

# SCOPE STUDY



**Carroll County Career &  
Technology Center**

**Board of Education of Carroll County  
Westminster, MD**

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## **EXECUTIVE SUMMARY**

In 2002, Carroll County embarked upon a study of the career and technology education in the school system. The comprehensive Career and Technology Program and Facilities Plan identified the vision, mission and goals of Career Technology Education (CTE) in the County. It further identified priorities, program strengths and opportunities, strategies and desired outcomes. The report offered justification for the programs, and culminated in recommendations for the facilities that are to support CTE in Carroll County. The conclusion was to consolidate the CTE programs at one central facility, at the current Carroll County Career and Technology Center (CCCTC) in Westminster. The programs currently offered at South Carroll High School would be moved to CCCTC as a result.

In February of 2006, the Board of Education initiated the process to study the physical condition and the educational adequacy of the current CCCTC. The school is located in Westminster, Maryland adjacent to the Westminster High School complex.

As part of this study, building concepts were developed, to help identify the preferred physical relationships for the school's functions and spaces. Two general options presented themselves for initial evaluations: renovation/expansion and new construction. The new construction option was further defined by locations for the new facility. These included two locations for study: on the Westminster High School site, and on a new site (to be determined). The option of building a replacement facility on the existing CCCTC site was dismissed due to lack of available land that would not severely impact the existing facility use during construction. These options were studied to determine the feasibility at each site and the functional and fiscal implications that each encompassed.

The three options explored for CCCTC include:

- ❖ Option A - Fully renovate and build additions to the existing facility
- ❖ Option B - Build a replacement facility on the Westminster High School site
- ❖ Option C - Build a replacement facility at a new site

It is important to note that options that did not fully address the educational adequacy of the facility were not studied, as it was collectively felt that to spend the money to simply improve the facility physically without addressing the functional issues appropriately was not in the best interest of the County or State.

The findings revealed that the expansion/renovation option (Option "A") when compared to building a new facility (Option "B" and "C") would result in unacceptable interruptions in the existing programs, increased time for construction due to phasing, and greater overall project costs. Though these factors are significant, an overriding factor presented itself. It was also

determined that the renovated facility would compromise the adequacy of the educational programs, limiting their effectiveness.

The following Scope Study report outlines the findings, assessments, programmatic issues and costs associated with the three options.

A summary of the costs of the three options follows:

<b>COSTS</b>	<b>Option A RENOVATE / EXPAND EXISTING</b>	<b>Option B NEW FACILITY ON WHS SITE</b>	<b>Option C NEW FACILITY ON NEW SITE</b>	<b>Comments</b>
<b>BASE CAPITAL COSTS</b>				
Demolition	440,000	1,150,000	1,150,000	\$10/sf
Renovation	15,265,000	0	0	\$215/sf
Addition/New Construction	29,885,000	45,150,000	45,150,000	\$215/sf
<b>Building Construction Costs</b>	<b>45,590,000</b>	<b>46,300,000</b>	<b>46,300,000</b>	
Site Construction - Renov.	763,250	0	0	5%
Site Construction - New	3,586,200	5,418,000	5,418,000	12%
<b>Total Site Costs</b>	<b>4,349,450</b>	<b>5,418,000</b>	<b>5,418,000</b>	
<b>Total Base Capital Costs</b>	<b>49,939,450</b>	<b>51,718,000</b>	<b>51,718,000</b>	
<b>OTHER CAPITAL COSTS</b>				
Contingency	2,496,973	2,585,900	2,585,900	5%
Phasing	4,559,000	0	0	10%
Temporary Facilities	320,000	0	0	Trailers at \$40K
Additional Site Work	0	2,000,000	0	Stadium, Pkg.
Land Acquisition	0	0	3,000,000	60 acres
Land/Infrastructure	0	0	1,000,000	New Site Utilities
Escalation	9,170,468	9,008,624	8,848,624	8% per year, 2 yr.
<b>Other Capital Costs</b>	<b>16,546,440</b>	<b>13,594,524</b>	<b>15,434,524</b>	
<b>TOTAL CAPITAL COSTS</b>	<b>66,485,890</b>	<b>65,312,524</b>	<b>67,152,524</b>	
<b>SOFT COSTS</b>				
FFE	5,992,734	6,206,160	6,206,160	12%
A/E Fees	3,246,064	3,361,670	3,361,670	6.5%
CM Fees	2,996,367	3,103,080	3,103,080	6%
Additional Surveys & Fees	0	200,000	300,000	
Misc.	499,395	517,180	517,180	1%
<b>Total Soft Costs</b>	<b>12,734,560</b>	<b>13,388,090</b>	<b>13,488,090</b>	
<b>TOTAL PROJECT COSTS</b>	<b>79,220,450</b>	<b>78,700,614</b>	<b>80,640,614</b>	

## **PART 1 – EDUCATIONAL SPECIFICATIONS**

The formal development of the Educational Specifications for the Carroll County Career & Technology Center (CCCTC) will be developed once the Board of Education has applied for and secured planning approval for the project. At that time, the Educational Specifications will be reviewed and approved by the Carroll County Board of Education, and will be submitted to Maryland State Board of Education for review and approval.

Highlights of the proposed program include:

- ❖ Proposed Enrollment .....750
- ❖ Proposed Teaching Stations ..... 40
- ❖ Proposed Building Size ..... 210,000 gsf

The CCCTC will be organized into five major Career Clusters:

- ❖ Health & Human Services
  - Allied Health
  - Textiles & Fashion Careers
  - Emergency Services Technology
  - Homeland Security
  - Cosmetology
  - Culinary Arts
  - Floral Design
- ❖ Information Technology
  - Video Production
  - Print Production
  - Computer Technology
  - Drafting
  - Technical Support / Networking
- ❖ Engineering
  - Project Lead The Way
  - Machine Technology
  - Electronics
- ❖ Transportation
  - Automotive Technology
  - Collision Repair
  - Heavy Equipment & Truck Technology (Diesel)
- ❖ Construction
  - HVAC
  - Carpentry
  - Masonry
  - Electrical
  - Landscaping
  - Welding
  - Building Maintenance

It will be supported by:

- ❖ Administration
- ❖ Shared Resources

The following is the proposed Program:

Space	PROPOSED PROGRAM				
	Teach. Sta.	# of rooms	Size	Total area	Area by Dept.
<b>ADMINISTRATION</b>					
<b>Central Admin</b>					<b>3,180</b>
Principal		1	200	200	
Asst. Principal		1	150	150	
Waiting		1	200	200	
Reception		1	100	100	
Office area		1	400	400	
Bookkeeper's Office		1	120	120	
Career Coordinator		2	250	500	
Conference		1	350	350	
Workroom / Mail		1	400	400	
Records Storage		1	100	100	
Office (extra office)		1	120	120	
Office Storage		1	60	60	
Staff Lounge		1	400	400	
Toilets		2	40	80	
<b>Guidance</b>					<b>1,170</b>
Counselor Office		1	200	200	
Counselor Office		1	150	150	
Secretary / Office		1	170	170	
Conference / Visitor Office		1	150	150	
Career Resource Room		1	200	200	
Workroom/Storage		1	150	150	
Early Childhood Ed. Office		1	150	150	
<b>Health Suite</b>					<b>640</b>
Waiting		1	50	50	
Treatment / Med		1	100	100	
Consult/Exam		1	120	120	
Office		1	100	100	
Cot areas		2	100	200	
Toilet		1	40	40	
Storage		1	30	30	
<b>Career Tech Support Services</b>					<b>4,050</b>
Office		1	600	600	
Pull-out Rooms		4	200	800	
Staff Workroom		1	150	150	
Testing Room		1	300	300	
Conference		1	300	300	
Storage		1	50	50	
Career Assessment Lab	2	1	1,500	1,500	
Career Assessment Office		1	200	200	
Career Assessment Storage		1	150	150	
<b>Building Services</b>					<b>1,160</b>
Custodial Office		1	120	120	
Lockers / Toilet		1	120	120	
Custodial Storage		1	800	800	
Custodial Closets		4	30	120	



Space	# of rooms	Size	Total area	Area by Dept.
<b>SHARED RESOURCES</b>				
<b>Resource Center</b>				<b>2,050</b>
Circulation Desk	1	150	150	
Stacks	1	600	600	
Computer area	1	400	400	
Seating	1	350	350	
Office / Workroom	1	150	150	
Comm Distr. Room	1	200	200	
Storage	1	200	200	
<b>Presentation Room</b>				<b>2,500</b>
150 Seating	1	2,500	2,500	
<b>Student Activities</b>				<b>600</b>
Club Meeting Rooms	2	300	600	
<b>Food Service</b>				<b>8,800</b>
Dining	1	6,000	6,000	
Serving	1	700	700	
Food Prep	1	1,200	1,200	
Dishwashing	1	300	300	
Food Storage	1	250	250	
Refrig / Freezer	1	200	200	
Receiving	1	100	100	
Janitor	1	50	50	

Space	# of rooms	Size	Total area	Area by Dept.
<b>HEALTH &amp; HUMAN SERVICES CLUSTER</b>				
<b>Allied Health Careers</b>				<b>7,600</b>
Lab	1	2 1,500	3,000	
Storage 1		1 200	200	
Locker 1		1 300	300	
Classroom 1	1	4 800	3,200	
Storage		1 450	450	
Office		1 300	300	
Laundry		1 100	100	
Toilet		1 50	50	
<b>Textiles &amp; Fashion Careers</b>				<b>2,550</b>
Lab	1	1 1,400	1,400	
Classroom		1 800	800	
Lockers		1 200	200	
Storage		1 150	150	
<b>Emergency Services Technology</b>	1			<b>1,500</b>
Lab		1 1,350	1,350	
Storage		1 150	150	
<b>Homeland Sec.</b>				<b>2,150</b>
Classroom		1 800	800	
Lab		1 1,200	1,200	
Storage		1 150	150	
<b>Cosmetology</b>				<b>5,600</b>
Classroom	2	2 1,200	2,400	
Lab/ Clinic ( <i>includes rooms for manicures/ pedicures/ waxing/ etc.</i> )		1 2,000	2,000	
Waiting Area		1 200	200	
Dispensary		1 300	300	
Lockers		1 400	400	
Toilet		1 50	50	
Laundry		1 100	100	
Office		1 150	150	
<b>Culinary Arts</b>				<b>7,400</b>
Kitchen Lab	1	1 2,000	2,000	
Bakery Kitchen Lab	1	1 1,200	1,200	
Classroom		2 800	1,600	
Restaurant		1 1,000	1,000	
Office		1 200	200	
Locker		1 400	400	
Laundry		1 100	100	
Storage (Drygoods/ linens)		2 200	400	
Walk-in Refrigerator/ Freezer		2 200	400	
Toilets		2 50	100	
<b>Floral Design</b>				<b>2,700</b>
Lab	0.5	1 1,200	1,200	
Classroom		1 800	800	
Lockers		1 300	300	
Material Storage		1 400	400	
<b>Instruction / Resource</b>				<b>2,440</b>
Computer Lab		1 900	900	
Classroom/ Lab- Anatomy		1 1,200	1,200	
Seminar Room		1 200	200	
Copy/work room		1 140	140	

Space		# of rooms	Size	Total area	Area by Dept.
<b>INFORMATION TECHNOLOGY CLUSTER</b>					
<b>Video Production</b>					<b>2,400</b>
Video Computer Lab / CR	0.5	1	800	800	
Studio (currently shared w/ Shop)		1	500	500	
Control Booth		1	200	200	
Clean Storage		1	200	200	
Paint/Chemical Storage		1	150	150	
Tool & Material Storage		1	200	200	
Lockers		1	300	300	
Toilet		1	50	50	
<b>Print Production</b>					<b>3,000</b>
Print Prod. Computer Lab / CR		1	800	800	
Production Shop	0.5	1	1,300	1,300	
Clean Storage		1	200	200	
Paint/Chemical Storage		1	150	150	
Tool & Material Storage		1	200	200	
Lockers		1	300	300	
Toilet		1	50	50	
<b>Computer Technology</b>					<b>2,500</b>
Computer Lab	1	1	1,300	1,300	
Classroom		1	800	800	
Storage		1	400	400	
<b>Drafting</b>					<b>4,400</b>
Lab/ Classroom	1	2	2,100	4,200	
Storage		1	200	200	
<b>Technical Support Networking</b>					<b>2,000</b>
Lab/ Classroom	1	1	1,800	1,800	
Storage		1	200	200	
<b>Instruction / Resource</b>					<b>340</b>
Seminar Room		1	200	200	
Copy/work room		1	140	140	

Space	# of rooms	Size	Total area	Area by Dept.
<b>ENGINEERING CLUSTER</b>				
<b>Project Lead The Way</b>				<b>6,800</b>
Computer Lab/ Classroom	1	3 1,000	3,000	
Engineering Lab		2 1,500	3,000	
Project Storage		1 400	400	
Storage		1 400	400	
<b>Machine Technology</b>				<b>5,250</b>
Lab	1	1 3,500	3,500	
Classroom/ Computer Lab		1 1,000	1,000	
Lockers		1 300	300	
Tool Storage		1 200	200	
Toilet		1 50	50	
Storage		1 200	200	
<b>Electronics</b>				<b>2,000</b>
Lab	1	1 1,000	1,000	
Classroom		1 800	800	
Storage		1 200	200	
<b>Instruction / Resource</b>				<b>2,240</b>
Computer Lab		1 900	900	
Classroom/ Lab- Math/ AP Calculus		1 1,000	1,000	
Seminar Room		1 200	200	
Copy/work room		1 140	140	

