



Crabtree, Rohrbaugh & Associates

# **MONTOURSVILLE AREA SCHOOL DISTRICT**

## **DISTRICT WIDE FACILITY STUDY**

March 8, 2022

# OPTION 8

- HVAC Upgrades to Loyalsock Valley Elementary School
- HVAC Upgrades to Lyter Elementary School.
- Maintain current grade configuration.

# OPTION 8

## Loyalsock Elementary School - Replace entire HVAC system with new system with air conditioning

The building will be served by terminal units with a Dedicated Outdoor Air ventilation System (DOAS). The DOAS rooftop units will provide ventilation air. The units will be provided with dehumidification/heating controls on the ventilation air. The classrooms will be served ventilation air through the DOAS units. These rooftop units may have energy recovery wheels.

Classrooms, offices and corridors will be served with Variable Refrigerant Flow (VRF) terminal units. Classrooms will be served by a single terminal unit. The terminal system will have units sized to meet the space heating and cooling requirements. The terminal units will be piped to air cooled condensing units located on the roof. Several classrooms will be tied to multiple outdoor heatpump units. The heatpump units will provide 100% heating /cooling throughout the school year.

Toilet rooms, storage rooms will have new exhaust fans for ventilation.

The HVAC system will be controlled through a new Energy Management Control System (EMCS).

Electrical system upgrades will include new distribution panels for powering the new HVAC equipment. The existing electrical service is 120/208- 600 amp service. The existing building service will be replaced with a new service. A new electric room will be required to install the new electric service. The existing electric service will be back fed from the new service. The new electric room will be 200 square feet and be located adjacent to the existing electrical service entrance on the building.

General construction will require clean up, ceilings, managing the project. The ceilings throughout the school will have to be removed and reinstalled. The exterior louvers on unit ventilators will need to be bricked. Provide classroom casework where floor mounted unit ventilators were removed. The scheduling and managing of the project progress will be completed by the general contractor.

# OPTION 8

## Lyter Elementary School - Replace entire HVAC system with new system with air conditioning

The building will be served by terminal units with a Dedicated Outdoor Air ventilation System (DOAS). The DOAS rooftop units will provide ventilation air. The units will be provided with dehumidification controls on the ventilation air. The classrooms will be served ventilation air through the DOAS units. These rooftop units will energy recovery wheels or plate and frame heat exchangers. As the project moves through design this option will be explored. This may be an alternate to control project costs.

Classrooms, offices and corridors will be served with terminal units. Classrooms will be served by a single terminal unit. The terminal system will have units sized to meet the space heating and cooling requirements. Cooling will be provided by variable refrigerant flow (VRF) heatpump systems. These terminal units will have hot water coils for space heating. New heating boilers, hot water heating system piping and pumps will be utilized to provide heat throughout the building.

Toilet rooms, storage rooms will have new exhaust fans for ventilation.

The HVAC system will be controlled through a new Energy Management Control System (EMCS).

Electrical system upgrades will include reusing the existing power panels and providing new power panels to provide power to the new HVAC equipment. The existing electrical service to the building is 480volt 1200 amp. The existing power panels currently serving the HVAC equipment will be reused to serve the new equipment. Where additional power is needed, new panels will be added to serve the new HVAC equipment.

General construction will require clean up, ceilings, managing the project. The ceilings throughout the school will have to be removed and reinstalled. The exterior louvers on unit ventilators will need to be bricked. Provide classroom casework where floor mounted unit ventilators where removed. The scheduling and managing of the project progress will be completed by the general contractor.

# OPTION 8

# ESTIMATED COSTS

Loyalsock Valley Elementary School				March 3, 2022	
HVAC Upgrades			COST RANGE		
Renovation Construction Costs	40,920 SF	\$ 2,741,640		\$ 3,015,804	
Additions Construction Costs	500 SF	\$ 114,750		\$ 126,225	
Site Construction Costs		\$ -		\$ -	
Escalation & Contingency	7%	\$ 199,947		\$ 219,942	
<b>Subtotal Construction Costs</b>		<b>\$ 3,056,337</b>		<b>\$ 3,361,971</b>	
Construction Soft Costs	10.0%	\$ 305,634		\$ 336,197	
<b>Total Construction Costs</b>		<b>\$ 3,361,971</b>		<b>\$ 3,698,168</b>	
Project Soft Costs	11.0%	\$ 369,817		\$ 406,798	
<b>TOTAL PROJECT COSTS</b>		<b>\$ 3,731,788</b>		<b>\$ 4,104,967</b>	

