MECHANICAL MAIN FLOOR PLAN
1/8" = 1'-0"

SMITH EDWARDS McCC
ARCHITECT

CES

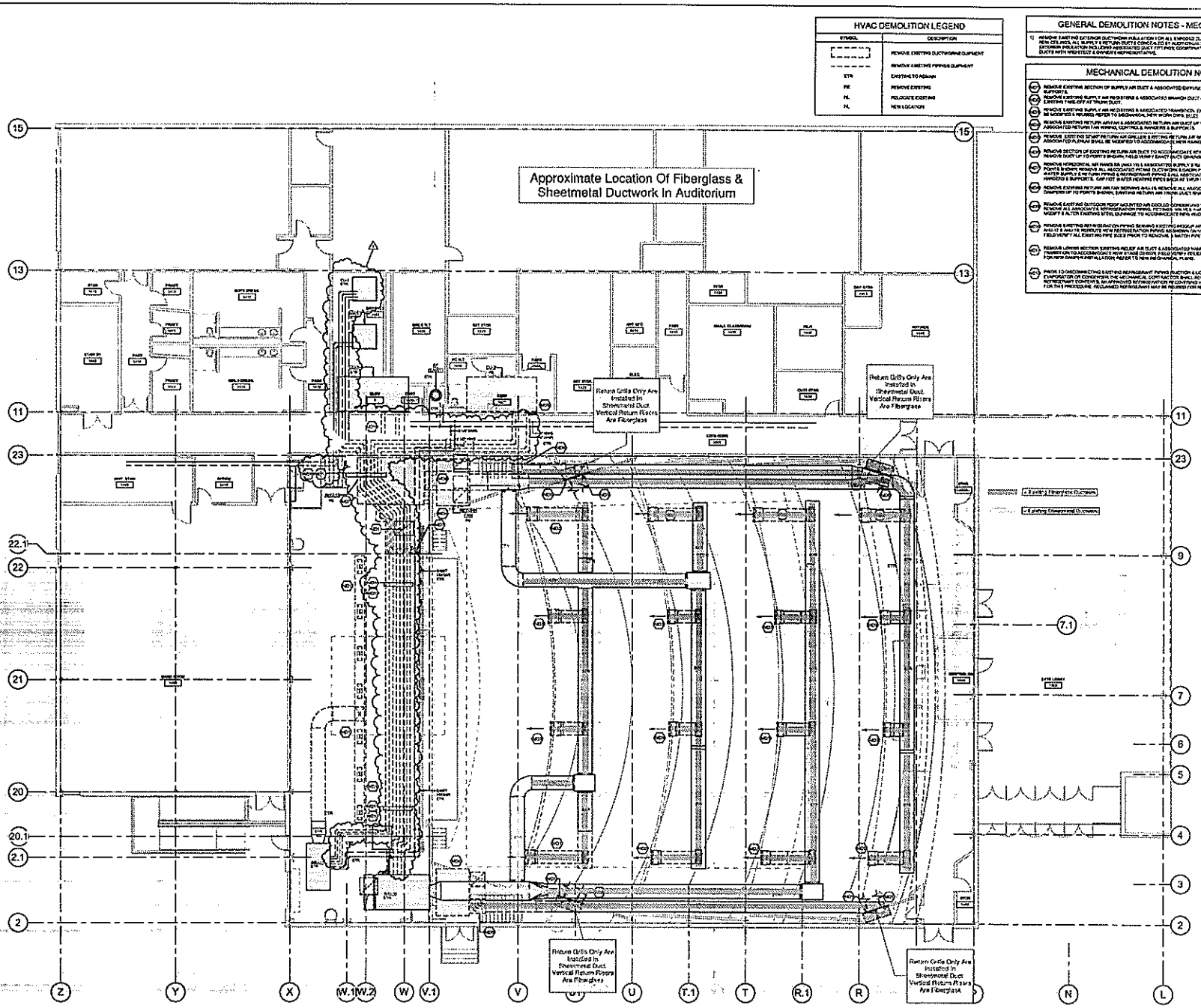
RENOVATIONS TO
NEWTOWN HIGH SCHOOL
AUDITORIUM
12 Berkshire Road
Newtown, Connecticut

CONSTRUCTION
DOCUMENTS PACKAGE
SDE PROJECT # 097-CPPP

MECHANICAL MAIN
FLOOR PLAN

M1.0

BINDING AREA - DO NOT USE



1 MECHANICAL MAIN FLOOR DEMOLITION PLAN
1/8" = 1'-0"

SMITH EDWARDS McCOY ARCHITECTS

CLS

RENOVATIONS TO NEWTOWN HIGH SCHOOL AUDITORIUM
12 Berkshire Road
Newtown, Connecticut

CONSTRUCTION DOCUMENTS PACKAGE
SDE PROJECT # 097-CPPP

MECHANICAL MAIN FLOOR DEMOLITION PLAN

MD1.0

Newfield Construction

REQUEST FOR INFORMATION

No. 00032

Phone:
Fax: Cell- 860-922-8042

TITLE: Existing Fiberglass Ductwork

DATE: 03/15/2017

PROJECT: 826 - Newtown High School Auditorium

JOB: 826

TO: Attn: Joann Picone
Smith Edwards McCoy Architects
100 Allyn Street, 4th Floor
Hartford, CT 06103
Phone: 860-560-6000 Fax: 860-560-9005

STARTED:

COMPLETED:

REQUIRED: 03/22/2017

QUESTION:

As seen in the attached photos and included sketch upon completing ceiling demolition activities it was discovered that majority of supply/return ductwork in the auditorium is constructed with fiberglass on a foil face. Is it the design teams intent to reuse fiberglass ductwork in areas noted as "ETR" on drawing MD1.01? Majority of the new ductwork will be constructed using sheetmetal. It may be difficult to tie new sheetmetal duct lines into falling apart fiberglass. Please advise on how to proceed.

ANSWER:

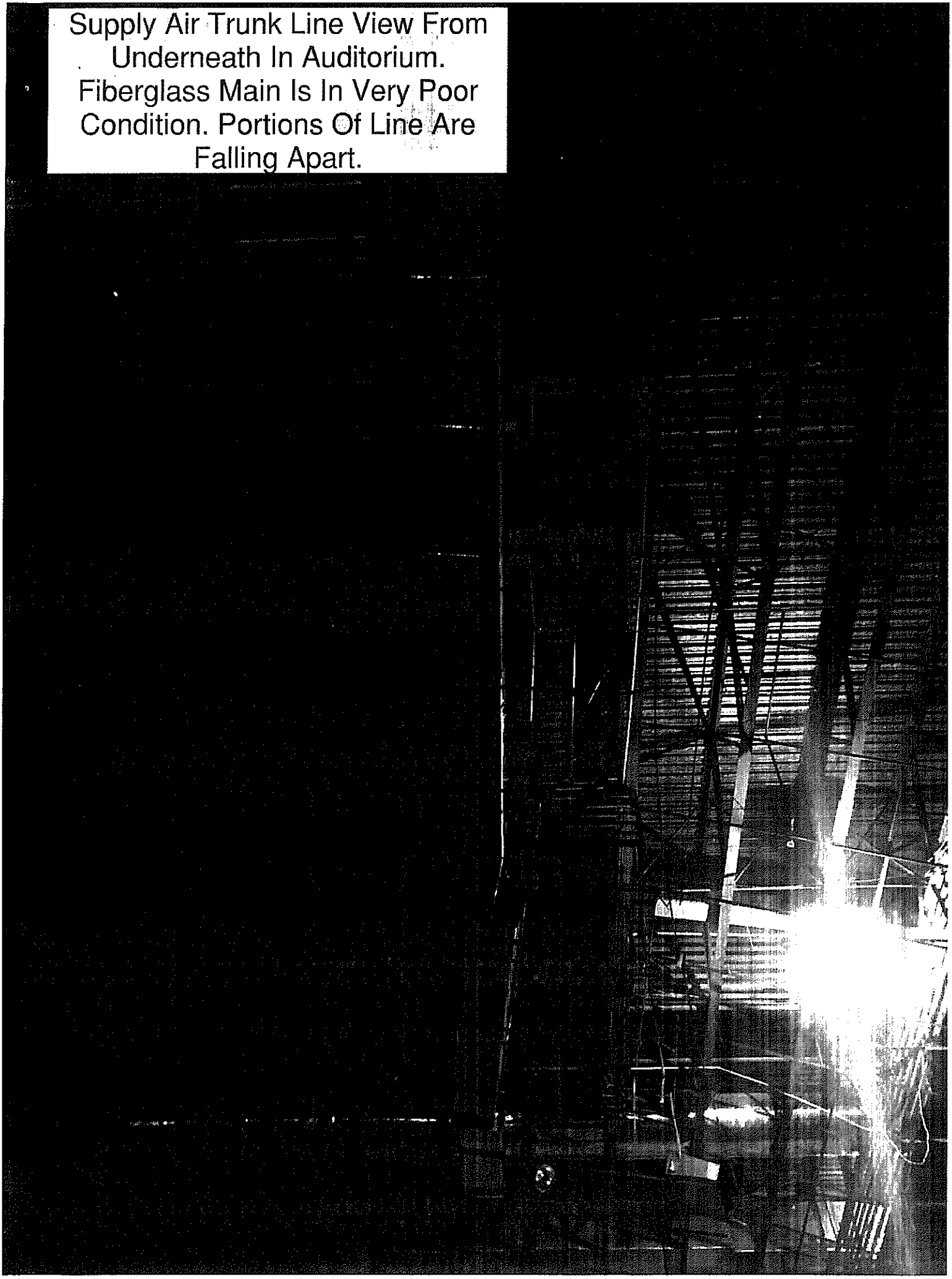
See attached revised M1.01

Requested By: Newfield Construction

Date:

Signed:
John Pekar


Typical Fiberglass Duct Construction


Supply Air Trunk Line View From Underneath In Auditorium. Fiberglass Main Is In Very Poor Condition. Portions Of Line Are Falling Apart.

CREST MECHANICAL SERVICES
HARTFORD NEWARK P.O. Box 340683 – Hartford, CT 06134-0683 – 860-724-3431 Telephone – 860-251-7132 Fax – www.crestmechanical.com

Newfield Construction Inc.
Al Howat- Sr. Project Manager
225 Newfield Ave.
Hartford, CT

Attached is our proposed change order (PCO) #1 for the Newtown High School Auditorium. This change is based on the revised mechanical plans and e-mail correspondence sent March 27th 2017. The attached change order is somewhat budgetary due to the short time frame allowed for pricing. We have not been able to get complete proposals from subcontractors and suppliers. That being said, we believe the attached costs to be fairly accurate given our knowledge of the systems and equipment involved. Below is a summary of our work involved.

Work Summary:

-Delete the 30x20 supply registers and associated ductwork shown for the auditorium from the scope
-Delete approximately 100 feet of 14" round ductwork from the run-outs to the new linear grilles in the auditorium
-Add: Demolition of the existing fiberglass supply mains running perpendicular to the trusses at the perimeter of the auditorium. Replace with new 36" round or equivalent square galvanized ductwork. (+/-150 feet)
-Add: Demolition of the existing fiberglass supply mains running parallel with the trusses across the center of the auditorium and replace this ductwork with new 36x16 galvanized ductwork as shown. (+/- 140 feet)
-Add: additional fiberglass duct insulation with foil jacket for all new supply mains installed
-Add: Two (2) new 36" round x 84 feet long fabric ducts and associated support system
-Add: Allowance of $3,500.00 for repairs to the existing return air fiberglass mains that will stay in place.
-Add: 1 month of additional 40 foot scissor-lift rentals (2) to accommodate the new work scope.