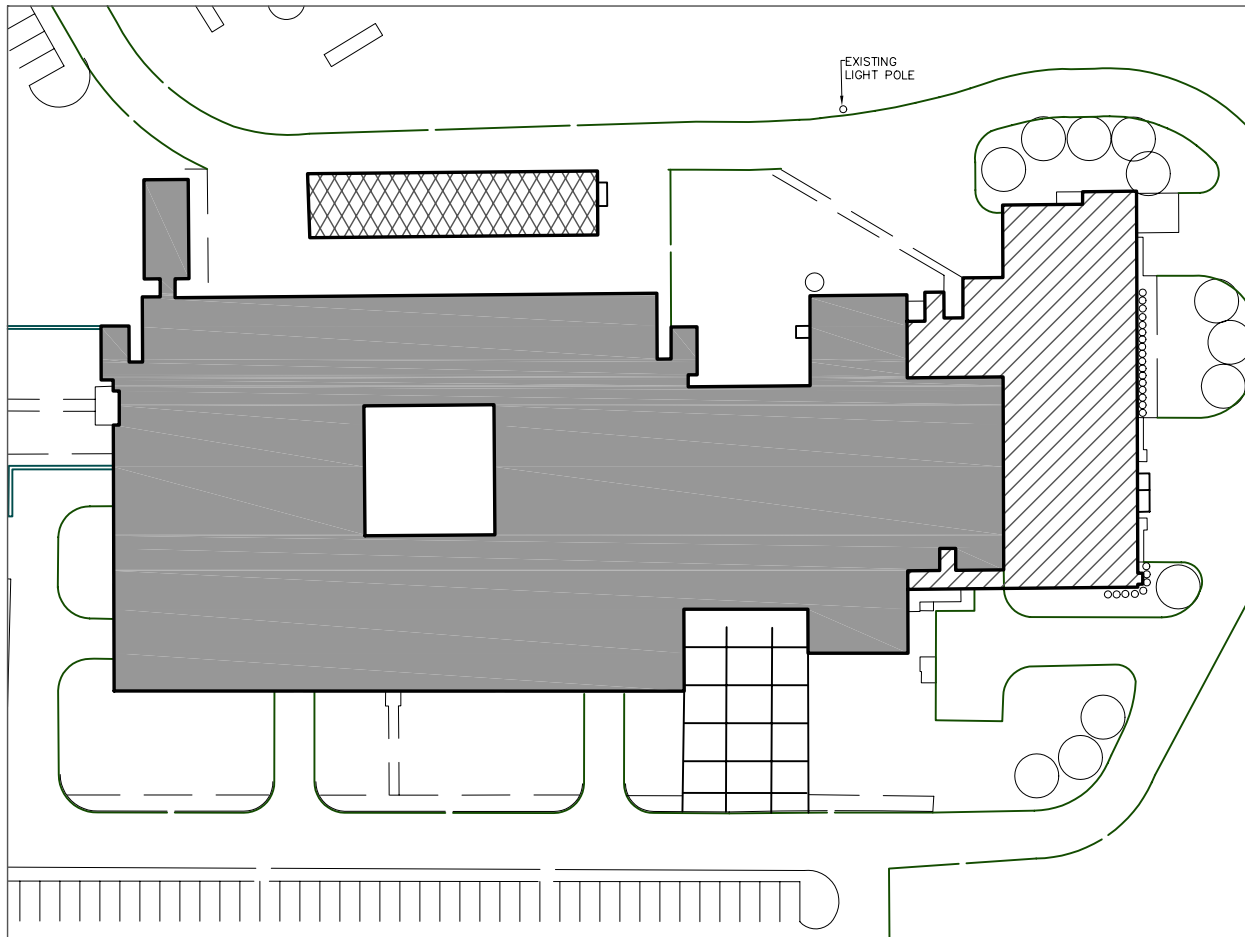
Space	# of rooms	Size	Total area	Area by Dept.
<b>TRANSPORTATION CLUSTER</b>				
<b>Automotive Technology</b>				<b>14,150</b>
Classroom	2	800	1,600	
Shop	1	10,000	10,000	
Computer/ Reference	1	700	700	
Tool Storage	1	650	650	
Office	3	150	450	
Locker	1	300	300	
Toilet	1	50	50	
Storage	1	400	400	
<b>Collision Repair</b>				<b>9,450</b>
Classroom	1	800	800	
Shop (incl. paint booth)	1	7,500	7,500	
Office	1	150	150	
Toilets	1	50	50	
Tool Storage	1	650	650	
Locker	1	300	300	
<b>Heavy Equip. &amp; Truck Tech. (Diesel)</b>				<b>9,800</b>
Classroom	1	800	800	
Shop	1	7,500	7,500	
Toilet	1	50	50	
Tool Storage	1	650	650	
Office	1	150	150	
Locker	1	300	300	
Cleaning Room	1	200	200	
Dyna. Room	1	150	150	
<b>Instruction / Resource</b>				<b>1,240</b>
Computer Lab	1	900	900	
Seminar Room	1	200	200	
Copy/work room	1	140	140	

Space	# of rooms	Size	Total area	Area by Dept.
<b>CONSTRUCTION CLUSTER</b>				
<b>HVAC</b>				<b>4,050</b>
Lab	1	1 2,400	2,400	
Classroom		1 800	800	
Lockers		1 200	200	
Toilet		1 50	50	
Tool Storage		1 200	200	
Mezzanine Storage		1 400	400	
<b>Carpentry</b>				<b>5,850</b>
Lab	1	1 4,000	4,000	
Classroom		1 800	800	
Lumber Storage		1 300	300	
Project Storage		1 300	300	
Tool Storage		1 200	200	
Toilet		1 50	50	
Lockers		1 200	200	
<b>Masonry</b>				<b>4,650</b>
Lab	2	1 2,400	2,400	
Classroom		2 800	1,600	
Lockers		1 200	200	
Toilet		1 50	50	
Storage		1 400	400	
<b>Electrical</b>				<b>4,050</b>
Lab	1	1 2,400	2,400	
Classroom		1 800	800	
Lockers		1 200	200	
Tool Storage		1 300	300	
Toilet		1 50	50	
Storage		1 300	300	
<b>Landscaping</b>				<b>5,400</b>
Classroom/ Computer Lab	0.5	1 2,100	2,100	
Greenhouse		1 1,200	1,200	
Prep Lab		1 800	800	
Lockers		1 300	300	
Material Storage		1 1,000	1,000	
<b>Welding</b>				<b>3,800</b>
Lab	1	1 2,400	2,400	
Classroom		1 800	800	
Lockers		1 300	300	
Toilet		1 50	50	
Tool Storage		1 250	250	
<b>Construction Bay</b>				<b>5,000</b>
Bay		1 5,000	5,000	
<b>Instruction / Resource</b>				<b>1,640</b>
Computer Lab		1 900	900	
Bldg.Maint. Program Stor.		1 400	400	
Seminar Room		1 200	200	
Copy/work room		1 140	140	
<b>TOTAL NET AREA</b>	<b>28</b>			<b>156,100</b>
<b>TOTAL GROSS AREA (1.35 factor)</b>				<b>210,735</b>

## **PART 2 – EXISTING FACILITY INVENTORY DATA**

## Existing Facility Inventory Data

The Carroll County Career and Technology Center is located in Westminster Maryland between Routes 32 and 97 and Hook Road. The original building was constructed in 1970, with an addition to the southeast side of the building in 1986, and a renovation of the storage building in 1998 converting the structure to a collision repair lab and classroom building. A storage building on the West side of the building was added in 2004 for building maintenance staff. Numerous modifications to the interior walls have been made throughout the history of the building to accommodate the delivery of the program to students.



LEGEND/TABULATION CHART:

	1970	ORIGINAL TOTAL AREA: 95,808 SF
	1986	AREA ADDED BY RENOVATION: 15,512 SF NEW TOTAL AREA: 111,320 SF
	1998	AREA RENOVATED: 4,624 SF



The following is the existing Program:

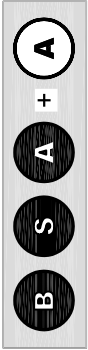
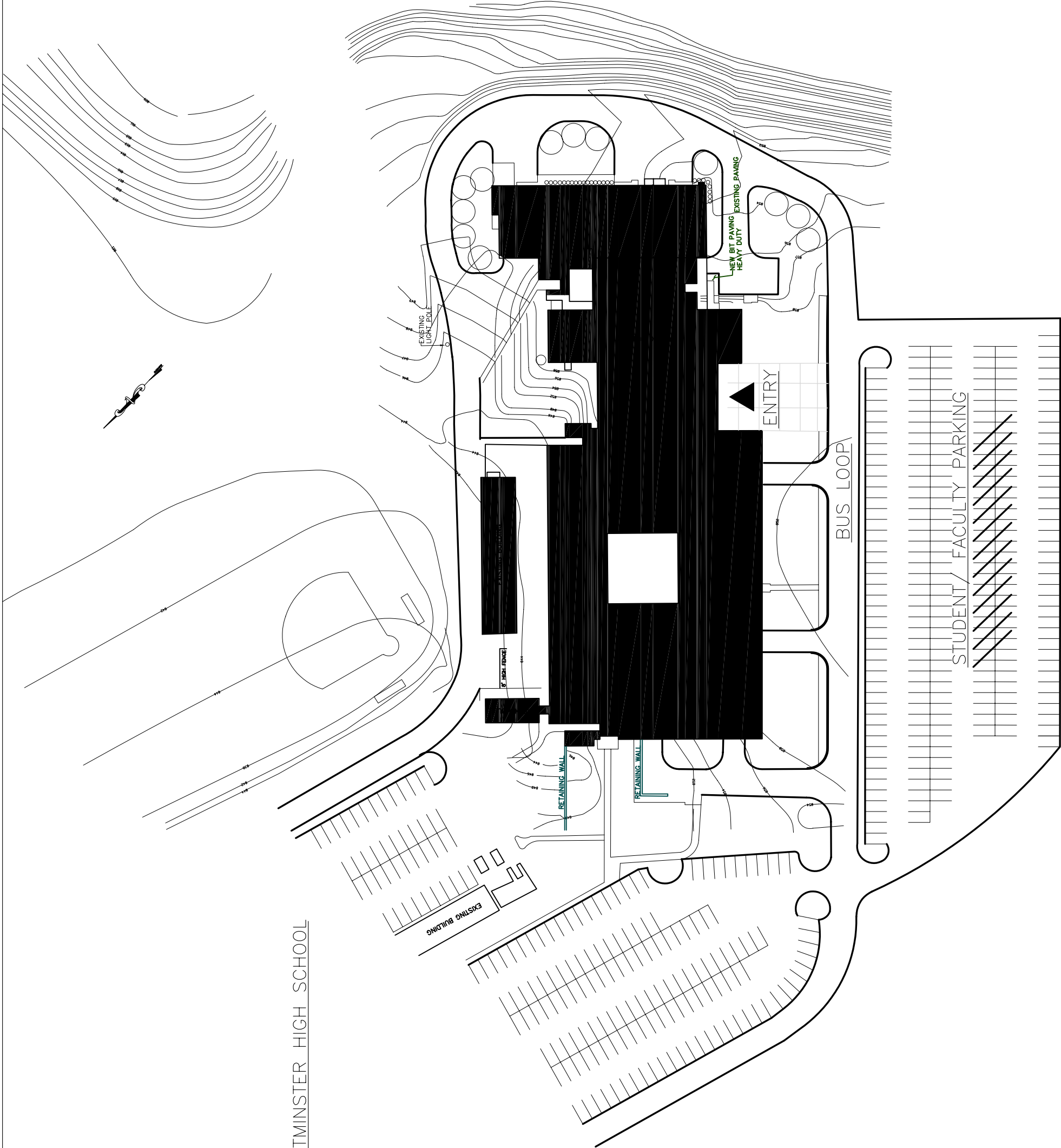
Space	EXISTING		
	Total Area	Area by Dept.	Teach. Sta.
<b>ADMINISTRATION</b>			
<b>Central Admin</b>		<b>2,144</b>	
Principal	300		
Asst. Principal	176		
Waiting	190		
Reception	50		
Office area	520		
Career Coordinator	216		
Workroom / Mail	120		
Records Storage	100		
Staff Lounge	372		
Toilets	100		
<b>Guidance</b>		<b>1,856</b>	
Counselor Office	182		
Counselor Office	170		
Early Childhood Ed. Office	1,504		
<b>Health Suite</b>		<b>236</b>	
Treatment / Med	236		
<b>Career Tech Support Services</b>		<b>2,829</b>	
Office	596		
Testing Room			
Storage	25		
Career Assessment Lab	1,926		2
Career Assessment Office	208		
Career Assessment Storage	74		
<b>Building Services</b>		<b>1,395</b>	
Custodial Storage	1,312		
Custodial Closets	83		
Space	Total Area	Area by Dept.	Teach. Sta.
<b>SHARED RESOURCES</b>			
<b>Resource Center</b>		<b>448</b>	
Computer area	448		
<b>Food Service</b>		<b>4,416</b>	
Dining	3,840		
Serving	432		
Dishwashing	144		

Space	Total Area	Area by Dept.	Teach. Sta.
<b>HEALTH &amp; HUMAN SERVICES CLUSTER</b>			
<b>Allied Health Careers</b>		<b>4,585</b>	
Lab	1,520		1
Storage 1	192		
Locker 1	217		
Lab	721		
Classroom 1	536		1
Classroom 2	267		1
Classroom 3	587		1
Storage	60		
Lockers	72		
Office	413		
<b>Textiles &amp; Fashion Careers</b>		<b>2,806</b>	
Lab	1,461		1
Classroom	1,236		
Storage	109		
<b>Emergency Services Technology</b>		<b>Off Site</b>	<b>1</b>
Classroom	0		
Lab	0		
Storage	0		
Locker	0		
<b>Cosmetology</b>		<b>5,263</b>	
Lab/Classroom (So Carroll HS)	2,400		
Classroom	768		2
Lab/ Clinic ( <i>includes rooms for manicures/ pedicures/ waxing/ etc.</i> )	1,521		
Waiting Area	80		
Dispensary	128		
Lockers	184		
Toilet	30		
Office	152		
<b>Culinary Arts</b>		<b>3,437</b>	
Kitchen Lab	1,472		1
Classroom	360		
Classroom	490		
Restaurant	416		
Office	109		
Locker	144		
Laundry	66		
Storage (Drygoods/ linens)	220		
Walk-in Refrigerator/ Freezer	160		
<b>Floral Design</b>		<b>2,209</b>	
Lab	940		0.5
Classroom	1,269		
<b>Instruction / Resource</b>		<b>488</b>	
Computer Lab	488		

Space	Total Area	Area by Dept.	Teach. Sta.
<b>INFORMATION TECHNOLOGY CLUSTER</b>			
<b>Video Production</b>		<b>1,638</b>	
Video Computer Lab / CR	1,146		0.5
Control Booth	133		
Tool & Material Storage	153		
Lockers	186		
Toilet	20		
<b>Print Production</b>		<b>994</b>	
Production Shop	879		0.5
Tool & Material Storage	115		
<b>Computer Technology</b>		<b>2,138</b>	
Computer Lab	1,305		1
Classroom	585		
Storage	248		
<b>Drafting</b>		<b>5,098</b>	
Lab/ Classroom	2,048		1
Lab (So Carroll HS)	3,050		
<b>Technical Support Networking</b>		<b>2,200</b>	
Lab/ Classroom	1,997		1
Storage	203		
Space	Total Area	Area by Dept.	Teach. Sta.
<b>ENGINEERING CLUSTER</b>			
<b>Project Lead The Way</b>		<b>2,334</b>	
Computer Lab/ Classroom	680		1
Engineering Lab	1,392		
Storage	262		
<b>Machine Technology</b>		<b>4,686</b>	
Lab	3,379		1
Classroom/ Computer Lab	480		
Lockers	180		
Tool Storage	120		
Storage	527		
<b>Electronics</b>		<b>816</b>	
Lab	816		1

