

Maine School Administrative District 75
Asphalt Assessment Study Report

Prepared for
Maine School Administrative District 75
50 Republic Avenue
Topsham, ME 04086

RFS 20-9466.001

June 09, 2021





Maine School Administrative District 75 Asphalt Assessment Study Report

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A. Project Scope

1. General

Rist-Frost-Shumway Engineering, P.C. (RFS) has prepared this report in conjunction with the Maine School Administrative District 75 (MSAD 75) to provide a comprehensive assessment of a number of asphalt surfaces at various locations throughout the District. The general scope of work for the MSAD 75 Asphalt Assessment Study focused on existing roadway, parking lot, sidewalk, and playground asphalt hardscape areas at nine MSAD 75 sites, including:

- 1) Bowdoin Central School
- 2) Bowdoinham Community School
- 3) Harpswell Community School
- 4) Merrymeeting Adult Education Lodge
- 5) MSAD 75 District Office
- 6) Mt. Ararat Middle School
- 7) Republic Avenue Roadway
- 8) Williams-Cone School
- 9) Woodside Elementary School

2. Study Tasks

This report is the final document of the study, which project scope included the following tasks:

- 1) Participate in a web-based project kick-off meeting with MSAD 75.
- 2) Prepare site maps for each project site utilizing available drawings and aerial photography.
- 3) Review record drawings and other documents for each site, as provided by MSAD 75.
- 4) Perform one site visit to visually observe existing conditions. Interview MSAD 75 facilities staff to obtain additional information. Prepare summary notes along with significant observations.
- 5) Perform assessment of existing conditions. (Note, the proposal did not include obtaining any core samples to verify base conditions, or any geotechnical engineering. All assessment was based on review of record drawings and other documents, fieldwork, and MSAD 75 interviews.)
- 6) Develop a prioritized list of improvements recommended for each asphalt area type, including roadway, parking lot, and sidewalk, in accordance with the table provided in the RFP. Recommendations will be specific for asphalt depth, subbase composition and depth, stormwater drainage, etc.
- 7) Prepare a construction cost estimate for the prioritized list of improvements. The construction cost estimate will be sortable by project site, and/or by priority.
- 8) Prepare a draft study report.
- 9) Attend a web-meeting with MSAD 75 to review the draft report.
- 10) Based on MSAD 75 review comments on the draft study report, prepare a final study report.

B. Bowdoin Central School

The Bowdoin Central School is one of the newest schools in the district, constructed circa 2002. The school has a total of approximately 69,000 SF of asphalt surfaces, with access off of Main Street in Bowdoin.

Access drive/ bus lane: The bus route goes through the parking area and loops around one-way in front of the school and back out. The access drive/ bus loop pavement is in fair to good condition.



The bus lane at the front of the school

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Parking area: The only parking area for the school is approximately 31,000 SF in size and accommodates 95 vehicles. The pavement is in fair to good condition with some visible cracks but is in fair condition overall. In fact, all of the pavement on the site appears to be of similar vintage and in similar condition, except for the service drive behind the school.



Bowdoin Central School Parking Area

Rear service drive/ playground: There is an 8,000± SF paved area to the rear of the school which provides access for maintenance and delivery vehicles. This area also serves as a playground. The pavement in this area is in fair to poor condition, with cracks, patches, and frost heaves observed. A large patch was recently placed at the east end of this area, abutting the bus loop. The topography rises from the rear of the school to the north, resulting in a lot of runoff flowing toward the school and creating wet areas at the rear of the school, between the service drive and playground. This drainage issue has to do with the surrounding topography, and although not ideal, is outside of the scope of this report. However, there were frost heaves and undulating pavement observed in the service drive abutting this area, which is likely due to poor base materials, improper compaction, poor drainage beneath the pavement, or a combination thereof. Therefore, when this pavement is replaced, a base of free-draining material (clean stone), sloped to drain away from the school, is recommended.



Bowdoin Central School: Poor drainage at rear of school



Bowdoin Central School: Deformed pavement/ heaving can be seen near the shed on the left.



Bowdoin Central School rear service drive/ playground - note heaves



Bowdoin Central School rear service drive/ playground – note large patch of new pavement

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Front walkway/ entry plaza: There is a 5000± SF asphalt walkway at the front entrance to the school that extends the length of the front of the school, encompasses the main entrance plaza area, and extends out to the entrance drive. This walkway is bordered by vertical granite curbing along its length and abuts the bus lane. This pavement is in fairly good condition.



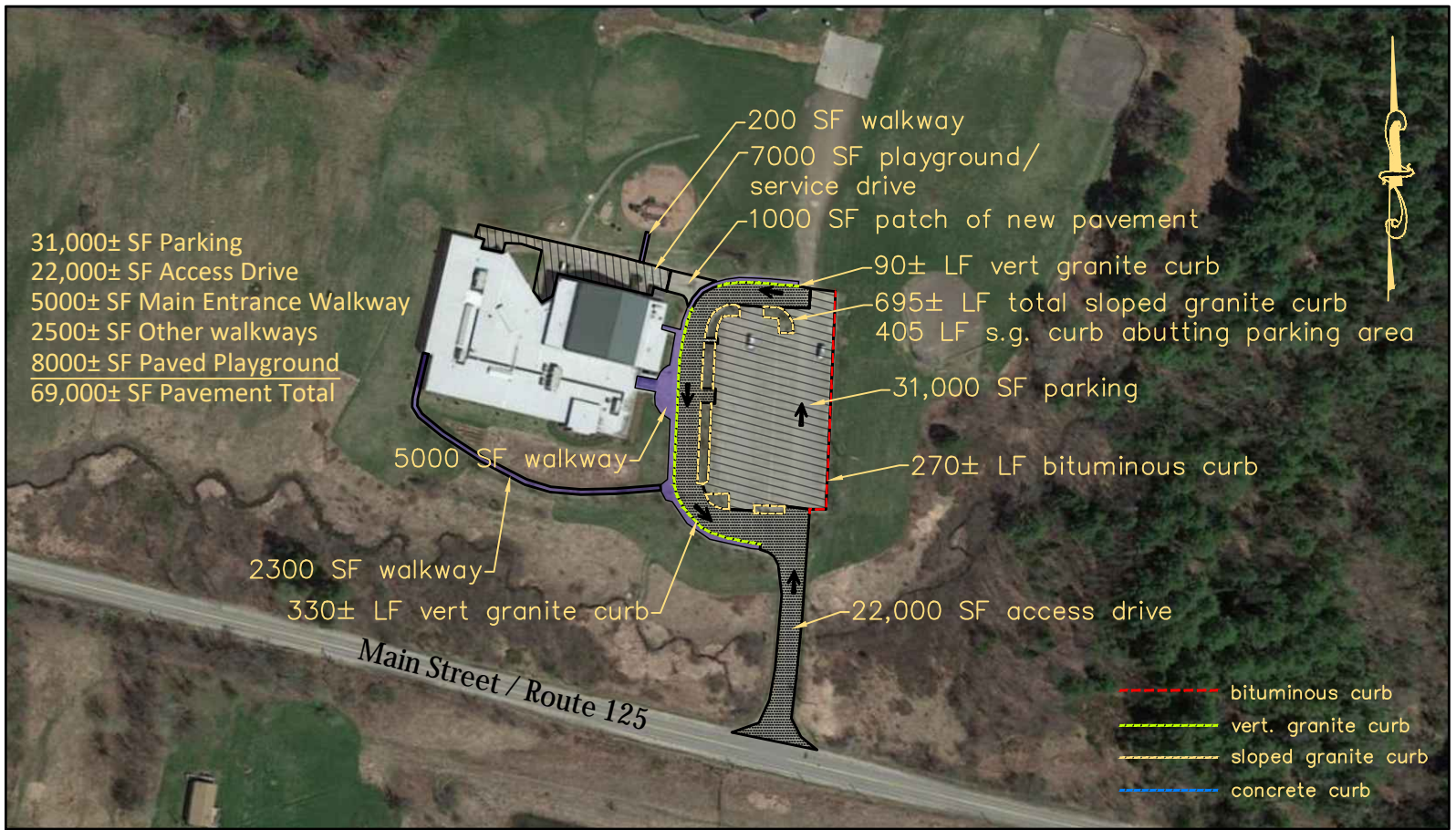
Bowdoin Central School front entry plaza/ walkway and bus lane

Interpretive trail walkway: A 750-foot long paved walkway connects the front parking area to the rear of the school. The walkway pavement is in good condition and also serves as an interpretive trail.



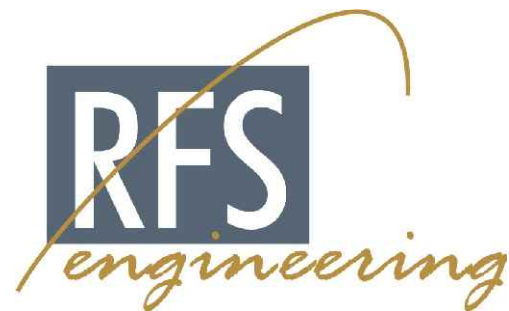
Bowdoin Central School Interpretive trail walkway

Priorities for Bowdoin Central School: Because this is the newest school in the district, the pavement is in fairly good condition overall. The bus loop, parking area, main sidewalk/ entrance plaza, and entrance drive are all in fair to good condition. The only area that shows significant signs of age is the service drive/ playground at the rear of the school, which is in fair to poor condition. There were frost heaves and deformed pavement observed in this area, which is likely due to poor base materials, improper compaction, poor drainage beneath the pavement, or a combination thereof.



Scale: 1" = 200'±

Bowdoin Central School
 1460 Main Street
 Bowdoin, ME 04287



C. Bowdoinham Community School

Access drive: The Bowdoinham Community School has a total of approximately 28,000 SF of asphalt surfaces, with access off of Cemetary Road. Two of these access points provide a U-shaped bus lane that loops in front of the school. This bus loop drive consists of newer pavement in good condition.



Bowdoinham Community School U-Shaped Bus loop



Bowdoinham Community School U-Shaped Bus loop

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Main parking area: There is a parking area in front of the school parallel with Cemetary Road which has capacity for 19 vehicles. This parking area has direct access onto Cemetary Road and is also connected to the bus lane. The pavement in this parking area is in fair to poor condition with cracks and potholes observed. There is a drainage issue at the west end of this parking area, where obvious ponding occurs around a catch basin, which has caused significant pavement deterioration.



Bowdoinham Community School main parking area parallel to Cemetary Road



West end of main parking area- note significant pavement deterioration due to ponding at catch basin



West end of main parking area where there is significant pavement deterioration due to ponding at catch basin

West side parking area: There is a 5600± SF paved area on the west side of the school with separate access of Cemetary Road. This area is for maintenance and delivery access and has parking for 14 vehicles. The pavement in this area is in poor shape, with cracks, patches, and frost heaves observed. District personnel report that there is a buried underground fuel oil tank beneath this parking area that should be removed when this pavement is replaced.



Bowdoinham Community School west side parking area



Bowdoinham Community School west side parking area

Front walk & entry plaza: Although not a part of this study, there is a 4000-SF concrete walkway at the front entrance to the school that extends the length of the front of the school, encompasses the main entrance plaza area, and extends out to and along Cemetery Road. The concrete is in fairly good condition.



Bowdoinham Community School Front walk



Bowdoinham Community School junction of front walk, bus loop, and main parking area

Paved playground: There is a 6000± SF paved playground area on the east side of the school that is used only as a play area. The pavement in this area is in poor condition, with cracks supporting grass growth, areas of differential settling, and deteriorated pavement observed.



Bowdoinham Community School paved playground



Bowdoinham Community School entrance to playground from front of school



Bowdoinham Community School paved playground

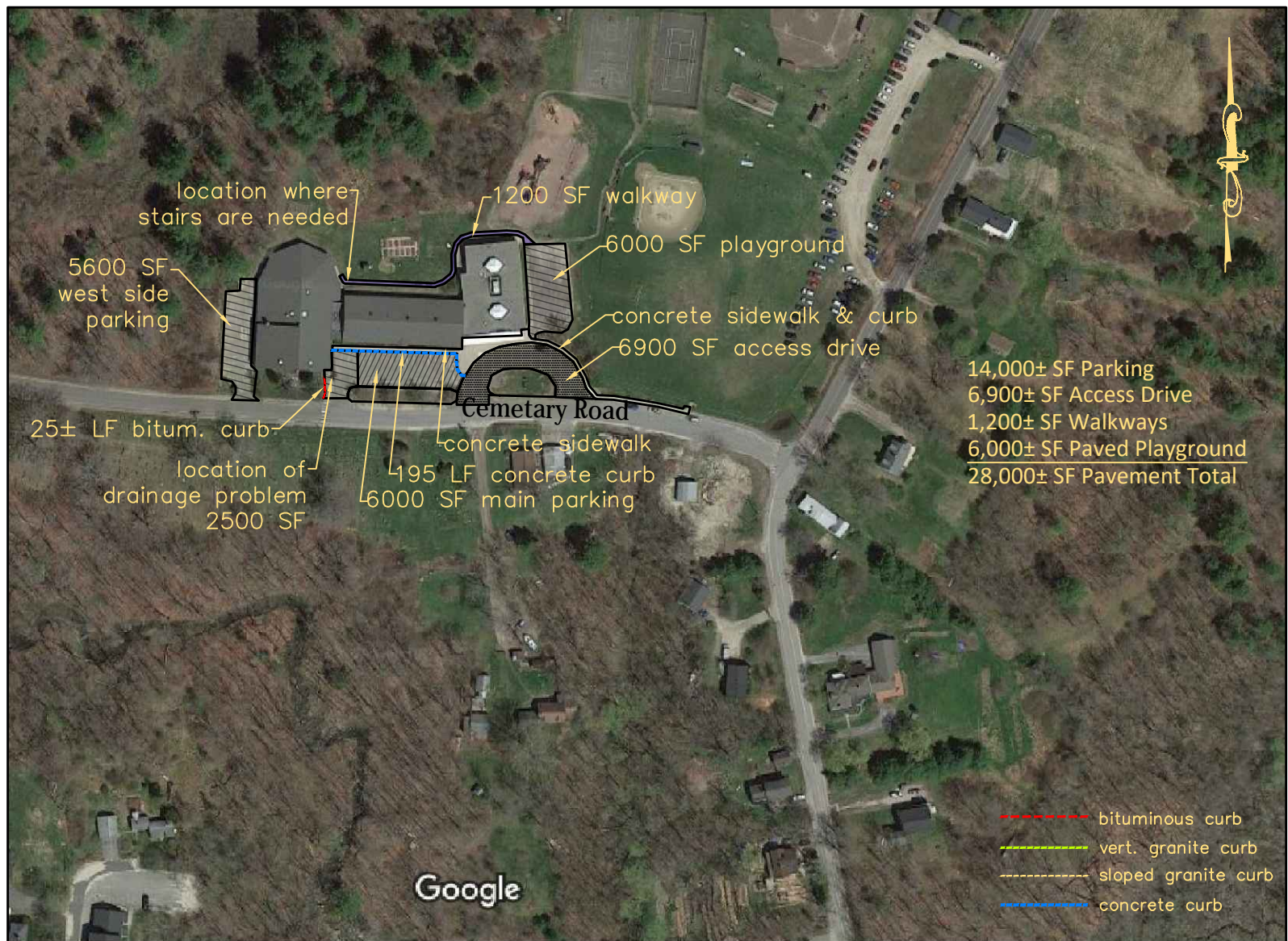
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Rear walkway: There is a $300\pm$ foot long paved walkway (estimated $1200\pm$ SF), on the north side of the school that connects the playground to the rear of the school. This walkway is in poor condition, with cracks supporting grass growth and deteriorated pavement. The western end of this walkway is too steep and should be replaced with a set of steps and/or a ramp.



Bowdoinham Community School rear walkway where stairs are needed

Priorities for Bowdoinham Community School: The U-shaped bus loop is in good condition and therefore not in need of replacement at this time. The main parking area, west parking area, playground, and rear walkway are in fair to poor condition. The main parking area is a high priority, as is the playground, due to safety concerns. The main parking area has a drainage problem at the west end related to ponding around a catch basin, which creates a significant fall risk in winter. It is recommended to relocate this catch basin out of the pavement area and onto the grassed area between the road and the gymnasium. The west end of the parking area could then be raised and the low spot and catch basin moved into the grassed area where it will not present a safety hazard to pedestrians in winter. The section of pavement at the west end of the main parking area is in much worse condition than the remainder, and could be sawcut and fixed without restoring the entire main parking area. The playground is in poor condition, with potholes, significant cracking, and deterioration present which are tripping hazards. The west parking area and rear walkway are also in poor condition, and should be replaced when the other areas are paved for economy. The west parking area and rear walkway are also in poor condition.



Scale: 1" = 200'±

Bowdoinham Community School
23 Cemetery Road
Bowdoinham, ME 04008

D. Harpswell Community School

Access drive: The Harpswell Community School is set back on a hill about 500 feet from Harpswell Island Road, with one long access driveway. The site has a total of approximately 54,000 SF of asphalt surfaces. The 500+ foot access drive terminates in front of the school in a circular bus drop-off area. The lower, flatter part of the access drive (first 200± feet from Harpswell Island Road) is in poor condition with cracks, potholes, and broken edges observed. The upper, steeper section of the drive and the bus drop-off loop also has areas of cracking observed but is in somewhat better condition, although the entire drive and bus loop all appear to be of the same vintage. There is a drainage ditch along the access drive that is in need of maintenance.