Cost Change:

Total Cost for PCO#1 Attached including labor and Material: **$70,969.23** (See attached PCO form)

Lead Times:

-Lead time for new fabricated galvanized ductwork: 1.5 weeks from formal CO approval*
-Lead time for new Fabric Ductwork: 5 weeks from formal CO and submittal approval.

Schedule impact:

-Demolition of existing fiberglass duct and install of new *galvanized* ductwork & associated insulation will take approximately nineteen (19) working days after duct delivery to site.

-Installation of new fabric duct system will take approximately six (6) working days after material delivery to site

Tentative schedule:

CO approval: Friday 3/31/17
Tentative Delivery of all new galvanized ductwork to Site complete*: April 12th (portions may be available sooner)
Complete with Install of new galvanized ductwork: May 8th
Fabric Duct Delivered to Site: May 12th
Fabric Duct install complete: May 23rd

CREST MECHANICAL SERVICES
HARTFORD NEWARK P.O. Box 340683 – Hartford, CT 06134-0683 – 860-724-3431 Telephone – 860-251-7132 Fax – www.crestmechanical.com

Proposal Notes/Clarifications:

*-The timeline above assumes that a full formal duct coordination process will not be required. If a formal and complete coordination proess with drawings/approvals is required, add 2 weeks to all timeline dates above.

-The above price is based strictly on he plans provided from CES on 3/27/17. Any additional changes to this scope may result in additional costs or time on site.

-The existing fiberglass return duct is shown to remain. We have included a $3,500 allowance for repairs only as directed. We cannot guarantee the integrity of this ductwork or warranty it in any fashion. Fiberglass ductwork is no longer allowed by code in commercial applications and we do not recommend leaving this installed due to its age and condition.

-Any painting of ductwork or ceiling modifications required for the new work is by others.

-A finalized design drawing must be provided from the design team prior to installation

Renovations to Newtown High School Auditorium

Proposed Change Order

To: **Newfield Construction Inc.** From: **CREST MECHANICAL SERVICES**

Date: **3/28/2017**

Ref: **Revised pricing per updated mechanical plans sent 3-27-17**

CM Number:

Trade Contractor PCO Number: **1**

Description: Demo existing supply mains noted, provide new duct supply mains as shown, provide new fabric duct as shown, delete supply registers and ductwork noted.

Quantity	Unit	Description of Material and Equipment	Unit Cost	Total
1		New 36x16 supply as shown +/- 140 feet	5,753.61	5,753.61
1		new 40x34 Supply as shown (36" round equiv) +/- 150 feet	8,726.50	8,726.50
-1		Credit for 100 feet of 14" round pipe deleted	2,529.29	(2,529.29)
-1		Credit for 40 feet of 30 x 20 duct deleted	1,455.87	(1,455.87)
2		36" round x 80 feet fabricair duct and hardware	6,540.00	13,080.00
2		40 foot platform lift with outriggers for 1 month	1,420.00	2,840.00
1		Allowance for T&M duct repairs on existing return fiberglass duct	3,500.00	3,500.00
1		Hangers, supports, strut, hardware	850.00	850.00
-8		30x20 Supply registers	114.50	(916.00)
				0.00
				0.00
				0.00
				0.00
Line 1			Material and Equipment Total	29,848.95

	Labor Classification	Hours	Base Rate	FICA & Med Care	FUTA & SUTA	G/L, W/C Ins	Benefits	Total Rate	Total
1	SM/2 Journeyman	194	43.41	3.32	3.17	6.34	33.85	90.09	17,477.42
1	P2/S2/D2 Journeyman	0	40.62	3.11	2.97	6.07	29.71	82.47	0.00
1	SM apprentice	194	36.90	2.82	2.69	5.84	33.85	82.11	15,928.67
1	P/S/D apprentice	0	34.53	2.64	2.52	5.61	29.71	75.01	0.00
1	SM/2 Journeyman-credit	-48	43.41	3.32	3.17	6.34	33.85	90.09	(4,324.31)
1	SM apprentice-credit	-48	36.90	2.82	2.69	5.84	33.85	82.11	(3,941.11)
Line 2								Labor Total	25,140.67

Subcontractor Cost (Attach Proposals)		
Trade	Name of Subcontractor	Total
Insulation- Credit for deleted duct	O&A Insulation	(3,340.00)
Insulation- ADD for new duct	O&A insulation	13,135.00
		0.00
		0.00
		0.00
Line 3	Subcontractor Total	9,795.00

Line 4 Total Labor, Material, and Equipment 54,989.62

Contractor Overhead and Profit	Allow %	Amount	Total
Net Value of Self Performed Work (Amount= Lines 1+2)= $0.00-$15,000.00	15	0.00	0.00
Net Value of Self Performed Work (Amount= Lines 1+2)= $15,001.00-$25,000.00	12	0.00	0.00
Net Value of Self Performed Work (Amount= Lines 1+2)= $25,001.00 and Greater	10	54,989.62	5,498.96
Net Value of Subcontract Work (Amount = Line 3)	5	9,795.00	685.65
Line 5		Contractor Overhead and Profit Total	6,184.61

Line 6	Total Proposed Change Order Amount (Lines 1+2+3+4)	**$70,969.23**

Duct Cost Estimator using *2016 R.S. Means Building Construction Cost Data*

etal Duct				SM								
Length	W (or D)	H (0 if round)	Perimeter	Gauge	90° Els	45° Els	Trans.	Sq→Rnd	Eqv. L	Area	Weight	Cost
Ft.	In.	In.	In.		Quanity	Quanity	Quanity	Quanity	ft	ft^2	lb	2004 $
150	40	34	148.0	26			2		162	1998	1499	$8,726.50
140	36	16	104.0	26			2		152	1317	988	$5,753.6
-100	14		44.0	26	-16	-4			-158	-579	-434	-$2,529.2
-40	30	20	100.0	26					-40	-333	-250	-$1,455.8
			0.0	26					0	0	0	$0.0
			0.0	26					0	0	0	$0.0
			0.0	26					0	0	0	$0.0
								Metal	Sub-total:	2403	1802	**$10,494.95**

PHASE ZERO REPORT FOR TO THE PARTIAL REROOFING, WINDOW WALL REPLACEMENT AND RELATED WORK AT THE NEWTOWN HIGH SCHOOL

Preface:

In the fall of 2016, Kaestle Boos was asked to prepare a proposal to conduct a Phase Zero analysis of the problem and to recommend a scope of work that will define a repair/replacement/budget scenario for this project. Kaestle Boos was formally authorized to proceed with this task 12/12/16.

It was our initial intent to divide this report into two parts. The first part would address the definition and budgeting of the scope of the work related to the repair and or replacement of portions of the roof, adjacent window wall/wall panel installation at the Newtown High School that has been damaged by on-going water infiltration into an area shown on the attached Key Plan.

The second part would address the scope of work related to the internal water damage to finishes, soffits, ceiling mounted equipment and the proposed restoration, repair and replacement of these surfaces and structures as may be required. It would also address any related environmental issues that may have evolved because of this leakage. We have also attached a copy of Fuss & O'Neil EnviroScience, LLC entitled Limited Asbestos Inspection & Indoor Air Assessment Report dated March 17, 2017 which indicates that the surfaces and areas tested related to these leaks did not any hazardous materials including mold. Therefore, the water damage is limited to surface discoloration, dislodged vinyl bases and paint peeling along the base of walls. In our judgement, the restoration required is most economically accomplished by the school's maintenance staff

Background and Conclusions:

The area of the roof in question reportedly began leaking shortly after the roof, window wall and metal wall panel installations were completed as part of the recent Renovation and Addition to the Newtown High School Project. This work was completed during the 2009/2010 school year.

During the late fall of 2016 Kaestle Boos conducted an onsite investigation of the area in question. Kaestle Boos was assisted in this endeavor by Greenwood Industries, the roofing trade contractor of record. Greenwood helped with the taking and repair of roof "test cuts" and the partial disassembly of the window wall and metal wall panels. Based upon our observations we concluded that the source of the water that was infiltrating into the roof assembly was the installation of incomplete window wall flashings. These flashings lacked "end dams", the lack of end dams allowed water to flow horizontally into gaps in the flashings. The water in turn flowed downward to the concrete slab and spread outwardly saturating both the roof assembly and the roof's concrete structural slab. The water also flowed inwardly into the base of the stub masonry wall that supports the window wall. Saturation of the base of this stub wall caused paint to peel and the vinyl base to dislodge from the wall. Water also leaked into the ceiling of the floor below resulting cosmetic damage to surfaces below.

Kaestle Boos was able to secure copies of shop drawings that were prepared by the window wall fabricator Advanced Performance Glass (APG) South Windsor, CT. These plans bear revision markings that appear to be generated by Fletcher-Thompson the architect of record. These plans also included markings indicating that the flashing and miscellaneous caulking was not provided by APG. We can find no further reference to whom the responsibility for the installation of the caulking and flashings may or may not have been assigned too by Morganti Construction, the construction manager.

Speculation on the contractual responsibilities and potential liabilities of all the parties involved in the construction of this project are beyond the scope of this report.

The Task:

Design a repair/replacement project that will result in a watertight installation of all associated building components. The goal is to complete the design of this project on or before April 15, 2017 to enable the work to be bid in time for the repair/replacement work to be substantially complete on or before September 1, 2017.

Project Approach:

The budget that we have established to complete this project is based upon the following:

- The project begins with the removal of the existing window wall and metal wall panels in whole or in part consistent with the contractor's ability to keep the project watertight during the construction evolution.
- All existing flashings associated the existing window wall and metal wall panels are assumed to be in-complete or otherwise non-compliant and will be removed and replaced in accordance with both the window wall manufacturers and industry standards.
- Whomever is tasked with the reinstallation of the new window wall and metal wall panels, the approved trade contractor shall provide a labor and material bond that unconditionally guarantees the water tight integrity of the new installation for a period five years from the date of final payment.
- Repair of all interior finishes at window wall sills, jambs and heads that have been disturbed by the removal and reinstallation of the window walls.
- Upon the completion of all work associated with the installation of the window wall and metal wall panels, the replacement of the existing roofing can begin. Since test cuts have determined that the existing concrete sub-strate slab is saturated, removal of this moisture is a primary design concern. Drying this slab is problematic and totally weather dependent. The short summer period available to complete this project very likely represents insufficient time to complete this task so another more creative approach is warranted.
- To expedite the removal of excess moisture on and within the existing concrete sub-strate slab we propose the installation of 3" galvanized metal deck fastened to the existing concrete. The new roof assembly can then be installed over the new metal decking. The existing moisture will be removed by mechanically circulating outside air through the 3" voids in the metal decking. The mechanics of this proposed air circulation system are illustrated in the plans that accompany this report. After the saturated slab is dried sufficiently, the temporary mechanical ventilation system will then be removed and the openings reroofed.
- The provision of specified warranties and guaranties for the roof, window wall and metal panel systems.