Space	Total Area	Area by Dept.	Teach. Sta.
<b>TRANSPORTATION CLUSTER</b>			
<b>Automotive Technology</b>		<b>16,172</b>	
Auto Shop (So Carroll HS)	4,200		
Auto Mezz. Stor. (So Carroll HS)	700		
Auto Stor Sheed (So Carroll HS)	2,800		
Classroom	614		
Shop	7,000		2
Tool Storage	378		
Locker	480		
<b>Collision Repair</b>		<b>4,917</b>	
Classroom	760		
Shop (incl. paint booth)	3,000		1
Toilets	100		
Tool Storage	153		
Locker	144		
Mezzanine Storage	760		
<b>Heavy Equip. &amp; Truck Tech. (Diesel)</b>		<b>6,664</b>	
Classroom	590		
Shop	3,015		1
Toilet	107		
Tool Storage	200		
Locker	265		
Cleaning Room	559		
Dyna. Room	203		
Mezzanine Storage	1,585		
Storage	140		
Space	Total Area	Area by Dept.	Teach. Sta.
<b>CONSTRUCTION CLUSTER</b>			
<b>HVAC</b>		<b>4,020</b>	
Lab	1,970		1
Classroom	378		
Lockers	180		
Toilet	81		
Tool Storage	329		
Mezzanine Storage	1,082		
<b>Carpentry</b>		<b>5,153</b>	
Lab	3,659		1
Classroom	547		
Tool Storage	200		
Mezzanine Storage	747		
<b>Masonry</b>		<b>3,514</b>	
Lab	2,738		2
Classroom	263		
Storage	513		
<b>Electrical</b>		<b>3,277</b>	
Lab	2,233		1
Classroom	600		
Lockers	124		
Tool Storage	180		
Storage	140		
<b>Landscaping</b>		<b>2,700</b>	
Greenhouse	2,000		
Material Storage	700		
<b>Welding</b>		<b>4,020</b>	
Lab	1,970		1
Classroom	378		
Lockers	329		
Toilet	81		
Tool Storage	180		
Mezzanine Storage	1,082		
<b>TOTAL NET AREA</b>	<b>102,453</b>		<b>29</b>
<b>TOTAL GROSS AREA (1.35 factor)</b>	<b>115,016</b>		

WESTMINSTER HIGH SCHOOL



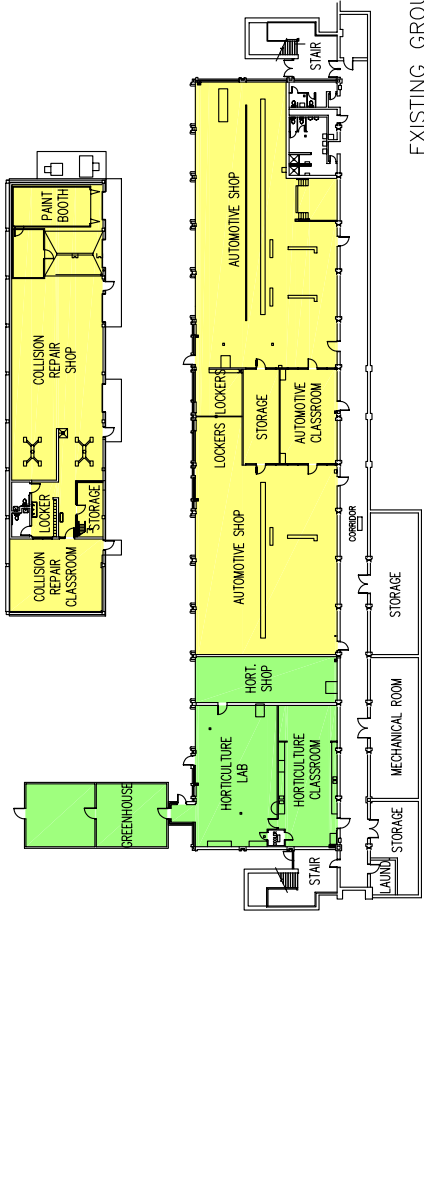
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CARROLL COUNTY CAREER  
AND TECHNOLOGY  
CENTER

1229 WASHINGTON ROAD  
WESTMINSTER, MD 21157

EXISTING SITE PLAN

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The floor plan shows a complex arrangement of rooms. At the top, there are diesel labs and classrooms, followed by welding and HVAC labs. The middle section features a large commons area, a lobby, and various specialized labs like culinary, computer, and nursing. The bottom section includes a machine shop, electronics lab, and masonry labs. A central courtyard provides an outdoor space. The plan is detailed with room names, dimensions, and color-coding to distinguish between different functional areas.

CARROLL COUNTY CAREER  
AND TECHNOLOGY  
CENTER

1229 WASHINGTON ROAD  
WESTMINSTER, MD 21157

## EXISTING BUILDING PLAN

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## **PART 3 – EXISTING CONDITIONS OF BUILDING COMPONENTS**

## General

The Carroll County Career and Technology Center is located in Westminster Maryland between Routes 32 and 97 and Hook Road. The original building was constructed in 1970, with an addition to the southeast side of the building in 1986, and a renovation of the storage building in 1998 converting the structure to an autobody repair lab and classroom building. A storage building on the West side of the building was added in 2004 for building maintenance staff. Numerous modifications to the interior walls have been made throughout the history of the building to accommodate the delivery of the program to students.

The original building is a two story structure with the main entry at the upper level. There is a grade change around the rear of the building to several at grade entrance locations at the ground floor level. An elevator and 2 stair towers allow access to the lower level. The upper level contains the administration, cafeteria, kitchen, health and human services labs and classrooms and the majority of the construction labs and classrooms. A courtyard is located on the upper level. The lower level contains the automotive and landscaping/ floral design labs and classrooms and the main mechanical room. Greenhouses serving the landscaping/ floral program are adjacent to the lower level. The autobody building is located on the north side of the building at the same elevation as the ground floor of the original building. The 1986 addition follows the grade on the southeast side of the building with the floor elevation between the first and ground floors of the original building. Access to the addition is via a stair tower on the North side and a ramp on the south side. Heavy Equipment and Truck Technology (Diesel), HVAC, and Welding are located in the addition.

The following is a summary of the existing facility deficiencies. These are explained in more detail following this summary.

### Physical Deficiencies:

- All systems (HVAC, Plumbing, Elec., Etc.) need to be replaced
- Roof needs to be replaced
- Exterior skin needs to be repaired
- Exterior windows & doors need to be replaced
- Interior doors need to be replaced
- Finishes need to be replaced
- Casework & Furnishings need to be replaced
- Equipment needs to be replaced
- Various Site repairs / replacements
- Full Building, Life Safety & ADA Compliance

### Functional Deficiencies:

- Many spaces are too small
- Some program elements not present
- Functional adjacencies are not optimal
- Trades are not clustered optimally
- Existing building components restrict optimal program delivery:
  - Ceiling heights
  - Floor level changes
  - Interior wall locations
  - Building infrastructure / core locations
  - Site features

### **SITE**

#### **ASSESSMENT**

##### **I. General:**

Currently, the center is accessed from a driveway leading around the perimeter of the building connecting to the access road at Westminster High school, which in turn accesses Maryland Route 32. The driveway serves as the only means of ingress and egress for the site. Consequently, there is a mixture of bus, delivery, parent, staff and service vehicles entering the site. While the adjacent photo indicates an apparent long linear access to the school, the actual access points are very limited.



## Existing Conditions of Building Components

The main entrance to the center is located near the southwest corner of the building. Pedestrian access to the parking lot is directly across the access road. Vehicular access to the parking lot is addressed by two major entrance points, one along the southern end which is approximately 50 feet from the pedestrian crossing. The proximity of these two entrances leads to a source of major congestion during the times of arrival and departure, with buses and parent pick up and drop off. The adjacent photo illustrates how close the pedestrian and vehicular entries are so one can get a sense of the possible interaction between them.

The second entrance to the parking lot is located along the north end of the parking lot. The location is opposite the staging area for construction projects and is physically located at the north end of the building. The entrance to this parking lot also occurs south of the student parking lot for the high school.



During a site visit on February 23, 2006 we interviewed some of the staff and determined that there are two different arrival times, a smaller volume between 7:30 and 8:00 AM and a major volume between 9:30 and 10:00 AM. Conversely, the smaller volume departure time occurs between 12:30 and 1:00 PM and the major departure volume between 2:00 and 2:45 PM. During the morning arrival time, we noted that there are approximately 44 vehicles with a clockwise movement around the building plus an additional 19 vehicles in a counterclockwise movement. We also noted that 12 buses arrived and staged in the third row of parking on the parking lot. The majority of the buses



left the staging area at 7:45 AM. At 8:00 AM we noted 43 cars parked on the parking lot. During the afternoon departure, we noted that there were 80 cars parked on the parking lot. There was also a timed dismissal with respect to the buses, 4 were staged along the drive and another 4 staged in the parking lot waiting for the first buses to leave. Once dismissal began, all

## Existing Conditions of Building Components

of the buses were boarded and left the site by 2:17 PM. After the buses left, student dismissals began on the parking lot. In addition, traffic circulation began around the loop road from the high school dismissal. Approximately 46 vehicles moved in a clockwise direction plus 11 buses. The counterclockwise movements were limited to 18 vehicles with no bus movements.

Generally, the existing parking lot is in need of serious repairs. The photo on the previous page shows how the wearing surface has completely dried and demonstrates the impacts of UV rays over the years. The visible cracking will require a major expenditure to bring the surface up to a usable condition. Obviously the surface course is in the worst condition; however it is not known if the subsequent courses reflect the same type and quantity of cracking.

The driveway around the south side of the building contains several major access points for the building including shop entries, storage areas and trash areas, as indicated in the photo to the right. There are also some utilities servicing the building in this area. Any future expansions to the building will have to consider the grade changes and utility relocations along with the expansion.



The terminus of the two way operation for the perimeter drive occurs at the parking lot adjacent to the greenhouses along the east side of the building. Once again, the perimeter drive contains multiple locations where services and building entries must occur as apparent in the photo to the left. Upon closer inspection, it appears

that the condition of the service drive is almost as bad as the parking lot in the front of the building.

**II. Existing Utilities:**

1. Water: The site is served by a public water system. The service line appears to be along the south side of the building and enters the building on the east side. There is a Siamese connection on the east face of the building, protected by two bollards.
2. Sanitary: The sanitary sewerage system is also public. It appears that the original service connection to the building was built in conjunction with the high school in 1969. We believe that the service connection is picked up by a service main which empties into a pumping station on south side of the property in the low portion of the site for the fire training facility.
3. Storm Drainage: Stormwater runoff is not managed, by today's standards. Generally, there is a closed collection system which drains the hard-surfaced areas and collects runoff from roof leaders. The parking lots at the front of the building appear to sheet flow into a series of inlets on the north side of the parking lot. A closed storm drain system picks up these inlets and deposits them into an inlet on the south side of the high school. In turn, this system extends to the east side of the building and drains into a larger closed drainage system, which collects the runoff from both the high school and the career and technology center in a 60 CMP which outfalls into a wetland area south of the CCPS property. See attached Existing Condition Exhibit to help illustrate the locations of the existing utilities.



## **ARCHITECTURAL ASSESSMENT**

### **Building Exterior**

The building skin is comprised of brown brick masonry veneer and some striated concrete block veneer with concrete block back-up. The brick bond is a standard running bond. The autobody building contains the original brick veneer on the north, east, and west sides and was repointed during the renovation. The south side was covered with a new metal panel system to help mitigate leakage through the masonry. The windows on the 1970 section are aluminum with single pane glazing and are not thermally broken. Leaks at many of these windows have been noted by school maintenance personnel (see figure 1). The 1986 addition contains thermally broken aluminum windows with insulated glazing units. The window sills are sloped brick on both sections of the building.



*Figure 1*



*Figure 2*

The mortar joints of the brick veneer appear to be in poor condition (see figure 2). Numerous leaks in the building have been occurring as a result of the failed mortar (see figures 3 & 4). This has caused damage inside the building. Select areas of mortar have been repointed at areas where leaks are active. Efflorescence is present in numerous locations, indicating heavy water penetration inside the masonry cavity. The entire building should be repointed or the brick veneer removed and replaced as part of a major renovation. The windows in the original building should be replaced with aluminum, thermally broken windows.



Figure 3



Figure 4

## Roof

The roofs are original to each section of the building. The roof system on the 1970 building section is a built-up roof with gravel ballast on a ½ inch of rigid insulation on concrete deck. The roof system on the 1986 addition is a single ply rubber membrane roof by Carlisle on tapered insulation on metal deck supported by open web steel joists. Drainage for both sections of the building are via internal roof drains. Access to the roof is via a ship's ladder from the storage mezzanine in the HVAC shop. A new roof was installed on the renovated collision repair building in 1998.

Evidence of ponding was observed throughout the entire roof area. The parapet flashings on the 1970 building are blistered in numerous areas (see figure 8). According to school maintenance personnel, the parapet flashings leak constantly. Some sections of the parapet flashing were replaced in 2005. Roof drains leaked previously but were all patched in recent years. The main roof areas have numerous fans, vents, flues, and other mechanical penetrations. Base flashings are peeling and in generally poor condition (see figures 5 and 6). Edge metal at the parapet walls is in good condition, however the joint sealant has failed in many locations and needs to be recaulked (see figure 7).



Figure 5



Figure 6





Figure 7



Figure 8

The entire roof system should be replaced in the next 1 to 3 years. All copings should be sealed as soon as possible. A second roof drainage system (overflow) will need to be incorporated. This can be via scuppers cut through the existing parapet wall or additional roof drains installed adjacent to the primary roof drains. A combination of both types may be required to meet the code requirements. All flashings at parapet walls and at all roof penetrations should be replaced as part of the total roof replacement program.

## **BUILDING INTERIOR**

### **Corridors**

The main lobby and commons/cafeteria floor are poured terrazzo. This extends into some of the Allied Health classrooms where partitions have been added over time. The remaining corridors in the original building are sealed concrete. The corridors in the addition are vinyl composition tile (VCT) with rubber flooring on the ramp. The walls are painted CMU with some brick accents matching the exterior brick. The ceilings are acoustic lay-in tiles. The northwest corridor has stairs at the west end. A ramp that does not meet the requirements of the American's With Disabilities Act (ADA) connects the original building with the addition.

The terrazzo floors should remain and be cleaned. The walls should be repainted. All ceiling tiles and grid should be replaced. New display and tack surfaces should be provided. The grade changes in the two corridors are addressed in other sections of this report.

### **Classrooms/ Labs**

The floors are generally VCT in the classrooms and sealed concrete in the labs. Asbestos containing tile was removed throughout the school several years ago. The VCT is in good condition. The base is 4" vinyl cove base. The walls are a combination of CMU, metal demountable partitions, and gypsum board on metal studs. Numerous walls throughout the original building have been moved over time. The ceilings are 2x4 lay-in acoustic ceiling tiles and grid in the classrooms and exposed structure in the labs.