Harpswell Community School lower access drive facing Harpswell Island Road



Lower access drive facing uphill



Harpwell Community School upper access drive facing uphill



Harpwell Community School upper access drive facing downhill

Parking area: There is a 21,000-SF parking area next to the bus drop-off loop at the top of the hill which has capacity for approximately 50 vehicles. The pavement in this parking area is in fair to poor condition with significant cracks and areas of differential settlement observed.



Harpswell Community School Parking area



Harpswell Community School Parking area where it borders bus loop

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Harpswell Community School facing parking area from top of driveway with bus loop at left

Front walk & entry plaza: There is an 8000-SF asphalt walkway at the front entrance to the school that extends the length of the front of the school, abuts the bus drop-off lane, encompasses the main entrance plaza area, and connects the parking area to the school. This pavement is in fair to poor condition.



Harpswell Community School front walk coming from parking area



Harpswell Community School front walk / bus loop



Harpswell Community School front walk / bus loop



Harpowell Community School front walk / bus loop



Harpowell Community School front walk / bus loop



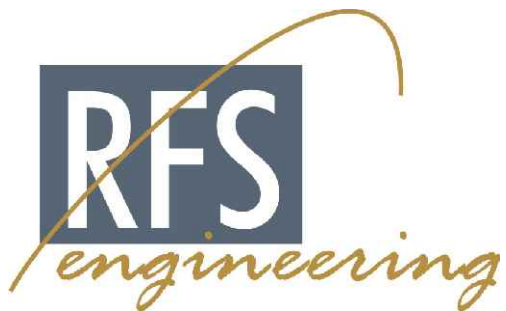
Harpswell Community School front walk / bus loop

Priorities for Harpswell Community School: The pavement at this campus is in fair to poor condition overall, with significant cracking, deterioration, and patching observed. The front walk and parking area would be top priorities from a pedestrian safety standpoint, if the project had to be prioritized and undertaken in phases. The driveway and bus loop should all be done together. The drainage ditch on the north side of the entrance drive should be improved/ maintained in conjunction with the work. Additionally, it is recommended to place some hard pack material in the pull-off area adjacent to the driveway at the bottom of the hill near Harpswell Island Road, to prevent the pavement edges from breaking at this location.



Scale: 1" = 150'±

Harpswell Community School
 308 Harpswell Islands Road
 Harpswell, ME 04079



E. Merrymeeting Adult Education Lodge

Access: The Merrymeeting Adult Education Lodge is located on Republic Avenue at the intersection with Canam Drive. The site has a total of approximately 30,000 SF of asphalt surfaces. There are two parking lots which serve the building, both with two access points each onto Republic Ave. Access to the building is via walkways from these parking areas; there is no central access drive.



Merrymeeting Adult Education Lodge entrance to northern parking area off Republic Ave

Northern parking area: The northernmost parking area for the Merrymeeting building is 9000± SF and has capacity for approximately 22 vehicles. The pavement in this parking area is showing signs of age; it has patches and cracks and is in fair condition.



Merrymeeting Lodge northern parking area



Merrymeeting Lodge northern parking area

Southern parking area: The southernmost parking area for the Merrymeeting building is 14,000± SF and has capacity for approximately 20 to 25 vehicles. The pavement in this parking area is in very poor condition with significant rutting, cracks, patches, and potholes. The sidewalk bordering the southern edge of the lot which leads to the tennis courts has recently been replaced.



Merrymeeting Lodge southern parking area



Merrymeeting Lodge southern parking area showing new sidewalk

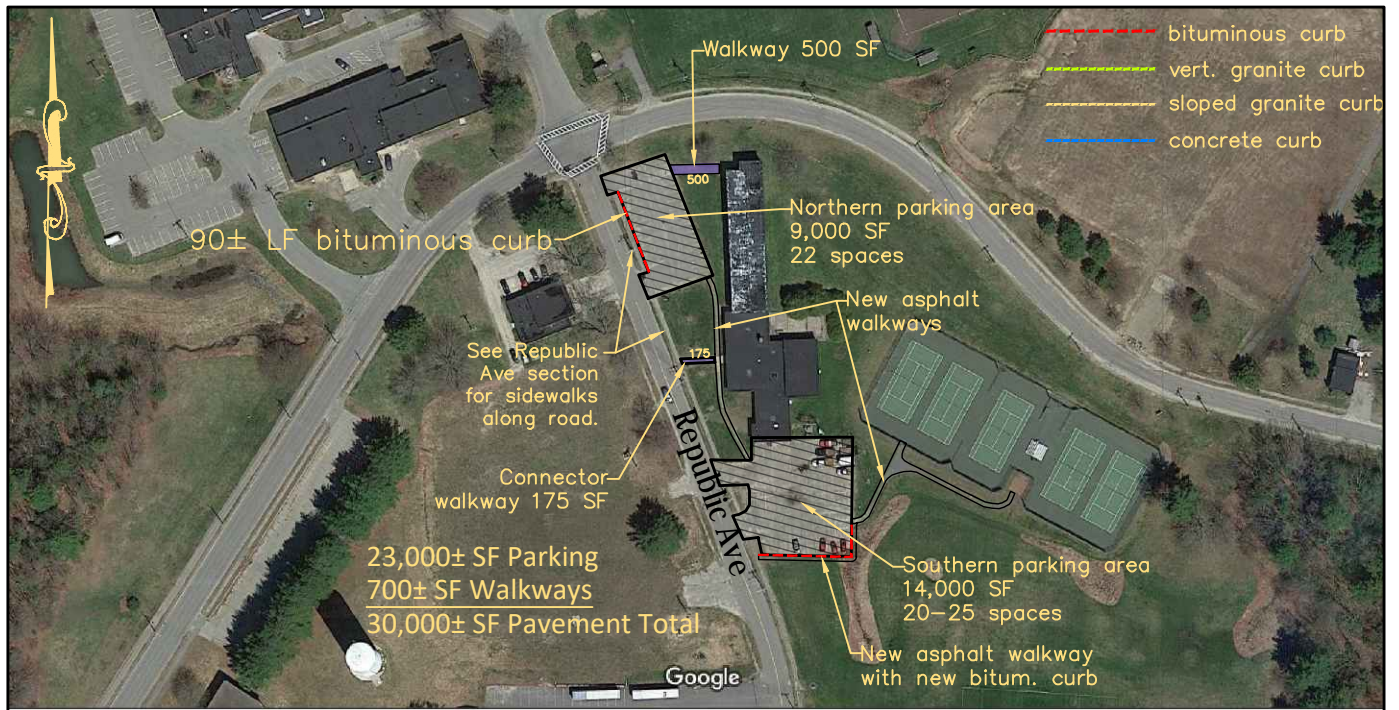
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Walkways: The walkway directly in front of the Merrymeeting building which connects to both parking areas is in new condition, as is the walkway behind the building that connects to the tennis courts. The walkway along Republic Ave in front of the Merrymeeting building is covered in the Republic Avenue section of this report. The walkway connecting the Merrymeeting building to the sidewalk on Republic Ave is in fair condition as shown below.



Merrymeeting Lodge connecting sidewalk between the new sidewalk and Republic Ave.

Priorities for Merrymeeting Adult Education Lodge: The pavement at this facility varies from good to poor condition overall, with significant cracking, deterioration, and patching observed. The southern parking area is a top priority, as it is in very poor condition and badly in need of replacement. The walkways are fairly new, and the northern parking area is in fair condition and not in need of immediate attention. The walk from the northern parking area to the northern end of the building should be replaced when the northern parking area is replaced, and the connecting walk between the new sidewalk and the Republic Ave sidewalk should be replaced when the Republic Ave sidewalk is replaced.



Merry Meeting Adult Ed / Lodge
35 Republic Ave.
Topsham, ME 04086

F. MSAD 75 District Office

Access: The MSAD 75 Administrative Office is located at 50 Republic Avenue, and is part of the Mt. Ararat Middle School campus. The MSAD District Office is in a separate building adjacent to the middle school. The office grounds have a total of approximately 35,000 SF of asphalt surfaces. There is a separate 150± foot long driveway off Canam Drive for the District Office building located on the west side of the building which is in fairly good condition (shown below.) There is a service drive off Canam Drive that provides access to a loading dock and dumpster that is also in fair to good condition.



The MSAD office main drive looking back out to Canam Drive



MSAD Office service driveway off Canam Drive (2019 photo)

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Parking: Parking area #1 is a 21,000-SF, 52-space lot on the west side of the building in fair condition. There is another drive from parking area #1 that wraps around the north side of the building and connects to Republic Ave with parking for another 7 vehicles (parking area #2; 4600 SF). Parking area #2 and the connecting drive and are in fair condition.



MSAD Office parking area #1



MSAD Office drive connecting parking area #2 to Republic Ave and parking area #2

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Sidewalk: The walkway connecting the two parking areas to the front of the school and Republic Ave is in fair condition, as shown below.

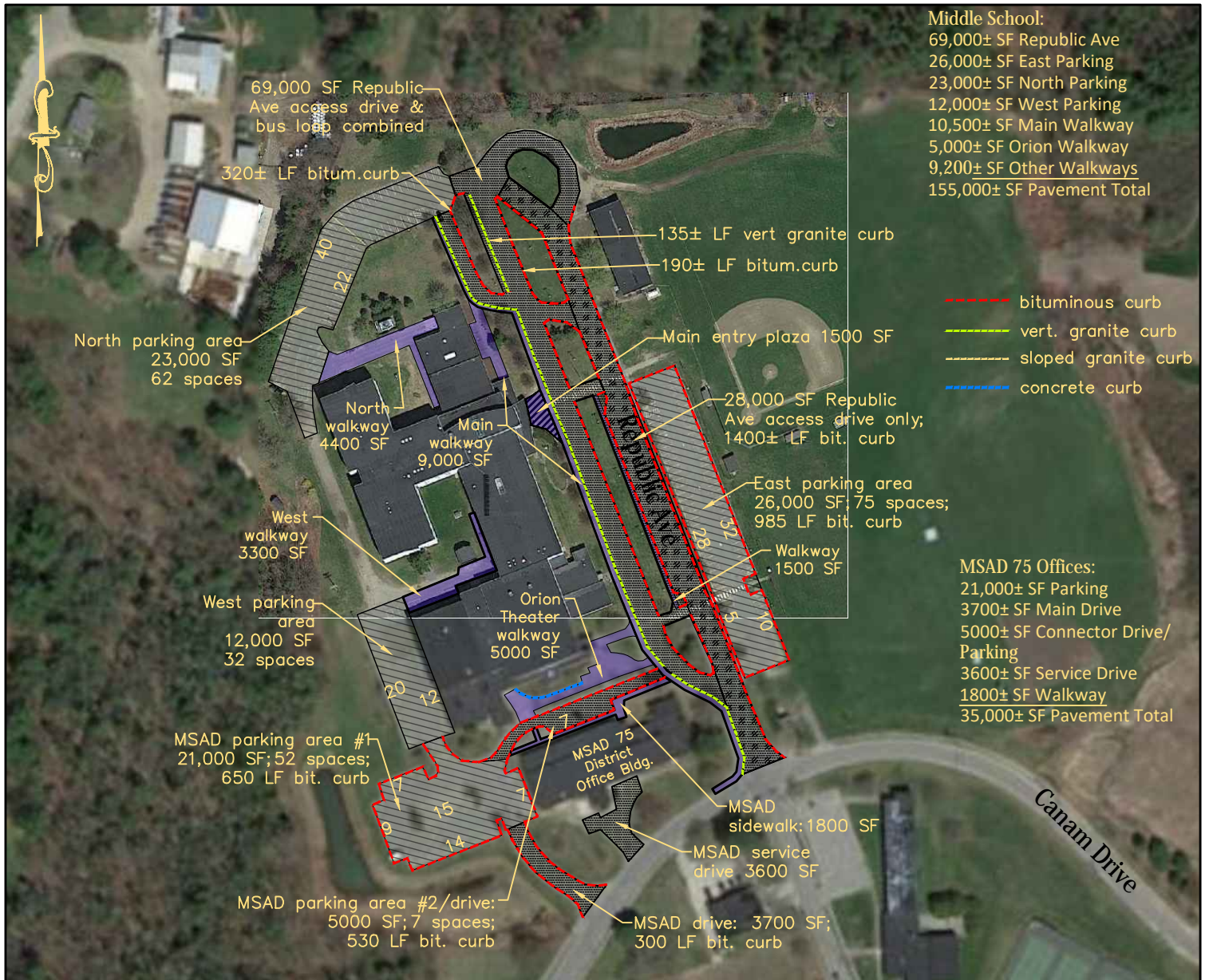


MSAD Office front walk and parking area #2



MSAD Office walkway at main entrance

Priorities for MSAD Office Building: The pavement at this facility varies in condition in different areas. The driveway from Canam Drive and the service area drive are in fairly good condition. The driveway connecting parking area #2 and Republic Ave and parking area #2 itself is in fair to poor condition. Stormwater runoff reportedly pools at parking area #2 along the curbing, so this area should be graded to drain when the work is done.



Scale: 1" = 200'±

Mt. Ararat Middle School
 66 Republic Ave.
 Topsham, ME 04086

MSAD 75 District Office
 50 Republic Ave.
 Topsham, ME 04086



engineering

G. Mt. Ararat Middle School

Access Drive: The Ararat Middle School driveway is technically a continuation of Republic Avenue although it is not a through-way. The Republic Ave driveway extends from Canam Drive for a straight distance of $800 \pm$ feet parallel to the front of the school. The road then makes a U-turn and runs directly in front of the school for the bus drop-off. The bus drop-off lane and Republic Ave run parallel to each other and are separated by grassed islands. The drive is in mostly fair condition, with a few areas of potholes and cracking. The bus lane is in fair to good condition.



Mt. Ararat Middle School Republic Ave access drive facing north with east parking area on right



Mt. Ararat Middle School Republic Ave access drive facing main entrance to school



Mt. Ararat Middle School Republic Ave facing south from cul-de-sac with bus lane on right



Mt. Ararat Middle School Republic Ave bus lane facing south

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Mt. Ararat Middle School Sidewalk along bus lane looking north toward U-turn

East Parking Area: The east parking area located parallel to Republic Ave is 26,000± SF, accommodates 75 vehicles, and is in fair condition.



Mt. Ararat Middle School East Parking Area is in fair condition



Mt. Ararat Middle School East Parking Area



Mt. Ararat Middle School East Parking Area

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North Parking Area: The north parking area, located off the U-turn area of Republic Ave, is 23,000± SF and accommodates 62 vehicles.



Mt. Ararat Middle School North Parking Area



Mt. Ararat Middle School North Parking Area

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West Parking Area: There is a 12,000± SF west parking area that can accommodate 32 vehicles located behind the Orion Theater and is accessed through the District Office Building parking lot.



The west parking area is in fair condition.

Main Entrance Plaza & Sidewalks: The asphalt entrance plaza at the main entrance to the school is in fair condition, with more cracking present than the rest of the main walkway parallel to the bus lane.



Mt. Ararat Middle School sidewalk at main entrance



Mt. Ararat Middle School main entrance plaza



Mt. Ararat Middle School main entrance plaza

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Orion Theater Walkways: The walks surrounding the Orion Theater are in fair condition, and appear to have been partially replaced over the years.



Orion Theater Walkways



Orion Theater Walkway

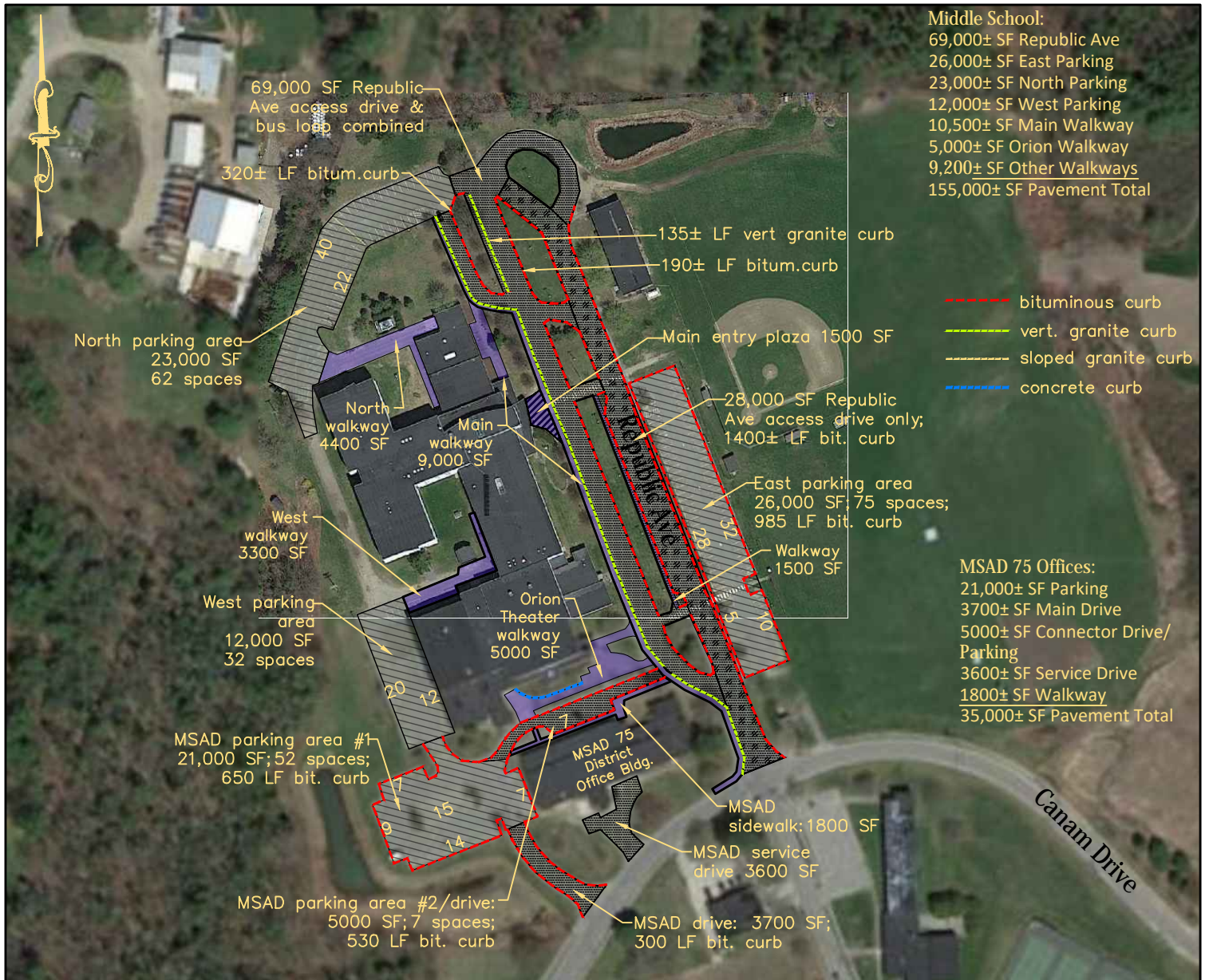


Orion Theater walks as viewed from main entrance to MSAD office. Arrow points to main theater entrance.