Project Budget:

The following project cost estimate has been prepared in consultation with Silktown Roofing Inc., Manchester, CT:

Roofing:

This task includes the removal of the existing roof to the concrete deck; the installation of the 3" galvanized metal deck secured to the concrete deck; temporary existing deck ventilation system consisting of sheet metal fabrications for the intakes and exhaust fans and associated wood blocking; the raising of existing roof drains; the installation of rigid and tapered roof insulation; the insulation of new PVC roof membrane; associated perimeter flashings and new perimeter metal facia to match existing and all related temporary installations required to keep this project watertight during the roof replacement evolution
$190,000.00.

Curtain Wall:

This task includes the removal and disposal of the existing curtain wall in manageable sections; the removal and replacement of existing related flashings and column closures; the installation of new window wall; the testing of the installation for watertight integrity and the installation of all related temporary installations required to keep this project watertight during the window wall waterproofing evolution.
$180,000.00.

Metal Wall Panels:

This task includes the removal and of the existing metal wall panels in manageable sections; the removal and replacement of existing related flashings; the installation of new metal wall panels; the testing of the installation for watertight integrity and the installation of all related temporary installations required to keep this project watertight during the metal wall waterproofing evolution.
$90,000.00.

Total Estimated Construction Bid:
$460,000.00.

Total Project Cost:
Bid Estimate $460,000.00
Contingency $ 86,000.00
Soft Costs $ 54,000.00

Grand Total $600,000.00

Limited Asbestos Inspection & Indoor Air Quality Assessment Report

Newtown High School
12 Berkshire Road
Sandy Hook, Conencticut

Town of Newtown

Newtown, Connecticut

March 17, 2017

FUSS & O'NEILL
EnviroScience, LLC

Fuss & O'Neill EnviroScience, LLC
56 Quarry Road
Trumbull, CT 06611

Project No. 20161170.A1E

FUSS & O'NEILL
EnviroScience, LLC

March 17, 2017

Mr. Robert G. Tait
Financial Director
Town of Newtown
3 Primrose Street
Newtown, CT 06470

Re: Limited Asbestos Inspection and Indoor Air Quality Assessment Report
Newtown High School – Cafeteria and Rooms 217, 219, 221, 223, 225, and 227
12 Berkshire Road, Sandy Hook, Connecticut 06482
Fuss & O'Neill EnviroScience Project No. 20161170.A1E

Dear Mr. Tait:

Enclosed is the report for the limited asbestos-containing materials inspection and indoor air quality assessment conducted in response to proposed renovations and air quality concerns within the Cafeteria, and Rooms 217, 219, 221, 223, 225, and 227 at the Newtown High School located at 12 Berkshire Road in Sandy Hook, Connecticut(the "Site"). The work was conducted for Town of Newtown (the "Client").

The services were performed on March 9, 2017, by a Fuss & O'Neill EnviroScience, LLC licensed inspector and included a limited asbestos inspection, and limited indoor air sampling. The information summarized in this report is for the above-mentioned materials only. The work was performed in accordance with our written proposal dated January 18, 2017.

If you should have any questions regarding the contents of this report, please do not hesitate to contact us at (203) 374-3748. Thank you for this opportunity to have served your environmental needs.

Sincerely,

Eduardo Miguel Marques
Environmental Analyst

EMM/seo
Enclosure

56 Quarry Road
Trumbull, CT
06611
t 203.374.3748
800.286.2469
f .203.374.4391

www.fando.com

Connecticut
Massachusetts
Rhode Island

FUSS & O'NEILL
EnviroScience, LLC

Table of Contents

Limited Asbestos Inspection & Indoor Air Quality Assessment Report Newtown High School Town of Newtown

Tables

Appendices

End of Report

1 Introduction

On March 9, 2017, Fuss & O'Neill EnviroScience, LLC (EnviroScience) representative, Mr. James Blum, performed a limited asbestos containing-materials (ACM) inspection and indoor air quality (IAQ) assessment in targeted locations at the Newtown High School located at 12 Berkshire Road in Sandy Hook, Connecticut (the "Site"). The work was conducted for Town of Newtown (the "Client") in accordance with our written scope of services dated January 18, 2017, and is subject to the limitations included in *Appendix A*.

This limited asbestos inspection and indoor air quality assessment was performed in response to proposed renovation activities and indoor air quality concerns in the following areas:

- Classroom 217
- Classroom 219
- Classroom 221
- Classroom 223
- Classroom 225
- Classroom 227
- Cafeteria
- Exterior Roof of Cafeteria

The areas listed above are located in addition to the school building reportedly constructed approximately seven years ago. It has been reported by the Client that this section of the building is displaying evidence of moisture intrusion along the metal panel window wall system and the concrete roof deck/2nd floor slab. In anticipation of renovation activities to address water intrusion/moisture issues, EnviroScience conducted a limited asbestos inspection of building materials that may be impacted during a renovation. Additionally, EnviroScience performed an IAQ assessment of the spaces where moisture issues have been reported or are suspected based on similar constrcution.

2 Limited Asbestos Inspection

A property Owner must ensure that a thorough ACM inspection is performed prior to possible disturbance of suspect ACM during renovation or demolition activities. This is a requirement of the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation located at Title 40 CFR, Part 61, Subpart M.

On March 9, 2017, Mr. James Blum of EnviroScience conducted the limited inspection. Mr. James Blum is a State of Connecticut Department of Public Health (CTDPH) -licensed Asbestos Inspectors. Refer to *Appendix B* for the Asbestos Inspector licenses and accreditations.

2.1 Methodology

The limited inspection was conducted by visually inspecting for suspect ACM and touching each of the suspect materials. The suspect materials were categorized into three EPA NESHAP groups: friable and non-friable Category I and Category II type ACM.

- A Friable Material is defined as material that contains greater than 1 percent (> 1%) asbestos that when dry can be crumbled, pulverized, or reduced to powder by hand pressure.

- A Category I Non-Friable Material refers to material that contains > 1% asbestos (i.e., packings, gaskets, resilient floor coverings, and asphalt roofing products) that when dry **cannot** be crumbled, pulverized, or reduced to powder by hand pressure.
- A Category II Non-Friable Material refers to any non-friable material excluding Category I materials that contain > 1% asbestos that when dry **cannot** be crumbled, pulverized, or reduced to powder by hand pressure.

The suspect ACM were also categorized into their applications including Thermal System Insulation (TSI), Surfacing ACM (S), and Miscellaneous ACM (M). TSI includes those materials used to prevent heat loss/gain or water condensation on mechanical systems. Examples of TSI are pipe insulation, boiler insulation, duct insulation, and mudded pipe fitting insulations. Surfacing ACM includes those ACM that are applied by spray, trowel, or otherwise applied to an existing surface. Surfacing ACM is commonly used for fireproofing, decorative, and acoustical applications. Miscellaneous materials include those ACM not listed as thermal or surfacing, such as linoleum, vinyl asbestos flooring, ceiling tiles, caulkings, glues, construction adhesives, etc.

The EPA recommends collecting suspect ACM samples in a manner sufficient to determine asbestos content and to segregate each suspect type of homogenous (similar in color, texture, and date of application) materials. The EPA NESHAP regulation does not specifically identify a minimum number of samples to be collected for each homogeneous material, but the NESHAP regulation does recommend the use of sampling protocols included in Title 40 CFR, Part 763, Subpart E: Asbestos Hazard Emergency Response Act (AHERA).

The EPA AHERA regulation requires a specific number of samples be collected based on the type of material and quantity present. This regulation includes the following protocol:

1. Surfacing Materials (S) (i.e., plasters, spray-applied fireproofings, etc.) must be collected in a randomly distributed manner representing each homogenous area based on the overall quantity represented by the sampling as follows:

    a. Three (3) samples collected from each homogenous area that is less than or equal to 1,000 square feet.
    b. Five (5) samples collected from each homogenous area that is greater than 1,000 square feet but less than or equal to 5,000 square feet.
    c. Seven (7) samples collected from each homogenous area that is greater than 5,000 square feet.

2. Thermal System Insulation (TSI) (i.e., pipe insulations, tank insulations, etc.) must be collected in a randomly distributed manner representing each homogenous area. Three (3) samples must be collected from each material. Also, a minimum of one (1) sample of any patching materials applied to TSI presuming the patched area is less than 6 linear or square feet should be collected.

3. Miscellaneous materials (M) (i.e., floor tile, gaskets, construction mastics, etc.) should have a minimum of two (2) samples collected for each type of homogenous material. Sample

collection was conducted in a manner sufficient to determine asbestos content of the homogenous material as determined by the inspector.

The inspectors collected samples of those suspect ACM anticipated to be disturbed by proposed renovation activities, and prepared proper chain-of-custody forms for transmission of the samples to EMSL Analytical Inc. for analysis. EMSL is a State of Connecticut-licensed and American Industrial Hygiene Association (AIHA)-accredited asbestos laboratory. The sample locations, material type, sample identification, and asbestos content are identified by bulk sample analysis in **Table 1** attached hereto. Suspect ACM not listed in the table that may be identified at a later date at the Site, should be assumed to be ACM until sample collection and analysis indicate otherwise. Initial asbestos sample analysis was conducted using the EPA Interim Method for the Determination of Asbestos in Bulk Building Materials (EPA/600/R-93/116) via Polarized Light Microscopy with Dispersion Staining (PLM/DS).

2.2 Results

Utilizing the EPA protocol and criteria, the materials sampled during this inspection were determined to be **non-ACM.**

Refer to **Table 1** for a complete list of non-ACM identified as part of this inspection. Refer to *Appendix C* for the asbestos laboratory report and chain-of-custody forms. Refer to *Appendix D* for site photographs.

2.3 Discussion

The EPA, the Occupational Safety and Health Administration (OSHA), and the CTDPH, define a material that contains greater than one percent (> 1%) asbestos, utilizing PLM/DS, as being an ACM. Materials that are identified as "none detected" are specified as not containing asbestos.

Additionally, the EPA has suggested that materials that are non-friable organically bound (NOB) materials (e.g., asphaltic-based materials, adhesives, etc.) are recommended for further confirmatory analysis utilizing Transmission Electron Microscopy (TEM). Eight of the collected samples were recommended to be analyzed by TEM. The results of TEM analysis are denoted in **Table 1.**

2.4 Conclusions and Recommendations

Based on visual observations, sample collection, and laboratory analysis, visible and acccesible ACM are not present in areas of the building expected to be impacted by anticipated renovation activities.

Suspect materials encountered during renovation that are not identified in this report as being non-ACM should be presumed to be ACM until sample collection and laboratory analysis indicate otherwise. Prior to renovation/demolition that may disturb hidden/inaccessible areas, we recommend conducting a supplemental asbestos inspection of these areas and spaces.

This report is not intended to be utilized as a bidding document or as a project specification document. The report is designed to aid the building owner, architect, construction manager, general contractors, and asbestos abatement contractors in locating identified ACM.

3 Limited Indoor Air Quality Assessment

On March 9, 2017, Mr. James Blum, of EnviroScience performed a limited indoor air quality assessment within representative areas at the Site. This limited indoor air quality assessment was performed in response to indoor air quality concerns. The following representative areas were inspected:

- Class Room 219
- Cafeteria
- Exterior Roof of Cafeteria

Test parameters included measurement of temperature, relative humidity (RH), Carbon Monoxide (CO), carbon dioxide (CO_2) as well as bio-aerosol (quantitative spore count) air sampling and direct microscopic assessment (surface) tape lift sampling.

