

T/E SCHOOL DISTRICT PROPOSED TRAFFIC / CIRCULATION IMPROVEMENTS FEASIBILITY STUDY



VALLEY FORGE MIDDLE SCHOOL

VALLEY FORGE ELEMENTARY SCHOOL



CONESTOGA HIGH SCHOOL

TREDYFFRIN EASTTOWN MIDDLE SCHOOL

AUGUST 9, 2018

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EXECUTIVE SUMMARY

This study was prepared by Heckendorn Shiles Architects, Pennoni Associates, and Traffic Planning and Design. The intent of this study is to evaluate the feasibility associated with implementing the "Potential Physical Enhancements" identified in the July 7, 2017 Traffic Planning and Design (TPD) "School Vehicular Access and Circulation Study". The study reviews and evaluates the feasibility and relative costs and traffic benefit of these potential enhancements.

The study consists of the following schools:

- Conestoga High School
- T/E Middle School
- Valley Forge Middle School
- Valley Forge Elementary School

The intent of this study is to provide the Facilities Committee with:

- A qualitative analysis of Potential Physical Enhancements
- An evaluation of the Feasibility associated with implementing the individual Potential Physical Enhancements
- An actionable project plan (Basis-of-Design) for adding selected Physical Improvements to the TESD Infrastructure Study in order to construct improvements in the future (Summer '19 or beyond)

The budgets in the study are budgets not estimates. A revised budget and schedule is recommended to be prepared as additional details of the improvements are developed. Savings could be achieved by combining projects at schools if multiple improvements are desired. Should Tredyffrin Easttown School District elect to construct a proposed improvement in the study, further design development and analysis would need to take place.

CONESTOGA HIGH SCHOOL

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CONESTOGA HIGH SCHOOL

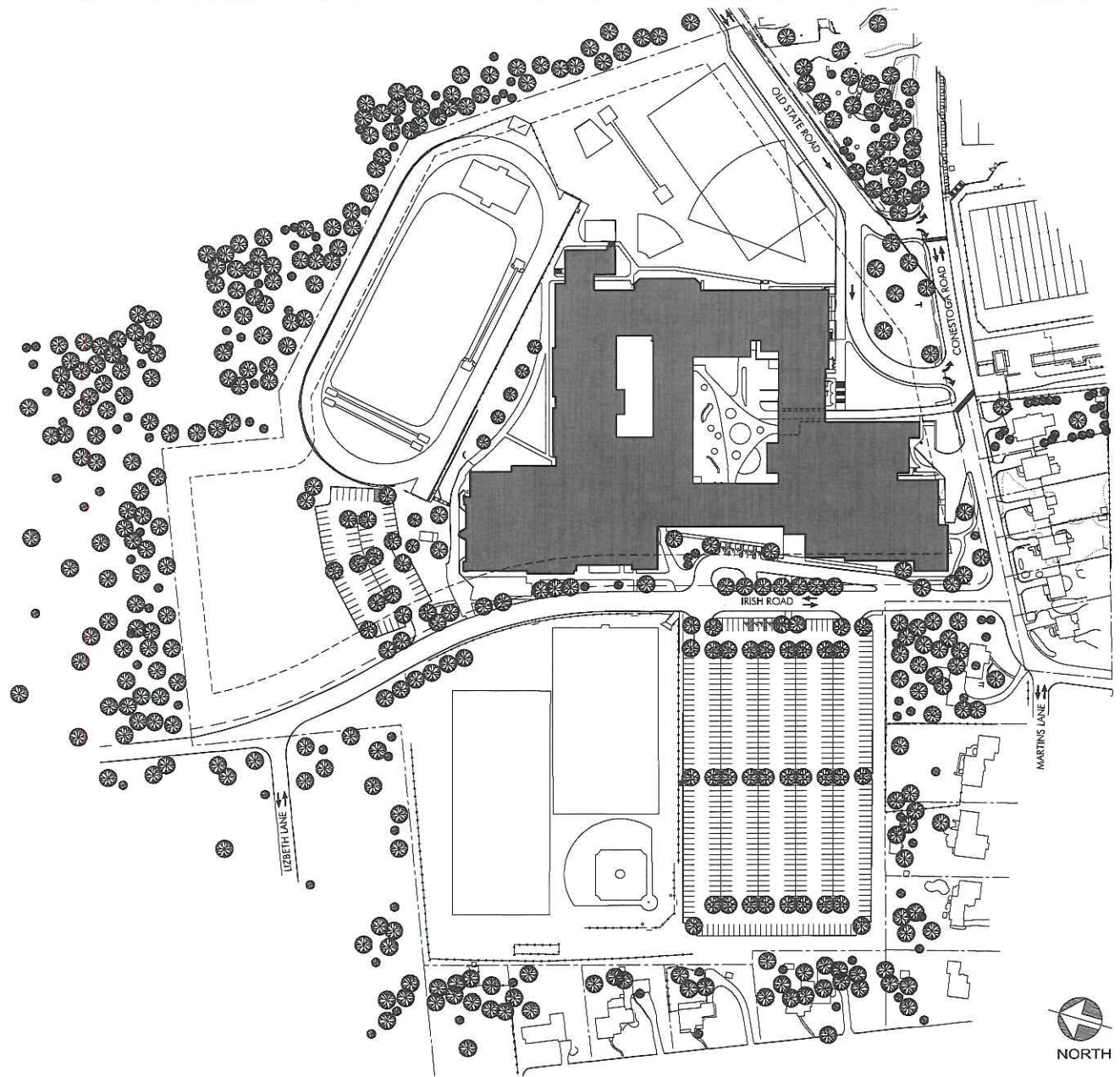
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AERIAL PHOTOGRAPH