The corridor doors are wood with metal frames. The hardware is non-ADA compliant and are often located in a manner that does not allow access for wheelchair bound users.

### Toilet Rooms

No toilet rooms meet current ADA requirements. Leaking of fixtures was noted and the quantity of fixtures does not meet current code requirements (see figure 9).



Figure 9



Figure 10

### Hazardous Materials

It is assumed that there are hazardous materials in the building construction in the form of asbestos, lead based paint, etc. The hazardous materials report maintained by CCPS will be reviewed as part of the final report.

### Initial Code Assessment

The existing building is approximately 115,016 gross square feet. Per IBC and Life Safety Codes, the use groups are Educational and Assembly. Based on initial observations, the existing construction is type 2B- non-combustible, unprotected. The building is protected throughout with sprinklers. There appear to be no fire walls or fire separation zones. The doors from instructional and other spaces into the corridors do not appear to be rated. Some spaces do not appear to contain the proper number of required exits.

The school has several locations of grade-changes. Stairs are located at the end of the northwest corridor, thus not allowing at grade egress from the building. The carpentry and masonry labs both have stairs from the main corridor down into the lab and classroom. No accessible route from inside the buildings to these spaces exists. The ramp from the original building to the addition does not meet the maximum slope requirements of 1 inch rise over 12 feet of run as required by the ADA (see figure 10).

A full code analysis must be performed for the selected option. It is assumed that fire zones will need to be created, with full fire walls. Mixed-use and high hazard separation walls may be needed. All means of egress must be evaluated with doors added and/or enlarged to meet code standards. All area must be made fully accessible. Additional ramps, lifts, and other features should be explored as needed. All doors and hardware must be fully ADA-compatible and must meet all Life Safety and other requirements.

### **STRUCTURAL ASSESSMENT**

The Carroll County Career & Technology Center is primarily a one story structure, with a partial second floor. The original structure was constructed in 1969. Structural drawings for the original structure were not available at the time of this report.

The majority of the roof construction consists of pre-cast single tees, roughly 24" deep, with stems approximately 48" o.c. Based on information in the architectural drawings, the tees appear to be supported by a combination of load bearing masonry walls and steel columns and beams. The floor appears to be a concrete slab on grade. Foundation system is assumed to be a shallow, spread footing foundation system.

#### 1986 Addition

The structural drawings for the one story addition indicate that the roof framing for the addition consists of open web steel long-span joists at 5'-6" on center maximum with 1-1/2" galvanized metal roof deck. The joists clear-span the addition, bearing on both the new exterior masonry wall and the existing exterior masonry wall. This supports the assumption that the existing construction was load bearing masonry.

These spaces are used as welding, HVAC, and heavy equipment and truck technology (Diesel) shops. Roof joist bearing is approximately 22' above the finished floor. Each of the shops contain a mezzanine space consisting of open web steel joists at 2'-0" o.c. maximum and a 3" total concrete slab on 9/16" permanent metal formdeck. Mezzanines joists are supported by a combination of load bearing masonry walls and steel beams supported on load bearing masonry.

Floor slabs consists of either a 5" or a 6" concrete slab on grade reinforced with welded wire fabric. Foundations for the addition consist of a shallow spread footing system with isolated concrete column footings and continuous concrete wall footings.

## Existing Conditions of Building Components

Due to the grade changes, the finished floor elevation of the addition is substantially lower than the existing adjacent floor elevation. Concrete ramps on grade and metal stairs provide access to the spaces. A large concrete retaining wall was constructed against the existing building to support the backfill created by the higher elevations of the existing adjacent floors.

### Existing Conditions

Based on our limited visual observations, the existing structure appears to be in good condition. We did not observe any signs of distress which would indicate a structural problem, and, at this time, do not anticipate any significant structural modifications other than those required for the proposed additions and renovation. The masonry walls and the brick all appear to be in good condition. A very minimal amount of cracks were observed in some of the interior masonry walls. We do not believe these pose structural concerns.



There were a few maintenance items, that although they are not a problem now, could develop into one if left as is. In a few locations, there is evidence of failing mortar joints. Continued exposure to freeze/thaw cycles will cause these joints to leak, allowing moisture into the building. We recommend these be re-pointed.



## Existing Conditions of Building Components

Similarly, it appears as if some of the caulk joints are also failing and need to be cleaned and re-caulked to prevent moisture getting in to the building.

Additionally, there are joints that have already been re-pointed and repaired with caulk joints that appear to be leaching in isolated locations around the exterior of the building. Although none of these are a structural issue in and of themselves, left un-repaired, they can lead to structural problems in the future.



There was also evidence of moisture in one of the welding bays. It appears as if the roof joint may be leaking, causing the paint on the masonry wall to blister and peel. The deck support angle is beginning to rust. This should be cleaned and re-painted, and the roof leak repaired.



The moisture problems identified above also extended to the steel angle lintels supporting the brick veneer over windows. Many of the lintels showed signs of some corrosion. These should be wire brush cleaned and repainted.



## Existing Conditions of Building Components



The most significant issue, structurally, was the condition of the hung plates supporting the brick veneer over the overhead doors into all the shops in the 1986 addition. These were severely corroded, and the expansion of the steel as it rusted has caused the plates to warp. In some locations, it appears the steel may have started to laminate. The hung plates are supported from W16 steel lintel beams over the door openings. These beams are within the wall and not visible for observation. However, given the extent of the corrosion of the plates, we recommend the walls be opened up to verify the integrity of these beams. A worst case scenario would be that the walls would need to be temporarily shored, the lintels would need to be replaced, and the walls partially rebuilt.



To summarize, the existing structure appears to be in good condition. The items identified previously are localized and do not impact the overall structural integrity of the school.

## **MECHANICAL**

### **ASSESSMENT**

#### **General**

The original building was constructed in 1969 and a building addition was constructed at the southeast end of the original building in 1986/1987. The building is primarily multi-level single-story, except for a partial lower level located on the northeast side. In 2002/2003, the adjacent storage building was renovated to create the new collision repair shop, including a paint spray booth. HVAC upgrades to the carpentry and masonry shops were included as part of that construction project. The original building has two (2) typical double-loaded corridors located parallel to each other serving classrooms and shop/lab areas. The building wall system is primarily masonry construction.

#### **Existing Mechanical Systems:**

- A. General: The existing mechanical systems, for the most part, are original to the time of construction, be it the 1969 building or the 1986 addition. The collision repair shop, which was relocated in 2003, into the renovated storage building, has new HVAC and plumbing systems and equipment. Similarly, the HVAC systems for the masonry and carpentry shops were upgraded to help alleviate indoor air quality concerns. The existing cooling tower, chiller, domestic hot water heater(s), greenhouse systems, and shop air compressors have been replaced as part of independent systemic projects over the years. Supplemental split type direct expansion systems have been sporadically added throughout the building.

There have been several modifications to the spaces and/or their function with little to no modifications to the mechanical system.

- B. Heating: The original and primary heating source for the building is electric resistance. Carroll County Public Schools, in conjunction with BGE, did run a new four-inch (4") two-pound (2 psig) gas main into the building at the northwest end, which enters a small mechanical room, which houses the domestic hot water heaters. Currently, this gas service does supply the domestic hot water heaters, greenhouse units, carpentry and masonry shops make-up air units, collision repair shop rooftop unit, collision repair shop classroom rooftop unit, and the paint spray booth heater. Currently, a 3-inch valved and capped connection exists in the water heater mechanical room for future extension. A valved and capped connection was also provided for the emergency generator; however, at this time, the unit has not been converted from LP to natural gas.

A gas line has been extended to the lower level electrical room for connection to the emergency generator, which currently remains propane-fired.

- C. Cooling: The building is partially air-conditioned. Labs, such as heavy equipment and truck technology (diesel), welding, HVAC, automotive technology, masonry, and carpentry labs are heated and ventilated only. Classrooms are typically cooled. Chilled water is generated by a water-cooled chiller located in the lower level/ground floor mechanical equipment room which serves the original building only. Split type Dx units serve the 1986 addition classrooms, as well as various spaces within the original building.

The chiller, manufactured by York International (Model #VCWJ77KHO-46PA; Serial# SMEM-569940) was installed in 1997, utilizes refrigerant R-22, has 181 nominal ton capacity, has two (2) semi-hermetic reciprocating compressors, and operates at a flow rate of 436 gallons per minute (gpm). A new Spirotherm air and dirt separator has recently been installed in the chilled water system. Two (2) base-mounted end suction pumps, one (1) standby; circulate chilled water through steel pipe mains to unit ventilators which serve individual spaces.

A forced draft, centrifugal type open cooling tower is located at the northwest end of the building. It has a nominal capacity of 116 tons. The unit is fairly new and is manufactured by Baltimore Air Coil Company (BAC Model Number VTO-116M). Condenser water pipes between the building and cooling tower are located below-grade. A remote sump tank is located in the Lower Level/Ground Floor Mechanical Equipment Room, which houses the chiller and multiple shop air compressors. Two (2) base-mounted end suction pumps, one (1) standby, circulate condenser water to the water-cooled chiller.

- D. Compressed Air: A new (2003/2004) Ingersoll Rand air compressor and refrigerated air dryer has been installed for the shops. The existing air compressors/tanks are used for back-up/redundancy. These air compressors, dryers, and tanks are located in the lower level/ground floor mechanical equipment room, which is shared with the chiller and cooling plant equipment.



E. Spaces:

1. 1986 Addition:

- a. The HVAC and heavy equipment and truck technology (diesel) shops utilize roof-mounted heating and ventilating units equipped with electric resistance heating coils (42 kW HVAC shop/78kW diesel shop). These shops have exposed ductwork, a roof-mounted gravity relief air hood, space exhaust fan and ceiling fans. The heavy equipment and truck technology (diesel) shop has multiple dedicated local exhaust systems. The classroom areas are equipped with a residential type split fan coil unit with electric heat and remote air-cooled condensing unit. Outside air is provided through a gravity intake vent connected to the return air duct. Independent exhaust fans serve the toilet and locker room areas.
- b. The welding shop utilizes two (2) roof-mounted heat recovery units equipped with 57 kW electric heat coils. Heat recovery units contain both a supply fan and exhaust fan. The exhaust system connects to multiple welding booth canopy hoods and local source capture work bench inlets. The classroom is served with a residential type split fan coil unit with electric heat and remote air-cooled condensing unit. Outside air is provided through a gravity intake vent connected to the return air duct. An independent exhaust fan serves the toilet room and locker room area.
- c. Conference Room: The conference room is served with a residential type split fan coil unit with electric heat and remote air-cooled condensing unit. Outside air is provided through a gravity intake vent connected to the return air duct. An independent exhaust fan serves the toilet room and locker room area.
- d. Electric heaters are located at the entryways and in the corridor.

2. Original Building:

- a. Greenhouse (Lower Level): The greenhouse system has been recently upgraded, including new gas-fired heating units, circulation fans, motorized windows, water spray system, and "microgrow" greenhouse control system.
- b. Horticulture (Lower Level): A split A/C unit currently serves the computer lab. A heating and ventilating unit ventilator currently serves the horticulture lab. A paint spray booth was recently installed with an exhaust fan tied into the existing collision repair shop paint booth exhaust fan/duct system. The landscape/horticulture shop is currently located where the existing paint spray booth was located.
- c. Auto Service Technology Labs: The main incoming fire service is located in the former collision repair area (new auto transportation area). A large heating and ventilating unit (96 kW heating coil) serves the former collision repair shop and is hung in the associated storage room. Similarly, a large heating and ventilating unit (50 kW heating coil) located over the same storage area is one of two (2) units that serve the auto service lab. The second unit (60 kW) is located over the adjacent gang toilet rooms at the southeast end of the lower level. The common classroom is served by a horizontal/above-ceiling heating and ventilating unit ventilator. This unit ventilator and the two (2) heating and ventilating units located above the storage room have outside air ducted to an areaway located in the courtyard at the main level.

Both shops have independent exhaust systems and the auto service area still has local dust filtration units originally utilized for the Collision Repair Shop.

- d. Collision Repair Shop (Lower Level): The collision repair shop was recently relocated to the existing storage building, which is adjacent to the main building, lower level, northeast side. The classroom is served by a dedicated roof-mounted packaged air handling unit with gas-fired furnace. The collision repair lab is served by an independent roof-mounted, gas-fired heating and ventilating unit. A new paint spray booth is located at the southeast end of the building and its associated air exchange heater unit (gas-fired) is located outside at grade.

- e. Lower Level Corridor: Relief air from the labs is ducted into the corridor where a separate intake grille is connected to a vertical duct up to a roof exhaust fan. This is currently a Code Violation. Electric unit heaters are located in the corridor and stair towers.
- f. Electrical Lab, Allied Health Careers Lab, Early Childhood Education Lab, Career Assessment Lab, Cosmetology Classroom, and Cosmetology Lab (Upper Level): These labs are located on the northeast side of the building over the lower level lab/classroom spaces and look out over the new collision shop. These spaces are served by both horizontal (above-ceiling) and vertical (floor-mounted) type unit ventilators. All spaces except for the electrical lab are cooled and served by the central chilled water plant. Vertical units have through-the-wall intake vents for fresh air, while the above-ceiling types are ducted to roof-mounted fresh air intake vents. This air is then relieved to the corridor, where a roof-mounted exhaust fan draws the air through the corridor and relieves it to the outside.

Due to the odors generated in the cosmetology lab, two (2) heat recovery units were installed above the ceiling to provide additional fresh air to the space and dilute/exhaust odors primarily created by chemicals used in permanent-wave solutions.

- g. Carpentry Lab (Upper Level): the carpentry and masonry labs have switched from the originally intended locations. Other modifications have also occurred. A new gas-fired rooftop heating and ventilating unit was installed to provide make-up air to the space as the original heating and ventilating unit were already removed. Electric unit heaters provided the space with heat and are now used to supplement the heat provided by the make-up air system. The dust collector is original and is still functioning; however, the dust collection system was recently replaced. A horizontal heating and cooling unit ventilator serves both the carpentry and masonry lab classrooms.
- h. Masonry (Upper Level): The masonry shop, similar to the carpentry shop, was recently upgraded with a roof-mounted gas-fired heating and ventilating unit. New supply and return air ductwork is tied into the new rooftop unit. The

## Existing Conditions of Building Components

air distribution system was designed as a push-pull system supplying (pushed) clean air at the corridor end of the space which is then returned (pulled) at the exterior wall through a filter return grille. A dust type collector connected to a canopy hood located over the mixing area was installed to capture particulate matter during the mixing process.