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Priorities for Mt Ararat Middle School: Overall the asphalt on this campus is in fair condition. The main drive onto the campus (Republic Ave) up to the turn around, is fatigued and disintegrated in quite a few areas. The bus lane is in much better condition. The main entry plaza shows more cracking than the remainder of the main walkway parallel to the front of the school. The parking areas are all in about the same condition, which is fair, with moderate cracking observed. The Orion Theater walkway is also in fair condition.



Scale: 1" = 200'±

Mt. Ararat Middle School
 66 Republic Ave.
 Topsham, ME 04086

MSAD 75 District Office
 50 Republic Ave.
 Topsham, ME 04086



H. Republic Avenue Roadway

General: Republic Avenue connects the middle school to the high school. The area of this road being evaluated is the first 860±feet from Canam Drive heading toward the high school, terminating at the small practice field auxiliary parking area opposite the Wicked Joe Coffee Roasters building, but not including the aux parking area. This section of the road contains approximately 24,000± SF of pavement in fairly good condition with minor cracks and one utility patch observed. There is an asphalt berm curb on both sides of the road which is also in fairly good condition.



Republic Ave, facing north from the beginning of the study area with the entrance to the Aux Parking lot on right

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Republic Ave, facing north from the entrance to the Aux Parking lot on right. Note new sidewalk.

Sidewalks: There is a new asphalt sidewalk on the east side of Republic Ave that connects the aux parking area to the southernmost parking area serving the Merrymeeting building. On the opposite side of the road there are remnants of an abandoned asphalt sidewalk, which sidewalk was not considered as part of this study.



Republic Ave, facing south toward the Aux Parking lot, showing utility patch. Note new sidewalk.



Republic Ave, facing north. Note new sidewalk & Merrymeeting building on right.



Republic Ave, facing south, showing abandoned sidewalk.



Republic Ave at intersection with Canam Drive (Merrymeeting parking at left)



Republic Ave, facing south, showing sidewalk parallel to Merrymeeting building

Priorities for Republic Ave: The sidewalk from the end of the new sidewalk to Canam Drive should be a priority, as it is in poor condition, and this would complete the walk along this stretch of road. When the sidewalk is replaced, the connecting segment to the front of the Merrymeeting building should also be replaced. The road itself is in fair to good condition.



- - - - - bituminous curb
- - - - - vert. granite curb
- - - - - sloped granite curb
- - - - - concrete curb

22,000± SF Republic Ave
 1600 SF Sidewalks
 24,000± SF total

Scale: 1" = 200'±

Republic Ave Roadway
 from int. with Canam Drive to Practice Field
 Aux. Parking Lot



I. Williams-Cone School

Main Access Drive & Central Parking: The Williams-Cone School campus has a total of 84,000± SF of pavement. There is a one-way circular entrance drive with a bus drop-off area that comes from Perkins Street, circles around a central parking area, and goes back out to Perkins Street to the point of beginning. The access drive and central parking area are in fair condition, with some cracking observed. The area near Perkins Street is in poor condition. The central parking area and entrance drive contain 22,000± SF of pavement and the central parking area can accommodate 25 vehicles.



Williams-Cone School main entrance drive with central parking area visible on left



Williams-Cone School main entrance drive at junction with Perkins Street is in poor condition



Williams-Cone School central parking area

Lower Parking Area: There is a lower parking area on the east side of the school, accessed off a driveway that branches off the main access loop. The access drive has a fairly steep pitch down to the parking area. This parking area contains 10,000± SF of pavement, accommodates approximately 26 vehicles, and is in fair condition.



Williams-Cone School driveway to lower parking area



Williams-Cone School lower parking area



Williams-Cone School lower parking area

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Northwest Parking Area: Another driveway branches off the main access drive that leads to the rear of the school (northwest side.) The drive and parking area are in very poor condition, with large potholes and significant amounts of spalling and cracked pavement observed. The parking area accommodates approximately 21 vehicles. The drive wraps around the north side of the school and connects to a large paved playground on the northeast side of the school.



Williams-Cone School driveway to northwest parking area



Williams-Cone School driveway to northwest parking area



Williams-Cone School northwest parking area



Williams-Cone School northwest parking area



Williams-Cone School northwest parking area



Williams-Cone School termination of NW parking area at northern end of building



Williams-Cone School drive / playground area at north side of building

Playground: The paved playground on the northeast side of the school is 22,000 SF in area and in poor condition. This area is crisscrossed with cracks and grass growing up through the pavement.



Williams-Cone School paved playground in very poor condition



Williams-Cone School paved playground in very poor condition



Williams-Cone School paved playground in very poor condition

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Sidewalks: The main entry plaza and connected walkways at the main entrance contain about 3300 SF of asphalt pavement in fair to good condition. This area is abutted by concrete curbing at the bus drop-off area. There is also about 95 linear feet (600± SF) of sidewalk connecting Perkins Street to the main entry plaza and walkway.



Williams-Cone School main entry plaza & bus drop-off

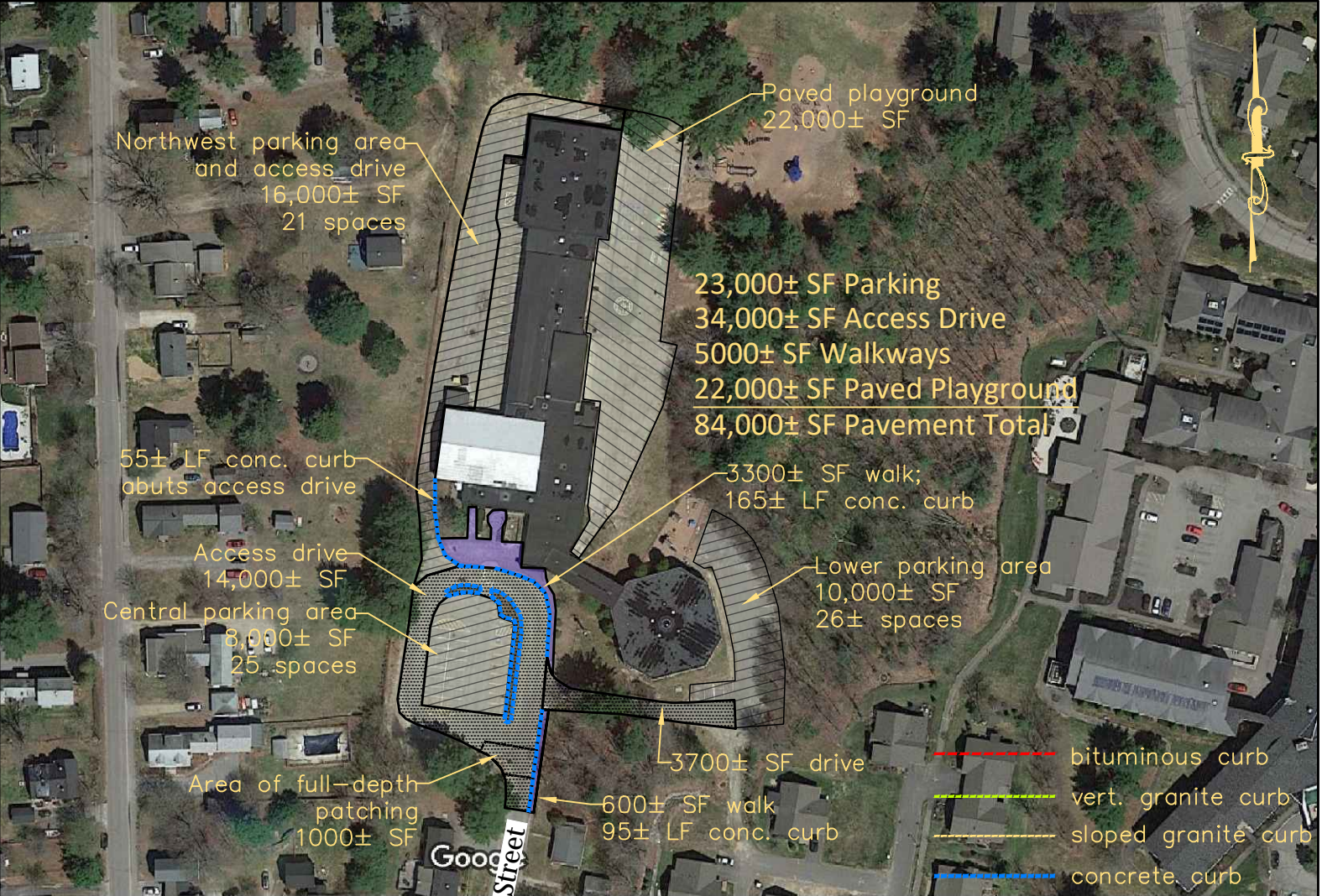


Williams-Cone School main entry plaza



Williams-Cone School sidewalk/main entrance drive from Perkins Street. Entrance to lower parking on right.

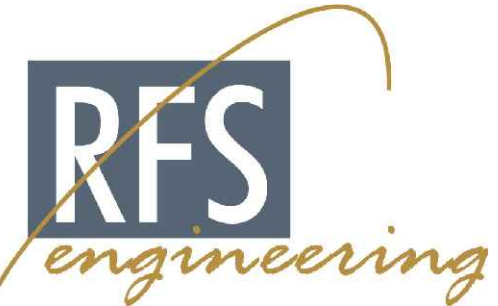
Priorities for Williams-Cone School: The northwest parking area, the drive to the northwest parking area, and the north/northeast playground are in very poor condition and warrant immediate attention. The remainder of the pavement on the campus is in fair condition.



Imagery ©2020 Maine GeoLibrary, Maxar Technologies, U.S. Geological Survey, Map data ©2020 50 ft

Scale: 1" = 150'±

Williams-Cone School
19 Perkins Street
Topsham, ME 04086



J. Woodside Elementary School

Access Drive: The Woodside Elementary School has a one-way, 1400-foot-long, U-shaped driveway that extends in a loop from Barrows Drive, passes in front of the school for bus drop-off, and returns to Barrows Drive. The entrance drive up to the top of the "U" (approximately 600 linear feet) consists of newer pavement in good condition. The top portion of the "U", the bus drop-off area, and the exit drive (totaling $800 \pm$ linear feet) consists of older pavement and shows signs of age. With the exception of the first 600 feet of entrance drive, the remaining pavement on the site appears to be about the same age, and is in fair to poor condition.



Woodside Elementary access drive at end of newer pavement taken from beginning of service road

Parking: There are three large parking areas serving the school. The northern parking areas are in fair to good condition. The northeast parking area contains $12,000 \pm$ SF of pavement and about 40 spaces. The northwest parking area contains $11,000 \pm$ SF of pavement and $28 \pm$ spaces. The southern parking area contains $10,000 \pm$ SF of pavement and $41 \pm$ spaces. The southern parking area is in fair to poor condition.



Woodside Elementary School southeast parking area



Woodside Elementary School southeast parking area



Woodside Elementary School entrance to southeast parking area from main driveway



Woodside Elementary School northeast parking area



Woodside Elementary School northwest parking area

Service Road & Loading Area: A service drive approximately 570 feet long branches off the top of the “U” of the entrance drive and wraps around the rear of the school. This drive contains 8,500± of pavement and is in fair condition. The 2500± SF loading area is in fair to poor condition.



Woodside Elementary School service drive at loading area



Woodside Elementary School service drive along back of school

Playground: There is a paved playground area off the southeast corner of the building. This playground contains 9,000± of pavement and is in fair to poor condition with many cracks.



Woodside Elementary School looking at paved playground from end of southern parking area



Woodside Elementary School looking at paved playground from end of southern parking area



Woodside Elementary School paved playground

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Sidewalks: The main entrance plaza and walkway in front of the school is concrete in good condition and not a part of this study. There are sidewalks bordering the northeast and northwest parking areas that are in fair to good condition. There is a sidewalk bordering the southern parking area and another extending from the southern parking area out to the Barrows Street that are in fair to somewhat poor condition.



Sidewalk bordering the northeast parking area



Sidewalk bordering the northwest parking area



Sidewalk bordering the southern parking area



Sidewalk extending from the southern parking area along exit drive out to the Barrows Street



Woodside Elementary School walk from southern parking to Barrows Street along the exit drive

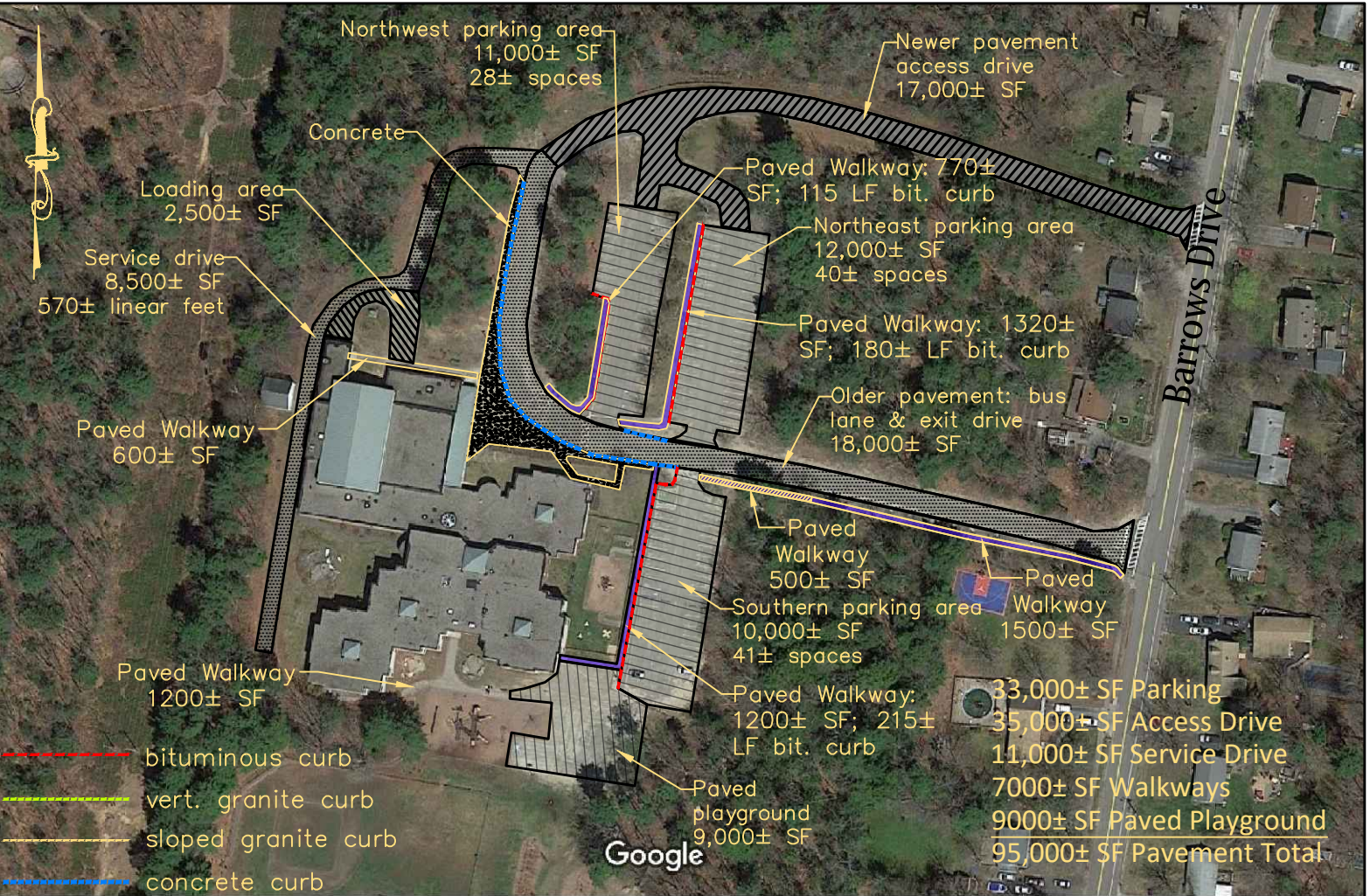


Sidewalk extending from the southeast parking area along exist drive out to the road



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Priorities for Woodside Elementary School: The southern parking area is in fair to poor condition and in the greatest need of repair, and the sidewalks bordering it should be repaired at the same time. This includes the portion of the sidewalk along the exit road closest to the southern parking area (first 100± feet.) The loading area on the north side of the school off of the service road and the paved playground are in fair to poor condition. The remainder of the pavement on the campus is in fair to good condition.