Lyter Elementary School				March 3, 2022	
HVAC Upgrades			COST RANGE		
Renovation Construction Costs	70,270 SF	\$ 4,216,200		\$ 4,637,820	
Additions Construction Costs		\$ -		\$ -	
Site Construction Costs		\$ -		\$ -	
Escalation & Contingency	7%	\$ 295,134		\$ 324,647	
<b>Subtotal Construction Costs</b>		<b>\$ 4,511,334</b>		<b>\$ 4,962,467</b>	
Construction Soft Costs	10.0%	\$ 451,133		\$ 496,247	
<b>Total Construction Costs</b>		<b>\$ 4,962,467</b>		<b>\$ 5,458,714</b>	
Project Soft Costs	11.0%	\$ 545,871		\$ 600,459	
<b>TOTAL PROJECT COSTS</b>		<b>\$ 5,508,339</b>		<b>\$ 6,059,173</b>	
<b>TOTAL OPTION 8 COSTS</b>		<b>\$ 9,240,127</b>	-	<b>\$ 10,164,139</b>	



# OPTION 8

## Pros

- Lowest construction costs.
- Maintains neighborhood schools.

## Cons

- Does not address any educational/functional deficiencies at Loyalsock Valley Elementary School or Lyter Elementary School.
- Does not address all existing facility conditions at Loyalsock Valley Elementary School or Lyter Elementary School.
- Lack of equity and shared resources among grade levels.
- Not as operationally efficient as other Options.

**SUMMARY**

OPTION 1	Comprehensive Renovations and minor additions to Loyalsock Valley Elementary School and Mechanical, Electrical and Plumbing system upgrades to Lyter Elementary School. Maintain current grade configuration.											
FACILITY	EXST. GRADE CONFIG.	EXISTING AREA	EXIST. FUNC. CAPACITY	CURRENT ENROLL.	PROPOSED SCOPE	PROP. GRADE CONFIG.	SF OF NEW CONSTR.	TOTAL NET SF	ELEM. PLAN. FUNC. CAP.	SEC. PLAN. FUNC. CAP.	TOTAL ESTIMATED COST RANGE	
Loyalsock Valley Elementary School	K-4	40,920	293	252	Renov. & Minor Additions	K-4	1,500	42,420	293		\$ 10,244,547	- \$ 11,269,001
Lyter Elementary School	K-4	70,270	518	433	MEP Upgrades	K-4		70,270	518		\$ 6,182,118	- \$ 6,800,329
C.E. McCall Middle School	5-8	146,500	802	643	Maintain	5-8		146,500		802		
Montoursville Area High School	9-12	208,173	924	610	Maintain	9-12		208,173		924		
<b>Total District</b>		<b>465,863</b>	<b>2,537</b>	<b>1,938</b>			<b>1,500</b>	<b>467,363</b>	<b>811</b>	<b>1,726</b>	<b>16,426,664</b>	<b>\$ 18,069,331</b>

OPTION 2	Comprehensive renovations and major additions to Loyalsock Valley Elementary School and Mechanical, Electrical and Plumbing system upgrades to Lyter Elementary School. Maintain current grade configuration.											
FACILITY	EXST. GRADE CONFIG.	EXISTING AREA	EXIST. FUNC. CAPACITY	CURRENT ENROLL.	PROPOSED SCOPE	PROP. GRADE CONFIG.	SF OF NEW CONSTR.	TOTAL NET SF	ELEM. PLAN. FUNC. CAP.	SEC. PLAN. FUNC. CAP.	TOTAL ESTIMATED COST RANGE	
Loyalsock Valley Elementary School	K-4	40,920	293	252	Renov. & Major Additions	K-4	12,500	53,420	315		\$ 15,110,772	- \$ 16,621,850
Lyter Elementary School	K-4	70,270	518	433	MEP Upgrades	K-4		70,270	518		\$ 6,182,118	- \$ 6,800,329
C.E. McCall Middle School	5-8	146,500	802	643	Maintain	5-8		146,500		802		
Montoursville Area High School	9-12	208,173	924	610	Maintain	9-12		208,173		924		
<b>Total District</b>		<b>465,863</b>	<b>2,537</b>	<b>1,938</b>			<b>12,500</b>	<b>478,363</b>	<b>833</b>	<b>1,726</b>	<b>\$ 21,292,890</b>	<b>\$ 23,422,179</b>