CONESTOGA HIGH SCHOOL

EXISTING CONDITIONS

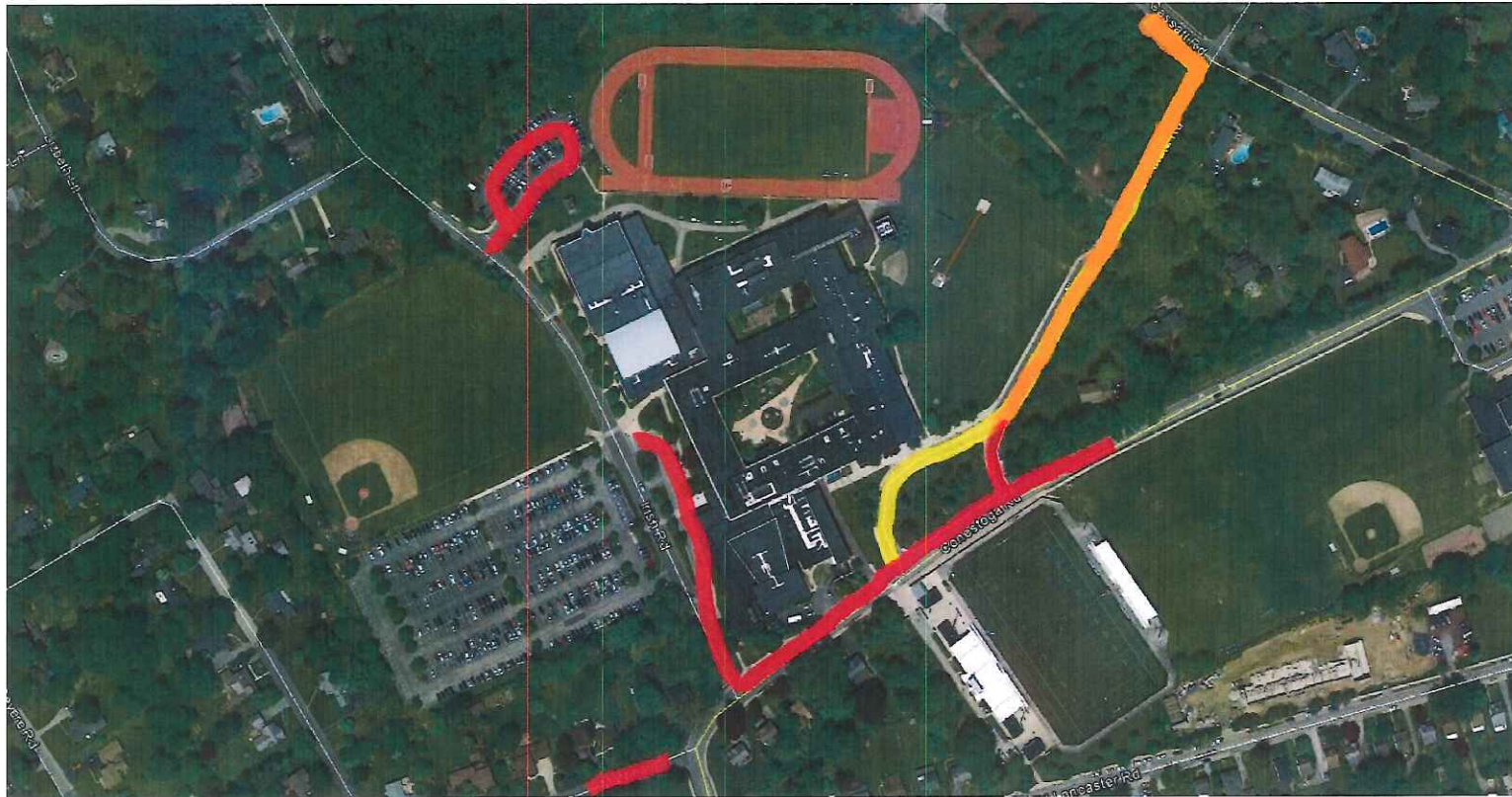


SITE PLAN



CONESTOGA HIGH SCHOOL

EXISTING CONDITIONS



BUSES



BUSES AND PASSENGER VEHICLES



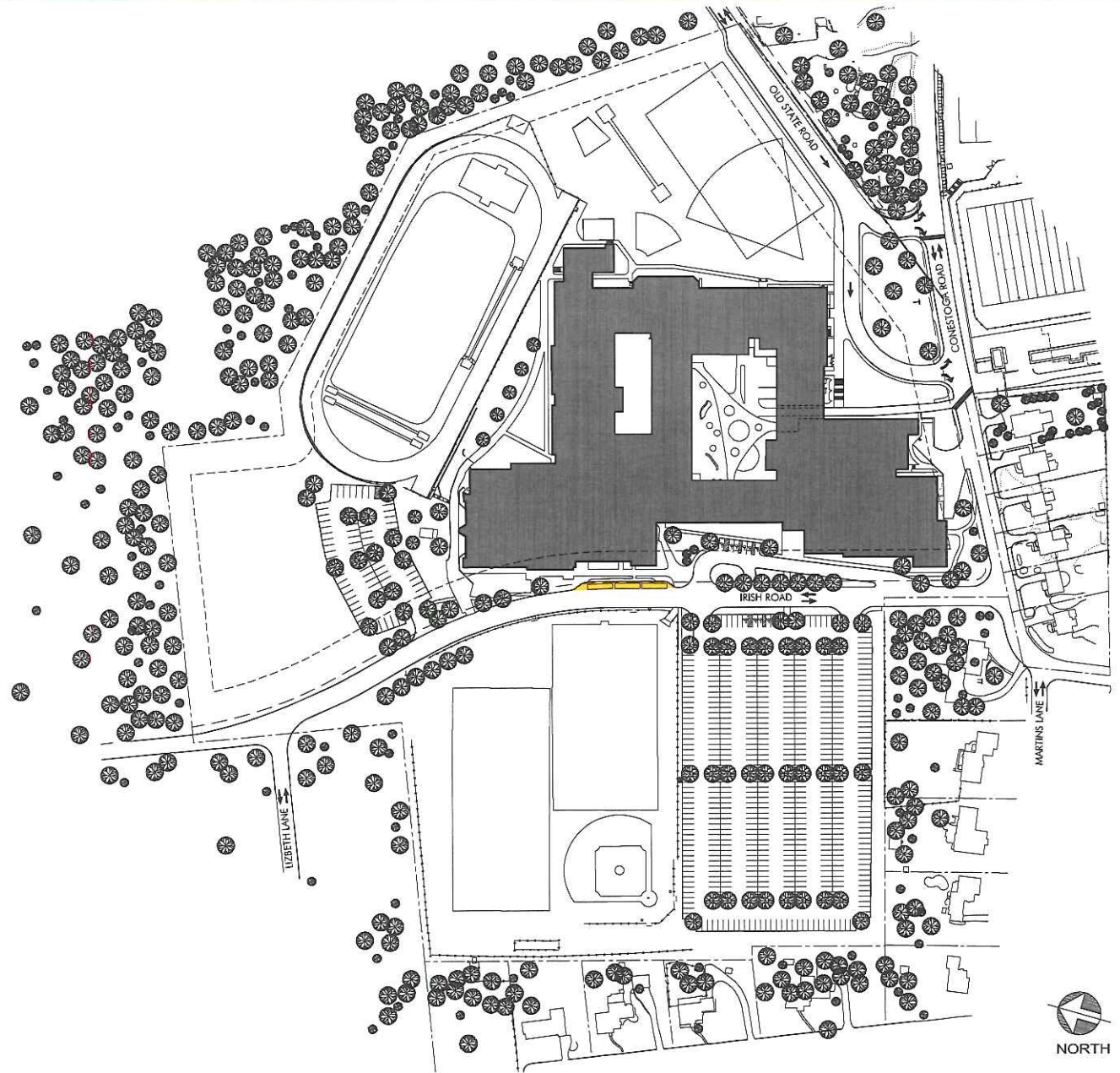
PASSENGER VEHICLES

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CONESTOGA HIGH SCHOOL

SPORTS BUS QUEUE

The Sports Bus Queue will create a lay-by area off of Irish Road in front of the Gym entrance to allow for the teams to load players and equipment on the buses in the afternoon, while allowing traffic to still move freely along Irish Road. This option requires grading for the lay-by and new sidewalk. A stormwater management system would need to be constructed to manage the additional impervious coverage. It will also require modifications to existing light standards, and trees.



PROPOSED PLAN

CONESTOGA HIGH SCHOOL

SPORTS BUS QUEUE



GOOGLE STREET VIEW IMAGES

SITE CONDITION



GOOGLE STREET VIEW IMAGES