Scale: 1" = 150'±

Woodside Elementary School
42 Barrows Drive
Topsham, ME 04086





Maine School Administrative District 75 Asphalt Assessment Study Report

K. Prioritized Recommendations by School

LOCATION: **Bowdoin Central School**

AREA	SCOPE (Spot, Restoration or Replacement)	PRIORITY BY AREA (1-3)	OVERALL PRIORITY BY LOCATION (1-3)	LOGAN CO. COST ESTIMATE FOR PRIORITY* 1 & 2 ONLY
ENTRANCE ROADWAY & BUS LOOP 22,000 SF	Maintenance (crack fill & sealcoat)	1	1	\$13,200
PARKING AREA <i>This parking area has 270± LF of bit. Curb and 405± LF of sloped granite curb</i> 31,000 SF	Maintenance (crack fill & sealcoat)	1	1	\$33,450
PLAYGROUND/ SERVICE AREA At rear of school 7000 SF	Full-depth reclamation with 2" overlay (add base material as needed & grade to drain at 3% slope away from building)	1	1	\$31,700
MAIN SIDEWALK & ENTRANCE PLAZA 5,000 SF	Maintenance (crack fill & sealcoat)	2	2	\$2,500
Rim adjustment				\$3,500
Mobilization				\$14,500
Contingencies and escalation				\$13,147
Total Priority 1&2				\$111,997

Note: The pavement at this school was originally placed circa 2002.

Price for new asphalt is based on the average recent (2020) bid prices for the Merrymeeting southern parking area

* Priority 1 = 1-2 years

Priority 2 = 3-5 years

Priority 3 = 6-8+ years



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LOCATION: **Bowdoinham Community School**

AREA	SCOPE (Spot, Restoration or Replacement)	PRIORITY BY AREA (1-3)	OVERALL PRIORITY BY LOCATION (1-3)	LOGAN CO. COST ESTIMATE FOR PRIORITY* 1 & 2 ONLY
ENTRANCE ROADWAY & BUS LOOP	N/A (pavement is fairly new)	-	-	-
Portion of MAIN PARKING (west end) 2500 SF	Full-depth reclamation with 2" overlay (add base material as needed & grade to drain at west end CB) & relocate CB	1	1	\$18,095 Relocate CB \$8,000
Remainder of MAIN PARKING 6000 SF	Maintenance (crack fill & sealcoat)	1	1	\$3,600
WEST PARKING 5600 SF	Full-depth reclamation with 2" overlay & remove UG oil tank	1	1	\$25,880 Remove oil tank \$10,000
PLAYGROUND 6000 SF	Full-depth reclamation with 1.5" overlay (add base material as needed & grade to drain at 3% slope away from building)	1	1	\$25,485
REAR SIDEWALK 1,200 SF	3" Remove & Replace	1	1	\$4,135
	Add stairs or ramp	3	3	Add stairs or ramp \$15,000 (priority 3; not included in total)
Rim adjustment				\$7,650
Mobilization				\$14,500
Contingencies and escalation				\$15,607
Total Priority 1 & 2				\$132,952

Notes: The pavement at this school varies in age. The building was originally constructed in 1955 with expansions in 1976 and 1992.

Price for new asphalt is based on the average recent (2020) bid prices for the Merrymeeting southern parking area

* Priority 1 = 1-2 years

Priority 2 = 3-5 years

Priority 3 = 6-8+ years



Maine School Administrative District 75 Asphalt Assessment Study Report

LOCATION: **Harpwell Community School**

AREA	SCOPE (Spot, Restoration or Replacement)	PRIORITY BY AREA (1-3)	OVERALL PRIORITY BY LOCATION (1-3)	LOGAN CO. COST ESTIMATE FOR PRIORITY* 1 & 2 ONLY
ENTRANCE ROADWAY & BUS LOOP <i>Bus drop-off area has 220± LF of bit. curb abutting the sidewalk</i> 25,000 SF	Full-depth reclamation with 2" overlay (add base material as needed & grade to drain)	1	1	\$116,515
	Drainage ditch maintenance	1	1	\$5,000
	Pull-off area Add hardpack material at pull-off area	1	1	\$5,000
PARKING 21,000 SF	Full-depth reclamation with 1.5" overlay (add base material as needed & grade to drain)	1	1	\$90,345
PLAYGROUND	-	-	-	-
SIDEWALK <i>This walk has 220± LF of bit. curb abutting the bus drop-off</i> 8,000 SF	3" remove & replace	1	1	\$28,350
Rim adjustment				\$14,500
Mobilization				\$21,000
Contingencies and escalation				\$37,334
Total Priority 1 & 2				\$318,044

Notes: The pavement at this school varies in age. The building was originally constructed in 1957 with expansions in 1980 and 1996.

Price for new asphalt is based on the average recent (2020) bid prices for the Merrymeeting southern parking area

* Priority 1 = 1-2 years

Priority 2 = 3-5 years

Priority 3 = 6-8+ years



Maine School Administrative District 75 Asphalt Assessment Study Report

LOCATION: **Merrymeeting Adult Education**

AREA	SCOPE (Spot, Restoration or Replacement)	PRIORITY BY AREA (1-3)	OVERALL PRIORITY BY LOCATION (1-3)	LOGAN CO. COST ESTIMATE FOR PRIORITY* 1 & 2 ONLY
ENTRANCE ROADWAY	N/A	-	-	-
Northern PARKING 9000 SF	Maintenance (crack fill & sealcoat) plus 1.5" shim & overlay	1 2	1 2	\$15,165
Southern PARKING 14,000 SF	Full-depth reclamation & 2" overlay & repair bituminous curb (there is a small gap in the new curb, maybe 10' long)	1	1	\$51,400
PLAYGROUND	N/A	-	-	-
SIDEWALKS 675 SF	3" remove & replace	3	3	\$2,233 (priority 3; not included in total)
Rim adjustment				\$0
Mobilization				\$14,500
Contingencies and escalation				\$10,871
Total Priority 1 & 2				\$91,846

Notes: The pavement at this building varies in age. The northern parking area was paved in the 1990s, the main sidewalk is new, while the remainder is unknown.

Price for new asphalt is based on the average recent (2020) bid prices for the Merrymeeting southern parking area

* Priority 1 = 1-2 years

Priority 2 = 3-5 years

Priority 3 = 6-8+ years



Maine School Administrative District 75 Asphalt Assessment Study Report

LOCATION: **MSAD 75 District Office**

AREA	SCOPE (Spot, Restoration or Replacement)	PRIORITY BY AREA (1-3)	OVERALL PRIORITY BY LOCATION (1-3)	LOGAN CO. COST ESTIMATE FOR PRIORITY* 1 & 2 ONLY
MAIN ENTRANCE ROADWAY	In fairly good condition	-	-	-
Service Drive at Canam Road 3700 SF	Maintenance (crack fill & sealcoat)	3	3	\$2,220 (priority 3; not included in total)
PARKING AREA #1 <i>This area has 650± LF of bit. curb</i> 21,000 SF	1.5" shim & overlay and Maintenance (crack fill & sealcoat)	2	2	\$41,885
PARKING AREA #2 & drive <i>This area has 530± LF of bit. curb</i> 5000 SF	2" mill & overlay	1	1	\$19,810
PLAYGROUND	N/A	-	-	-
SIDEWALK 1800 SF	3" remove & replace	1	1	\$6,160
Rim adjustment				\$0
Mobilization				\$14,500
Contingencies and escalation				\$10,953
Total Priority 1 & 2				\$93,308

Notes: The pavement at this facility likely dates to the 1990s, when the middle school was built, although the access drive appears newer.

Price for new asphalt is based on the average recent (2020) bid prices for the Merrymeeting southern parking area

* Priority 1 = 1-2 years

Priority 2 = 3-5 years

Priority 3 = 6-8+ years



Maine School Administrative District 75 Asphalt Assessment Study Report

LOCATION: **Mt. Ararat Middle School**

AREA	SCOPE (Spot, Restoration or Replacement)	PRIORITY BY AREA (1-3)	OVERALL PRIORITY BY LOCATION (1-3)	LOGAN CO. COST ESTIMATE FOR PRIORITY* 1 & 2 ONLY
MAIN ENTRANCE DRIVE (Republic Ave.) <i>This area has 1400± LF of bit. curb abutting it.</i> 28,000 SF	Crack fill & Full-depth patching of potholes and areas of fatigue cracking, followed by 1.5" overlay	1	1	\$72,415
BUS LANE	In good condition	-	-	-
EAST PARKING AREA <i>with 985± LF of bit. curb</i> 21,000 SF	Maintenance (crack fill & sealcoat)	1	1	\$25,450
NORTH PARKING AREA 23,000 SF	Maintenance (crack fill & sealcoat)	1	1	\$13,800
WEST PARKING AREA 12,000 SF	Maintenance (crack fill & sealcoat)	1	1	\$7,200
PLAYGROUND	N/A	-	-	-
MAIN ENTRY PLAZA 1500 SF	4" Remove & Replace	2	2	\$6,050
SIDEWALKS 23,000 SF	Maintenance (crack fill & sealcoat)	1	1	\$13,800
Rim adjustment				\$0
Mobilization				\$18,000
Contingencies and escalation				\$20,843
Total Priority 1 & 2				\$177,558

Notes: The pavement on this campus is all generally the same age, except for the bus lane which was repaved in 2008. The middle school was built in the 1990s.

Price for new asphalt is based on the average recent (2020) bid prices for the Merrymeeting southern parking area

* Priority 1 = 1-2 years

Priority 2 = 3-5 years

Priority 3 = 6-8+ years



Maine School Administrative District 75 Asphalt Assessment Study Report

LOCATION: **Republic Avenue**

AREA	SCOPE (Spot, Restoration or Replacement)	PRIORITY BY AREA (1-3)	OVERALL PRIORITY BY LOCATION (1-3)	LOGAN CO. COST ESTIMATE FOR PRIORITY* 1 & 2 ONLY
ROADWAY 22,000 SF	Maintenance (crack fill & sealcoat)	2	2	\$13,200
PARKING AREA	N/A	-	-	-
PLAYGROUND	N/A	-	-	-
OLD SIDEWALK 1800 SF	3" Remove & Replace & small repair of bituminous curbing (estimate 10 LF)	2	2	\$6,360
Rim adjustment				\$11,000
Mobilization				\$10,200
Contingencies and escalation				\$5,421
Total Priority 1 & 2				\$46,181

Notes: The pavement on this road dates from circa 2005.

Price for new asphalt is based on the average recent (2020) bid prices for the Merrymeeting southern parking area

* Priority 1 = 1-2 years

Priority 2 = 3-5 years

Priority 3 = 6-8+ years



Maine School Administrative District 75 Asphalt Assessment Study Report

LOCATION: **Williams-Cone School**

AREA	SCOPE (Spot, Restoration or Replacement)	PRIORITY BY AREA (1-3)	OVERALL PRIORITY BY LOCATION (1-3)	LOGAN CO. COST ESTIMATE FOR PRIORITY* 1 & 2 ONLY
MAIN ENTRANCE DRIVEWAY	Full depth patching near Perkins Street 1,000 SF	1	1	\$5,000
	Remainder- Maintenance (crack fill & sealcoat) 13,000 SF	1	1	\$7,800
CENTRAL PARKING AREA 8,000 SF	Maintenance (crack fill & sealcoat)	1	1	\$4,800
NORTHWEST PARKING AREA & drive 16,000 SF	Full depth reclamation & 2" overlay <i>(55± LF conc. curb abuts access drive)</i>	1	1	\$71,600
LOWER PARKING AREA & drive 13,700 SF	Maintenance (crack fill, shim, & 1.5" overlay)	1	1	\$23,025
PLAYGROUND 22,000 SF	Full depth reclamation & 1.5" overlay	1	1	\$73,330
SIDEWALK & MAIN ENTRY PLAZA 3900 SF	Maintenance (crack fill & sealcoat)	2	2	\$2,340
Rim adjustment				\$153
Mobilization				\$18,000
Contingencies and escalation				\$27,405
Total Priority 1 & 2				\$233,453

Notes: The asphalt on this campus varies in age from 25 to 60 years old. The northwest parking dates from the 60's or 70's. The remainder dates from the 80's (lower parking) or 90's.

Price for new asphalt is based on the average recent (2020) bid prices for the Merrymeeting southern parking area

* Priority 1 = 1-2 years

Priority 2 = 3-5 years

Priority 3 = 6-8+ years



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LOCATION: **Woodside Elementary School**

AREA	SCOPE (Spot, Restoration or Replacement)	PRIORITY BY AREA (1-3)	OVERALL PRIORITY BY LOCATION (1-3)	LOGAN CO. COST ESTIMATE FOR PRIORITY* 1 & 2 ONLY
BUS LANE & EXIT ROAD 18,000 SF	Crack fill & full-depth patching of potholes and areas of fatigue cracking, followed by sealcoat	1	1	\$19,800
LOADING AREA at service drive 2500 SF	Crack fill followed by 1.5" overlay	1	1	\$3,915
SOUTHERN PARKING AREA 10,000 SF	Full depth reclamation & 1.5" overlay	1	1	\$33,370
NORTHWEST PARKING AREA 11,000 SF	Maintenance (crack fill & sealcoat)	1	1	\$6,600
NORTHEAST PARKING AREA 12,000 SF	Maintenance (crack fill & sealcoat)	1	1	\$7,200
PLAYGROUND 9,000 SF	Full depth reclamation & 1.5" overlay	1	1	\$29,970
SIDEWALK at Southern Parking 1700 SF	3" remove & replace	1	1	\$5,800
ALL OTHER SIDEWALKS 5390 SF	Maintenance (crack fill & sealcoat)	2	2	\$2,695
Rim adjustment				\$0
Mobilization				\$14,500
Contingencies and escalation				\$16,472
Total Priority 1 & 2				\$140,322

Notes: The school was built circa 1990. The asphalt all appears to be of the same vintage, except for the entrance drive. Some areas have deteriorated more rapidly than others.

Price for new asphalt is based on the average recent (2020) bid prices for the Merrymeeting southern parking area

* Priority 1 = 1-2 years

Priority 2 = 3-5 years

Priority 3 = 6-8+ years



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L. District-Wide Priority Recommendations/Summary

Based on the condition of each area evaluated for this report, the following is a prioritized list of improvements (those listed as priority rating 1 & 2 only) across the District as a whole. Note that this list is somewhat subjective and based only on the surface conditions observed and is not based on type of use or frequency of use or any other parameters that may be worth taking into consideration.

1. Merrymeeting adult education southern parking area <u>full-depth reclamation with 2" overlay</u>	\$51,400
2. Williams-Cone School northwest parking area/driveway <u>full-depth reclamation with 2" overlay</u>	\$71,600
3. Williams-Cone School playground <u>full-depth reclamation with 1.5" overlay</u>	\$73,330
4. Bowdoinham Community School western portion of main parking <u>full-depth reclamation with 2" overlay & relocate CB</u>	\$26,095
5. Harpwell Community School entrance road & bus loop <u>full-depth reclamation w/ 2" overlay & incidentals</u>	\$126,515
6. Bowdoinham Community School playground <u>full-depth reclamation with 1.5" overlay</u>	\$25,485
7. Bowdoinham Community School west parking area <u>full-depth reclamation with 2" overlay & remove UG oil tank</u>	\$35,880
8. Harpwell Community School sidewalk 3" remove & replace	\$28,350
9. Bowdoin Central School playground/ service drive <u>full-depth reclamation with 2" overlay</u>	\$31,700
10. Harpwell Community School parking <u>full-depth reclamation with 1.5" overlay</u>	\$90,345
11. Woodside Elementary School southern parking <u>full-depth reclamation with 2" overlay</u>	\$33,370
12. Woodside Elementary sidewalks at southern parking 3" remove & replace	\$5,800
13. Woodside Elementary playground <u>full-depth reclamation with 2" overlay</u>	\$29,970
14. Bowdoinham Community School rear sidewalk 3" remove & replace	\$4,135
<i>Subtotal this page:</i>	\$633,975



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15. Mt. Ararat MS main driveway Crack fill & limited spot patching w/ 1.5" overlay	\$72,415
16. Williams-Cone School main driveway near Perkins Street full-depth patching near Perkins Street	\$5,000
17. Woodside Elementary School bus lane & exit road Crack fill, full-depth patching, & sealcoat	\$19,800
18. Woodside Elementary School loading area Crack fill & 1.5" overlay	\$3,915
19. Woodside Elementary School NW & NE parking areas Crack fill & sealcoat	\$13,800
20. Woodside Elem. all other sidewalks Crack fill & sealcoat	\$2,695
21. Bowdoinham Comm. School Crack fill & sealcoat- main parking	\$3,600
22. Bowdoin Central School Crack fill & sealcoat- all other areas	\$49,150
23. Merrymeeting Adult Ed northern parking Crack fill & sealcoat plus 1.5" shim & overlay	\$15,165
24. MSAD 75 Office parking area #1 Crack fill & sealcoat plus 1.5" shim & overlay -	\$41,885
25. MSAD 75 Office sidewalk – 3" remove & replace	\$6,160
26. MSAD 75 Office 2" mill & overlay- drive/ parking area #2	\$19,810
27. Mt. Ararat MS Crack fill & sealcoat - parking areas	\$46,450
28. Mt. Ararat MS Crack fill & sealcoat - sidewalks	\$13,800
29. Mt. Ararat MS main entry plaza 4" remove & replace	\$6,050
30. Republic Ave 3" remove & replace - sidewalks	\$6,360
31. Republic Ave Crack fill & sealcoat - roadway	\$13,200
32. Williams-Cone School main drive, central parking & sidewalks Crack fill & sealcoat	\$14,940
33. Williams-Cone School lower parking & drive crack fill, shim & 1.5" overlay	\$23,025
<i>Subtotal this page:</i>	\$377,220



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Total All Priority 1 & 2 Improvements: \$1,011,195

Crack Fill & Sealcoat by Site:

Bowdoin Central	\$49,150
Bowdoinham Community	\$3,600
Harpwell Community	\$0
Merrymeeting	\$15,165*
MSAD 75 Office	\$41,885
Mt. Ararat	\$60,250
Republic Ave.	\$13,200
Williams-Cone	\$14,940
Woodside	\$16,495
Total:	\$214,685

Add 10% contingency	\$21,469
Add 3% inflation	\$ 644
Total Crack Fill & Sealcoat Only:	\$236,798

*Number also includes 1.5" shim & overlay

Totals by Site:

Bowdoin Central:	\$80,850
Bowdoinham Community:	\$95,195
Harpwell Community:	\$245,210
Merrymeeting:	\$66,565
MSAD 75 Office:	\$67,855
Mt. Ararat:	\$138,715
Republic Ave.:	\$19,560
Williams-Cone:	\$187,895
Woodside:	\$109,350
Subtotal	\$1,011,195

Add 10% contingency	\$101,120
Add 3% inflation	\$ 3,034
Total	\$1,115,349**

**The Logan Company's total for all sites is \$1,345,661. The discrepancy is because the tasks in Section L above are piecemeal line items and do not include mobilization or drainage structure rim adjustments.