- i. Technical Support and Networking Lab (Upper Level): A split system located in the masonry mezzanine serves the space. The existing heating-only unit ventilator was disconnected to provide power for the air conditioning units(s).
- j. Engineering Lab (Upper Level): Two (2) split Sanyo type (ductless mini-split system) units and the existing horizontal heating and ventilating unit ventilator serve the space.
- k. Machine Technology Shop (Upper Level): The machine shop is served by a horizontal heating and ventilating unit ventilator and the classroom is served by a split fan coil unit with remote heat pump.
- l. Computer Resource Center (Upper Level): An independent ductless split unit by EMI Technologies serves this space, which originally, was part of the Main Lobby. An electric cabinet heater is located within the room.
- m. Textiles and Fashion Careers: A split fan coil unit by Trane serves the area. The remote heat pump is located on the roof. Two (2) above-ceiling unit ventilators with cooling serve the classroom space.
- n. Drafting/CADD Classroom: Two (2) vertical (floor-mounted) unit ventilators with cooling serve the space.
- o. Video/Print/Production Room (Media/Communications): Two (2) above-ceiling horizontal style units and one (1) floor-mounted vertical style unit ventilator with cooling serve the space.
- p. Computer Technology Lab/Classroom (Upper Level): An above-ceiling unit ventilator with cooling serves the classroom, while a floor-mounted split fan-coil unit, with roof-

## Existing Conditions of Building Components

mounted heat pump serves the lab through an overhead distribution system.

- q. Allied Health Careers (Upper Level): This area was originally a resource center and connecting corridor, both of which extended from corridor to corridor. Above-ceiling unit ventilators were located above the northeast corridor ceiling and relieved to the corridor at the southeast corridor. The current layout creates multiple spaces within this area, yet only minor changes to the HVAC System occurred. Health Suite 101 is currently served by a ductless split system.
- r. Commons Area: The Commons Area is an open space served by six (6) horizontal unit ventilators with cooling coils. Outside air is introduced into the units from roof-mounted gravity vents.
- s. Kitchen/Culinary Arts Lab: Similar to the Commons Area, three (3) horizontal unit ventilators with cooling coils serve the space. Outside air is introduced into the units from roof-mounted gravity vents. Roof-mounted exhaust fans serve the kitchen hoods and a roof-mounted tempering unit (108 kW electric heater) provides supplemental make-up air for the kitchen hood exhaust requirements.
- t. Culinary Arts Dining Room and Classroom: Floor-mounted heating and cooling unit ventilators serve these areas.
- u. Office/Administration: A small above-ceiling self-contained heating-cooling unit serves the interior staff area, while floor-mounted heating-cooling fan coil units serve the perimeter office space.
- v. Lobby: the Lobby is heated and cooled by horizontal flush-mounted recirculating air type unit ventilators supplemented by cabinet unit heaters at the entry door.

**Fire Protection and Incoming Water Service:**

The original building and addition are protected by a wet pipe sprinkler system. The original building and addition are served by independent incoming water services, both located at the northeast side of the building. The incoming service for the original building is located in the former collision shop/new auto transportation lab and the additions. Incoming water service is located in the storage room within the heavy equipment and truck technology (diesel) lab. The original building is served by a 6-inch fire main and the addition has a 4-inch fire main at 125 psig static pressure with a 3-inch domestic cold water service tied into the fire main (combined service). The existing site drawings indicate an independent 8-inch fire main and 4-inch metered water main serving both CCCTC and Westminster High School. The original building is served by an independent 3-inch, 100 psig water line located on the lower level and tied into the domestic water 4-inch main, which serves the CCCTC and Westminster High School.

## **ELECTRICAL**

### **ASSESSMENT**

#### A. ELECTRICAL SERVICE AND DISTRIBUTION

The existing electrical service is the original main switchboard consisting of a 3000 Amp, 277/480 volt, three phase, 4-wire service. The existing medium voltage transformer is located near the greenhouse at the rear of the building. BGE provide primary electric service to the site. The primary BGE feeder serves both Westminster High School and CCCTC. A maximum load of the meter serving the School is 2852 kW, which indicates that the existing switchboard cannot serve the new loads. In order to serve the new HVAC loads and future loads, as well as to provide for capacity for the new classrooms, the electrical service will be served from a new switchboard and back feed the existing switchboard. The utility transformer will need to be replaced with a larger transformer.

Emergency power is provided by a propane generator located in a room next to the Main Electric Room. The generator serves the emergency incandescent lights in the stairs.

#### B. LIGHTING:

Most of the existing corridors use 1' x 4' surface-mounted 1-lamp fixtures. Key switches are used to control the corridor lights. Exit signs use green letters.

#### C. FIRE ALARM SYSTEM:

The existing fire alarm system serving the building is a combination of the original Simplex Fire Alarm System and a recently-installed Edwards EST2 fire alarm panel, located in the main electric room. The fire alarm system uses horns and strobes located throughout the school to provide audible and visual alarms. A communicator panel provides dialup communications with the UL Monitoring Service.

#### D. SECURITY SYSTEM:

The existing Ademco Security System located in the Health Suite protects the school using a combination of door contacts and motion detectors. The System uses keypads located throughout the school to arm and disarm the alarm. A communicator panel provides dial-up communications with the UL Monitoring Service. The existing security system is at its maximum capacity and will need to be expanded or replaced.

#### E. CLOSED CIRCUIT TELEVISION (CCTV) SECURITY CAMERA SYSTEM

## Existing Conditions of Building Components

Currently, the school uses fifteen (15) security cameras connected to a time-lapse VCR located in the principal's office in the Main Office.

### F. ACCESS CONTROL SYSTEM:

Currently, the school uses a BEST Access Control / Card Reader System.

### G. VIDEO NETWORK CABLE TELEVISION SYSTEM

A coaxial video cabling system is provided throughout the school. The video system is powered by a BIDA video amplifier, in the existing media retrieval system, located in the Main Office Room.

### H. MASTER CLOCKS

Existing master clocks are connected to the existing master clock/bell system. A Rauland time control unit located in the main office provides control of the master clock system.

### I. VOICE NETWORK – TELEPHONE / PAGING / INTERCOM SYSTEM

The incoming telephone service is a 50-pair cable terminating in the generator room, next to the main electric room.

The existing Rauland Telecenter Public Address Cabinet, located in the main office, will be reused and expanded as needed. The Telecenter System is in good condition and has capacity to service the new additions.

The existing PA System uses ceiling-mounted speakers and call switch.

The existing Northern Telecom Norstar Meridian telephone switch in the storage room will be re-used.

### J. DATA NETWORK

Currently, there exists one (1) MDF (Main Office). The MDF contains multiple 48 port patch panels. Category 5 data cabling, installed around 1999, is provided throughout the school. Five (5) IDF Rooms exist:

1. Computer Technology
2. Video/Graphic Production
3. Drafting B111
4. Tech Support & Networking



5. Collision Repair Classroom

**MECHANICAL**

**A. MECHANICAL SYSTEMS**

1. Existing rooftop units and heat recovery serving the 1986 addition are not functioning or not functioning properly. The rooftop heating and ventilating units were manufactured by Bohn, which is no longer in business. Similarly, the heat recovery units were manufactured by "Temp Exchanger", which also is no longer in business. All of the equipment, including the split systems, are beyond their useful lives and are recommended to be replaced.
2. Existing Chilled Water Plant: Even though the chiller is not that old, the existing piping systems are degrading and have caused the need to keep the chilled water system circulating 24/7, including throughout the entire heating season when chilled water is not required. A Spirovent air and dirt separator has been installed to aid in cleaning the system. It is our understanding that the chiller ices up, which is probably the result of fouling of the evaporator tubes. Even though this chiller can be reconditioned if/when the piping system is replaced, higher efficiency rotary screw chillers have replaced reciprocating compressor chillers. Ultimately, it is recommended that the chiller, piping, cooling tower, remote sump, and all associated pumps be replaced. Based on the projected capacity of the cooling system, a multi-circuit air-cooled chiller is recommended to serve the entire complex (original building and addition).
3. Existing Heating System: The existing heating system, for the most part, remains as electric resistance. Even though electric resistance is 100% efficient, it is typically more expensive to operate. The electric heaters are located in equipment (unit ventilators, fan-coil units, rooftop units, wall heaters) that is typically original to the time of construction. This equipment is beyond its useful life and is recommended to be replaced. Therefore, it is recommended that a gas-fired central boiler plant be installed, which-- possibly--could reside in the existing chiller room, if the chiller is replaced with an air-cooled type.
4. Existing Terminal Equipment/Systems/Exhaust Fan: Based on the age of the equipment, controls, ongoing indoor air quality, and thermal comfort issues, age and type of equipment, it is recommended that the HVAC System and associated electric resistance heating units be replaced in their entirety. The existing relief air system uses the corridor as a duct, which is a Code

## Existing Conditions of Building Components

violation that needs to be corrected. Most storage rooms have individual exhaust fans. There are many special system exhaust fans, as well as relief air system exhaust fans, which are original and beyond their useful lives. It is recommended that all exhaust fans and special exhaust systems be replaced in their entirety.

## **PART 4 – EVALUATION AND COSTS FOR OTHER FACTORS**

As part of the overall tasks performed on behalf of Carroll County Board of Education, a thorough evaluation of the existing buildings and the site features was conducted. As part of this evaluation, the evaluation of numerous other factors was conducted.

- ❖ Hazardous Materials – The County's records indicate that there is approximately 60 square feet of ACM (9" x 9" tiles & mastic) that is located under walls in three rooms. In addition, there are two items that are assumed to contain ACM, but have not been tested or confirmed – the solid black laboratory benches and tops, and the fire doors. The costs to remediate these items are included in the renovation cost estimates.
- ❖ Accessibility  
Refer to Part 3
- ❖ Fire Safety (egress, construction type, sprinklers) – Refer to Part 3
- ❖ Historic Significance – None
- ❖ Importance to Community  
All school facilities play a vital role in their communities. The CCCTC serves an even greater role, by providing facilities for students and adults to become exposed to and trained in trades and skills that are important to the continued growth of the county and region.
- ❖ Energy-use Data (past three years) –
 

	<u>2004</u>	<u>2005</u>	<u>2006</u>
Electric (KWH)	2,841,338	2,557,082	2,559,953
Natural Gas (Therms)	0	0	20,242
Propane (Gallons)	1,505	1,218	1,134
- ❖ Existing or alternative site consistency with the county comprehensive land use plan  
Refer to Part 6, Options
- ❖ Placement of students and staff during construction  
Refer to Part 7

## **PART 5 – 35-YEAR LIFE CYCLE COSTS**

Utilizing a dollar-per-square-foot method for determining likely life-cycle costs for 35 years, the following figures are developed. Note that a smaller \$/sf figure is used for new construction, since the entire facility and its systems are newer, and therefore will have a greater value and lower life-cycle cost on an annual basis.

Option A - \$9,565,000 (based on 71,000 gsf of renov. & 139,000 gsf of addition)

Option B - \$8,820,000 (based on 210,000 gsf pf new construction)

Option C - \$8,820,000 (based on 210,000 gsf pf new construction)

### **Mechanical 35 Year-Life-Cycle Costs**

Utilizing a computer model for determining likely life-cycle costs for 1 year, the following figures are developed. The annual operating cost was then multiplied by 35 years to provide a simple cost analysis for a 35 year life span.

The only two options that need to be considered in terms of the building systems are either a building renovation or new building. The various options proposed around a new building do not impact the building systems and are site dependent. Issues related to the site options are addressed in other portions of the report. Mechanical systems were analyzed for either option based on installation and operational costs.

To evaluate all of these options, estimates were developed for the costs of installation of the mechanical system, including plumbing, and operating costs of the HVAC system.

It is important to note with these estimates that the 35 year cost is simple cost and does not account for inflation in a given fuel source. These estimates also do not factor in maintenance costs which will be much higher for the conventional chiller and boiler system due to service contracts required for these pieces of equipment.

In summary, the projected life-cycle costs, including mechanical & utility costs, are less for the replacement facility options than for the renovation / addition option. The primary reason for this is that in the renovation / addition options, while the systems, finishes and roof are new, the rest of the building, including the structure, floor slabs and other elements are original to the building, decreasing the longevity of several of the new systems and finishes.

In short, there will be less value per dollars spent in terms of projected life-cycle costs for the renovation / addition option than for the new school option.

## **PART 6 – OPTIONS**

## OPTION A

This option renovates portions of the existing facility. The 1986 addition and the collision repair building are demolished to make way for the expansion. The expansion is located and designed to attempt minimize disruption to the current programs while it is being constructed. Once the expansion is complete, additional phasing of renovation to the existing structure would take place, to provide program space for current and proposed programs. Site access and circulation is reconfigured to work with the new building arrangement.

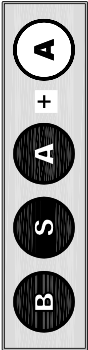
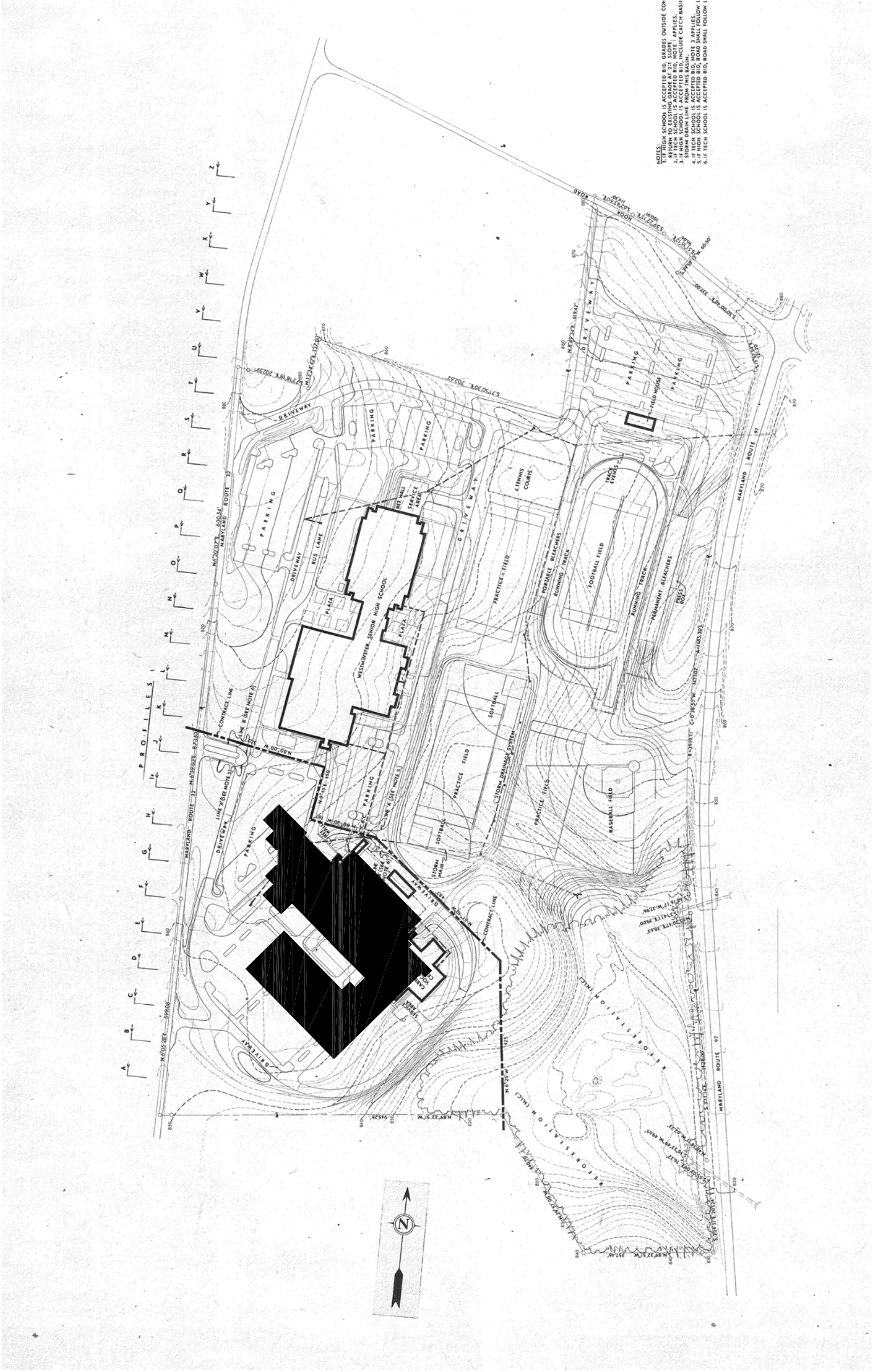
### **PROS:**

- ❖ The facility remains on its current site.
- ❖ All existing systems and building components are fully renovated and/or replaced.
- ❖ All functions are accommodated per the proposed program, though with some compromises due to re-use of the existing facility and the limitations it imposes.
- ❖ A new entrance / building image is created.
- ❖ CCPS currently owns the site, so the project can proceed as soon as funding is approved with no break in development.