SITE CONDITION

CONESTOGA HIGH SCHOOL

SPORTS BUS QUEUE

ZONING ANALYSIS

- Variance required for sidewalk in the buffer
- Township approvals for development, stormwater, and dedication of widened roads

TRAFFIC ANALYSIS

- Removes buses from student drop-off area
- Eliminates queued buses on Irish Road, thus improving traffic flow and reducing queues
- Improves queue capacity for drop-offs/pick-ups
- Improves pedestrian safety from the student parking lot
- Reduces congestion and queues along Irish Road
- Cost Benefit Assessment:
While this improvement will have a positive impact, the priority level should be considered medium since the sports buses are not the primary source of congestion during the arrival and dismissal time periods.

CONESTOGA HIGH SCHOOL

SPORTS BUS QUEUE

PROJECT DURATION

Preparation of construction documentation will take approximately 3-4 months. The permitting process will take approximately 4-6 months to receive Township and conservation district approvals. Bidding process will take approximately 2-3 months. Construction of the proposed improvements will take approximately 1-2 months. A revised budget and schedule is recommended to be prepared as additional details of the improvement are developed.

PROJECT BUDGET

ITEM	EST. COST
CONESTOGA HIGH SCHOOL	
SPORTS BUS QUEUE	
REMOVE - TREES	\$ 4,000
REMOVE - CONCRETE CURB	\$ 1,200
REMOVE - CONCRETE SIDEWALK	\$ 2,400
REMOVE AND RELOCATION - SITE UTILITIES	\$ 15,000
EARTHWORK/GRADING/FINE GRADING	\$ 25,000
STORMWATER MANAGEMENT	\$ 40,000
NEW ASPHALT - FULL DEPTH	\$ 16,500
ASPHALT PAVING - MILL and OVERLAY	\$ 9,500
CONCRETE SIDEWALK PAVING	\$ 15,000
NEW CONCRETE CURB	\$ 12,000
RETAINING WALL	\$ 40,000
NEW LIGHTING	\$ 25,000
EROSION & SEDIMENTATION CONTROLS	\$ 15,000
GENERAL CONDITIONS (15%)	\$ 33,090
CONTINGENCY (20%)	\$ 44,120
SOFT COSTS - DESIGN, ENG., PERMIT.	\$ 54,000
Subtotal	\$ 351,810