Note: The estimates by The Logan Company are based on recent bid prices for the Merrymeeting southern parking area along with adjustments made by the Estimator due to economies of scale and current market conditions. The Logan Company's full report is appended hereto. **Although inflation can reasonably be expected to cause prices to increase roughly 3% per year, this rate of increase for construction is widely variable and difficult to predict.**



Maine School Administrative District 75 Asphalt Assessment Study Report

M. Merrymeeting Southern Parking Area Bids (July 2020)

<u>Item</u>	<u>Crooker Construction</u>	<u>Rodney Skelton</u>
Mobilization	\$15k	\$7k
Stormwater	\$17k	\$31k
Sitework	\$12k	\$13k
Paving	\$51k	\$57k
Landscaping	\$3k	\$1k
<hr/>		
Total	\$99k	\$109k

RFS Notes / Calculations:

Southern parking lot area = 14,000± SF

Bid was based on remove & replace 4" of pavement.

14,000 SF x 4" thick x 1 ft/12" x 1 CY/27 CF = 173 CY of asphalt pavement

CY x 2.025 = tons asphalt pavement

173 CY x 2.025 = 350± tons

350 tons @ \$xx/ton = \$54,000± => installed price per ton = \$154

N. Asphalt Pavement – Typical Specifications for Maintenance Protocols

An asphalt pavement has a typical life expectancy of 25 to 30 years. Pavement life is influenced by many factors, including quality of initial materials and installation, traffic volume, vehicle loads (weight), weather, chemicals such as oil and road salt, and maintenance. Proper maintenance is often neglected and can greatly extend the life of a pavement. Some of the maintenance protocols which are utilized to extend pavement life and are recommended in this report are described below.

While the following specifications are typical for the maintenance procedure being described, they are not project-specific, as no design plans have been produced for any of the sites covered in this report. Therefore, the following specifications are not meant for bidding and construction, but may be used as general guidance for the process and materials:

Crack Fill & Sealcoat

Cracks in asphalt pavement are a common form of deterioration. By filling the cracks with a hot asphalt-based sealant, water is prevented from infiltrating the pavement surface through the cracks and causing more damage. A sealcoat or thin asphalt layer is then applied over the entire pavement surface to further prevent water infiltration.

The following specification is not meant for bidding and construction, but may be used as general guidance for the process and materials:

CLEANING THE CRACKS: Vegetation growing through the surface of pavements that are being prepared for crack sealing and/or seal coating shall be removed and the crack then sterilized with a hot air lance or a propane torch unit, eliminating all vegetation, dirt, moisture and seeds. It's important to ensure debris from one crack doesn't get blown into cracks that have already been cleaned, and to time the operation so cleaning happens just before sealing to avoid debris blowing back into cleaned cracks. Sometimes, more than one pass is required to properly clean cracks, especially for wider cracks.

ROUTING & SEALING MASTIC: There are a number of factors determining whether or not cracks should be routed before they are sealed. Routing offers cleaner edges for better material adhesion and creates a defined reservoir that holds the appropriate amount of sealant to accommodate the anticipated annual thermal movement. When done before crack sealing, routing can improve the likelihood of proper sealant adherence and double its service life. To determine whether routing is appropriate, calculate the linear footage of cracks per square foot of the pavement area. Routing is recommended only if the crack density is not greater than 20 percent. When routing, a minimum of $\frac{1}{8}$ of an inch of deteriorated pavement is cut from each side of the crack and the rout should be no less than $\frac{3}{8}$ of an inch deep. Generally, colder climates require wider routed reservoirs to allow for additional expansion/ movement, but not wider than 1½ inches. The rout should be centered over the crack for uniform adhesion. Cracks, routed or not, that are more than 1½ inches wide need to be cleaned and filled with a hot-applied mastic sealant, such as Crafcoc Mastic One.



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POTHOLE REPAIR: All potholes shall be repaired before the crack seal is applied. The Contractor shall saw cut the existing asphalt a minimum of 12" around the pothole and associated cracking in all directions. All saw cuts shall be performed to leave only square or rectangular-shaped repairs. Any jagged or misshaped repairs shall be rejected and replaced by the Contractor at no additional cost. The asphalt and any loose base material shall be removed. An asphalt tack coat shall be applied to the vertical faces of the patch. The area shall be filled with a dense-graded hot mix asphalt. If the patch is more than six inches deep, place the patching material in 4-inch layers, and compact each layer as it is placed. Proper compaction is a critical factor in producing a permanent patch. A properly compacted patch should be overfilled in anticipation of traffic compaction. Once the asphalt has been properly compacted, the final result of the installation shall provide even transitions to the existing area so that a good quality ride is provided. No more than one-quarter (1/4) inch difference in height shall be allowed for the transition between the patch area and the adjacent area. Cold patch asphalt shall be allowed with approval from the Facilities Director of MSAD 75.

CRACK SEALING: Crack sealing should be performed in the spring or fall when cracks are neither completely open (as they are in winter) nor closed (as they are in summer). Most manufacturers recommend a minimum pavement temperature of 40 degrees Fahrenheit. Performing crack sealing at lower temperatures results in reduced adhesion. A hot air lance may be required to warm the pavement if crack sealing must happen when the pavement temperature is below 40 degrees.

1. Materials a. The vendor shall use a product approved by MSAD 75, appropriate for use in cold climates. Crack sealer shall be an asphalt-based product designed to be used to fill cracks and joints in asphalt. The product shall have the ability to seal out water. b. A proprietary blotting material or cement dust shall be used for the blotter coat, or approved equal.

2. Equipment a. Equipment used to install the sealant shall have the ability to maintain the proper temperature of the sealant throughout the sealing process. This heating unit shall be a jacketed double boiler melter equipped with an agitation system. The applicator hose shall have a recirculation system or be equipped with a temperature controlled heating system. Pouring pots or gravity-fed sealant applicators shall not be used for sealing cracks and joints. b. The compressor shall have a capacity of 75 C.F.M., or more, to ensure an adequate supply of air to effectively clean the cracks and joints. Any pneumatic tool lubricator must be bypassed and a water separator/filter must be installed at the hose inlet connection to keep water and oil out of the lines. c. A hot compressed air lance can be used to clean, dry, and pre-heat cracks and joints prior to applying sealant. The air lance shall consist of a compressor propane system providing a high temperature, high velocity blast of air.

3. Work Methods a. All cracks or joints that are greater than one-quarter (1/4) inch shall be properly prepared and sealed using these crack sealing specifications and/or the manufacturer's specifications. b. No sealant shall be installed unless the ambient and pavement temperature are forty (40) degrees and rising. There shall be no fog and no chance of rain. If rain or fog delays the sealing operation, the cracks and joints shall be allowed to dry and shall have additional cleaning as required to remove any debris that may have been washed into the cracks or joints. The cracks and joints shall be completely dry before the seal treatment can resume. The vendor may use the Hot Compressed Air Lance method of cleaning and drying the cracks and joints with the approval of the Facilities Director of MSAD 75. The vendor shall ensure the existing asphaltic concrete

surface is not overheated if this method is used. c. All cracks and joints shall be cleaned free of all deleterious materials, including any dust, old sealant, and organic material by using high-pressure air. All cracks and joints are to be clean and sufficiently dry before any crack sealing material is applied. All old material and other debris removed from the cracks and joints shall be removed from the pavement surface immediately. Any cracks and joints that are not sealed the same day they are prepared shall be blown out with high-pressure air before the sealing operation continues. The vendor shall limit the amount of dust created from this operation. d. The temperature of the sealant shall be heated/maintained using the manufacturer's recommended procedures. The sealant compound shall be melted slowly with constant agitation until it is in a lump-free, free-flowing state, and within the temperature range recommended for application by the manufacturer. Care shall be taken to insure that the sealant is not heated above the recommended maximum temperature or for longer than the recommended time. The Facilities Director of MSAD 75 shall have the right to reject the product if it is determined that this has occurred. e. The sealant shall be applied in the crack or joint uniformly from the bottom to the top and shall be filled without formation of entrapped air or voids. The level of the sealant shall be even with the surface of the asphaltic concrete. At no time shall the sealant be recessed more than one-eighth (1/8) inch below or raised one-sixteenth (1/16) inch above the adjacent surface. A squeegee may be used to remove excess sealant from the pavement surface when a crack or joint is overfilled. At no time shall the sealant overburden be more than one (1) inch from the crack or joint edges. f. A blotting material shall be broadcast or sprayed over the fresh sealant to prevent it from being picked up and tracked. Any excessive or spilled sealer shall be removed by the vendor using approved methods. g. The vendor shall be responsible for any claims of crack seal tracking. If there is a claim, the vendor shall be responsible for applying more blotting material as necessary and addressing the tracked material by either removing or repairing the item that was affected.

4. Curing a. Crack sealing shall have a minimum of 30 days or Manufacturer's recommended curing time before asphalt emulsion seal coat is applied.

5. Deficiencies and Repairs a. Where the sealant settles in the crack or joint lower than one-eighth (1/8) inch below the adjacent asphaltic concrete surface, the surface of the sealant shall be cleaned and more sealant shall be installed to meet the specifications. The vendor shall be responsible to 3 remove any excess material that is greater than one-sixteenth (1/16) inch above the adjacent asphaltic concrete. b. The sealant shall be removed at discretion of the Facilities Director of MSAD 75, and resealed if any of the following occur: 1. The sealant contains imbedded foreign material other than dusting material. 2. The sealant contains entrapped air bubbles. 3. The sealant has de-bonded or pulled away from the crack or joint. 4. The sealant has been excessively heated.

ASPHALT EMULSION SEAL COATING

a. Prior to application of coatings protect adjacent curbs, walks, fences, buildings and other items in the work area.

b. Prior to seal coating asphalt repairs and crack sealing shall have sufficient curing time as required by the manufacturer's specifications. The surface shall also be thoroughly cleaned and free from all loose material, dirt, and debris using brooms, air blowers and/or power sweepers. Surface must be dry before coatings are installed.

c. Vegetation removal, crack sealing, and asphalt repair repairs shall be completed as described above.

- d. Scrub and clean grease, oil, and gasoline spots with soap and water and prime according to seal coat manufacturer's specifications.
- e. Apply two coats of asphalt emulsion seal coat according to manufacturer's specifications.
- f. Application of the asphalt emulsion seal coat shall be done by using rubber faced squeegees, brooms, distributor bar /wand, or combinations of these or other techniques as approved by the Facilities Director of MSAD 75.
- g. Care shall be exercised to leave no unsightly appearance from handwork and the surface shall appear uniform with the machine surface. The same type of finish as applied by the spreader box shall be required
- h. Sealed areas shall be barricaded to traffic and may not be opened to traffic during the curing period as recommended by seal coat manufacturer's installation instructions.

Shim & Overlay

This is the process of shimming the existing road surface with asphalt pavement to fill any low spots and create an even surface prior to installing a new top layer of pavement. The thin surface overlay is typically 1.5 to 2.5 inches deep. The most severe cracks must be cleaned and filled first, and an asphalt tack coat applied to the entire surface. Overlays are a good option for structurally sound pavements with minor to mid-range cracking and potholes.

The following specification is not meant for bidding and construction, but may be used as general guidance for the process and materials:

PAVEMENT REPAIRS: If areas of damaged or failing asphalt pavement are present, such as fatigue cracks or potholes, the Contractor shall cut out and remove the damaged asphalt, and excavate unsuitable material to a depth determined by the Owner's Representative, based upon evaluation of existing conditions. Contractor shall grade and compact the underlying surface as directed by the Owner's Representative, and shall place crushed gravel in lifts not exceeding 6-inches in thickness, compacted to at least 95% modified proctor density, ASTM D-1557, up to 3-inches below the surface of the existing asphalt. Contractor shall apply tack coat to the edges of the patching area, and shall place and compact HMAC patching material in lifts not exceeding 3-inches thick. Contractor shall compact the HMAC patch to 94% +/- 2% maximum theoretical density. The completed repair shall match the surface of the existing pavement. Contractor shall remove waste pavement and gravel from the site and dispose of in a legal manner.

TACK COAT: Tack coat shall be placed on all asphalt to asphalt contact surfaces, including edges of patches. Tack coat material shall be emulsified asphalt conforming to AASHTO M 140 or M 208. Tack coat will not normally be required between bottom and top lifts of two-course pavements, provided the surface mat is placed promptly after placement of the leveling course.

HOT MIX ASPHALT CONCRETE (HMAC) PLACEMENT AND COMPACTION: The Contractor's laydown machine shall be equipped with automatic screed controls to average out irregularities in the existing surfaces. The Contractor's laydown machine shall be of sufficient width to cover at least one lane of the roadway, as applicable. Contractor's compaction equipment shall include steel drum vibratory breakdown and finish rollers, and a pneumatic tire roller to be used during placement of the initial HMAC leveling course. HMAC pavement shall be finished to provide a



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uniform smooth surface, and shall be compacted to 94% +/- 2% of maximum density. Compaction shall be completed before temperature of the mat falls below 185° F.

PLACING HOT MIX ASPHALT:

1. Asphalt Emulsion Tack Coat shall be applied on the cleaned and shimmed surface, between asphalt layers and on exposed cross-sections of adjacent roadways.
2. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
3. Spread mix at a minimum temperature of 250° F.
4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
5. Regulate paver machine speed to obtain a smooth, continuous surface free of pulls and tears in asphalt-paving mat.
6. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required. a. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Overlap mix placement about 1 to 1-1/2 inches from strip to strip to ensure proper compaction of mix along longitudinal joints. b. Complete a section of asphalt base course before placing asphalt surface course, if two courses are specified.
7. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

JOINTS:

1. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.
2. Clean contact surfaces and apply tack coat to joints.
3. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
4. Offset transverse joints, in successive courses, a minimum of 24 inches.
5. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Joints between old and new pavements, or between successive days' work, shall be carefully made in such a manner as to insure a thorough and continuous bond between the old and new surfaces.
6. The edge of the old pavement or previously placed new pavement, shall be cut back a sufficient distance to expose a fresh, full thickness, vertical face. To obtain a well bonded joint, this face shall be brush-painted or pressure sprayed with a bituminous tack coat, after which the hot bituminous mixture shall be placed in contact with it.
7. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
8. Compact asphalt at joints to a density within 2 percent of specified course density.

COMPACTION:

1. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers. a. Complete compaction before mix temperature cools to 185 degrees F.
2. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
3. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density: a. Average Density: 96 percent of Marshall density as determined at the plant. Density shall be attained before the temperature of the surface falls below 185° F.
4. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
5. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
6. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.
7. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
8. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

Mill & Overlay

Mill and overlay includes grinding up and removing the surface layer of the pavement and disposing of it offsite. A new layer of pavement 1.5 to 2.5 inches deep is then placed over the milled surface. This option is a good solution for pavement with a moderate to high amount of cracking and potholes. Though the mill and overlay procedure is more labor intensive than a sole overlay, it is still quite reasonable and budget-friendly, particularly if weighed against the most time-consuming and hefty full-depth repairs. However, if asphalt pavement has finally come to the end of its lifespan, total overhaul and replacement will be inevitable.

The following specification is not meant for bidding and construction, but may be used as general guidance for the process and materials:

MILLING EQUIPMENT: Use a micro-milling machine designed and built for the type of work. Provide a machine with an effective automatic grade and slope control system and having the capacity to mill concrete patches. Use a small milling machine (width of cut 24" or less) to mill adjacent to the curb and around all manholes, inlets and any other structures not accessible or practical to be milled by the milling machine. The small milling machine shall also be used to square off the beginning and ending edges of the roadway. The areas milled with the small milling machine shall be milled to the same depth as the remainder of the project area. The milled product must be completely removed from the project site.

MILLING OPERATION: Mill so the finished surface is free from gouges, grooves, ridges and in accordance with standard surface tolerance requirements, or as directed. Remove milled material immediately after the milling operations to facilitate traffic control. Use care to remove the existing bituminous material around all utility facilities within the work areas. Repair or replace, to the satisfaction of the utility owner, utility facilities which are damaged by the milling operation. Control the rate of milling to avoid tearing of the mat, resulting in chunky and non-uniformly milled material. Separate oversize and chunky milled material as directed. Keep the milled pavement surface free of all loose materials and dust. The Contractor shall use water as necessary to minimize airborne dust. Dispose of the milled material offsite.