3.1 Methodology

Measurements were obtained using a portable TSI IAQ-CALC Meter, Model 7545 and a Delmhorst Moisture Meter. Refer to *Appendix E* for a complete list of instrumentation used in conducting this assessment.

3.1.1 Temperature and Relative Humidity

Temperature and relative humidity levels are indicators of thermal comfort. The American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) recommends that wintertime indoor temperature be maintained between 68°F and 74°F and summertime indoor temperature be maintained between 73°F and 79°F. ASHRAE also recommends that humidity be maintained in the range of 30% to 60%. Humidity below this range may cause stress through the drying of mucous membranes and skin. Humidity above this range may promote the growth of fungi spores with resultant building and/or ventilation system contamination.

According to ASHRAE Standard 55-2013, Thermal Environmental Conditions for Human Occupancy, ASHRAE has defined the operative temperature is defined as that temperature range at which at least 80% of the sedentary or near sedentary occupants will find the environment

3.1.2 Carbon Monoxide (CO)

CO is a colorless and odorless toxic gas that most often occurs as a by-product of incomplete hydrocarbon fuel combustion. The most likely sources of CO are from incomplete hydrocarbon fuel combustion inside a building, and from air intakes placed in, at, or near parking garages or street level that may entrain automotive exhaust gases into the air handling system. Back drafts from boiler flues

may also provide a pathway for CO infiltration. In absence of any formal IAQ standard, EnviroScience uses the more conservative National Ambient Air Quality Standard (NAAQS) of 9 parts per million (ppm) for CO. The OSHA Permissible Exposure Limit (PEL) for carbon monoxide is 50 ppm, as an eight-hour time-weighted-average (8-hr. TWA).

3.1.3 Carbon Dioxide (CO_2)

CO_2 is a product of human respiration. CO_2 concentrations in a building are used as a primary indicator of outside air exchange. CO_2 at very high concentrations (e.g., greater than 5,000 ppm can pose a health risk. However, in most buildings, concentrations rarely rise to these levels and CO_2 at the concentrations commonly identified in buildings is not a direct health risk. At the activity levels in typical office buildings, steady CO_2 concentrations of about 700 ppm above outdoor air measurements indicate an outdoor air ventilation rate of about 15 cubic feet per minute (cfm) per person. CO_2 concentrations in outdoor air typically range from 300 to 500 ppm.

ASHRAE Standard 62.1-2013, Ventilation for Acceptable Indoor Air Quality, suggests an indoor CO_2 concentration of up to 1,000 to 1,200 ppm in spaces housing sedentary people is acceptable, and an indicator of adequate outside air exchange.

3.1.4 Bio-Aerosol (Quantitative Spore Count) Air Sampling

Air-dispersed mold particles are common in indoor and outdoor environments. The particles can include spores (air-disseminated "seeds" of mold), yeasts, and other particles. The particles of many mold can produce allergic reactions in susceptible members of the population.

The possible sources for the growth of mold are varied and numerous, including stagnant water, water-soaked building materials (i.e., ceiling tiles, drywall, carpets, etc.), soiled ducting and filters in air handling units, and plants and landscaping inside a building.

Air samples are collected for Quantitative Spore Count analysis (QSC), representing concentrations of both viable and non-viable spores, as the latter can also have an influence on occupants as well as viable spores.

Air sampling at the Site was conducted within two representative locations from reported areas of concern (Cafeteria, and Classroom 219). In addition, air samples were collected from the Main Lobby/Foyer (non-problem area) and an additional two air samples were collected from outside of the building (ambient). The latter samples serve to provide comparative data for the type and amount of particulate gathered in the above locations.

Air samples are collected on Air-O-Cell™ cassettes at a flow rate of 15.0 liters per minute (lpm) for ten minutes each. Vacuum is provided by an A.P. Buck BioAire sampling pump specific for bio-aerosol sampling and calibrated onsite with the associated calibrated rotometer. Particulate impacted onto the adhesive strip in the cassette is visually examined by microscope by a properly trained analyst to determine the quantitative spore count of the sample.

Molds are ubiquitous in the environment. As such, there are no regulatory standards regarding exposures to mold spores or even consistent guidelines for interpreting indoor mold concentrations. Most industry sources agree that it is not possible to recommend limits for mold concentrations due to the lack of data from which the concentrations can be linked to the onset of disease. Also, airborne mold concentrations may change according to spatial and temporal variations. Numerical standards and guidelines for mold; therefore, are not likely to be available in the near future.

Without standards and guidelines, the current approach to interpretation of results of mold samples relies on comparison of indoor versus outdoor results and affected versus non-affected area results. In general, indoor airborne mold counts should be significantly lower than those on a building exterior. Airborne mold counts in non-affected areas should be significantly lower than those in complaint areas. In addition, the genus/species identified indoors should be similar to those identified in exterior samples. However, this may not always be consistent. Occupied buildings with many entrances and operable windows may have indoor mold airborne concentrations higher than, or as high as those from the exterior. Also, the concentrations of exterior mold genus/species are likely to be lower on a cold or rainy day compared to the expected concentrations on a warm, sunny day when the spores may be abundant. A situation may be considered unusual when the airborne mold concentrations in the indoor/affected area are significantly higher than those in the exterior/non-affected area. Interpretation of these results requires considerable professional judgment.

3.2 Surface (Tape Lift) Sampling

Tape lift samples were collected from surfaces where water staining/damage was observed. One tape lift sample was collected in the Cafeteria on the gypsum ceiling that covered the HVAC duct work chase.

Tape lift samples are collected using laboratory provided adhesive sampling media with a pre-fabricated sampling area. Tape lift samples are then analyzed by direct microscopic examination for spores and growth to determine a quantitative spore count per area of the sample. Like the air sampling method described above, direct examination identifies mold spores, but does not differentiate between viable and non-viable mold spores. Non-viable spores can be of interest with respect to health, as can viable spores. EMSL Analytical, Inc. of Cinnaminson, New Jersey performed the analysis.

3.3 Moisture Meter Testing

Moisture measurements were obtained using a Delmhorst Moisture Meter. Measurements were collected in various locations during the assessment to determine if moisture was present, which may be an indicator of an active water intrusion.

3.4 Observations

On March 9, 2017, Mr. James Blum performed a visual and olfactory assessment of the Site and noted the following:

The weather was cloudy with ambient temperatures in the mid 50's°F.

- Classroom 219
  - No obvious visible suspect mold present;
  - No mold or mildew odor present;
  - No water staining was observed on suspended ceiling tiles;
  - Moisture meter indicated low percentage of moisture (0% - 10%) within measured building materials:
    - Ceiling Tiles
    - Spray-Applied Insulation
    - Gypsum wall board
    - Floor Tile;
      - The recorded moisture measurements were consistent in areas near the exterior of the room and by the hallway
  - Classroom was unoccupied

- Cafeteria
  - No obvious visible suspect mold present;
  - No mold or mildew odor present;
    - The ceiling deck and spray-applied insulation were inaccessible to assess for mold or mildew due to height.
  - Limited water staining was observed on the gypsum wallboard ceiling of the soffit area that enclosed duct work;
  - Moisture meter indicated low moisture (5%) within the gypsum ceiling;
  - Faculty reported that the ceiling has been leaking for several years;
  - Area was occupied

- Exterior Roof of Cafeteria
  - No obvious visible suspect mold present;
  - No mold or mildew odor present;
  - During roof test cuts, all materials identified (foam board, Densdek®, etc.) associated with roof field, parapet wall, and concrete masonry walls under classroom windows were saturated with water.

3.5 Results

3.5.1 Temperature and Relative Humidity

Interior temperature measurements ranged from 68.1°F to 70.0°F. These measurements were within the ASHRAE recommended conform range. Interior relative humidity measurements ranged from 12.8% to 15.2%. The measurements were below the ASHRAE recommended range. Interior relative humidity measurements can likely be attributed to seasonably low ambient humidity.

Refer to *Appendix F* for the data sheet for temperature and relative humidity

3.5.2 Carbon Monoxide

Within the limitation of instrumental accuracy, concentrations of CO were not detected within the building at the time of the assessment..

Refer to *Appendix F* for the data sheet for CO.

3.5.3 Carbon Dioxide

Concentrations of CO_2 ranged from 403 ppm to 607 ppm. These measurements were within the ASHRAE recommended range.

Refer to *Appendix F* for the data sheet for CO_2.

3.5.4 Bio-Aerosol (Quantitative Spore Count) Air Sampling

The QSC results for the samples collected inside the building ranged from 14 count per cubic meter of air (Count/m^3) to 47 Count/m^3. Spore counts outside the building for the samples collected ranged from 130 Count/m^3 to 460 Count/m^3. In general, spore counts for samples collected inside the building were less than the spore counts for samples collected outside the building.

The interior sample locations displayed no significant concentrations of concern for airborne mold and particulate. The majority of spore types identified in the interior samples were also exhibited in the exterior samples at similar concentrations. Spore types that were identified in the indoor samples and not present in the outdoor ambient sample were present at low concentrations.

Refer to *Appendix G* for the indoor air sampling laboratory report and chain-of-custody form.

3.5.5 Surface (Tape Lift) Sampling

Analytical results of the tape lift sample collected from the gypsum ceiling in the Cafeteria did not display detectable spore types.

Refer to *Appendix H* for the laboratory reports and chain of custody forms.

3.6 Conclusions and Recommendations

Based on the visual inspection, sample results, and information available at the time of this assessment, EnviroScience concludes and recommends the following:

- Temperature measurements were within the ASHRAE recommended range.

- Relative humidity measurements were below the ASHRAE recommended range.
    - This can likely be attributed to seasonably low ambient humidity.

- Within the limitation of instrumental accuracy, concentrations of CO were not detected within the building at the time of the assessment.

- CO_2 concentrations within the building were within the ASHRAE recommended range.

- The source of the moisture causing the water staining observed on the gypsum board soffit area enclosing the HVAC/duct work should be investigated and corrected.
    - Periodic inspections should be completed after any significant precipitation event to correct active water intrusions and take preventative measures to dry affected materials within 24 to 48 hours to prevent growth of mold/mildew until the action is taken to stop the water intrusion.
    - Following the correction of the water intrusion, the gypsum wall board should be cleaned with an EPA certified fungistat and repainted or replaced as necessary.

- The interior sample locations displayed no significant concentrations of concern for airborne mold and particulate. The majority of spore types identified in the interior samples were also exhibited in the exterior samples at similar concentrations. Spore types that were identified in the indoor samples and not present in the outdoor ambient sample were present at low concentrations.

- Analytical results of the tape lift sample collected from the gypsum ceiling in the Cafeteria did not display detectable spore types.