* Cost estimate does not include property/Right-of-Way acquisition

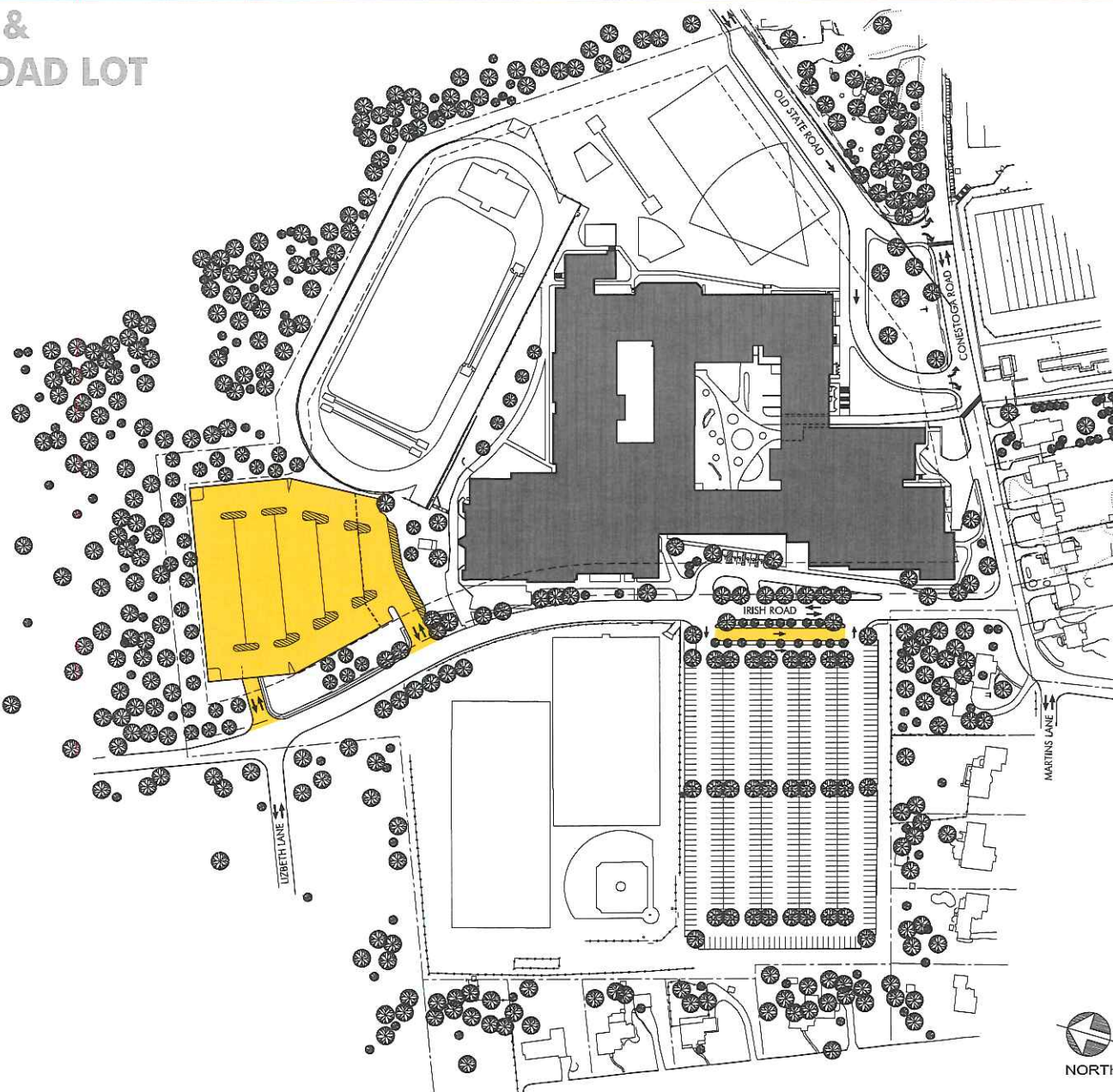
CONESTOGA HIGH SCHOOL

NORTH LOT PARKING DECK & DROP-OFF LANE AT IRISH ROAD LOT

The proposed parking deck would be at the elevation of the existing North lot extended north into the adjacent treed area, which will have lower level parking on-grade accessed from Irish road. The existing North lot will be tied into the new construction, and will use the current driveway entry for accessing the upper parking deck. The new deck and on-grade parking will provide 434 spaces, 366 new additional spaces to the current total of 593 at Conestoga High School. A stormwater management system would need to be constructed to manage the additional impervious coverage of the new parking decks.

A drop off lane for South bound traffic on Irish Road would be created in the existing main parking lot. The first row of parking would be removed, and an island with a lane would be constructed. Modifications to the existing island and plantings would take place. The existing crosswalk to the main entry would remain. A loss of 11 standard spaces, and 6 accessible spaces would happen to create this option. The loss of spaces would be accommodated with the additional spaces in the new parking at the North lot area, making the new additional spaces count at 349, giving an overall new total of 942 spaces.