PLACING HOT MIX ASPHALT:

1. Asphalt Emulsion Tack Coat shall be applied on the micro milled surface, between asphalt layers and on exposed cross-sections of adjacent roadways.
2. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
3. Spread mix at a minimum temperature of 250 degrees F.
4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
5. Regulate paver machine speed to obtain a smooth, continuous surface free of pulls and tears in asphalt-paving mat.
6. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required. a. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Overlap mix placement about 1 to 1-1/2 inches from strip to strip to ensure proper compaction of mix along longitudinal joints. b. Complete a section of asphalt base course before placing asphalt surface course, if two courses are specified.
7. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

JOINTS:

1. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.
2. Clean contact surfaces and apply tack coat to joints.
3. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
4. Offset transverse joints, in successive courses, a minimum of 24 inches.
5. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Joints between old and new pavements, or between successive days' work, shall be carefully made in such a manner as to insure a thorough and continuous bond between the old and new surfaces.

6. The edge of the old pavement or previously placed new pavement, shall be cut back a sufficient distance to expose a fresh, full thickness, vertical face. To obtain a well bonded joint, this face shall be brush-painted or pressure sprayed with a bituminous tack coat, after which the hot bituminous mixture shall be placed in contact with it.

7. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement. 8. Compact asphalt at joints to a density within 2 percent of specified course density.

COMPACTION:

1. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers. a. Complete compaction before mix temperature cools to 185 degrees F.

2. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

3. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density: a. Average Density: 96 percent of Marshall density as determined at the plant. Density shall be attained before the temperature of the surface falls below 185° F.

4. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

5. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

6. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

7. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

8. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

Full-Depth Pavement Reclamation

Pavement reclamation is the process of rebuilding a pavement by recycling the existing asphalt in place. This method eliminates the need to dispose of removed asphalt off-site, which makes it an environmentally friendly alternative to full replacement. This process is generally for pavements in poor condition at the end of their useful life. Full-depth reclamation addresses issues with subgrade stability, surface integrity, and various forms of cracking and rutting. FDR is typically best suited for situations where base failures have occurred, or increased bearing capacity is desired. The process includes grinding up and mixing the pavement with the existing gravel base material (typically to a depth of 6 to 12 inches) to create a stronger base, and then adding new pavement on top of the compacted base. *Stabilized* full-depth reclamation involves adding material such as cement or



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asphalt emulsion to the mixed base to strengthen it (recommended for pavements with poor subgrade soils or drainage issues below the pavement.)

The following specification is not meant for bidding and construction, but may be used as general guidance for the process and materials:

GENERAL:

Description: Full-depth reclamation (FDR) shall consist of pulverizing and mixing existing asphalt pavement and base course material, soil and water (as needed), to produce a dense, hard, treated base. It shall be proportioned, mixed, placed, compacted, and cured in accordance with this specification, and shall conform to the lines, grades, thicknesses, and typical cross sections shown in the plan.

MATERIALS:

1. Recycled Asphalt Pavement (RAP) and Base Material: Shall consist of the existing asphalt pavement, existing base course material and/or subgrade material. The base course and subgrade material shall not contain roots, topsoil, or any material deleterious to its reaction with cement. The particle distribution of the processed material shall be such that 100% passes a 3- inch (75 mm) sieve, at least 95% passes a 2-inch (50 mm) sieve, and at least 55% passes a No. 4 (4.75 mm) sieve.

2. Mix Design - Remove samples of RAP and RAM to the specified depth and perform appropriate testing to establish mix design. Submit mix design to the Owner/Representative (O/R) for approval one week before the planned start of work. Approval of the mix design by the O/R is solely for monitoring quality control and in no way releases the Contractor from his responsibilities. Mix Design Development - Samples must be obtained inclusive of the depth to be recycled. Sampled materials must be properly processed and prepared to closely simulate field conditions. A Qualified Technical Representative will analyze the samples and provide the following information as part of the mix design to the O/R: A. Location core samples. B. Thickness and description of existing pavement and aggregate layers to be reclaimed. C. A selected matrix of soils testing standards. • Moisture Content AASHTO T265 - Mechanical and Hydrometer • Particle Size Analysis of Soils AASHTO T88-90 - Liquid Limit, Plastic Limit AASHTO T89 • Unconfined Compression AASHTO T208 - To be performed only if more than 20% of the underlying subgrade is to be included in the Portland Cement stabilized layer.

3. Water: Shall be free from substances deleterious to the hardening of the cement-treated material.

EQUIPMENT:

1. Description: FDR may be constructed with any machine or combination of machines or equipment that will produce a satisfactory product meeting the requirements for pulverization, water application, mixing, compacting, finishing, and curing as provided in this specification.

2. Mixing Methods: Mixing shall be accomplished in place, using single-shaft or multiple-shaft mixers. Agricultural disks or motor graders are not acceptable mixing equipment.

3. Application of Water: Water may be applied through the mixer or with water trucks equipped with pressure-spray bars. If using the spray bar system, road base shall be pre-wet to obtain optimum moisture content prior to the dispensing of cement.

4. Compaction: The processed material shall be compacted with one or a combination of the following: Tamping or grid roller, pneumatic-tire roller, steel-wheel roller, vibratory roller, or vibrating-plate compactor. The full depth recycled material shall be rolled with a vibratory pad/tamping foot

roller and a vibratory steel drum soil compactor. The pad/tamping foot roller drum shall have a minimum of 112 tamping feet 73 mm [3 in] in height, a minimum contact area per foot of 110 cm² [17 in²], and a minimum width of 2.15 m [84 in]. The vibratory steel drum roller shall have a minimum 2.15 meter [84 in] width single drum.

CONSTRUCTION REQUIREMENTS:

1. Preparation: Prior to the start of the reclamation, all utilities and drainage systems shall be relocated as necessary. Methods, equipment, tools, and any machinery to be used during construction shall be approved by the Engineer prior to the start of the project. Prior to the actual reclaiming of the roadway, drop inlets or catch basins that might be affected shall be sufficiently barricaded to prevent reclaimed subbase material, silt or runoff from plugging the drainage system. Sufficient surface drainage must be provided for each stage of construction so that ponding does not occur on the reclaimed sub-base course prior to the placement of bituminous concrete. Reclamation shall be accomplished by means of a self-propelled, traveling rotary reclaimer or equivalent machine capable of cutting through existing bituminous concrete pavement to depths of up to 15 inches with one pass. The machine shall be equipped with an adjustable grading blade leaving its path generally smooth for initial compaction. Equipment such as road planers or cold milling machines designed to mill or shred the existing bituminous concrete, rather than crush or fracture it, shall not be allowed. Existing bituminous concrete pavement and any underlying granular material must be pulverized and mixed so as to form a homogenous mass of reclaimed sub-base material which will bond together when compacted. In areas where the vertical or horizontal geometry of the proposed roadway is different than that of the existing, the roadway shall be reclaimed in-place and the reclaimed material sub-base placed in windrows or stockpiled while any filling or excavation is performed. When the proposed sub-grade elevation is achieved, the reclaimed sub-base material will be placed back onto the roadway in lifts no greater than five (5) inches in depth before being compacted. Reshaping using the reclaimed sub-base material should be minimized in order to insure that the roadway has a uniform thickness of reclaimed sub-base material throughout. Unless otherwise specified, when reshaping of the roadway is required, it should be performed utilizing additional sub-base or processed aggregate base. The reclaimed sub-base material shall be compacted prior to the placement of any additional granular material used (sub-base or processed aggregate base). Subsequent to the compaction of the reclaimed sub-base material, any reshaped material or additional material placed on the roadway should not exceed five (5) inches in depth before being compacted. The reclaimed sub-base material shall be compacted to the requirements above prior to the placement of traffic on the roadway. A motor grader shall be used for shaping, fine grading, and finishing the surface of the reclaimed material or any other granular materials placed to form the surface prior to paving. Any surface irregularities which develop during or after the above described work shall be corrected until it is brought to a firm and uniform surface satisfactory to the Engineer.

2. Mixing and Placing: FDR processing shall not commence when the soil aggregate or subgrade is frozen, or when the air temperature is below 40°F (4°C). Moisture in the base course material shall not exceed the quantity that will permit a uniform and intimate mixture of the pulverized asphalt and base material and shall be within 2% of the optimum moisture content for the processed material at start of compaction.

3. Scarifying: Initial pulverization or scarification may be required to the full depth of mixing. Scarification or pre-pulverization is a requirement for the condition when the processed material is more than 3% above or below optimum moisture content. When the material is below optimum moisture content, water shall be added. The pre-pulverized material shall be sealed and properly drained at the end of the day or if rain is expected.

4. **Mixing:** Mixing shall continue until a uniform mixture is produced. The mixed material shall meet the following gradation conditions: a) The final mixture (bituminous surface, granular base, and sub-grade soil) shall be pulverized such that 100% passes the 3-inch (75 mm) sieve, at least 95% passes the 2-in. (50 mm) sieve, and at least 55% passes the No. 4 (4.75 mm) sieve. No more than 50% of the final mixed material shall be made of the existing bituminous material unless approved by the engineer and included in a mixture design. Additional material can be added to the top or from the sub-grade to improve the mixture gradation, as long as this material was included in the mixture design. b) The final pulverization test shall be made at the conclusion of mixing operations. Mixing shall be continued until the product is uniform in color, meets gradation requirements, and is at the required moisture content throughout. The entire operation of spreading, water application, and mixing shall result in a uniform pulverized asphalt, soil, cement, and water mixture for the full design depth and width.

5. **Compaction:** The processed material shall be uniformly compacted to a minimum of 98% of maximum density based on a moving average of five consecutive tests with no individual test below 98%. Field density of compacted material can be determined by nuclear method in the direct transmission mode (ASTM D 2922, AASHTO T 310), sand cone method (ASTM D 1556, AASHTO T 191), or rubber balloon method (ASTM D 2167). Optimum moisture and maximum density shall be determined prior to start of construction and also in the field during construction by a moisture-density test (ASTM D 558 or AASHTO T 134). At the start of compaction, the moisture content shall be within 2% of the specified optimum moisture. No section shall be left undisturbed for longer than 30 minutes during compaction operations. All compaction operations shall be completed within 2 hours from start of mixing.

6. **Finishing:** As compaction nears completion, the surface of the FDR material shall be shaped to the specified lines, grades, and cross sections. If necessary or as required by the engineer, the surface shall be lightly scarified or broom-dragged to remove imprints left by equipment or to prevent compaction planes. Compaction shall then be continued until uniform and adequate density is obtained. During the finishing process the surface shall be kept moist by means of water spray devices that will not erode the surface. Compaction and finishing shall be done in such a manner as to produce a dense surface free of compaction planes, cracks, ridges, or loose material. All finishing operations shall be completed within 4 hours from start of mixing.

7. **Curing:** Finished portions of the FDR base that are traveled on by equipment used in constructing an adjoining section shall be protected in such a manner as to prevent equipment from marring or damaging completed work. After completion of final finishing, the surface shall be cured by application of a bituminous or other approved sealing membrane, or by being kept continuously moist for a period of 7 days with a water spray that will not erode the surface of the FDR base. If curing material is used, it shall be applied as soon as possible, but not later than 24 hours after completing finishing operations. The surface shall be kept continuously moist prior to application of curing material. For bituminous curing material, the FDR base surface shall be dense, free of all loose and extraneous materials, and shall contain sufficient moisture to prevent excessive penetration of the bituminous material. The bituminous material shall be uniformly applied to the surface. The exact rate and temperature of application for complete coverage, without undue runoff, shall be specified by the engineer. Should it be necessary for construction equipment or other traffic to use the bituminous-covered surface before the bituminous material has dried sufficiently to prevent pickup, sufficient sand cover shall be applied before such use.

8. **Traffic:** Completed portions of FDR base can be opened immediately to low-speed local traffic and to construction equipment, provided the curing material or moist curing operations are not impaired, and provided the FDR base is sufficiently stable to withstand marring or permanent deformation. The



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section can be opened up to all traffic after the FDR base has received a curing compound or subsequent surface and is sufficiently stable to withstand marring or permanent deformation. If continuous moist curing is employed in lieu of a curing compound or subsequent surfacing within 7 days, the FDR base can be opened to all traffic after the 7-day moist curing period, provided the FDR base has hardened sufficiently to prevent marring or permanent deformation.

9. Surfacing: Subsequent pavement layers (asphalt, chip-seal, or concrete) can be placed any time after finishing, as long as the surface is sufficiently stable to support the required construction equipment without marring or permanent distortion of the surface.

10. Maintenance: The contractor shall maintain the FDR material in good condition until all work is completed and accepted. Maintenance shall include immediate repairs of any defects that may occur. If it is necessary to replace any processed material, the replacement shall be for the full depth, with vertical cuts, using FDR material. No skin patches will be permitted.

INSPECTION AND TESTING:

Description: The contractor shall make such inspections and tests as deemed necessary to ensure the conformance of the work to the contract documents. These inspections and tests may include, but shall not be limited to: Recycling operations including recycling speed, yield monitoring, monitoring treatment depth, procedures for avoiding recycling and curing in inclement weather, methods to ensure that segregation is minimized, procedures for mix design modification, grading and compacting operations, and cement application procedure. Density testing and recycled material testing will be performed using the nuclear method. Only those materials, machines, and methods meeting the requirements of the contract documents shall be used unless otherwise approved by the engineer.



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Appendix 1: The Logan Company's Cost Estimate

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construction cost consulting

**Maine School Administrative District 75,
Asphalt Assessment Study,
Maine**



Prepared for:
Rist-Frost-Shumway Engineering
50 Milk St
Boston, MA 02210
June 2, 2021
Rev 1

Assessment Study

MAIN CONSTRUCTION COST SUMMARY

	<u>Estimated Cost</u>
1 BOWDOIN CENTRAL SCHOOL	\$111,997
2 BOWDOINHAM COMMUNITY SCHOOL	\$132,952
3 HARPSWELL COMMUNITY SCHOOL	\$318,044
4 MERRYMEETING ADULT EDUCATION LODGE	\$91,846
5 MSAD 75 DISTRICT OFFICE	\$93,308
6 MT. ARARAT MIDDLE SCHOOL	\$177,558
7 REPUBLIC AVENUE ROADWAY	\$46,181
8 WILLIAMS-CONE SCHOOL	\$233,453
9 WOODSIDE ELEMENTARY SCHOOL	\$140,322
TOTAL COST	\$1,345,661

NOTES

This asphalt assessment cost estimate was produced from drawings and specifications prepared by RFS Engineering and their design team dated April 15th, 2021 and updated May 28th. Design and engineering changes occurring subsequent to the issue of these documents have not been incorporated in this estimate.

This estimate assumes bidding direct to qualified local asphalt contractors includes all direct construction costs and overhead and profit. Due to fluctuating market conditions cost escalation has been included to start of construction.

We have assumed procurement will utilize a fixed price contract with bidding to multiple contractors per trade, open specifications for materials and manufacturers.

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The estimate is based on Maine prevailing wage rates for construction in this market and represents a reasonable opinion of cost. It is not a prediction of the successful bid from a contractor as bids will vary due to fluctuating market conditions, errors and omissions, proprietary specifications, lack or surplus of bidders, perception of risk, etc. Consequently the estimate is expected to fall within the range of bids from a number of competitive contractors or subcontractors, however we do not warrant that bids or negotiated prices will not vary from the final construction cost estimate.