### **CONS:**

- ❖ As noted above, the re-use of the existing building, though reconfigured, leads to some programmatic compromises, mainly in relation to adjacencies optimal room arrangements.
- ❖ Some inefficiency exists due to the need to locate new functions within the existing building. Every attempt is made to minimize this impact.
- ❖ The construction will need to be phased so that the facility can be occupied and programs can continue while the new facilities are put into place. This adds both time and significant cost to the project. This also increases the potential for safety and disruption issues.





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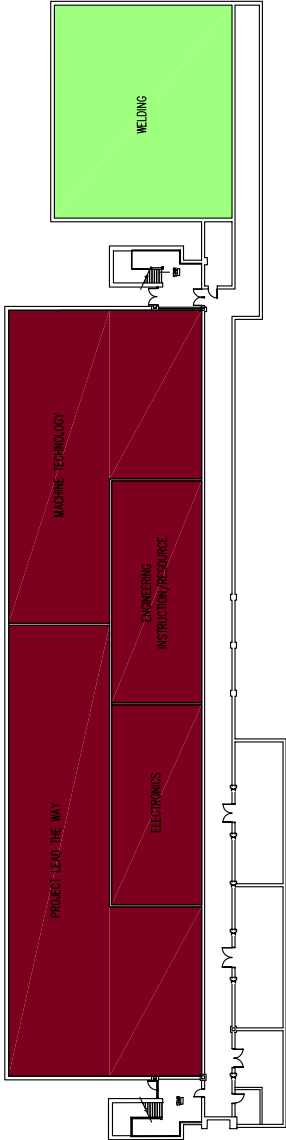
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OPTION A – SITE PLAN

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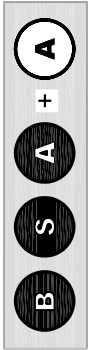
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SUBFLOOR LEVEL



ENTRY/FIRST LEVEL



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OPTION A – RENOVATION/  
ADDITION

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**OPTION B**

This option builds a new facility on the current Westminster High School site. This allows the existing school to operate with minimal disruptions while the new facility is being constructed. The location is at the intersection of Rt. 97 and Hook Road, where the current WHS stadium and a parking lot are located. The plan would attempt to not displace the stadium, though the potential exists to replace the stadium once the new CCCTC is built, on the property currently occupied by the CCCTC. Optimal program accommodation within the new CCCTC is achieved in this option.

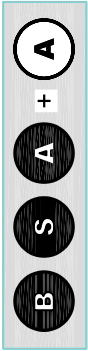
**PROS:**

- ❖ All functions are fully accommodated per the space program.
- ❖ The School remains on the current site; close to the population/work center in the county.
- ❖ Construction can occur with minimal disruption to the existing facility, and requires minimal phasing as a result of the impact on the WHS parking and stadium.
- ❖ A new entrance / building image is created.
- ❖ CCPS currently owns the site, so the project can proceed as soon as funding is approved with no break in development.

**CONS:**

- ❖ WHS will lose some site features during construction, including parking and a portion of the area around the stadium.
- ❖ The new facility cannot be expanded as well for future needs, given the site constraints.

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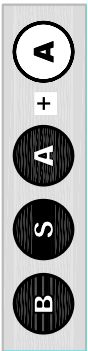
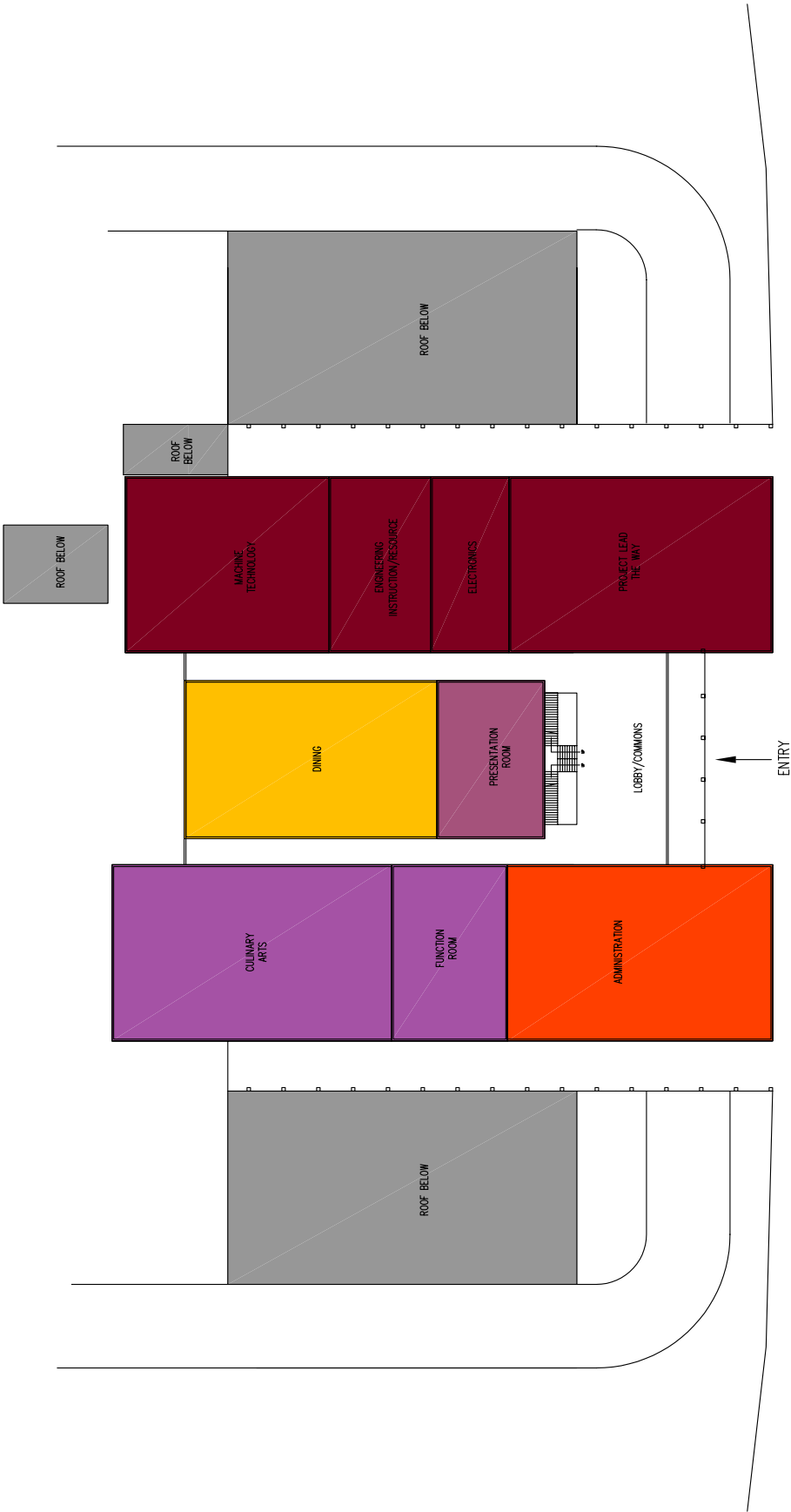
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OPTION B-WHS SITE  
GROUND FLOOR

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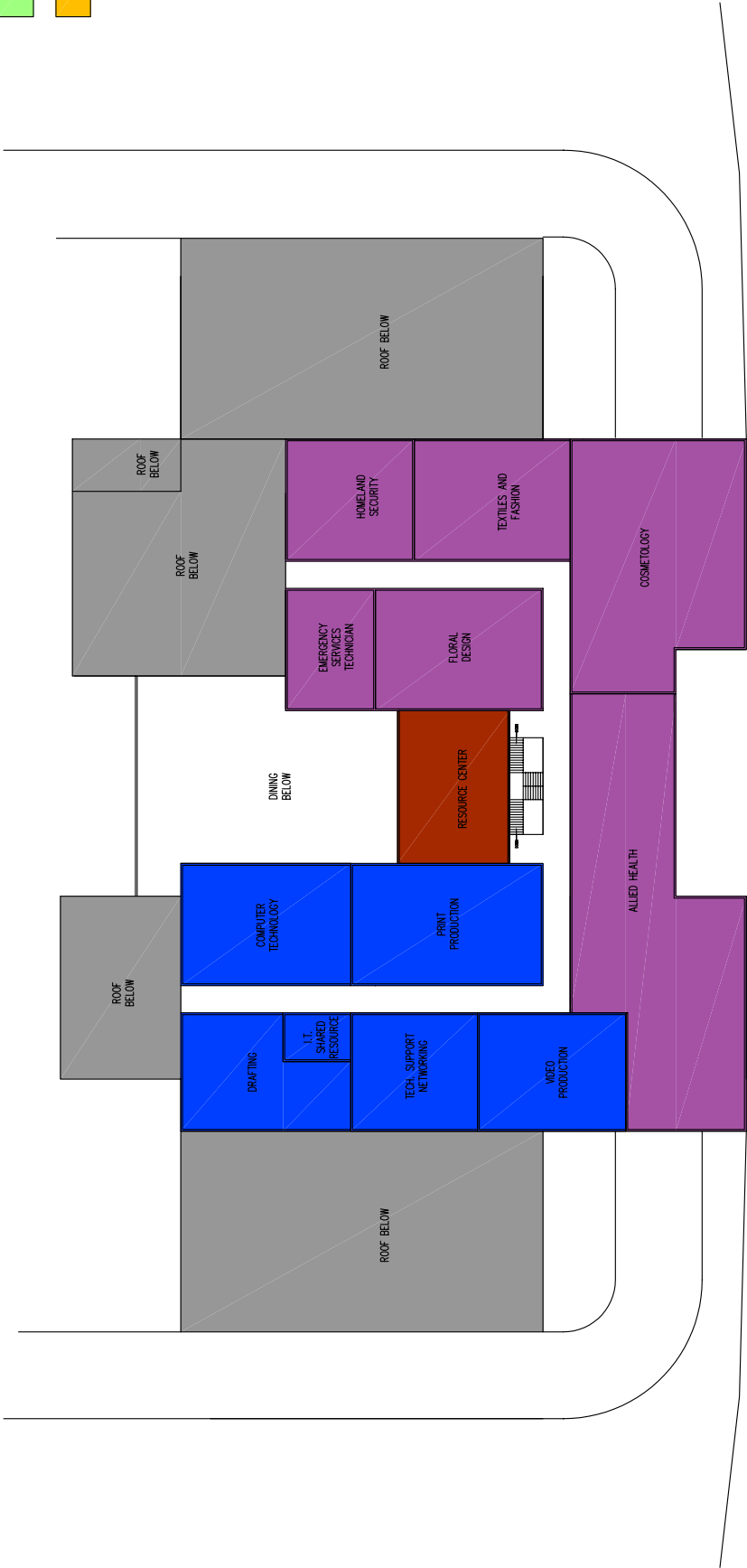
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OPTION B-WHS SITE  
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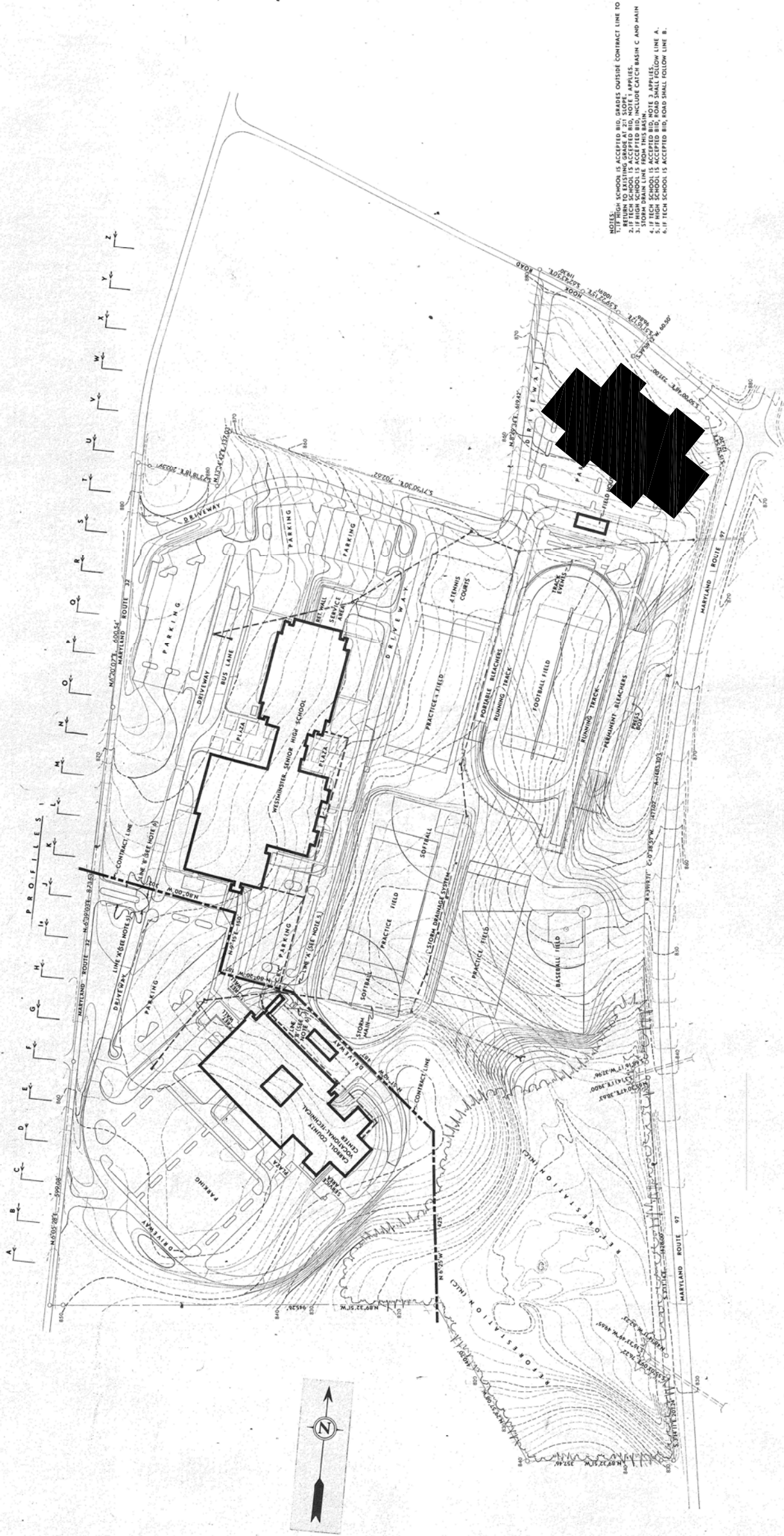
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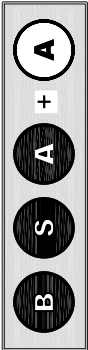
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NOTES:  
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2. IF TECH SCHOOL IS ACCEPTED BID, GRADES OUTSIDE CONTRACT LINE TO  
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OPTION B- SITE PLAN

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## OPTION C

This option builds a new facility on a new site (to be determined), located as centrally as possible. This allows the existing school to operate with no disruptions while the new facility is being constructed. Optimal program accommodation within the new CCCTC is achieved in this option. Once the new facility becomes operational, the existing facility could be demolished or renovated for reuse by CCPS.