PROPOSED PLAN



CONESTOGA HIGH SCHOOL

NORTH LOT PARKING DECK & DROP-OFF LANE AT IRISH ROAD LOT

ZONING ANALYSIS

- Subject to township parking structure design requirements
- Variance required for exceeding maximum building cover
- Variance required for exceeding maximum impervious cover
- Variance required for less than the required distance between accessways
- Variance/Special Exception for more than two driveways in the buffer
- Township approvals for development and stormwater
- PADEP NPDES permit required greater than (1) acre of disturbance
- 593 existing parking spaces, 1,280 required, 942 parking spaces proposed

TRAFFIC ANALYSIS

- Segregates traffic, improving traffic flow into two (2) separate student drop-off areas
- Improves pedestrian safety from the student parking lot
- Improves queue capacity for drop-offs/pick-ups
- Increased parking capacity
- Reduces congestion and queues along Irish Road
- Cost Benefit Assessment:
This improvement is the most costly of the options, but the positive benefits of reduction of congestion along Irish Road and Conestoga Road, improved safety, and an increase in parking capacity makes it a high priority.

CONESTOGA HIGH SCHOOL

NORTH LOT PARKING DECK & DROP-OFF LANE AT IRISH ROAD LOT

PROJECT DURATION

Preparation of construction documentation will take approximately 4-6 months. The permitting process will take approximately 8-10 months to receive township, conservation district, and PADEP approvals. Bidding process will take approximately 2-3 months. Construction of the proposed improvements will take approximately 10-14 months. A revised budget and schedule is recommended to be prepared as additional details of the improvement are developed.

PROJECT BUDGET

ITEM	EST. COST
CONESTOGA HIGH SCHOOL	
PARKING STRUCTURE NEAR EXISTING NORTH PARKING LOT	
REMOVE - TREES	\$ 4,000
SITE CLEARING	\$ 15,000
REMOVE - CONCRETE CURB	\$ 6,000
REMOVE - ASPHALT PAVING	\$ 33,000
REMOVE AND RELOCATION - SITE UTILITIES	\$ 60,000
EARTHWORK/GRADING/FINE GRADING	\$ 150,000
STORMWATER MANAGEMENT	\$ 400,000
PARKING STRUCTURE	\$ 3,500,000
NEW ASPHALT - FULL DEPTH	\$ 95,000
NEW CONCRETE CURB	\$ 35,000
PAVEMENT STRIPING	\$ 12,000
NEW LIGHTING	\$ 150,000
EROSION & SEDIMENTATION CONTROLS	\$ 50,000
GENERAL CONDITIONS (15%)	\$ 676,500
CONTINGENCY (10%)	\$ 451,000
SOFT COSTS - DESIGN, ENG., PERMIT.	\$ 335,000
Subtotal	\$ 5,972,500

* Cost estimate does not include property/Right-of-Way acquisition

CONESTOGA HIGH SCHOOL

NORTH LOT PARKING DECK & DROP-OFF LANE AT IRISH ROAD LOT

PROJECT DURATION

Preparation of construction documentation will take approximately 2-3 months. The permitting process will take approximately 4-6 months to receive Township and conservation district approvals. Bidding process would be in conjunction with parking deck improvement. Construction of the proposed improvements will take approximately 1-2 months. A revised budget and schedule is recommended to be prepared as additional details of the improvement are developed.