ITEMS NOT CONSIDERED IN THIS ESTIMATE

Items not included in this estimate are:

- Land acquisition, feasibility, and financing costs
- All professional fees and insurance
- Site or existing conditions surveys investigations costs, including to determine Subsoil conditions
- Disposal of contaminated soils
- Temporary utilities
- Winter conditions
- Shift work/ night work
- Traffic controls
- Police Details
- Furnishings, Fixtures and Equipment (except as noted in this estimate)
- Items identified in the design as Not In Contract (NIC)
- Items identified in the design as by others
- Owner supplied and/or installed items as indicated in the estimate
- Utility company back charges, including work required off-site (except as noted in this estimate)
- Work to City streets and sidewalks, (except as noted in this estimate)

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DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
<u>BOWDOIN CENTRAL SCHOOL</u>						
G SITE PREP/DEVELOPMENT						
G10 SITE PREPARATION & DEMOLITION						
<u>Site Clearing & Prep.</u>						
Mobilization and site prep	1	ea	10,000.00	10,000		
Temp fencing				Assumed Not Required		
Silt fence/erosion control, inlet protection	1	ea	2,500.00	2,500		
Make good green areas post construction	1	ea	2,000.00	2,000		
SUBTOTAL						\$14,500
G20 SITE IMPROVEMENTS						
<u>Entrance Roadway & Bus Loop</u>						
Maintenance - crack fill and sealcoat	22,000	sf		-		
New Road Markings	22,000	sf	0.50	11,000		
Curbing			0.10	2,200		
				Assume Not Required		
SUBTOTAL						\$13,200
<u>Parking Area</u>						
Maintenance - crack fill and sealcoat	31,000	sf	0.50	15,500		
New Road Markings	31,000	sf	0.10	3,100		
Granite curb	270	lf	40.00	10,800		
Bituminous curb	405	lf	10.00	4,050		
SUBTOTAL						\$33,450
<u>Playground & Service Area</u>						
Full depth reclamation	7,000	sf		-		
Regrade existing gravel base, add base material as required. Assume average of 6"	7,000	sf	2.25	15,750		
	130	cy	55.00	7,150		
Asphalt, 1" top course	44	tons	105.00	4,620		
Asphalt, 1" binder course	44	tons	95.00	4,180		
Curbing				Assume Not Required		
Road Markings				Assume Not Required		
SUBTOTAL						\$31,700
<u>Main Sidewalk & Entrance Plaza</u>						
Maintenance - crack fill and sealcoat	5,000	sf		-		
New Road Markings	5,000	sf	0.50	2,500		
Curbing				Assume Not Required		
				Assume Not Required		
SUBTOTAL						\$2,500
<u>New Pavement</u>						
Existing to remain	1,000	sf		-		
				NIC		
SUBTOTAL						\$0
<u>Walkway</u>						
Existing to remain	2,300	sf		-		
				NIC		
SUBTOTAL						\$0
G30 CIVIL MECHANICAL UTILITIES						
Allowance for minor elevations adjustments to existing manhole/catch basin cover and grates	7,000	sf	0.50	3,500		
SUBTOTAL						\$3,500
G40 ELECTRICAL UTILITIES						
No work in this section						
SUBTOTAL						\$0

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Assessment Study

	DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST	
<u>BOWDOIN CENTRAL SCHOOL</u>								
58	G90 OTHER SITE CONSTRUCTION							
59	No work in this section							
60	SUBTOTAL					\$0		
61								
62	TOTAL - SITE DEVELOPMENT						\$98,850	
63								
64								
65	INDIRECT COST							
66								
67	GENERAL COND. / PERMIT / INS.							
68	General Conditions				Not Required			
69	Overhead & profit/fee & insurance				Incl above			
70	Permit				Assumed Waived			
71	SUBTOTAL					\$0		
72								
73	CONTINGENCIES/ESCALATION							
74	Design and pricing contingency	10.00%		98,850.00	9,885			
75	Escalation contingency	3.00%		108,735.00	3,262			
76	Construction contingency				By Owner			
77	SUBTOTAL					\$13,147		
78								
79	TOTAL - INDIRECT COST						\$13,147	
80								
81	TOTAL PROJECT COST						\$111,997	
82								

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DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
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BOWDOINHAM COMMUNITY SCHOOL

G SITE PREP/DEVELOPMENT						
G10 SITE PREPARATION & DEMOLITION						
<u>Site Clearing & Prep.</u>						
	Mobilization and site prep	1	ea	10,000.00	10,000	
	Temp fencing			Assumed	Not Required	
	Silt fence/erosion control, inlet protection	1	ea	2,500.00	2,500	
	Make good green areas post construction	1	ea	2,000.00	2,000	
	SUBTOTAL					\$14,500
G20 SITE IMPROVEMENTS						
<u>Entrance Roadway & Bus Loop</u>						
	No work required				NIC	
	SUBTOTAL					\$0
<u>Portion of Main Parking (West End)</u>						
	Full depth reclamation	2,500	sf		-	
	Regard existing gravel base, add base material as required. Assume average of 6"	2,500	sf	2.25	5,625	
		46	cy	55.00	2,530	
	Asphalt, 1" top course	16	tons	105.00	1,680	
	Asphalt, 1" binder course	16	tons	95.00	1,520	
	New Road Markings	2,500	sf	0.10	250	
	Concrete curb	195	lf	32.00	6,240	
	Bituminous curb	25	lf	10.00	250	
	Relocate catch basin	1	ea	8,000.00	8,000	
	SUBTOTAL					\$26,095
<u>Remainder of Main Parking</u>						
	Maintenance - crack fill and sealcoat	6,000	sf		-	
		6,000	sf	0.50	3,000	
	Road Markings	6,000	sf	0.10	600	
	SUBTOTAL					\$3,600
<u>West Parking</u>						
	Full depth reclamation	5,600	sf		-	
	Regard existing gravel base, add base material as required. Assume average of 6"	5,600	sf	2.25	12,600	
		104	cy	55.00	5,720	
	Asphalt, 1" top course	35	tons	105.00	3,675	
	Asphalt, 1" binder course	35	tons	95.00	3,325	
	Road Markings	5,600	sf	0.10	560	
	Allowance to remove UG Oil Tank	1	ea	10,000.00	10,000	
	Curbing			Assume	Not Required	
	SUBTOTAL					\$35,880
<u>Playground</u>						
	Full depth reclamation	6,000	sf		-	
	Regard existing gravel base, add base material as required. Assume average of 6"	6,000	sf	2.25	13,500	
		111	cy	55.00	6,105	
	Asphalt, 1.5" overlay	56	tons	105.00	5,880	
	Curbing			Assume	Not Required	
	Road Markings			Assume	Not Required	
	SUBTOTAL					\$25,485
<u>Rear Sidewalk</u>						
	Remove and dispose of existing asphalt	1,200	sf		-	
		1,200	sf	1.50	1,800	
	Asphalt, 2" top course	15	tons	105.00	1,575	
	Asphalt, 1" binder course	8	tons	95.00	760	
	Curbing			Assume	Not Required	
	Road Markings			Assume	Not Required	

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	DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST	
<u>BOWDOINHAM COMMUNITY SCHOOL</u>								
57	Add stairs or Ramp	1	ea	15,000.00	Not Required			
58	SUBTOTAL					\$4,135		
59								
60	G30 CIVIL MECHANICAL UTILITIES							
61	Allowance for minor elevations adjustments to existing manhole/catch basin cover and grates	15,300	sf	0.50	7,650			
62	SUBTOTAL					\$7,650		
63								
64	G40 ELECTRICAL UTILITIES							
65	No work in this section							
66	SUBTOTAL					\$0		
67								
68	G90 OTHER SITE CONSTRUCTION							
69	No work in this section							
70	SUBTOTAL					\$0		
71								
72	TOTAL - SITE DEVELOPMENT						\$117,345	
73								
74								
75	INDIRECT COST							
76								
77	GENERAL COND. / PERMIT / INS.							
78	General Conditions				Not Required			
79	Overhead & profit/fee & insurance				Incl above			
80	Permit				Assumed Waived			
81	SUBTOTAL					\$0		
82								
83	CONTINGENCIES/ESCALATION							
84	Design and pricing contingency	10.00%		117,345.00	11,735			
85	Escalation contingency	3.00%		129,080.00	3,872			
86	Construction contingency				By Owner			
87	SUBTOTAL					\$15,607		
88								
89	TOTAL - INDIRECT COST						\$15,607	
90								
91								
92	TOTAL PROJECT COST						\$132,952	

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DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
HARPSWELL COMMUNITY SCHOOL						
G SITE PREP/DEVELOPMENT						
G10 SITE PREPARATION & DEMOLITION						
<u>Site Clearing & Prep.</u>						
Mobilization and site prep	1	ea	15,000.00	15,000		
Temp fencing				Assumed Not Required		
Silt fence/erosion control, inlet protection	1	ea	3,500.00	3,500		
Make good green areas post construction	1	ea	2,500.00	2,500		
SUBTOTAL						\$21,000
G20 SITE IMPROVEMENTS						
<u>Entrance Roadway & Bus Loop</u>						
Full depth reclamation	25,000	sf		-		
Regard existing gravel base, add base material as required. Assume average of 6"	25,000	sf	2.25	56,250		
Asphalt, 1" top course	463	cy	55.00	25,465		
Asphalt, 1" binder course	156	tons	105.00	16,380		
New Road Markings	156	tons	95.00	14,820		
Bituminous curb	25,000	sf	0.10	2,500		
Drainage ditch maintenance	110	lf	10.00	1,100		
Add hardpack material at pull-off area	1	ea	5,000.00	5,000		
SUBTOTAL						\$126,515
<u>Parking</u>						
Full depth reclamation	21,000	sf		-		
Regard existing gravel base, add base material as required. Assume average of 6"	21,000	sf	2.25	47,250		
Asphalt, 3/4" top course	389	cy	55.00	21,395		
Asphalt, 3/4" binder course	98	tons	105.00	10,290		
New Road Markings	98	tons	95.00	9,310		
Curbing	21,000	sf	0.10	2,100		
SUBTOTAL				Assume Not Required		\$90,345
<u>Playground</u>						
No work in this section						\$0
<u>Sidewalk</u>						
Remove and dispose of existing asphalt	8,000	sf		-		
Regard existing gravel base, add base material as required. Assume average of 6"	8,000	sf	1.50	12,000		
Asphalt, 2" top course				Assume Not Required		
Asphalt, 1" binder course	100	tons	105.00	10,500		
Bituminous curb	50	tons	95.00	4,750		
Road Markings	110	lf	10.00	1,100		
SUBTOTAL				Assume Not Required		\$28,350
G30 CIVIL MECHANICAL UTILITIES						
Allowance for minor elevations adjustments to existing manhole/catch basin cover and grates	29,000	sf	0.50	14,500		
SUBTOTAL						\$14,500
G40 ELECTRICAL UTILITIES						
No work in this section						\$0
SUBTOTAL						\$0

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	DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST	
<u>HARPSWELL COMMUNITY SCHOOL</u>								
53								
54	G90 OTHER SITE CONSTRUCTION							
55	No work in this section							
56	SUBTOTAL					\$0		
57								
58	TOTAL - SITE DEVELOPMENT						\$280,710	
59								
60								
61	INDIRECT COST							
62								
63	GENERAL COND. / PERMIT / INS.							
64	General Conditions					Not Required		
65	Overhead & profit/fee & insurance					Incl above		
66	Permit					Assumed Waived		
67	SUBTOTAL						\$0	
68								
69	CONTINGENCIES/ESCALATION							
70	Design and pricing contingency	10.00%		280,710.00	28,071			
71	Escalation contingency	3.00%		308,781.00	9,263			
72	Construction contingency				By Owner			
73	SUBTOTAL						\$37,334	
74								
75	TOTAL - INDIRECT COST						\$37,334	
76								
77								
78	TOTAL PROJECT COST						\$318,044	

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DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
<u>MERRYMEETING ADULT EDUCATION LODGE</u>						
G SITE PREP/DEVELOPMENT						
G10 SITE PREPARATION & DEMOLITION						
<u>Site Clearing & Prep.</u>						
Mobilization and site prep	1	ea	10,000.00	10,000		
Temp fencing				Assumed Not Required		
Silt fence/erosion control, inlet protection	1	ea	2,500.00	2,500		
Make good green areas post construction	1	ea	2,000.00	2,000		
SUBTOTAL						\$14,500
G20 SITE IMPROVEMENTS						
<u>Entrance Roadway</u>						
No work in this section						
SUBTOTAL						\$0
<u>Northern Parking - Crack Fill & Seal</u>						
Maintenance - crack fill and sealcoat	9,000	sf		-		
1.5" Shim & Overlay Existing	93	tons	105.00	9,765		
New Road Markings	9,000	sf	0.10	900		
SUBTOTAL						\$15,165
<u>Southern Parking - New</u>						
Full depth reclamation	14,000	sf		-		
Regard existing gravel base, add base material as required. Assume average of 6"	14,000	sf	2.25	31,500		
Asphalt, 1" top course	88	tons	105.00	9,240		
Asphalt, 1" binder course	88	tons	95.00	8,360		
Asphalt curbing	90	lf	10.00	900		
New Road Markings	14,000	sf	0.10	1,400		
SUBTOTAL						\$51,400
<u>Playground</u>						
No work in this section						
SUBTOTAL						\$0
<u>Sidewalk</u>						
Sidewalks						
SUBTOTAL				No Work Required		\$0
<u>All New Asphalt Sidewalk</u>						
Assume included w/sidewalks above						
SUBTOTAL				Assume NIC		\$0
G30 CIVIL MECHANICAL UTILITIES						
Allowance for minor elevations adjustments to existing manhole/catch basin cover and grates						
SUBTOTAL				Assume Not Required		\$0
G40 ELECTRICAL UTILITIES						
No work in this section						
SUBTOTAL						\$0
G90 OTHER SITE CONSTRUCTION						
No work in this section						
SUBTOTAL						\$0
TOTAL - SITE DEVELOPMENT						\$81,065

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DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
<u>MERRYMEETING ADULT EDUCATION LODGE</u>						
INDIRECT COST						
GENERAL COND. / PERMIT / INS.						
General Conditions				Not Required		
Overhead & profit/fee & insurance				Incl above		
Permit				Assumed Waived		
SUBTOTAL						\$0
CONTINGENCIES/ESCALATION						
Design and pricing contingency	10.00%		81,065.00	8,107		
Escalation contingency	3.00%		89,172.00	2,675		
Construction contingency				By Owner		
SUBTOTAL						\$10,782
TOTAL - INDIRECT COST						\$10,782
TOTAL PROJECT COST						\$91,847

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DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
MSAD 75 DISTRICT OFFICE						
G SITE PREP/DEVELOPMENT						
G10 SITE PREPARATION & DEMOLITION						
<u>Site Clearing & Prep.</u>						
Mobilization and site prep	1	ea	10,000.00	10,000		
Temp fencing				Assumed Not Required		
Silt fence/erosion control, inlet protection	1	ea	2,500.00	2,500		
Make good green areas post construction	1	ea	2,000.00	2,000		
SUBTOTAL						\$14,500
G20 SITE IMPROVEMENTS						
<u>Main Entrance Roadway</u>						
No work in this section						
SUBTOTAL						\$0
<u>Service Drive at Canam Road</u>						
Maintenance - crack fill and sealcoat	3,700	sf		-		
Bituminous curb				No Work Required		
New Road Markings				No Work Required		
SUBTOTAL						\$0
<u>Parking Area #1</u>						
Maintenance - crack fill and sealcoat	21,000	sf		-		
1.5" Shim & Overlay Existing	21,000	sf	0.50	10,500		
New Road Markings	217	tons	105.00	22,785		
Curbing	21,000	sf	0.10	2,100		
Curbing	650	lf	10.00	6,500		
SUBTOTAL						\$41,885
<u>Parking Area #2 & Drive</u>						
Scarify existing asphalt	5,000	sf		-		
Asphalt, 1" top course	5,000	sf	1.50	7,500		
Asphalt, 1" binder course	31	tons	105.00	3,255		
Asphalt, 1" binder course	31	tons	105.00	3,255		
Curbing	530	lf	10.00	5,300		
New Road Markings	5,000	sf	0.10	500		
SUBTOTAL						\$19,810
<u>Playground</u>						
No work in this section						
SUBTOTAL						\$0
<u>Service Dive</u>						
No work in this section						
SUBTOTAL						\$0
<u>Sidewalk</u>						
Remove and dispose of existing asphalt	1,800	sf		-		
Regard existing gravel base, add base material as required. Assume average of 6"	1,800	sf	1.50	2,700		
Asphalt, 2" top course				Assume Not Required		
Asphalt, 2" top course	23	tons	105.00	2,415		
Asphalt, 1" binder course	11	tons	95.00	1,045		
Asphalt curbing				Assume Not Required		
Road Markings						
SUBTOTAL						\$6,160
G30 CIVIL MECHANICAL UTILITIES						
Allowance for minor elevations adjustments to existing manhole/catch basin cover and grates						
SUBTOTAL						\$0

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DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST	
MSAD 75 DISTRICT OFFICE							
57							
58	G40	ELECTRICAL UTILITIES					
59		No work in this section					
60		SUBTOTAL				\$0	
61							
62	G90	OTHER SITE CONSTRUCTION					
63		No work in this section					
64		SUBTOTAL				\$0	
65							
66	TOTAL - SITE DEVELOPMENT						\$82,355
67							
68							
69	INDIRECT COST						
70							
71		GENERAL COND. / PERMIT / INS.					
72		General Conditions		Not Required			
73		Overhead & profit/fee & insurance		Incl above			
74		Permit		Assumed Waived			
75		SUBTOTAL				\$0	
76							
77		CONTINGENCIES/ESCALATION					
78		Design and pricing contingency	10.00%	82,355.00	8,236		
79		Escalation contingency	3.00%	90,591.00	2,718		
80		Construction contingency			By Owner		
81		SUBTOTAL				\$10,954	
82							
83	TOTAL - INDIRECT COST						\$10,954
84							
85							
86	TOTAL PROJECT COST						\$93,309

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MT. ARARAT MIDDLE SCHOOL

DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
G SITE PREP/DEVELOPMENT						
G10 SITE PREPARATION & DEMOLITION						
<u>Site Clearing & Prep.</u>						
Mobilization and site prep	1	ea	12,500.00	12,500		
Temp fencing				Assumed Not Required		
Silt fence/erosion control, inlet protection	1	ea	3,000.00	3,000		
Make good green areas post construction	1	ea	2,500.00	2,500		
SUBTOTAL						\$18,000
G20 SITE IMPROVEMENTS						
<u>Republic Ave Access Drive & Bus Loop Combined</u>						
	69,000	sf		No Work Required		
SUBTOTAL						
<u>Main Entrance Roadway (Republic Ave Access Drive On</u>						
Maintenance - crack fill & full depth patching of potholes	28,000	sf	1.00	28,000		
1.5" Overlay Existing	263	tons	105.00	27,615		
Curbing	1,400	lf	10.00	14,000		
New Road Markings	28,000	sf	0.10	2,800		
SUBTOTAL						\$72,415
<u>Bus Lane</u>						
No work in this section						\$0
SUBTOTAL						
<u>East Parking Area</u>						
Maintenance - crack fill and sealcoat	26,000	sf	0.50	13,000		
Curbing	985	lf	10.00	9,850		
New Road Markings	26,000	sf	0.10	2,600		
SUBTOTAL						\$25,450
<u>North Parking Area</u>						
Maintenance - crack fill and sealcoat	23,000	sf	0.50	11,500		
Curbing	320	lf		Not Required		
New Road Markings	23,000	sf	0.10	2,300		
SUBTOTAL						\$13,800
<u>West Parking Area</u>						
Maintenance - crack fill and sealcoat	12,000	sf	0.50	6,000		
New Road Markings	12,000	sf	0.10	1,200		
Curbing				Assume Not Required		
SUBTOTAL						\$7,200
<u>Playground</u>						
No work in this section						\$0
SUBTOTAL						