### **PROS:**

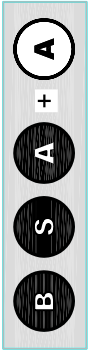
- ❖ All functions are fully accommodated per the space program.
- ❖ Construction can occur with no disruption to the existing facility, and requires no phasing.
- ❖ The facility can be better expanded to accommodate future needs.

### **CONS:**

- ❖ As CCPS does not likely own this hypothetical new site, the project would be delayed (a minimum of one year) until the new site goes through the State Clearinghouse acquisition and approval process.
- ❖ There is a risk this new site may not be approved at all.



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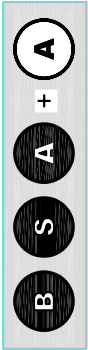
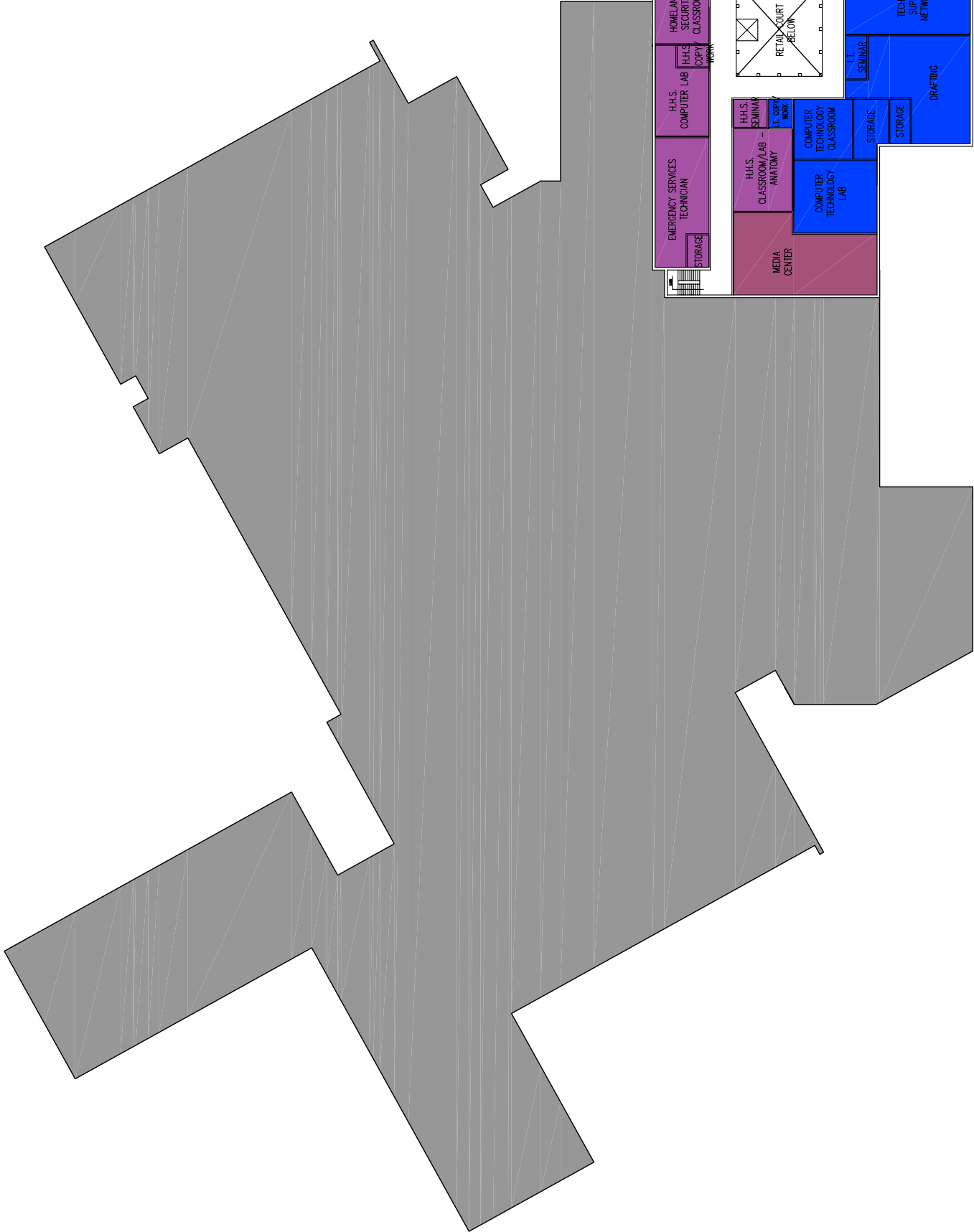
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OPTION C – NEW SITE  
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OPTION C – NEW SITE  
SECOND FLOOR

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AREA	Option A RENOVATE / EXPAND EXISTING	Option B NEW FACILITY ON WHS SITE	Option C NEW FACILITY ON NEW SITE	Comments
Existing	115,000	115,000	115,000	
Demolition	44,000	115,000	115,000	
New / Addition	139,000	210,000	210,000	
<b>TOTAL BUILDING AREA</b>	<b>210,000</b>	<b>210,000</b>	<b>210,000</b>	

COSTS	Option A RENOVATE / EXPAND EXISTING	Option B NEW FACILITY ON WHS SITE	Option C NEW FACILITY ON NEW SITE	Comments
<b>BASE CAPITAL COSTS</b>				
Demolition	440,000	1,150,000	1,150,000	\$10/sf
Renovation	15,265,000	0	0	\$215/sf
Addition/New Construction	29,885,000	45,150,000	45,150,000	\$215/sf
<b>Building Construction Costs</b>	<b>45,590,000</b>	<b>46,300,000</b>	<b>46,300,000</b>	
Site Construction - Renov.	763,250	0	0	5%
Site Construction - New	3,586,200	5,418,000	5,418,000	12%
<b>Total Site Costs</b>	<b>4,349,450</b>	<b>5,418,000</b>	<b>5,418,000</b>	
<b>Total Base Capital Costs</b>	<b>49,939,450</b>	<b>51,718,000</b>	<b>51,718,000</b>	
<b>OTHER CAPITAL COSTS</b>				
Contingency	2,496,973	2,585,900	2,585,900	5%
Phasing	4,559,000	0	0	10%
Temporary Facilities	320,000	0	0	Trailers at \$40K
Additional Site Work	0	2,000,000	0	Stadium, Pkg.
Land Acquisition	0	0	3,000,000	60 acres
Land/Infrastructure	0	0	1,000,000	New Site
Escalation	9,170,468	9,008,624	8,848,624	Utilities 8% per year, 2 yr.
<b>Other Capital Costs</b>	<b>16,546,440</b>	<b>13,594,524</b>	<b>15,434,524</b>	
<b>TOTAL CAPITAL COSTS</b>	<b>66,485,890</b>	<b>65,312,524</b>	<b>67,152,524</b>	
<b>SOFT COSTS</b>				
FFE	5,992,734	6,206,160	6,206,160	12%
A/E Fees	3,246,064	3,361,670	3,361,670	6.5%
CM Fees	2,996,367	3,103,080	3,103,080	6%
Additional Surveys & Fees	0	200,000	300,000	
Misc.	499,395	517,180	517,180	1%
<b>Total Soft Costs</b>	<b>12,734,560</b>	<b>13,388,090</b>	<b>13,488,090</b>	
<b>TOTAL PROJECT COSTS</b>	<b>79,220,450</b>	<b>78,700,614</b>	<b>80,640,614</b>	

## **PART 7 – EDUCATIONAL PROGRAM ACCOMMODATION**

The purpose of this summary is to identify the various facility issues that affect the delivery of the educational program. Each of the proposed options is addressed, with presumed effects on the program based on the extent of re-use of the existing facility or portions thereof.

### **EXISTING FACILITY**

In general, all spaces are undersized based on their functional and curricular needs. Additionally, there are numerous instances of the absence of necessary spaces, typically in the form of support spaces. The space program identifies the existing and proposed program.

Beyond size and quantity, the existing facility limits the adequate delivery of the program. As a base-line standard, each space should not in any way limit the ability for the programs to meet the minimum requirements for certification. Project-Lead-the-Way and NATEF certification teams have cited CCCTC for inadequate facilities and for the failure to attract non-traditional students.

The following is a summary of the existing facility deficiencies.

#### Physical Deficiencies:

- All systems (HVAC, Plumbing, Elec., Etc.) need to be replaced
- Roof needs to be replaced
- Exterior skin needs to be repaired
- Exterior windows & doors need to be replaced
- Interior doors need to be replaced
- Finishes need to be replaced
- Casework & Furnishings need to be replaced
- Equipment needs to be replaced
- Various Site repairs / replacements
- Full Building, Life Safety & ADA Compliance

#### Functional Deficiencies:

- Many spaces are too small
- Some program elements not present
- Functional adjacencies are not optimal
- Trades are not clustered optimally
- Existing building components restrict optimal program delivery:
  - Ceiling heights
  - Floor level changes
  - Interior wall locations
  - Building infrastructure / core locations
  - Site Features

**OPTION A**

As with each of the proposed options, the following CTE programs will be offered, with the proposed clusters for each:

- ❖ Health & Human Services
  - Allied Health
  - Textiles & Fashion Careers
  - Emergency Services Technician
  - Homeland Security
  - Cosmetology
  - Culinary Arts
  - Floral Design
- ❖ Information Technology
  - Video Production
  - Print Production
  - Computer Technology
  - Drafting
  - Technical Support / Networking
- ❖ Engineering
  - Project Lead The Way
  - Machine Technology
  - Electronics
- ❖ Transportation
  - Automotive Technology
  - Collision Repair
  - Heavy Equipment and Truck Technology (Diesel)
- ❖ Construction
  - HVAC
  - Carpentry
  - Masonry
  - Electrical
  - Landscaping
  - Welding

In addition, new and expanded support spaces are included to properly support the delivery of the program.

This option builds a new addition to the front of the existing school, to primarily house the Transportation and Construction cluster spaces. The 1986 addition is demolished to make room for an addition to house most of the Health & Human Services areas. An expansion off the back, on the lower level is built to accommodate the Engineering Cluster functions. Another addition is built to the front for the new entry, admin functions and other support spaces. The remaining portions of the existing facility are fully renovated and reconfigured to accommodate the remaining programs and functions.

While the expansions will be designed and constructed to properly accommodate the programs located in them, there are numerous elements within the existing building that will still limit the optimal delivery of those programs.

Finally, the largest limiting factor has to do with the need to construct the project while the school remains in operation. Unlike schools with more traditional programs and corresponding classroom spaces, the CCCTC has unique and large programs with very specific needs. The ability to utilize temporary classrooms (trailers) is not an option here, as those units would not support the unique needs of the program. Therefore, the phasing of the construction becomes a primary limiting factor. Phasing, more than anything, dictates where program functions need to be located or re-located, rather than the function and program determining this. The resulting lay-out is a programmatic compromise, in addition to the physical limitations noted previously.

### **OPTIONS B & C**

In the remaining two options, the requirements of the entire program are fully provided, in terms of sizes, quantities and proper adjacencies. The program areas are properly clustered, and the spaces within each program are optimally arranged. The entire building is arranged to take full advantage of the site opportunities and challenges. Internal arrangements and adjacencies are optimized. There are no limitations on the programs or building functions based on physical features, as these are all addressed through new construction. Finally, no phasing is required, resulting in a shorter construction schedule, with no disruption to the education programs.

The following is a summary comparison of the existing space allocation to the proposed program per the Educational Specifications.