OPTION 3	Close Loyalsock Valley Elementary School and consolidate to Lyter Elementary School. Comprehensive Renovations and Additions to Lyter Elementary School. Maintain current grade configuration.											
FACILITY	EXST. GRADE CONFIG.	EXISTING AREA	EXIST. FUNC. CAPACITY	CURRENT ENROLL.	PROPOSED SCOPE	PROP. GRADE CONFIG.	SF OF NEW CONSTR.	TOTAL NET SF	ELEM. PLAN. FUNC. CAP.	SEC. PLAN. FUNC. CAP.	TOTAL ESTIMATED COST RANGE	
Loyalsock Valley Elementary School	K-4	40,920	293	252	Close							
Lyter Elementary School	K-4	70,270	518	433	Renovations & Additions	K-4	21,400	91,670	720		\$ 16,547,508	- \$ 18,202,259
C.E. McCall Middle School	5-8	146,500	802	643	Maintain	5-8		146,500		802		
Montoursville Area High School	9-12	208,173	924	610	Maintain	9-12		208,173		924		
<b>Total District</b>		<b>465,863</b>	<b>2,537</b>	<b>1,938</b>			<b>21,400</b>	<b>446,343</b>	<b>720</b>	<b>1,726</b>	<b>\$ 16,547,508</b>	<b>\$ 18,202,259</b>

OPTION 4	Close Loyalsock Valley Elementary School, convert Lyter Elementary School to district wide K-2 Primary School and construct additions at C.E. McCall Middle school for grades 3-4. Comprehensive Renovations to Lyter Elementary School.											
FACILITY	EXST. GRADE CONFIG.	EXISTING AREA	EXIST. FUNC. CAPACITY	CURRENT ENROLL.	PROPOSED SCOPE	PROP. GRADE CONFIG.	SF OF NEW CONSTR.	TOTAL NET SF	ELEM. PLAN. FUNC. CAP.	SEC. PLAN. FUNC. CAP.	TOTAL ESTIMATED COST RANGE	
Loyalsock Valley Elementary School	K-4	40,920	293	252	Close							
Lyter Elementary School	K-4	70,270	518	433	Renovations	K-2		70,270	495		\$ 7,772,318	- \$ 8,549,550
C.E. McCall Middle School	5-8	146,500	802	643	Additions & Minor Renov.	3-8	40,500	187,000	270	802	\$ 16,429,481	- \$ 18,072,429
Montoursville Area High School	9-12	208,173	924	610	Maintain	9-12		208,173		924		
<b>Total District</b>		<b>465,863</b>	<b>2,537</b>	<b>1,938</b>			<b>40,500</b>	<b>465,443</b>	<b>765</b>	<b>1,726</b>	<b>\$ 24,201,799</b>	<b>\$ 26,621,979</b>



OPTION 5												Close Lyter Elementary School, convert Loyalsock Valley Elementary School to district wide K-2 Primary School, and construct additions at C.E. McCall Middle school for grades 3-4. Additions and Comprehensive Renovations to Loyalsock Valley Elementary School.		
FACILITY	EXST. GRADE CONFIG.	EXISTING AREA	EXIST. FUNC. CAPACITY	CURRENT ENROLL.	PROPOSED SCOPE	PROP. GRADE CONFIG.	SF OF NEW CONSTR.	TOTAL NET SF	ELEM. PLAN. FUNC. CAP.	SEC. PLAN. FUNC. CAP.	TOTAL ESTIMATED COST RANGE			
Loyalsock Valley Elementary School	K-4	40,920	293	252	Renov. & Major Additions	K-2		40,920	495		\$ 21,133,621	-	\$ 23,246,983	
Lyter Elementary School	K-4	70,270	518	433	Close									
C.E. McCall Middle School	5-8	146,500	802	643	Additions & Minor Renov.	3-8	40,500	187,000	270	802	\$ 16,429,481	-	\$ 18,072,429	
Montoursville Area High School	9-12	208,173	924	610	Maintain	9-12		208,173		924				
<b>Total District</b>		<b>465,863</b>	<b>2,537</b>	<b>1,938</b>			<b>40,500</b>	<b>436,093</b>	<b>765</b>	<b>1,726</b>	<b>\$ 37,563,102</b>		<b>\$ 41,319,412</b>	