PROJECT BUDGET

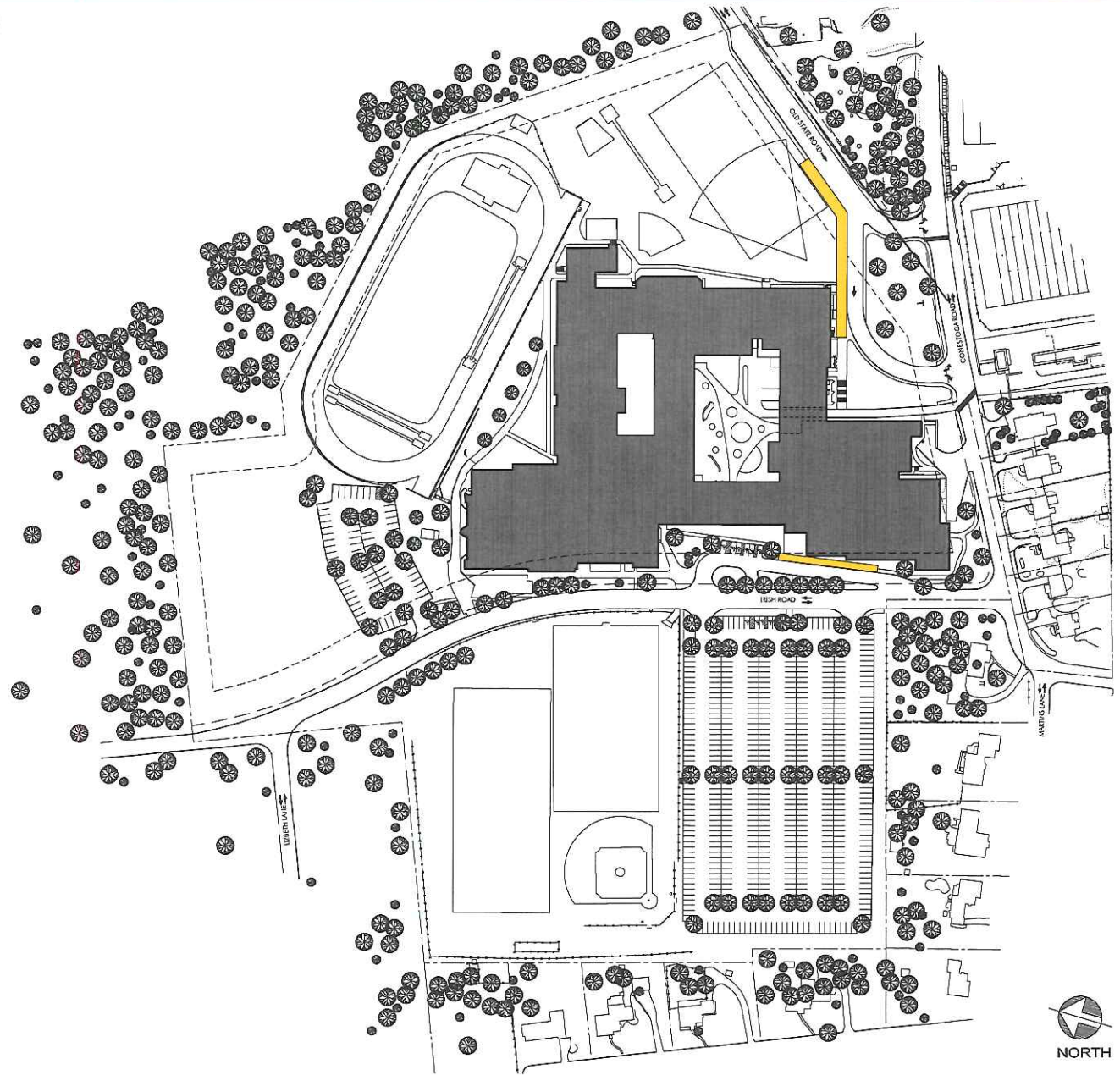
ITEM	EST. COST
CONESTOGA HIGH SCHOOL	
DROP OFF LANE IN IRISH ROAD LOT	
REMOVE - TREES	\$ 1,600
REMOVE - CONCRETE CURB	\$ 1,000
REMOVE - ASPHALT PAVING	\$ 1,000
EARTHWORK/GRADING/FINE GRADING	\$ 10,000
STORMWATER MANAGEMENT	\$ 35,000
NEW ASPHALT - FULL DEPTH	\$ 4,500
ASPHALT PAVING - MILL and OVERLAY	\$ 8,000
CONCRETE SIDEWALK PAVING	\$ 7,500
NEW CONCRETE CURB	\$ 5,000
PAVEMENT STRIPING	\$ 2,500
EROSION & SEDIMENTATION CONTROLS	\$ 5,000
GENERAL CONDITIONS (15%)	\$ 12,165
CONTINGENCY (20%)	\$ 16,220
SOFT COSTS - DESIGN, ENG., PERMIT.	\$ 28,000
Subtotal	\$ 137,485

* Cost estimate does not include property/Right-of-Way acquisition

CONESTOGA HIGH SCHOOL

COVERED DROP-OFF AREAS

Canopies for covered drop off locations would be constructed at both the main entry driveway, and the bus lobby driveway. The canopies would be installed over existing sidewalk to facilitate the drop off of multiple students at one time. The bus lobby canopy would be extended up a portion of Old State Road to allow parents to drop students off then exit before entering the bus loop. The canopy at the bus lobby would have to be constructed to allow the height of a bus to pass under. A stormwater management system would need to be constructed to manage the additional impervious coverage.