Report prepared by Environmental Technician II, James Blum

Reviewed by:

Jared D. Smith, CSP
Project Manager

Robert L. May, Jr.
President

Tables

Table 1
Summary of Suspect Asbestos-Containing Materials

Sample No.	Material Type	NESHAP Category	Sample Location	Asbestos Content	PLM/TEM
0309JB-01A	Gray Spray-applied Insulation	Non-ACM	Cafeteria	ND	PLM
0309JB-01B	Gray Spray-applied Insulation	Non-ACM	Room 227	ND	PLM
0309JB-01C	Gray Spray-applied Insulation	Non-ACM	Room 225	ND	PLM
0309JB-01D	Gray Spray-applied Insulation	Non-ACM	Room 223	ND	PLM
0309JB-01E	Gray Spray-applied Insulation	Non-ACM	Room 221	ND	PLM
0309JB-01F	Gray Spray-applied Insulation	Non-ACM	Room 219	ND	PLM
0309JB-01G	Gray Spray-applied Insulation	Non-ACM	Room 217	ND	PLM
0309JB-02A	White Cap on 2'x4' Fiberglass Suspended Ceiling Tile	Non-ACM	Room 221	ND	PLM
0309JB-02B	White Cap on 2'x4' Fiberglass Suspended Ceiling Tile	Non-ACM	Room 227	ND	PLM
0309JB-03A	White Cap on 4'x4' Fiberglass Suspended Ceiling Tile	Non-ACM	Cafeteria	ND	PLM
0309JB-03B	White Cap on 4'x4' Fiberglass Suspended Ceiling Tile	Non-ACM	Cafeteria	ND	PLM
0309JB-04A	Tan w/ Gray Mottled 12"x12" Floor Tile	Non-ACM	Room 227	ND/ND	PLM/TEM
0309JB-04B	Tan w/ Gray Mottled 12"x12" Floor Tile	Non-ACM	Room 221	ND	PLM
0309JB-05A	Yellow Floor Tile Adhesive	Non-ACM	Room 227	ND/ND	PLM/TEM
0309JB-05B	Yellow Floor Tile Adhesive	Non-ACM	Room 221	ND	PLM
0309JB-06A	Gray 4" Cove Base	Non-ACM	Room 227	ND/ND	PLM/TEM
0309JB-06B	Gray 4" Cove Base	Non-ACM	Room 221	ND	PLM
0309JB-07A	White/Tan Cove Base Adhesive	Non-ACM	Room 227	ND/ND	PLM/TEM
0309JB-07B	White/Tan Cove Base Adhesive	Non-ACM	Room 221	ND	PLM
0309JB-08A	Gray Gypsum Wall Board	Non-ACM	Room 227	ND	PLM
0309JB-08B	Gray Gypsum Wall Board	Non-ACM	Room 221	ND	PLM
0309JB-09A	White Joint / Taping Compound	Non-ACM	Room 227	ND	PLM
0309JB-09B	White Joint / Taping Compound	Non-ACM	Room 221	ND	PLM
0309JB-10A	Black Interior Window Glazing Compound	Non-ACM	Room 227	ND/ND	PLM/TEM
0309JB-10B	Black Interior Window Glazing Compound	Non-ACM	Cafeteria	ND	PLM
0309JB-11A	Gray Interior Window Caulking Compound	Non-ACM	Room 227	ND/ND	PLM/TEM
0309JB-11B	Gray Interior Window Caulking Compound	Non-ACM	Cafeteria	ND	PLM
0309JB-12A	Silver/Tan Paper Duct Wrap	Non-ACM	Cafeteria	ND	PLM
0309JB-12B	Silver/Tan Paper Duct Wrap	Non-ACM	Cafeteria	ND	PLM
0309JB-13A	Black Exterior Window Glazing Compound	Non-ACM	Exterior - O/S Room 227	ND/ND	PLM/TEM
0309JB-13B	Black Exterior Window Glazing Compound	Non-ACM	Exterior - O/S Room 221	ND	PLM

Sample No.	Material Type	NESHAP Category	Sample Location	Asbestos Content	PLM/TEM
0309JB-14A	Gray Exterior Window Caulking Compound	Non-ACM	Exterior - O/S Room 227	ND/ND	PLM/TEM
0309JB-14B	Gray Exterior Window Caulking Compound	Non-ACM	Exterior - O/S Room 221	ND	PLM
0309JB-15A	Gray Densdek Board	Non-ACM	Exterior - Roof Field	ND	PLM
0309JB-15B	Gray Densdek Board	Non-ACM	Exterior - Roof Field	ND	PLM
0309JB-16A	Black Paper between Foam Panels	Non-ACM	Exterior - Roof Field	ND	PLM
0309JB-16B	Black Paper between Foam Panels	Non-ACM	Exterior - Roof Wall under Class Windows	ND	PLM

Cat 1 NF=Category I Non-Friable Material
Cat 2 NF=Category II Non-Friable Material
NA/Pos Stop=Not Analyzed/ Positive Stop
ND=None Detected

Appendix A

Limitations

APPENDIX A

12 Berkshire Road
Sandy Hook, Connecticut

1. This environmental report has been prepared for the exclusive use of the Town of Newtown (the "Client") and is subject to, and is issued in connection with the terms and conditions of the original Agreement and all of its provisions. Any use or reliance upon information provided in this report, without the specific written authorization of the Client and Fuss & O'Neill EnviroScience, LLC (EnviroScience) shall be at the User's individual risk. This report should not be used as an abatement specification. All quantities of materials identified during this inspection are approximate.
2. EnviroScience has obtained and relied upon information from multiple sources to form certain conclusions regarding likely environmental issues at and in the vicinity of the subject property in conducting this inspection. Except as otherwise noted, no attempt has been made to verify the accuracy or completeness of such information or verify compliance by any party with federal, state or local laws or regulations.
3. EnviroScience has obtained and relied upon laboratory analytical results in conducting the inspection. This information was used to form conclusions regarding the types and quantities of ACM and mold that must be managed prior to renovation or demolition activities that may disturb these materials at the subject property. EnviroScience has not performed an independent review of the reliability of this laboratory data.
4. Unless otherwise noted, only suspect hazardous materials associated within the identified areas within the building or located on the building (aboveground) were included in this inspection. Suspect hazardous materials may exist in other locations within the building or below the ground surface that were not included in the scope of work of this inspection. EnviroScience cannot guarantee all asbestos or suspect hazardous materials were identified within the areas included in the scope of work. Only visible and accessible areas were included in the scope of work for this inspection.
5. The findings, observations and conclusions presented in this report are limited by the scope of services outlined in our original Agreement (January 18, 2017), which reflects schedule and budgetary constraints imposed by Client. Furthermore, the assessment has been conducted in accordance with generally accepted environmental practices. No other warranty, expressed or implied, is made.
6. The conclusions presented in this report are based solely upon information gathered by EnviroScience to date. Should further environmental or other relevant information be discovered at a later date, the Client should immediately bring the information to the EnviroScience's attention. Based upon an evaluation and assessment of relevant information, EnviroScience may modify the letter report and its conclusions.

Appendix B

EnviroScience Inspector Licenses and Accreditations

JAMES B BLUM
FUSS & O'NEILL ENVIROSCIENCE LLC
146 HARTFORD RD
MANCHESTER CT 06040-5992

Dear JAMES B BLUM,

Attached you will find your validated certificate for the coming year. Should you have any questions about your certificate renewal, please do not hesitate to write or call:

Department of Public Health
P.O. Box 340308
M.S.#12MQA
Hartford, CT 06134-0308

(860) 509-7603
opic.dph@ct.gov
www.ct.gov/dph/license

Sincerely,

RAUL PINO, MD, MPH, COMMISSIONER
DEPARTMENT OF PUBLIC HEALTH

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

JAMES B BLUM

03-549011	000841	11/30/17

ASBESTOS CONSULTANT INSPECTOR

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

PURSUANT TO THE PROVISIONS OF THE GENERAL STATUTES OF CONNECTICUT

THE INDIVIDUAL NAMED BELOW IS CERTIFIED
BY THE DEPARTMENT AS A
ASBESTOS CONSULTANT-INSPECTOR

JAMES B BLUM

000841

11/30/17

03-549011

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

JAMES B BLUM

03-549011	000841	11/30/17

ASBESTOS CONSULTANT INSPECTOR

Certificate of Training

This program was presented at Fuss & O'Neill Enviro Science in. Manchester, CT with the prior approval of the CTDPH.

Awarded to

JAMES BLUM

For successful completion of a 4 Hour, 1/2 Day

Asbestos Building Inspector

Annual Refresher Training

August 30, 2016

This training was approved and given in accordance with the Regulations for Connecticut State Agencies RCSA 20 - 440 - 1-9 and RCSA 20 - 441 and meets the requirements of the EPA Revised MAP under TSCA Title II of 4/4/94.

Presented by

Mystic Air Quality Consultants, Inc.

1204 North Road, Groton, CT 06340 (800) 247-7746

Certificate Number: ABIRF25267 **Exam Grade:** 100 **Exam Date:** 08/30/2016 **Expiration Date:** 08/30/2017

Christopher J. Eident, CIH, CSP, RS

George Williamson, Training Director

Richard Haffey, Training Director

FUSS & O'NEILL
EnviroScience, LLC

Appendix C

Asbestos Laboratory Report and Chain-of-Custody Form

Fuss & O'Neill EnviroScience EMSL Customer No. ENVI54

FUSS & O'NEILL
EnviroScience, LLC

56 Quarry Road, Trumbull, CT 066611

www.fando.com
Phone (203) 374-3748 Fax (203) 374-4391

ASBESTOS BULK SAMPLE CHAIN OF CUSTODY FORM

Project Name: Newtown High School Inspection/IAQ Project No. 20161170.A1E Date: 3/10/2017

Site Address: 12 Berkshire Road, Newtown Project Manager: Miguel Marques

Sample ID	Sample Location	Type of Material
0309JB-01A	Cafeteria	Gray Spray-applied Insulation
0309JB-01B	Room 227	Gray Spray-applied Insulation
0309JB-01C	Room 225	Gray Spray-applied Insulation
0309JB-01D	Room 223	Gray Spray-applied Insulation
0309JB-01E	Room 221	Gray Spray-applied Insulation
0309JB-01F	Room 219	Gray Spray-applied Insulation
0309JB-01G	Room 217	Gray Spray-applied Insulation
0309JB-02A	Room 221	White Cap on 2'x4' Fiberglass Suspended Ceiling Tile
0309JB-02B	Room 227	White Cap on 2'x4' Fiberglass Suspended Ceiling Tile
0309JB-03A	Cafeteria	White Cap on 4'x4' Fiberglass Suspended Ceiling Panel
0309JB-03B	Cafeteria	White Cap on 4'x4' Fiberglass Suspended Ceiling Panel
***0309JB-04A**	**Room 227**	**Tan w/ Gray Mottled 12"x12" Floor Tile**
0309JB-04B	Room 221	Tan w/ Gray Mottled 12"x12" Floor Tile
***0309JB-05A**	**Room 227**	**Yellow Floor Tile Adhesive**
0309JB-05B	Room 221	Yellow Floor Tile Adhesive
***0309JB-06A**	**Room 227**	**Gray 4" Cove Base**
0309JB-06B	Room 221	Gray 4" Cove Base
***0309JB-07A**	**Room 227**	**White/Tan Cove Base Adhesive**
0309JB-07B	Room 221	White/Tan Cove Base Adhesive
0309JB-08A	Room 227	Gray Gypsum Wall Board
0309JB-08B	Room 221	Gray Gypsum Wall Board
0309JB-09A	Room 227	White Joint/Taping Compound
0309JB-09B	Room 221	White Joint/Taping Compound
***0309JB-10A**	**Room 227**	**Black Interior Window Glazing Compound**