OPTION 6												Convert Loyalsock Valley Elementary School to district wide 3-4 Intermediate School and Lyter Elementary School to district wide K-2 Primary School. Comprehensive renovations and major additions to Loyalsock Valley Elementary School and Comprehensive Renovations to Lyter Elementary School.		
FACILITY	EXST. GRADE CONFIG.	EXISTING AREA	EXIST. FUNC. CAPACITY	CURRENT ENROLL.	PROPOSED SCOPE	PROP. GRADE CONFIG.	SF OF NEW CONSTR.	TOTAL NET SF	ELEM. PLAN. FUNC. CAP.	SEC. PLAN. FUNC. CAP.	TOTAL ESTIMATED COST RANGE			
Loyalsock Valley Elementary School	K-4	40,920	293	252	Renov. & Major Additions	3-4	12,500	53,420	270		\$ 15,110,772	-	\$ 16,621,850	
Lyter Elementary School	K-4	70,270	518	433	Renovations	K-2		70,270	495		\$ 7,772,318	-	\$ 8,549,550	
C.E. McCall Middle School	5-8	146,500	802	643	Maintain	5-8		146,500		802				
Montoursville Area High School	9-12	208,173	924	610	Maintain	9-12		208,173		924				
<b>Total District</b>		<b>465,863</b>	<b>2,537</b>	<b>1,938</b>			<b>12,500</b>	<b>478,363</b>	<b>765</b>	<b>1,726</b>	<b>\$ 22,883,091</b>		<b>\$ 25,171,400</b>	

OPTION 7												Close Loyalsock Valley Elementary School and Lyter Elementary School. Construct new K-4 Elementary School at C.E. McCall Middle School site. Maintain current grade configuration.		
FACILITY	EXST. GRADE CONFIG.	EXISTING AREA	EXIST. FUNC. CAPACITY	CURRENT ENROLL.	PROPOSED SCOPE	PROP. GRADE CONFIG.	SF OF NEW CONSTR.	TOTAL SF	ELEM. PLAN. FUNC. CAP.	SEC. PLAN. FUNC. CAP.	TOTAL ESTIMATED COST RANGE			
New Elementary School					New Construction	K-4	98,500	98,500	720		\$ 32,971,856	-	\$ 36,269,042	
Loyalsock Valley Elementary School	K-4	40,920	293	252	Close									
Lyter Elementary School	K-4	70,270	518	433	Close									
C.E. McCall Middle School	5-8	146,500	802	643	Maintain	5-8		146,500		802				
Montoursville Area High School	9-12	208,173	924	610	Maintain	9-12		208,173		924				
<b>Total District</b>		<b>465,863</b>	<b>2,537</b>	<b>1,938</b>			<b>98,500</b>	<b>453,173</b>	<b>720</b>	<b>1,726</b>	<b>\$ 32,971,856</b>		<b>\$ 36,269,042</b>	

OPTION 8												HVAC upgrades to Loyalsock Valley Elementary School and Lyter Elementary School. Maintain current grade configuration.		
FACILITY	EXST. GRADE CONFIG.	EXISTING AREA	EXIST. FUNC. CAPACITY	CURRENT ENROLL.	PROPOSED SCOPE	PROP. GRADE CONFIG.	SF OF NEW CONSTR.	TOTAL NET SF	ELEM. PLAN. FUNC. CAP.	SEC. PLAN. FUNC. CAP.	TOTAL ESTIMATED COST RANGE			
Loyalsock Valley Elementary School	K-4	40,920	293	252	HVAC Upgrades	K-4	-	40,920	293		\$ 3,731,788	-	\$ 4,104,967	
Lyter Elementary School	K-4	70,270	518	433	HVAC Upgrades	K-4		70,270	518		\$ 5,508,339	-	\$ 6,059,173	
C.E. McCall Middle School	5-8	146,500	802	643	Maintain	5-8		146,500		802				
Montoursville Area High School	9-12	208,173	924	610	Maintain	9-12		208,173		924				
<b>Total District</b>		<b>465,863</b>	<b>2,537</b>	<b>1,938</b>			<b>-</b>	<b>465,863</b>	<b>811</b>	<b>1,726</b>	<b>9,240,127</b>		<b>\$ 10,164,139</b>	



Crabtree, Rohrbaugh & Associates  
[www.cra-architects.com](http://www.cra-architects.com)