PROPOSED PLAN



CONESTOGA HIGH SCHOOL

COVERED DROP-OFF AREAS

ZONING ANALYSIS

- Variance required for exceeding maximum building cover
- Variance required for exceeding maximum impervious cover
- Township approvals for development and stormwater

TRAFFIC ANALYSIS

- No traffic benefit
- Cost Benefit Assessment:
 - Low priority level from traffic and cost perspectives.

CONESTOGA HIGH SCHOOL

COVERED DROP-OFF AREAS

PROJECT DURATION

Preparation of construction documentation will take approximately 2-3 months. Permitting 4-6 months to receive township and conservation district approvals. Bidding process will take approximately 2-3 months. Fabrication of the aluminum canopy system will take approximately 10-12 weeks. Construction time for the proposed improvement would take approximately 1-2 months. A revised budget and schedule is recommended to be prepared as additional details of the improvement are developed.

PROJECT BUDGET

ITEM	EST. COST
CONESTOGA HIGH SCHOOL	
CONSTRUCT COVERED DROP-OFFS	
PREFABRICATED ALUMINUM CANOPY SYSTEM	\$ 439,500
CONCRETE FOUNDATIONS	\$ 9,600
LIGHTING	\$ 25,000
STORMWATER MANAGEMENT	\$ 65,000
REMOVE - CONCRETE CURB	\$ 2,400
REMOVE - CONCRETE SIDEWALK	\$ 18,525
CONCRETE SIDEWALK PAVING	\$ 51,525
NEW CONCRETE CURB	\$ 24,000
EROSION & SEDIMENTATION CONTROLS	\$ 5,000
GENERAL CONDITIONS (15%)	\$ 96,082
CONTINGENCY (20%)	\$ 128,110
SOFT COSTS - DESIGN, ENG., PERMIT.	\$ 70,000
Subtotal	\$ 713,410

* Cost estimate does not include property/Right-of-Way acquisition

CONESTOGA HIGH SCHOOL

SUMMARY

Conestoga High School Zoning Summary							
Tredyffrin Township							
Zoning District: R1 - Residential							
Site Area							
	Acres	Square Feet					
Lot Area	19.90	866844					
Description	Current Ordinance Section	Ordinance Required					
			Existing	Sports Bus Queue	Covered Drop-offs	Drop-off Lane in Irish Road Lot	New Parking Area Adjacent to North Lot
Use Regulations	208-21(B)	Public Agency (School)	School	School	School	School	School
Min. Lot Area	208-23(A)	80,000 SF	>80000 SF	-	-	-	-
Min. Lot Width	208-23(A)	200 FT	> 200 FT	-	-	-	-
Max. Building Coverage	208-23(B)	10%	25.37%	-	26.06%	-	34.11%
Max Impervious Coverage	208-23(C)	25%	46.27%	-	46.34%	46.29%	53.79%
Min. Front Yard	208-23(D)	50 FT	Non-Conf.	-	-	-	-
Min. Side Yard, 2 Req.	208-23(E)	40 FT	> 40 FT	-	-	-	-
Min. Rear Yard	208-23(F)	50 FT	Non-Conf.	-	-	-	-
Max. Height	208-23(G)	35 FT	-	-	-	-	-
Min. Buffer to Residential	208-23(H)	25 FT	Non-Conf.	-	-	-	-
Buffer Use	208-102(B)(2)	No Sidewalk	Non-Conf.	-	-	-	-
One Entrance/ Exit in Buffer	208-102(B)(4)	More than one *	Non-Conf.	-	-	-	>2*
No More Than Two Accesses	208-102(C)(1)	300 FT Separation Req'd	-	-	-	-	Yes
Off-Street Loading Space	208-104	Provided on the Lot	Yes	-	-	No	-
Add'l On-Site Impervious					606 SF	200 SF	65180 SF
Add'l Off-Site Impervious				2230 SF			
Basin Footprint (5:1)				446 SF	121 SF	40 SF	13036 SF

Existing Conditions

- 19.90 AC Lot Area
- R1-Residential Zoning District
- (8) nonconformities
- Irish Road Parking Lot and Athletic Fields
 - o 9.50 AC Lot Area
 - o R1-Residential Zoning District

Variance Required

* Special Exception Required

CONESTOGA HIGH SCHOOL

SUMMARY

BUDGETS:

SPORTS BUS QUEUE	\$351,810
NORTH LOT PARKING DECK & DROP-OFF LANE AT IRISH ROAD LOT	\$5,972,500 \$137,485
COVERED DROP-OFF CANOPY	\$713,410