041706878

Fuss & O'Neill EnviroScience EMSL Customer No. ENVI54

FUSS & O'NEILL
EnviroScience, LLC

www.fando.com
Phone (203) 374-3748 Fax (203) 374-4391

56 Quarry Road, Trumbull, CT 066611

Sample ID	Sample Location	Type of Material
0309JB-10B	Cafeteria	Black Interior Window Glazing Compound
***0309JB-11A**	**Room 227**	**Gray Interior Window Caulking Compound**
0309JB-11B	Cafeteria	Gray Interior Window Caulking Compound
0309JB-12A	Cafeteria	Silver/Tan Paper Duct Wrap
0309JB-12B	Cafeteria	Silver/Tan Paper Duct Wrap
***0309JB-13A**	**Exterior – O/S Room 227**	**Black Exterior Window Glazing Compound**
0309JB-13B	Exterior – O/S Room 221	Back Exterior Window Glazing Compound
***0309JB-14A**	**Exterior – O/S Room 227**	**Gray Exterior Window Caulking Compound**
0309JB-14B	Exterior – O/S Room 221	Gray Exterior Window Caulking Compound
0309JB-15A	Exterior – Roof Field	Gray Densdek® Board
0309JB-15B	Exterior – Roof Field	Gray Densdek® Board
0309JB-16A	Exterior – Roof Field	Black Paper between Foam Panels
0309JB-16B	Exterior – Roof wall under class windows	Black Paper between Foam Panels

Analysis Method: ☒ PLM ☐ TEM ☐ Other _____ Turnaround Time: 24 Hours

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: _____ Please call EnviroScience if analyses will not be completed for requested TAT at (203) 374 - 3748.

Email Results to: EMarques@fando.com Do Not Mail Hard Copy Report **Total # of Samples:** 37
FAX Results to: 888-838-1160.

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do Not Point Count. If NOB group sample results are 0% - < 1% by PLM, analyze only "A" group sample above by TEM NOB, per group, as indicated by [*] above.

Samples collected by: James Blum J Blum **Date:** 3/09/17 **Time:** _____

Samples Sent by: James Blum J Blum **Date:** 3/10/17 **Time:** _____

Samples Received by: MAB - RK - 1015A **Date:** 3-11-17 **Time:** _____

Shipped To: ☒ EMSL State NJ ☐ Other _____

Method of Shipment: ☒ FedEx ☐ Lab Drop Off ☐ Other _____

RECEIVED
MAR 11 2017
EMSL ANALYTICAL, INC.
PISCATAWAY, NJ

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID:	041706878
Customer ID:	ENVI54
Customer PO:	201617170.A1E
Project ID:	

Attn:	Miguel Marques	Phone:	(860) 646-2469
	Fuss & O'Neill EnviroScience, LLC	Fax:	(888) 838-1160
	146 Hartford Road	Collected:	3/10/2017
	Manchester, CT 06040	Received:	3/11/2017
		Analyzed:	3/13/2017

Proj: Newtown High School Inspection / IAQ - 20161170.A1E - 12 Berkshire Road, Newtown

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 0309JB-01A ***Lab Sample ID:*** 041706878-0001

Sample Description: Cafeteria/Gray Spray-applied Insulation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Gray	60%	40%	None Detected	

Client Sample ID: 0309JB-01B ***Lab Sample ID:*** 041706878-0002

Sample Description: Room 227/Gray Spray-applied Insulation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Gray	60%	40%	None Detected	

Client Sample ID: 0309JB-01C ***Lab Sample ID:*** 041706878-0003

Sample Description: Room 225/Gray Spray-applied Insulation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Gray	60%	40%	None Detected	

Client Sample ID: 0309JB-01D ***Lab Sample ID:*** 041706878-0004

Sample Description: Room 223/Gray Spray-applied Insulation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Gray	60%	40%	None Detected	

Client Sample ID: 0309JB-01E ***Lab Sample ID:*** 041706878-0005

Sample Description: Room 221/Gray Spray-applied Insulation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Gray	60%	40%	None Detected	

Client Sample ID: 0309JB-01F ***Lab Sample ID:*** 041706878-0006

Sample Description: Room 219/Gray Spray-applied Insulation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	Gray	65%	35%	None Detected	

Client Sample ID: 0309JB-01G ***Lab Sample ID:*** 041706878-0007

Sample Description: Room 217/Gray Spray-applied Insulation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	Gray	60%	40%	None Detected	

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EMSL Order ID:	041706878
Customer ID:	ENVI54
Customer PO:	201617170.A1E
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 0309JB-02A ***Lab Sample ID:*** **041706878-0008**

Sample Description: Room 221/White Cap on 2'x4' Fiberglass Suspended Ceiling Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	White	0%	100%	None Detected	

Client Sample ID: 0309JB-02B ***Lab Sample ID:*** **041706878-0009**

Sample Description: Room 227/White Cap on 2'x4' Fiberglass Suspended Ceiling Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	White/Yellow	15%	85%	None Detected	

Client Sample ID: 0309JB-03A ***Lab Sample ID:*** **041706878-0010**

Sample Description: Cafeteria/White Cap on 4'x4' Fiberglass Suspended Ceiling Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	White	0%	100%	None Detected	

Client Sample ID: 0309JB-03B ***Lab Sample ID:*** **041706878-0011**

Sample Description: Cafeteria/White Cap on 4'x4' Fiberglass Suspended Ceiling Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	White/Yellow	15%	85%	None Detected	

Client Sample ID: 0309JB-04A ***Lab Sample ID:*** **041706878-0012**

Sample Description: Room 227/Tan w/ Gray Mottled 12"x12" Floor Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Tan	0%	100%	None Detected	
TEM Grav. Reduction	3/13/2017	Tan	0.0%	100%	None Detected	

Client Sample ID: 0309JB-04B ***Lab Sample ID:*** **041706878-0013**

Sample Description: Room 221/Tan w/ Gray Mottled 12"x12" Floor Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	Tan	0%	100%	None Detected	

Client Sample ID: 0309JB-05A ***Lab Sample ID:*** **041706878-0014**

Sample Description: Room 227/Yellow Floor Tile Adhesive

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Yellow	0%	100%	None Detected	
TEM Grav. Reduction	3/13/2017	Yellow	0.0%	100%	None Detected	

Client Sample ID: 0309JB-05B ***Lab Sample ID:*** **041706878-0015**

Sample Description: Room 221/Yellow Floor Tile Adhesive

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	Yellow	0%	100%	None Detected	

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EMSL Order ID:	041706878
Customer ID:	ENVI54
Customer PO:	201617170.A1E
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 0309JB-06A ***Lab Sample ID:*** **041706878-0016**

Sample Description: Room 227/Gray 4" Cove Base

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Gray	0%	100%	None Detected	
TEM Grav. Reduction	3/13/2017	Gray	0.0%	100%	None Detected	

Client Sample ID: 0309JB-06B ***Lab Sample ID:*** **041706878-0017**

Sample Description: Room 221/Gray 4" Cove Base

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	Gray	0%	100%	None Detected	

Client Sample ID: 0309JB-07A ***Lab Sample ID:*** **041706878-0018**

Sample Description: Room 227/White/Tan Cove Base Adhesive

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Tan/White	0%	100%	None Detected	
TEM Grav. Reduction	3/13/2017	Tan/White	0.0%	100%	None Detected	

Client Sample ID: 0309JB-07B ***Lab Sample ID:*** **041706878-0019**

Sample Description: Room 221/White/Tan Cove Base Adhesive

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	Tan/White	0%	100%	None Detected	

Client Sample ID: 0309JB-08A ***Lab Sample ID:*** **041706878-0020**

Sample Description: Room 227/Gray Gypsum Wall Board

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Brown/Gray	20%	80%	None Detected	

Client Sample ID: 0309JB-08B ***Lab Sample ID:*** **041706878-0021**

Sample Description: Room 221/Gray Gypsum Wall Board

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	Brown/Gray	20%	80%	None Detected	

Client Sample ID: 0309JB-09A ***Lab Sample ID:*** **041706878-0022**

Sample Description: Room 227/White Joint / Taping Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	White	0%	100%	None Detected	

Client Sample ID: 0309JB-09B ***Lab Sample ID:*** **041706878-0023**

Sample Description: Room 221/White Joint / Taping Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	White	0%	100%	None Detected	

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Customer ID:	ENVI54
Customer PO:	201617170.A1E
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 0309JB-10A ***Lab Sample ID:*** **041706878-0024**

Sample Description: Room 227/Black Interior Window Glazing Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Black	0%	100%	None Detected	
TEM Grav. Reduction	3/13/2017	Black	0.0%	100%	None Detected	

Client Sample ID: 0309JB-10B ***Lab Sample ID:*** **041706878-0025**

Sample Description: Cafeteria/Black Interior Window Glazing Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	Black	0%	100%	None Detected	

Client Sample ID: 0309JB-11A ***Lab Sample ID:*** **041706878-0026**

Sample Description: Room 227/Gray Interior Window Caulking Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Gray	0%	100%	None Detected	
TEM Grav. Reduction	3/13/2017	Gray	0.0%	100%	None Detected	

Client Sample ID: 0309JB-11B ***Lab Sample ID:*** **041706878-0027**

Sample Description: Cafeteria/Gray Interior Window Caulking Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	Gray	0%	100%	None Detected	

Client Sample ID: 0309JB-12A ***Lab Sample ID:*** **041706878-0028**

Sample Description: Cafeteria/Silver/Tan Paper Duct Wrap

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Tan/Silver	70%	30%	None Detected	

Client Sample ID: 0309JB-12B ***Lab Sample ID:*** **041706878-0029**

Sample Description: Cafeteria/Silver/Tan Paper Duct Wrap

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	Tan/Silver	70%	30%	None Detected	

Client Sample ID: 0309JB-13A ***Lab Sample ID:*** **041706878-0030**

Sample Description: Exterior - O/S Room 227/Black Exterior Window Glazing Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Black	0%	100%	None Detected	
TEM Grav. Reduction	3/13/2017	Black	0.0%	100%	None Detected	

Client Sample ID: 0309JB-13B ***Lab Sample ID:*** **041706878-0031**

Sample Description: Exterior - O/S Room 221/Black Exterior Window Glazing Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	Black	0%	100%	None Detected	

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Customer ID:	ENVI54
Customer PO:	201617170.A1E
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 0309JB-14A ***Lab Sample ID:*** 041706878-0032

Sample Description: Exterior - O/S Room 227/Gray Exterior Window Caulking Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Gray	0%	100%	None Detected	
TEM Grav. Reduction	3/13/2017	Gray	0.0%	100%	None Detected	

Client Sample ID: 0309JB-14B ***Lab Sample ID:*** 041706878-0033

Sample Description: Exterior - O/S Room 221/Gray Exterior Window Caulking Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	Gray	0%	100%	None Detected	

Client Sample ID: 0309JB-15A ***Lab Sample ID:*** 041706878-0034

Sample Description: Exterior - Roof Field/Gray Densdek Board

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Gray	15%	85%	None Detected	

Client Sample ID: 0309JB-15B ***Lab Sample ID:*** 041706878-0035

Sample Description: Exterior - Roof Field/Gray Densdek Board

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	Gray	20%	80%	None Detected	

Client Sample ID: 0309JB-16A ***Lab Sample ID:*** 041706878-0036

Sample Description: Exterior - Roof Field/Black Paper between Foam Panels

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/11/2017	Black	90%	10%	None Detected	