CLUSTER	EXISTING	PROPOSED	DIFFERENCE
Administration	8,460	10,200	1,740
Shared Resources	4,864	13,950	9,086
Health & Human Services	18,788	31,940	13,152
Information Technology	12,068	14,640	2,572
Engineering	7,836	16,290	8,454
Transportation	27,753	34,640	6,887
Construction	22,684	34,440	11,756
<b>Total Net Area</b>	<b>102,453</b>	<b>156,100</b>	<b>53,647</b>
<b>Total Gross Area</b>	<b>129,000</b>	<b>210,735</b>	<b>81,735</b>



The following is a detailed comparison of the existing program and the proposed program:

Space	EXISTING			FEASIBILITY STUDY		
	Total Area	Area by Dept.	Teach. Sta.	# of rooms	Size	Total area
<b>ADMINISTRATION</b>						
<b>Central Admin</b>		<b>2,144</b>				<b>3,180</b>
Principal	300			1	200	200
Asst. Principal	176			1	150	150
Waiting	190			1	200	200
Reception	50			1	100	100
Office area	520			1	400	400
Bookkeeper's Office	0			1	120	120
Career Coordinator	216			2	250	500
Conference	0			1	350	350
Workroom / Mail	120			1	400	400
Records Storage	100			1	100	100
Office (extra office)	0			1	120	120
Office Storage	0			1	60	60
Staff Lounge	372			1	400	400
Toilets	100			2	40	80
<b>Guidance</b>		<b>1,856</b>				<b>1,170</b>
Counselor Office	182			1	200	200
Counselor Office	170			1	150	150
Secretary / Office	0			1	170	170
Conference / Visitor Office	0			1	150	150
Career Resource Room	0			1	200	200
Workroom/Storage	0			1	150	150
Early Childhood Ed. Office	1,504			1	150	150
<b>Health Suite</b>		<b>236</b>				<b>640</b>
Waiting	0			1	50	50
Treatment / Med	236			1	100	100
Consult/Exam	0			1	120	120
Office	0			1	100	100
Cot areas	0			2	100	200
Toilet	0			1	40	40
Storage	0			1	30	30
<b>Career Tech Support Services</b>		<b>2,829</b>				<b>4,050</b>
Office	596			1	600	600
Pull-out Rooms	0			4	200	800
Staff Workroom	0			1	150	150
Testing Room				1	300	300
Conference	0			1	300	300
Storage	25			1	50	50
Career Assessment Lab	1,926		<b>2</b>	1	1,500	1,500
Career Assessment Office	208			1	200	200
Career Assessment Storage	74			1	150	150
<b>Building Services</b>		<b>1,395</b>				<b>1,160</b>
Custodial Office	0			1	120	120
Lockers / Toilet	0			1	120	120
Custodial Storage	1,312			1	800	800
Custodial Closets	83			4	30	120

Space						
<b>SHARED RESOURCES</b>						
<b>Resource Center</b>	<b>448</b>					<b>2,050</b>
Circulation Desk	0		1	150	150	
Stacks	0		1	600	600	
Computer area	448		1	400	400	
Seating	0		1	350	350	
Office / Workroom	0		1	150	150	
Seminar / Project Room	0		0	150	0	
Comm Distr. Room	0		1	200	200	
Storage	0		1	200	200	
<b>Presentation Room</b>	<b>0</b>					<b>2,500</b>
150 Seating	0		1	2,500	2,500	
<b>Student Activities</b>	<b>0</b>					<b>600</b>
Club Meeting Rooms	0		2	300	600	
<b>Food Service</b>	<b>4,416</b>					<b>8,800</b>
Dining	3,840		1	6,000	6,000	
Serving	432		1	700	700	
Food Prep	0		1	1,200	1,200	
Dishwashing	144		1	300	300	
Food Storage	0		1	250	250	
Refrig / Freezer	0		1	200	200	
Receiving	0		1	100	100	
Janitor	0		1	50	50	

Space						
<b>HEALTH &amp; HUMAN SERVICES CLUSTER</b>						
<b>Allied Health Careers</b>	<b>4,585</b>					<b>7,600</b>
Lab	1,520	1	2	1,500	3,000	
Storage 1	192		1	200	200	
Locker 1	217		1	300	300	
Lab	721		0	0	0	
Classroom 1	536	1	4	800	3,200	
Classroom 2	267	1	0	0	0	
Classroom 3	587	1	0	0	0	
Storage	60		1	450	450	
Lockers	72		0	0	0	
Office	413		1	300	300	
Laundry	0		1	100	100	
Toilet	0		1	50	50	
<b>Textiles &amp; Fashion Careers</b>	<b>2,806</b>					<b>2,550</b>
Lab	1,461	1	1	1,400	1,400	
Classroom	1,236		1	800	800	
Lockers	0		1	200	200	
Storage	109		1	150	150	
<b>Emergency Services Technology</b>	<b>0</b>	<b>1</b>				<b>1,500</b>
Classroom	0		0	800	0	
Lab	0		1	1,350	1,350	
Storage	0		1	150	150	
Locker	0		0	0	0	
<b>Homeland Sec.</b>	<b>0</b>					<b>2,150</b>
Classroom	0		1	800	800	
Lab	0		1	1,200	1,200	
Storage	0		1	150	150	
<b>Cosmetology</b>	<b>5,263</b>					<b>5,600</b>
Lab/Classroom (So Carroll HS)	2,400		0	0	0	
Classroom	768	2	2	1,200	2,400	
Lab/ Clinic ( <i>includes rooms for manicures/ pedicures/ waxing/ etc.</i> )	1,521		1	2,000	2,000	
Waiting Area	80		1	200	200	
Dispensary	128		1	300	300	
Lockers	184		1	400	400	
Toilet	30		1	50	50	
Laundry	0		1	100	100	
Office	152		1	150	150	
<b>Culinary Arts</b>	<b>3,437</b>					<b>7,400</b>
Kitchen Lab	1,472	1	1	2,000	2,000	
Bakery Kitchen Lab	0	1	1	1,200	1,200	
Classroom	360		2	800	1,600	
Classroom	490		0	0	0	
Restaurant	416		1	1,000	1,000	
Office	109		1	200	200	
Locker	144		1	400	400	
Laundry	66		1	100	100	
Storage (Drygoods/ linens)	220		2	200	400	
Walk-in Refrigerator/ Freezer	160		2	200	400	
Toilets	0		2	50	100	
<b>Floral Design</b>	<b>2,209</b>	0.5				<b>2,700</b>
Lab	940		1	1,200	1,200	
Classroom	1,269		1	800	800	
Lockers	0		1	300	300	
Material Storage	0		1	400	400	
<b>Instruction / Resource</b>	<b>488</b>					<b>2,440</b>
Computer Lab	488		1	900	900	
Classroom/ Lab- Anatomy	0		1	1,200	1,200	
Seminar Room	0		1	200	200	
Copy/work room	0		1	140	140	

Space						
INFORMATION TECHNOLOGY CLUSTER						
<b>Video Production</b>		<b>1,638</b>				<b>2,400</b>
Video Computer Lab / CR	1,146		0.5	1	800	800
Studio (currently shared w/ Shop)	0			1	500	500
Control Booth	133			1	200	200
Clean Storage	0			1	200	200
Paint/Chemical Storage	0			1	150	150
Tool & Material Storage	153			1	200	200
Lockers	186			1	300	300
Toilet	20			1	50	50
<b>Print Production</b>		<b>994</b>				<b>3,000</b>
Print Prod. Computer Lab / CR	0			1	800	800
Production Shop	879		0.5	1	1,300	1,300
Clean Storage	0			1	200	200
Paint/Chemical Storage	0			1	150	150
Tool & Material Storage	115			1	200	200
Lockers	0			1	300	300
Toilet	0			1	50	50
<b>Computer Technology</b>		<b>2,138</b>				<b>2,500</b>
Computer Lab	1,305		1	1	1,300	1,300
Classroom	585			1	800	800
Storage	248			1	400	400
<b>Drafting</b>		<b>5,098</b>				<b>4,400</b>
Lab/ Classroom	2,048		1	2	2,100	4,200
Lab (So Carroll HS)	3,050			0	0	0
Storage	0			1	200	200
<b>Technical Support Networking</b>		<b>2,200</b>				<b>2,000</b>
Lab/ Classroom	1,997		1	1	1,800	1,800
Storage	203			1	200	200
Locker	0			0	0	0
<b>Instruction / Resource</b>		<b>0</b>				<b>340</b>
Seminar Room	0			1	200	200
Copy/work room	0			1	140	140

**Space**
**ENGINEERING CLUSTER**

<b>Project Lead The Way</b>	<b>2,334</b>				<b>6,800</b>
Computer Lab/ Classroom	680	1	3	1,000	3,000
Engineering Lab	1,392		2	1,500	3,000
Project Storage	0		1	400	400
Storage	262		1	400	400
Locker	0		0	0	0
<b>Machine Technology</b>	<b>4,686</b>				<b>5,250</b>
Lab	3,379	1	1	3,500	3,500
Classroom/ Computer Lab	480		1	1,000	1,000
Lockers	180		1	300	300
Tool Storage	120		1	200	200
Toilet	0		1	50	50
Storage	527		1	200	200
<b>Electronics</b>	<b>816</b>				<b>2,000</b>
Lab	816	1	1	1,000	1,000
Classroom			1	800	800
Storage			1	200	200
<b>Instruction / Resource</b>	<b>0</b>				<b>2,240</b>
Computer Lab	0		1	900	900
Classroom/ Lab- Math/ AP Calculus	0		1	1,000	1,000
Seminar Room	0		1	200	200
Copy/work room	0		1	140	140

**Space**

<b>TRANSPORTATION CLUSTER</b>						
<b>Automotive Technology</b>	<b>16,172</b>					<b>14,150</b>
Auto Shop (So Carroll HS)	4,200			0	0	0
Auto Mezz. Stor. (So Carroll HS)	700			0	0	0
Auto Stor Sheed (So Carroll HS)	2,800			0	0	0
Classroom	614			2	800	1,600
Shop	7,000	2		1	10,000	10,000
Computer/ Reference	0			1	700	700
Tool Storage	378			1	650	650
Office	0			3	150	450
Locker	480			1	300	300
Toilet	0			1	50	50
Storage	0			1	400	400
<b>Collision Repair</b>	<b>4,917</b>					<b>9,450</b>
Classroom	760			1	800	800
Shop (incl. paint booth)	3,000	1		1	7,500	7,500
Office	0			1	150	150
Toilets	100			1	50	50
Tool Storage	153			1	650	650
Locker	144			1	300	300
Mezzanine Storage	760			0	0	0
<b>Heavy Equip. &amp; Truck Tech. (Diesel)</b>	<b>6,664</b>					<b>9,800</b>
Classroom	590			1	800	800
Shop	3,015	1		1	7,500	7,500
Toilet	107			1	50	50
Tool Storage	200			1	650	650
Office	0			1	150	150
Locker	265			1	300	300
Cleaning Room	559			1	200	200
Dyna. Room	203			1	150	150
Mezzanine Storage	1,585			0	0	0
Storage	140			0	0	0
<b>Instruction / Resource</b>	<b>0</b>					<b>1,240</b>
Computer Lab	0			1	900	900
Seminar Room	0			1	200	200
Copy/work room	0			1	140	140

Space						
<b>CONSTRUCTION CLUSTER</b>						
<b>HVAC</b>	<b>4,020</b>					<b>4,050</b>
Lab	1,970	1	1	2,400	2,400	
Classroom	378		1	800	800	
Lockers	180		1	200	200	
Toilet	81		1	50	50	
Tool Storage	329		1	200	200	
Mezzanine Storage	1,082		1	400	400	
<b>Carpentry</b>	<b>5,153</b>					<b>5,850</b>
Lab	3,659	1	1	4,000	4,000	
Classroom	547		1	800	800	
Lumber Storage			1	300	300	
Project Storage			1	300	300	
Tool Storage	200		1	200	200	
Mezzanine Storage	747		0	0	0	
Toilet	0		1	50	50	
Lockers			1	200	200	
<b>Masonry</b>	<b>3,514</b>					<b>4,650</b>
Lab	2,738	2	1	2,400	2,400	
Classroom	263		2	800	1,600	
Lockers	0		1	200	200	
Toilet	0		1	50	50	
Storage	513		1	400	400	
<b>Electrical</b>	<b>3,277</b>					<b>4,050</b>
Lab	2,233	1	1	2,400	2,400	
Classroom	600		1	800	800	
Lockers	124		1	200	200	
Tool Storage	180		1	300	300	
Toilet	0		1	50	50	
Storage	140		1	300	300	
<b>Landscaping</b>	<b>2,700</b>					<b>5,400</b>
Classroom/ Computer Lab	0	0.5	1	2,100	2,100	
Greenhouse	2,000		1	1,200	1,200	
Prep Lab	0		1	800	800	
Lockers	0		1	300	300	
Material Storage	700		1	1,000	1,000	
<b>Welding</b>	<b>4,020</b>					<b>3,800</b>
Lab	1,970	1	1	2,400	2,400	
Classroom	378		1	800	800	
Lockers	329		1	300	300	
Toilet	81		1	50	50	
Tool Storage	180		1	250	250	
Mezzanine Storage	1,082		0	0	0	
<b>Construction Bay</b>	<b>0</b>					<b>5,000</b>
Bay	0		1	5,000	5,000	
<b>Instruction / Resource</b>	<b>0</b>					<b>1,640</b>
Computer Lab	0		1	900	900	
Bldg.Maint. Program Stor.	0		1	400	400	
Seminar Room	0		1	200	200	
Copy/work room	0		1	140	140	
<b>TOTAL NET AREA</b>	<b>102,453</b>	<b>30</b>				<b>156,100</b>
<b>TOTAL GROSS AREA (1.35 factor)</b>	<b>115,016</b>					<b>210,735</b>

## **PART 8 – SUMMARY & RECOMMENDATION**



Two fundamental options were reviewed for the Carroll County Career and Technology Center – Renovate & Expand the existing facility, or build a new facility. The new facility option was further reviewed based on the location of the proposed new CCCTC. It was determined that maintaining the facility in the Westminster area was critical because of its central location in the County.

Option A - Renovating and expanding the existing building - would allow the facility to remain in Westminster. However, several deficiencies would remain. Some programmatic compromises would exist (mainly in relation to adjacencies and optimal room arrangements). The construction would also need to be phased so that the facility could be occupied and programs continued while the new facilities are put into place. This adds both time and significant cost to the project. This also increases the potential for safety and disruption issues. In addition, this option would utilize all possible land around the existing building, limiting any future expansion possibilities. Finally, this option is estimated to have the highest overall project costs of the three options studied.

Because of the compromises, disruptions and high costs associated with renovating and expanding the existing building, the option to build new was deemed to yield the best results for the funds expended. Option B - building a new facility on the Westminster High School – offers optimal program accommodation within the new CCCTC. All functions are fully accommodated per the space program. The school remains on its current site, close to the population/ work center in the County. Construction can occur with minimal disruption to the existing facility and requires minimal phasing as a result of the impact on the WHS parking and stadium. In addition, CCPS currently owns this site. This option, however, will cause disruption to WHS parking and loss of some site features during construction. In addition, the potential for expansion is limited due to the adjacent stadium, although this could be solved by relocating the stadium to the site of the existing CCCTC. This option is projected to have the lowest overall project costs of the three options studied.

Option C - building of a new facility on a new site (to be determined) - allows the existing school to operate with no disruptions while the facility is being constructed. Optimal program accommodation within the new CCCTC is achieved in this option. Once the new facility becomes operational, the existing facility could be demolished or renovated for reuse by CCPS. All functions are fully accommodated per the space program and construction can occur with no disruption to the existing facility, and requires no phasing. This option also offers a better opportunity for future expansion than Option B, due to Option B's site restrictions. This option would require the purchase of a suitable piece of land, adding to the overall project costs.

The fundamental recommendation is to build a new facility. If a suitable site can be found close to the existing CCCTC site, then Option C would be the best option. Otherwise, Option B is recommended as the best method to address the current and future needs of the Carroll County Career and Technology Center.