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DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
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REPUBLIC AVENUE ROADWAY

1	G SITE PREP/DEVELOPMENT						
2							
3	G10 SITE PREPARATION & DEMOLITION						
4	<u>Site Clearing & Prep.</u>						
5	Mobilization and site prep	1	ea	7,500.00	7,500		
6	Temp fencing			Assumed Not Required			
7	Silt fence/erosion control, inlet protection	1	ea	1,500.00	1,500		
8	Make good green areas post construction	1	ea	1,200.00	1,200		
9	SUBTOTAL					\$10,200	
10							
11	G20 SITE IMPROVEMENTS						
12							
13	<u>Roadway</u>						
14	Maintenance - crack fill and sealcoat	22,000	sf	0.50	11,000		
15	New Road Markings	22,000	sf	0.10	2,200		
16	SUBTOTAL					\$13,200	
17							
18	<u>Parking Area</u>						
19	No work in this section						
20	SUBTOTAL					\$0	
21							
22	<u>Playground</u>						
23	No work in this section						
24	SUBTOTAL					\$0	
25							
26	<u>Abandoned Sidewalk</u>						
27	No work in this section						
28	SUBTOTAL					\$0	
29							
30	<u>New Sidewalk</u>						
31	No work in this section						
32	SUBTOTAL					\$0	
33							
34	<u>Sidewalk</u>						
35	Remove and dispose of existing asphalt	1,800	sf		-		
36	Asphalt, 2" top course	1,800	sf	1.50	2,700		
37	Asphalt, 1" binder course	23	tons	105.00	2,415		
38	Asphalt curbing	11	tons	95.00	1,045		
39	Road Markings	10	lf	20.00	200		
40	SUBTOTAL				Assume Not Required	\$6,360	
41							
42	G30 CIVIL MECHANICAL UTILITIES						
43	Allowance for minor elevations adjustments to existing manhole/catch basin cover and grates	22,000	sf	0.50	11,000		
44	SUBTOTAL					\$11,000	
45							
46	G40 ELECTRICAL UTILITIES						
47	No work in this section						
48	SUBTOTAL					\$0	
49							
50	G90 OTHER SITE CONSTRUCTION						
51	No work in this section						
52	SUBTOTAL					\$0	
53							
54	TOTAL - SITE DEVELOPMENT					\$40,760	
55							

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DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
REPUBLIC AVENUE ROADWAY						
INDIRECT COST						
GENERAL COND. / PERMIT / INS.						
General Conditions				Not Required		
Overhead & profit/fee & insurance				Incl above		
Permit				Assumed Waived		
SUBTOTAL						\$0
CONTINGENCIES/ESCALATION						
Design and pricing contingency	10.00%		40,760.00	4,076		
Escalation contingency	3.00%		44,836.00	1,345		
Construction contingency				By Owner		
SUBTOTAL						\$5,421
TOTAL - INDIRECT COST						\$5,421
TOTAL PROJECT COST						\$46,181

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WILLIAMS-CONE SCHOOL

1	G SITE PREP/DEVELOPMENT					
2						
3	G10 SITE PREPARATION & DEMOLITION					
4	<u>Site Clearing & Prep.</u>					
5	Mobilization and site prep	1	ea	12,500.00	12,500	
6	Temp fencing			Assumed Not Required		
7	Silt fence/erosion control, inlet protection	1	ea	3,000.00	3,000	
8	Make good green areas post construction	1	ea	2,500.00	2,500	
9	SUBTOTAL					\$18,000
10						
11	G20 SITE IMPROVEMENTS					
12						
13	<u>Main Entrance Driveway - Perkins St</u>	1,000				
14	Full depth patching near Perkins Street	1,000	sf	5.00	5,000	
15	SUBTOTAL					\$5,000
16						
17	<u>Main Entrance Driveway - Remainder of Driveway</u>	13,000	sf		-	
18	Maintenance - crack fill and sealcoat	13,000	sf	0.50	6,500	
19	New Road Markings	13,000	sf	0.10	1,300	
20	SUBTOTAL					\$7,800
21						
22	<u>Central Parking Area</u>	8,000	sf		-	
23	Maintenance - crack fill and sealcoat	8,000	sf	0.50	4,000	
24	New Road Markings	8,000	sf	0.10	800	
25	SUBTOTAL					\$4,800
26						
27	<u>Northwest Parking Area & Drive</u>	16,000	sf			
28	Full depth reclamation	16,000	sf	2.25	36,000	
29	Asphalt, 1" top course	100	tons	105.00	10,500	
30	Asphalt, 1" binder course	100	tons	95.00	9,500	
31	Curbing	1,400	lf	10.00	14,000	
32	New Road Markings	16,000	sf	0.10	1,600	
33	SUBTOTAL					\$71,600
34						
35	<u>Lower Parking Area & Drive</u>	13,700	sf			
36	Crack fill	13,700	sf	0.50	6,850	
37	Asphalt, 1-1/2" shim & overlay	141	tons	105.00	14,805	
38	New Road Markings	13,700	sf	0.10	1,370	
39	SUBTOTAL					\$23,025
40						
41	<u>Playground</u>	22,000	sf			
42	Full depth reclamation	22,000	sf	2.25	49,500	
43	Asphalt, 1.5" overlay	206	tons	105.00	21,630	
44	New Surface Markings	22,000	sf	0.10	2,200	
45	SUBTOTAL					\$73,330
46						
47	<u>Sidewalks & Main Entry Plaza</u>	3,900	sf		-	
48	Maintenance - crack fill and sealcoat	3,900	sf	0.50	1,950	
49	New Road Markings	3,900	sf	0.10	390	
50	Curbing	260	lf	assume existing to remain		
51	SUBTOTAL					\$2,340
52						
53	G30 CIVIL MECHANICAL UTILITIES					
54	Allowance for minor elevations adjustments to existing manhole/catch basin cover and graters	306	sf	0.50	153	
55	SUBTOTAL					\$153
56						
57	G40 ELECTRICAL UTILITIES					
58	No work in this section					

THE LOGAN COMPANY

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Maine School Administrative District 75,
Asphalt Assessment Study,
Maine

June 2, 2021

Assessment Study

	DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST	
<u>WILLIAMS-CONE SCHOOL</u>								
59	SUBTOTAL					\$0		
60								
61	G90 OTHER SITE CONSTRUCTION							
62	No work in this section							
63	SUBTOTAL					\$0		
64								
65	TOTAL - SITE DEVELOPMENT						\$206,048	
66								
67								
68	INDIRECT COST							
69								
70	GENERAL COND. / PERMIT / INS.							
71	General Conditions				Not Required			
72	Overhead & profit/fee & insurance				Incl above			
73	Permit				Assumed Waived			
74	SUBTOTAL					\$0		
75								
76	CONTINGENCIES/ESCALATION							
77	Design and pricing contingency	10.00%		206,048.00	20,605			
78	Escalation contingency	3.00%		226,653.00	6,800			
79	Construction contingency				By Owner			
80	SUBTOTAL					\$27,405		
81								
82	TOTAL - INDIRECT COST						\$27,405	
83								
84								
85	TOTAL PROJECT COST						\$233,453	

*** Pricing is based on the 2020 bids for Merrymeeting southern carpark project, along adjustments made by the Estimator due to economies of scale and current market conditions.

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Maine School Administrative District 75,
Asphalt Assessment Study,
Maine

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Assessment Study

DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
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WOODSIDE ELEMENTARY SCHOOL

1	G SITE PREP/DEVELOPMENT						
2							
3	G10 SITE PREPARATION & DEMOLITION						
4	<u>Site Clearing & Prep.</u>						
5	Mobilization and site prep	1	ea	10,000.00	10,000		
6	Temp fencing			Assumed Not Required			
7	Silt fence/erosion control, inlet protection	1	ea	2,500.00	2,500		
8	Make good green areas post construction	1	ea	2,000.00	2,000		
9	SUBTOTAL					\$14,500	
10							
11	G20 SITE IMPROVEMENTS						
12							
13	<u>Bus Lane & Exit Road</u>						
14	Maintenance - crack fill & full depth patching of potholes & topseal	18,000	sf	1.00	18,000		
15	New Road Markings	18,000	sf	0.10	1,800		
16	SUBTOTAL					\$19,800	
17							
18	<u>Concrete Area of Bus Lane & Exit Road</u>						
19	No work in this section						
20	SUBTOTAL					\$0	
21							
22	<u>Loading Area at Service Drive</u>						
23	Crack fill	2,500	sf		-		
24	Asphalt, 1.5" overlay course	23	tons	105.00	2,415		
25	New Road Markings	2,500	sf	0.10	250		
26	SUBTOTAL					\$3,915	
27							
28	<u>Southern Parking Area</u>						
29	Full depth reclamation	10,000	sf	2.25	22,500		
30	Asphalt, 1.5" overlay	94	tons	105.00	9,870		
31	New Road Markings	10,000	sf	0.10	1,000		
32	SUBTOTAL					\$33,370	
33							
34	<u>Northwest Parking Area</u>						
35	Maintenance - crack fill and sealcoat	11,000	sf	0.50	5,500		
36	New Road Markings	11,000	sf	0.10	1,100		
37	Curbing						
38	SUBTOTAL					\$6,600	
39							
40	<u>Northeast Parking Area</u>						
41	Maintenance - crack fill and sealcoat	12,000	sf	0.50	6,000		
42	New Road Markings	12,000	sf	0.10	1,200		
43	SUBTOTAL					\$7,200	
44							
45	<u>Playground</u>						
46	Full depth reclamation	9,000	sf	2.25	20,250		
47	Asphalt, 1.5" overlay	84	tons	105.00	8,820		
48	New Surface Markings	9,000	sf	0.10	900		
49	SUBTOTAL					\$29,970	
50							
51	<u>Newer pavement access driveway</u>						
52	No work in this section						
53	SUBTOTAL					\$0	
54							
55	<u>Service Drive</u>						
56	No work in this section						
57	SUBTOTAL					\$0	
58							

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Maine School Administrative District 75,
Asphalt Assessment Study,
Maine

June 2, 2021

Assessment Study

	DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST	
WOODSIDE ELEMENTARY SCHOOL								
59	<u>Sidewalk at Southern Parking</u>	1,700	sf		-			
60	Remove and dispose of existing asphalt	1,700	sf	1.50	2,550			
61	Asphalt, 2" top course	21	tons	105.00	2,205			
62	Asphalt, 1" binder course	11	tons	95.00	1,045			
63	Asphalt curbing				Assume Not Required			
64	Road Markings				Assume Not Required			
65	SUBTOTAL						\$5,800	
66								
67	<u>All Other Sidewalks</u>	5,390	sf		-			
68	Maintenance - crack fill and sealcoat	5,390	sf	0.50	2,695			
69	New Road Markings	5,390	sf		Not Required			
70	Curbing	510	lf		Not Required			
71	SUBTOTAL						\$2,695	
72								
73	G30 CIVIL MECHANICAL UTILITIES							
74	Allowance for minor elevations adjustments to existing manhole/catch basin cover and grates				Assumed Not Required			
75	SUBTOTAL						\$0	
76								
77	G40 ELECTRICAL UTILITIES							
78	No work in this section							
79	SUBTOTAL						\$0	
80								
81	G90 OTHER SITE CONSTRUCTION							
82	No work in this section							
83	SUBTOTAL						\$0	
84								
85	TOTAL - SITE DEVELOPMENT							\$123,850
86								
87								
88	INDIRECT COST							
89								
90	GENERAL COND. / PERMIT / INS.							
91	General Conditions				Not Required			
92	Overhead & profit/fee & insurance				Incl above			
93	Permit				Assumed Waived			
94	SUBTOTAL						\$0	
95								
96	CONTINGENCIES/ESCALATION							
97	Design and pricing contingency	10.00%		123,850.00	12,385			
98	Escalation contingency	3.00%		136,235.00	4,087			
99	Construction contingency				By Owner			
100	SUBTOTAL						\$16,472	
101								
102	TOTAL - INDIRECT COST							\$16,472
103								
104								
105	TOTAL PROJECT COST							\$140,322

*** Pricing is based on the 2020 bids for Merrymeeting southern carpark project, along adjustments made by the Estimator due to economies of scale and current market conditions.



Maine School Administrative District 75 Asphalt Assessment Study Report

Appendix 2: Freeport, ME Asphalt Project Bid Tab, March 2020

MEMORANDUM


TO: Peter Joseph, Town Manager
FROM: Adam Bliss, Town Engineer (ASB)
DATE: March 12, 2020
SUBJECT: FY 2021 Paving Bid Award Recommendation

This memorandum provides the bid results and award recommendation for asphalt paving during Fiscal Year 2021.

The Town sent a Request for Proposal to major asphalt paving contractors in the southern Maine region with seven bids received from qualified contractors. The invitation was also posted on the Town's website and was advertised in Construction RFP databases which Contractors subscribe to. The major asphalt paving item is for the Grant Road reconstruction project with the remaining work items for overlay paving of several Town roads. The unit prices received for the work indicate the project is budgeted appropriately.

Please note that the asphalt paving bids are based on estimated quantities of work, so each project or phase will be invoiced for the actual amount of work performed at the unit prices bid. The Town's paving contract includes an "escalator" provision that will modify the asphalt unit prices based on the average New England Selling Price of liquid asphalt as published weekly by the Maine DOT. This adjustment can go both up and down, but since it reduces risk to both the Contractor and the Town, it typically results in more competitive bid prices.

Crooker Construction, LLC was the low bidder for the Asphalt Paving, and I recommend that the Town award the FY 2021 asphalt paving contract to them for the unit prices submitted under the bidding contract provisions. Earl Gibson, Public Works Superintendent, works closely with Crooker's Paving Manager and has received assurance that the schedule requirements can be met predicated upon favorable weather conditions for paving work. Schedule requirements were specified in the invitation requiring all paving work be completed by September 30, 2020.



FREEPORT ASPHALT PAVING Project No. 20-03 Bid Results: Tue. 3/10/2020

Item	Unit	Quantity	All States Asphalt, Inc		Crooker Construction, LLC		Glidden Excavating & Paving, Inc	
			Bid Unit Price	Extended Item Price	Bid Unit Price	Extended Item Price	Bid Unit Price	Extended Item Price
Pavement surface, 9.5 mm HMA	Ton	7,000	\$79.50	\$556,500.00	\$74.95	\$524,650.00	\$101.50	\$710,500.00
Pavement binder, 19.0 mm HMA	Ton	2,700	\$74.50	\$201,150.00	\$65.25	\$176,175.00	\$83.75	\$226,125.00
Full depth reclaim, two passes	SY	15,100	\$1.65	\$24,915.00	\$2.00	\$30,200.00	\$3.15	\$47,565.00
Temporary Driveway Gravel	CY	Nominal	\$100.00	\$100.00	\$120.00	---	\$150.00	---
Gravel Shoulder Reclaim	CY	200	\$38.00	\$7,600.00	\$44.50	\$8,900.00	\$75.00	\$15,000.00
Gravel Reclaim for Road Shaping	CY	500	\$26.00	\$13,000.00	\$43.00	\$21,500.00	\$50.00	\$25,000.00
Total Extended Price				\$803,265.00		\$761,425.00		\$1,024,190.00

FREEPART ASPHALT PAVING Project No. 20-03 Bid Results: Tue. 3/10/2020

Item	Unit	Quantity	Pike Industries, Inc		Shaw Brothers Construction, Inc		Spencer Group Paving	
			Bid Unit Price	Extended Item Price	Bid Unit Price	Extended Item Price	Bid Unit Price	Extended Item Price
Pavement surface, 9.5 mm HMA	Ton	7,000	\$91.00	\$637,000.00	\$98.00	\$686,000.00	\$77.11	\$539,770.00
Pavement binder, 19.0 mm HMA	Ton	2,700	\$80.25	\$216,675.00	\$75.00	\$202,500.00	\$71.50	\$193,050.00
Full depth reclaim, two passes	SY	15,100	\$2.50	\$37,750.00	\$3.00	\$45,300.00	\$1.75	\$26,425.00
Temporary Driveway Gravel	CY	Nominal	\$61.00	\$61.00	\$75.00	---	\$100.00	\$2,500.00
Gravel Shoulder Reclaim	CY	200	\$64.00	\$12,800.00	\$45.00	\$9,000.00	\$39.00	\$7,800.00
Gravel Reclaim for Road Shaping	CY	500	\$50.00	\$25,000.00	\$30.00	\$15,000.00	\$27.40	\$13,700.00
Total Extended Price				\$929,286.00		\$957,800.00		\$783,245.00

FREPORT ASPHALT PAVING Project No. 20-03 Bid Results: Tue. 3/10/2020

St. Laurent & Son Paving				
Item	Unit	Quantity	Bid Unit Price	Extended Item Price
Pavement surface, 9.5 mm HMA	Ton	7,000	\$95.90	\$671,300.00
Pavement binder, 19.0 mm HMA	Ton	2,700	\$79.70	\$215,190.00
Full depth reclaim, two passes	SY	15,100	\$3.30	\$49,830.00
Temporary Driveway Gravel	CY	Nominal	\$75.00	---
Gravel Shoulder Reclaim	CY	200	\$50.00	\$10,000.00
Gravel Reclaim for Road Shaping	CY	500	\$35.00	\$17,500.00
Total Extended Price				\$963,820.00