Client Sample ID: 0309JB-16B ***Lab Sample ID:*** 041706878-0037

Sample Description: Exterior - Roof Wall under Class Windows/Black Paper between Foam Panels

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	3/12/2017	Black	90%	10%	None Detected	

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EMSL Order ID:	041706878
Customer ID:	ENVI54
Customer PO:	201617170.A1E
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Analyst(s):

Debbie Little	TEM Grav. Reduction (8)
Keishla Vazquez Caraballo	PLM (20)
Megan Wierzbowski	PLM (17)

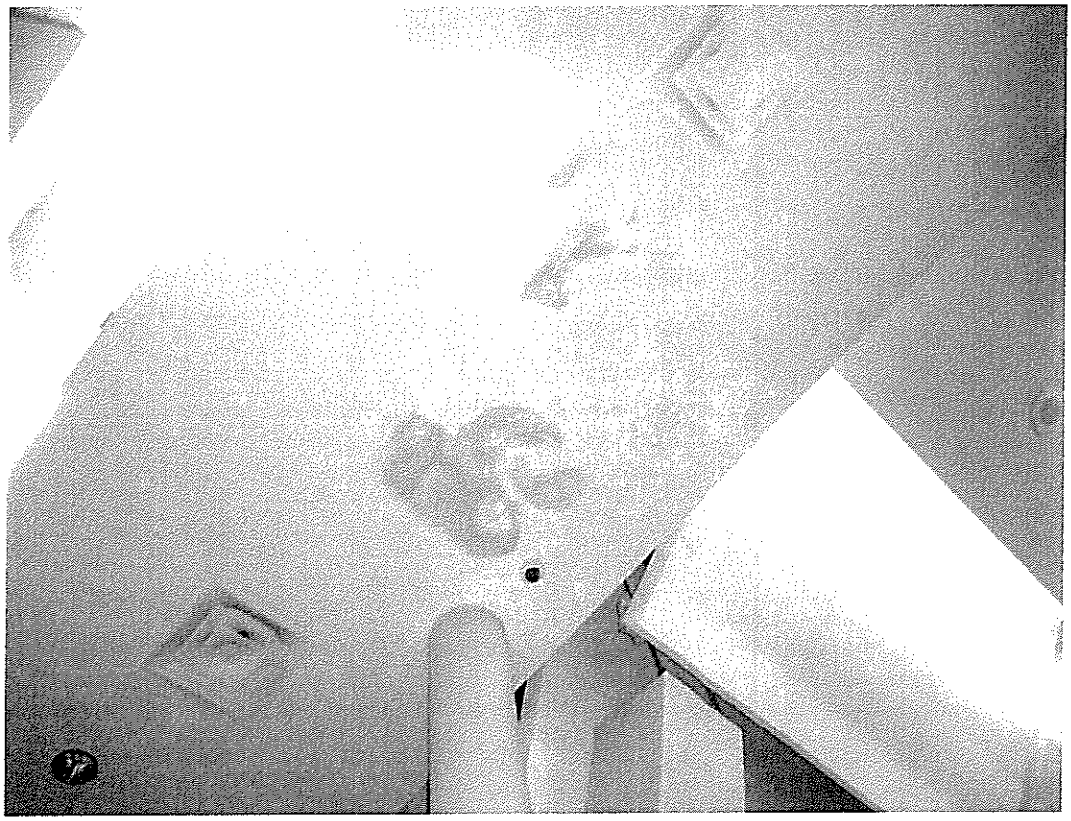
Reviewed and approved by:

Benjamin Ellis, Laboratory Manager
or Other Approved Signatory

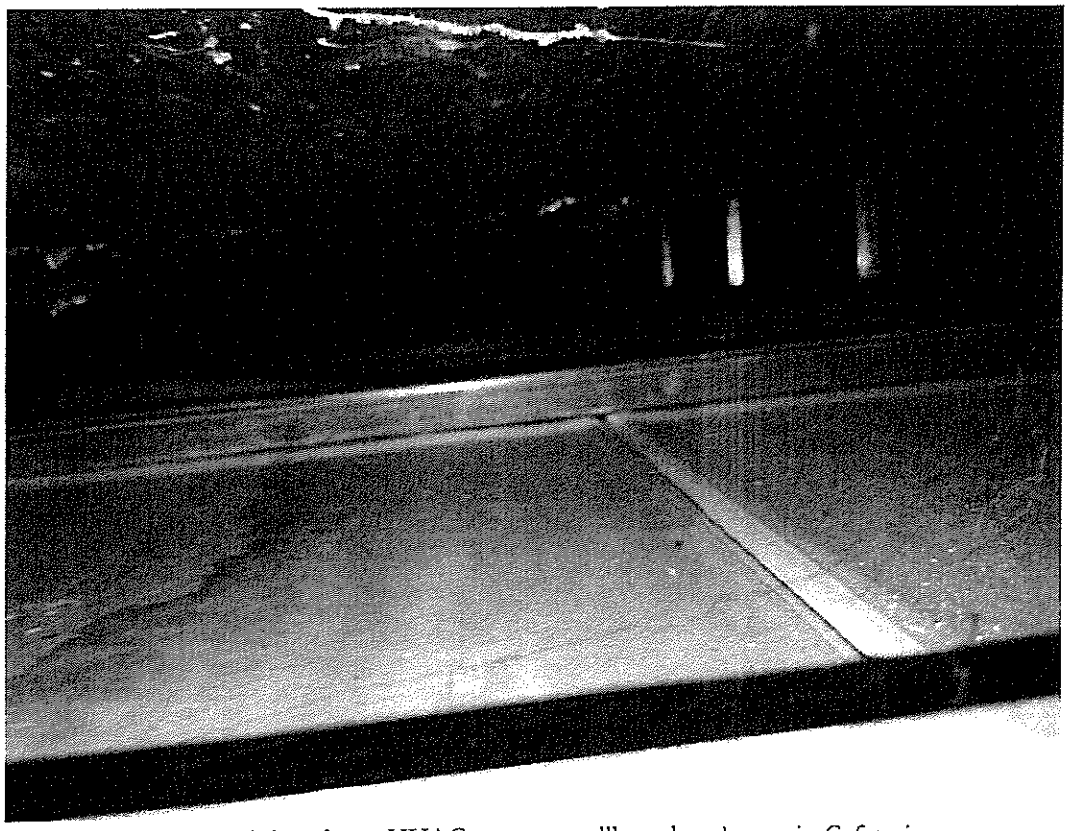
Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036

Appendix D

Site Photographs



Water staining on gypsum wallboard soffited areas enclosing HVAC ductwork in Cafeteria



Water staining above HVAC gypsum wallboard enclosure in Cafeteria

Appendix E

List of Instrumentation

Instrumentation

Analyze	Description	Calibration
Temperature, Relative Humidity, Carbon Dioxide & Carbon Monoxide	TSI IAQ-CALC Meter (7545)	Before/After Use Annually
Air Sampling	A.P Buck BioAire Bio-Aerosol Sampling pump with Air-O-Cell™ Cassettes	Rotometer # R12882
Moisture Content on/in Building Materials	Delmhorst Moisture Meter	Factory

Appendix F

Data Sheet for Temperature, Relative Humidity, Carbon Monoxide and Carbon Dioxide

FUSS & O'NEILL
EnviroScience, LLC

Air Quality Parameters

CLIENT: Town of Newtown

SITE ADDRESS: 12 Berkshire Road

CITY & STATE: Sandy Hook, CT

FUSS & O'NEILL ENVIROSCIENCE PROJECT NO. 20161170.A1E

Date: March 9, 2017 Location: Newtown High School Page 1 of 1

Location	# of Occupants	CO_2 (PPM)	CO (PPM)	Temperature (°F)	RH (%)
Recommended Guidelines		**< 1,200**	**< 9.0**	**68-79**	**30-60**
Pre-Assessment (Outdoors)	N/A	384	0.1	57.4	15.9
Classroom 219	0	448	0.0	71.8	12.8
Café (NW corner)	~20	607	0.0	68.5	15.2
Café – Stage	~20	600	0.0	68.1	13.6
Main Lobby/Foyer	~15	453	0.0	70.0	13.6
Post-Assessment (Outdoors)	N/A	403	0.1	51.7	19.5

Appendix G

Quantitiative Spore Count Laboratory Report and Chain-of-Custody Form

OrderID: 3717048971

Fuss & O'Neill EnviroScience EMSL Customer No. ENVI54

Microbiology Chain of Custody

EMSL Order Number (Lab Use Only):

3717048971

PHONE.
FAX

Company : Fuss & O'Neill EnviroScience, LLC	**EMSL-Bill to:** ☐ Different ☒ Same If Bill to is Different note instructions in Comments" *Third Party Billing requires written authorization from third party*
Street: 56 Quarry Road	
City: Trumbull **State/Province:** CT	**Zip/Postal Code:** 06611 **Country:** US
Report To (Name): Miguel Marques	**Telephone #:** 203-374-3748
Email Address: EMarques@fando.com	**Fax #:** 888-838-1160 **Purchase Order:**
Project Name/Number: 20161170.A1E	**Please Provide Results:** ☒ FAX ☐ E-mail ☐ Mail
U.S. State Samples Taken: CT	**Connecticut Samples:** ☒ Commercial ☐ Residential

Turnaround Time (TAT) Options* - Please Check

☐ 3 Hour	☐ 6 Hour	■ 24 Hour	☐ 48 Hour	☐ 72 Hour	☐ 96 Hour	☐ 1 Week	☐ 2 Week

**Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements*

Non Culturable Air Samples (Spore Traps) – Test Codes

• **M001** Air-O-Cell • **M049** BioSIS • **M030** Micro 5	• **M173** Allegro M2 • **M003** Burkard • **M174** MoldSnap	• **M004** Allergenco • **M043** Cyclex • **M176** Relle Smart	• **M032** Allerganco-D • **M002** Cyclex-d • **M130** Via-Cell	• **M172** Versa Trap

Other Microbiology Test Codes

• **M041** Fungal Direct Examination • **M005** Viable Fungi ID and Count • **M006** Viable Fungi ID and Count (Speciation) • **M007** Culturable Fungi • **M008** Culturable Fungi (Speciation) • **M009** Gram Stain Culturable Bacteria • **M010** Bacterial Count and ID – 3 Most Prominent • **M011** Bacterial Count and ID – 5 Most Prominent • **M013** Sewage Contamination in Buildings	• **M014** Endotoxin Analysis • **M015** Heterotrophic Plate Count • **M180** Real Time Q-PCR-ERMI 36 Panel • **M018** Total Coliform (Membrane Filtration) • **M020** Fecal *Streptococcus* (Membrane Filtration) • **M210-215** *Legionella* Detection • **M026** Recreational Water Screen • **M027** Mycotoxin Analysis	• **M029** *Enterococci* • **M019** Fecal Coliform • **M133** MRSA Analysis • **M028** *Cryptococcus neoformans* Detection • **M120** *Histoplasma capsulatum* Detection • **M033-39** Allergen Testing • **M044** Group Allergen (Cat, Dog, Cockroach, Dustmites) • Other See Analytical Price Guide

Preservation Method (Water):

Name of Sampler: James Blum **Signature of Sampler:**

Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected
Example: A1	Kitchen	Air	M001	75L	1/1/12 4:00 PM
0309JB-01	Pre-Assessment (Outdoor)	Air	M001	150 L	3/09/2017
0309JB-02	Room 219	Air	M001	150 L	3/09/2017
0309JB-03	Cafeteria - NW Corner	Air	M001	150 L	3/09/2017
0309JB-04	Cafeteria.- Stage	Air	M001	150 L	3/09/2017
0309JB-05	Main Lobby/Foyer	Air	M001	150 L	3/09/2017
0309JB-06	Post-Assessment (Outdoor)	Air	M001	150 L	3/09/2017
0309JB-01	Cafeteria - Duct Chase	Tape - Lift	M041		3/09/2017

Client Sample # (s): 9-5 above **Total # of Samples:** 7

Relinquished (Client): **Date:** 3-10-17 **Time:**

Received (Client): BW FX **Date:** 3/11/17 **Time:** 10A

Comments:

8100195435 54

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http://www.EMSL.com / cinnmicrolab@emsl.com

EMSL Order:	371704897
Customer ID:	ENVI54
Customer PO:	20161770.A1E
Project ID:	

Attn:	Miguel Marques
	Fuss & O'Neill EnviroScience, LLC
	146 Hartford Road
	Manchester, CT 06040
Project:	20161770.A1E

Phone:	(203) 379-6144
Fax:	(888) 838-1160
Collected:	03/09/2017
Received:	03/11/2017
Analyzed:	03/13/2017

Test Report: Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods EMSL 05-TP-003, ASTM D7391)

Lab Sample Number:	371704897-0001			371704897-0002			371704897-0003		
Client Sample ID:	0309JB-01			0309JB-02			0309JB-03		
Volume (L):	150			150			150		
Sample Location	Pre-Assessment (Outdoor)			Room 219			Cafeteria - NW Corner		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria	-	-	-	-	-	-	-	-	-
Ascospores	1	20	15.4	-	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	-	-	-	-	-	-
Basidiospores	3	70	53.8	1	20	42.6	-	-	-
Bipolaris++	-	-	-	-	-	-	1	20	50
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	2	40	30.8	1	20	42.6	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	1*	7*	14.9	1	20	50
Pithomyces	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-	-	-	-
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	6	130	100	3	47	100	2	40	100
Hyphal Fragment	1	20	-	-	-	-	-	-	-
Insect Fragment	-	-	-	1	20	-	-	-	-
Pollen	2*	10*	-	3*	20*	-	-	-	-
Analyt. Sensitivity 600x	-	22	-	-	22	-	-	22	-
Analyt. Sensitivity 300x	-	7*	-	-	7*	-	-	7*	-
Skin Fragments (1-4)	-	1	-	-	2	-	-	3	-
Fibrous Particulate (1-4)	-	1	-	-	2	-	-	1	-
Background (1-5)	-	1	-	-	4	-	-	3	-

Bipolaris++ = Bipolaris/Drechslera/Exserohilum
Myxomycetes++ = Myxomycetes/Periconia/Smut

No discernable field blank was submitted with this group of samples.

Vincent Iuzzolino

Vincent Iuzzolino, M.S., Laboratory Manager
or other approved signatory

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ AIHA-LAP, LLC–EMLAP Lab 100194

Initial report from: 03/13/2017 11:03:56

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-0262
http://www.EMSL.com / cinnmicrolab@emsl.com

EMSL Order: 371704897
Customer ID: ENVI54
Customer PO: 20161770.A1E
Project ID:

Attn: Miguel Marques
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone: (203) 379-6144
Fax: (888) 838-1160
Collected: 03/09/2017
Received: 03/11/2017
Analyzed: 03/13/2017

Project: 20161770.A1E

Test Report: Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods EMSL 05-TP-003, ASTM D7391)

Lab Sample Number:	371704897-0004			371704897-0005			371704897-0006		
Client Sample ID:	0309JB-04			0309JB-05			0309JB-06		
Volume (L):	150			150			150		
Sample Location	Cafeteria - Stage			Main Lobby / Foyer			Post-Assessment (Outdoor)		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	6	100	21.7
Aspergillus/Penicillium	-	-	-	-	-	-	1	20	4.3
Basidiospores	1*	7*	50	-	-	-	7	200	43.5
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	-	-	-	6	100	21.7
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	1*	7*	50	1	20	50	2	40	8.7
Pithomyces	-	-	-	-	-	-	-	-	-
Rust	-	-	-	1	20	50	-	-	-
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-	-	-	-
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**2**	**14**	**100**	**2**	**40**	**100**	**22**	**460**	**100**
Hyphal Fragment	-	-	-	1	20	-	1	20	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	1	20	-	1	20	-
Analyt. Sensitivity 600x	-	22	-	-	22	-	-	22	-
Analyt. Sensitivity 300x	-	7*	-	-	7*	-	-	7*	-
Skin Fragments (1-4)	-	3	-	-	2	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	3	-	-	1	-

Bipolaris++ = Bipolaris/Drechslera/Exserohilum
Myxomycetes++ = Myxomycetes/Periconia/Smut

No discernable field blank was submitted with this group of samples.

Vincent Iuzzolino

Vincent Iuzzolino, M.S., Laboratory Manager
or other approved signatory

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "**" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ AIHA-LAP, LLC–EMLAP Lab 100194

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Appendix H

Direct Microscopic Assessment laboratory Report and Chain-of-Custody Form

OrderID: 371704897

Fuss & O'Neill EnviroScience EMSL Customer No. ENVI54

Microbiology Chain of Custody

EMSL Order Number (Lab Use Only):

371704897

PHONE:
FAX:

Company: Fuss & O'Neill EnviroScience, LLC	**EMSL-Bill to:** ☐ Different ☒ Same If Bill to is Different note instructions in Comments" *Third Party Billing requires written authorization from third party*
Street: 56 Quarry Road	
City: Trumbull **State/Province:** CT	**Zip/Postal Code:** 06611 **Country:** US
Report To (Name): Miguel Marques	**Telephone #:** 203-374-3748
Email Address: EMarques@fando.com	**Fax #:** 888-838-1160 **Purchase Order:**
Project Name/Number: 20161170.A1E	**Please Provide Results:** ☒ FAX ☐ E-mail ☐ Mail
U.S. State Samples Taken: CT	**Connecticut Samples:** ☒ Commercial ☐ Residential

Turnaround Time (TAT) Options* - Please Check

☐ 3 Hour ☐ 6 Hour ■ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☒ 2 Week

*Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements

Non Culturable Air Samples (Spore Traps) – Test Codes

• M001 Air-O-Cell • M049 BioSIS • M030 Micro 5	• M173 Allegro M2 • M003 Burkard • M174 MoldSnap	• M004 Allergenco • M043 Cyclex • M176 Relle Smart	• M032 Allerganco-D • M002 Cyclex-d • M130 Via-Cell	• M172 Versa Trap

Other Microbiology Test Codes

• M041 Fungal Direct Examination • M005 Viable Fungi ID and Count • M006 Viable Fungi ID and Count (Speciation) • M007 Culturable Fungi • M008 Culturable Fungi (Speciation) • M009 Gram Stain Culturable Bacteria • M010 Bacterial Count and ID – 3 Most Prominent • M011 Bacterial Count and ID – 5 Most Prominent • M013 Sewage Contamination in Buildings	• M014 Endotoxin Analysis • M015 Heterotrophic Plate Count • M180 Real Time Q-PCR-ERMI 36 Panel • M018 Total Coliform (Membrane Filtration) • M020 Fecal *Streptococcus* (Membrane Filtration) • M210-215 *Legionella* Detection • M026 Recreational Water Screen • M027 Mycotoxin Analysis	• M029 *Enterococci* • M019 Fecal Coliform • M133 MRSA Analysis • M028 *Cryptococcus neoformans* Detection • M120 *Histoplasma capsulatum* Detection • M033-39 Allergen Testing • M044 Group Allergen (Cat, Dog, Cockroach, Dustmites) • Other See Analytical Price Guide

Preservation Method (Water):

Name of Sampler: James Blum **Signature of Sampler:** James Blum

Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected
Example: A1	Kitchen	Air	M001	75L	1/1/12 4:00 PM
0309JB-01	Pre-Assessment (Outdoor)	Air	M001	150 L	3/09/2017
0309JB-02	Room 219	Air	M001	150 L	3/09/2017
0309JB-03	Cafeteria - NW Corner	Air	M001	150 L	3/09/2017
0309JB-04	Cafeteria - Stage	Air	M001	150 L	3/09/2017
0309JB-05	Main Lobby/Foyer	Air	M001	150 L	3/09/2017
0309JB-06	Post-Assessment (Outdoor)	Air	M001	150 L	3/09/2017
0309JB-01	Cafeteria - Duct Chase	Tape - Lift	M041		3/09/2017

Client Sample # (s): as above **Total # of Samples:** 7

Relinquished (Client): JBlum **Date:** 3-10-17 **Time:**

Received (Client): BW FX **Date:** 3/11/17 **Time:** 10A

Comments: 8100195438 54

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Attn: Miguel Marques
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Phone:	(860) 646-2469
Fax:	(888) 838-1160
Collected:	03/09/2017
Received:	03/11/2017
Analyzed:	03/13/2017

Proj: 20161770.A1E

Test Report: Microscopic Examination of Fungal Spores, Fungal Structures, Hyphae, and Other Particulates from Tape Samples (EMSL Method: M041)

Lab Sample Number:	371704897-0007				
Client Sample ID:	0309JB-01				
Sample Location:	Cafeteria - Duct Chase				
Spore Types	Category	-	-	-	-
Agrocybe/Coprinus	-	-	-	-	-
Alternaria	-	-	-	-	-
Ascospores	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	-	-
Basidiospores	-	-	-	-	-
Bipolaris++	-	-	-	-	-
Chaetomium	-	-	-	-	-
Cladosporium	-	-	-	-	-
Curvularia	-	-	-	-	-
Epicoccum	-	-	-	-	-
Fusarium	-	-	-	-	-
Ganoderma	-	-	-	-	-
Myxomycetes++	-	-	-	-	-
Paecilomyces	-	-	-	-	-
Rust	-	-	-	-	-
Scopulariopsis	-	-	-	-	-
Stachybotrys	-	-	-	-	-
Torula	-	-	-	-	-
Ulocladium	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-
Zygomycetes	-	-	-	-	-
Fibrous Particulate	-	-	-	-	-
Hyphal Fragment	-	-	-	-	-
Insect Fragment	-	-	-	-	-
Pollen	-	-	-	-	-

ample Comment: 371704897-0007 None Detected

Category: Count/per area analyzed
Rare: 1 to 10 Low: 11 to 100 Medium: 101 to 1000 High: >1000

Bipolaris++ = Bipolaris/Dreschlera/Exserohilum Myxomycetes++ = Myxomycetes/Periconia/Smut
* = Sample contains fruiting structures and/or hyphae associated with the spores.

Vincent Iuzzolino, M.S., Laboratory Director
or Other Approved Signatory

No discernable field blank was submitted with this group of samples.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ AIHA-LAP, LLC--EMLAP Accredited #100194

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