

5-Point Intersection Safety & Capacity Improvement Study

Five Points Study: DTC Monroe Street Garage Feasibility Study/Master Plan

Introduction

The 5-Point Intersection Study is evaluating multiple transportation improvement alternatives to address safety and capacity at and near the intersection of MLK Boulevard, Maryland Avenue, and Madison Street in Wilmington, Delaware.

As part of the review and assessment of opportunities and constraints, a critical element was identified that needed further study: the current and planned operations of the Delaware Transit Corporation (DTC) Operations and Maintenance facility at the intersection of Monroe Street and MLK Blvd. DTC operations also include separate lots for bus parking, employee parking, paratransit maintenance, and an electric bus charging facility.

It has been determined that any alternative that changes Monroe Street between MLK Blvd and Maryland Avenue from its current one-way configuration to a two-way configuration would severely impact DTC's Bus Operations, which use Monroe Street as a key component of its bus staging and deployment associated with buses from Lots 1, 2, and 6.

Two of the 5-Point Study improvement alternatives provide for two-way traffic on Monroe Street and therefore would create these transit operational issues; however, if all bus maintenance activities associated with Lots 1,2 and 6 can be oriented to allow maintenance operations to not rely on public streets, the transit operational concerns of a two-way configuration on Monroe Street can be mitigated.

It was recommended that the development of potential DTC Monroe Site layout scenarios was needed to help evaluate the study improvement alternatives. DTC has indicated that the evaluations should also be beneficial to help support maintenance building upgrade/replacement decisions, since the existing building is 40+ years old.

Below is a summary of the Feasibility Study Approach and Recommendations

Site Visit – February 26, 2020

On February 26, 2020, RK&K staff performed a site visit at the DTC Monroe Street facilities.

The site visit was used to understand daily site activities, evaluate facility conditions, identify any issues/constraints, and capture photographic images. As part of the evaluation, RK&K would also be considering site constraints including property ownership, traffic, and community impacts and expectations. Facilities evaluations were based primarily on what could be readily observed as well as from meetings with facilities maintenance personnel and division staff.

A summary of the site visit is found in **Attachment A**.

5-Point Intersection Safety & Capacity Improvement Study

Architectural Massing Study

Based upon the initial site visit, interviews with personnel, and utilizing a Best Practices computer program created by HDR Maintenance Design Group, RK&K developed a conceptual building program establishing optimal building square footage and massing models that determined operational spatial relationships, interior building horizontal and vertical circulation and optimal site orientation and access. The modeling specifically addressed a multi-story, structured parking building solution for the facility to optimize the existing site(s). The assessment also considered building and site layouts that maximize public streetscape and access (such as improved bike and pedestrian streetscape, access and safety).

Work Session – April 15, 2020 and SiteOPS

Based upon the input received at the February 26th site visit and the recommendations from the architectural massing study, a site optimization tool SiteOPS was used to analyze existing topography, site features, parking configurations, building locations and order of magnitude site costs. A virtual GoToMeeting with DTC staff was held to allow participants to explore site planning “what-if” scenarios and reconfigurations in real time to immediately understand potential impacts. Usually this workshop is held on site and in person; however, the workshop was held as a virtual meeting because of the pandemic.

Four site models/layouts were ultimately developed in the SiteOPS program for possible site layouts to meet the program requirements. SiteOPS “optioneering” software allowed conceptual design of site layouts in a fraction of the time over traditional drafting methods. Layouts were dynamically generated in the interactive session instead of through an iterative process of passing drawings back and forth over weeks or even months.

The SiteOPS process allowed site elements (roads, parking lots, buildings, landscape areas, etc.) to be rapidly moved around the site or between sites to compare the impact of layouts in a matter of minutes. Parking lots with hundreds of spaces were redrawn in a matter of seconds. Grading decisions, like determining suitability for grading out a slope or installing a retaining wall were seen in real time. Sites were visualized in 3D to better understand the context in which the sites exist. All the “what-if” scenarios were rapidly compared to arrive at an optimal site solution that met DTC’s needs all while optimizing cost and evaluating a site’s constraints.

The presentation and summary of the work session is found in **Attachment B**.

Results

The results of the DTC Monroe Maintenance Facility Study are shown below. Cost estimates for a new Maintenance Building, Parking Structure(s), and site construction costs ranged from \$45,960,000 to \$99,725,000.

5-Point Intersection Safety & Capacity Improvement Study

DTC Monroe Facility						
Cost Estimates						
16-Jun-20						
	Concept 1		Concept 3		Concept 4	Concept 4
	Bus Parking on Top	Bus Parking on Bottom	Bus Parking on Top	Bus Parking on Bottom		w/ Employee Garage
Buildings	\$36,130,890	\$36,130,890	\$36,130,890	\$36,130,890	\$36,130,890	\$36,130,890
Parking Structure	\$30,921,660	\$30,921,660	\$25,821,180	\$25,821,180	\$0	\$17,123,040
80% Solar Panel Cover	\$21,859,200	\$0	\$18,899,100	\$0	\$0	\$0
Other Site Costs	\$10,813,250	\$10,812,450	\$12,008,830	\$12,007,930	\$9,829,110	\$9,831,070
Total Cost Estimate	\$99,725,000	\$77,865,000	\$92,860,000	\$73,960,000	\$45,960,000	\$63,085,000
Bus Parking Spaces	110 +/-	120 +/-	146 +/-	127 +/-	140 +/-	140 +/-
Employee Parking Spaces	520 +/-	380 +/-	460 +/-	400 +/-	159 +/-	300 +/-
*Assumes Solar Panels not needed for Bus Parking on Bottom since buses will be covered, but could be added later for energy reasons						
*If Concept 4 is modified to allow two way access to Lot 1 from Chestnut Street, then Bus Parking Spaces are reduced 5-10 spaces						
*Delmarva needs 225 +/- Employee Parking Spaces						
*DTC needs 100+ Employee Parking Spaces						
*Total Cost Estimate does not include real estate costs						

A summary of results of the feasibility study are found in **Attachment C**, as presented to the DTC Working Group on June 15, 2020. The group has not identified a preferred concept, recognizing that many factors, both now and in the future, may affect decisions for future funding, design, and implementation.

Attachment A
Summary of February 26, 2020 Site Visit



DTC Monroe Street Garage Fesibility Study/Master Plan

Project Kick-off Meeting

February 26, 2020 | 1:00 PM -4:00 PM

DTC Administration Office

119 Lower Beech Street, Wilmington, DE 19805

MEETING NOTES

1. Trolley Square Conference Room Meeting

I. Introductions, Points of Contact

- Attendees Introduced themselves (Attendee List Attached)
- Dave Gula is WILMAPCO PM; Mark Tudor is Consultant PM

II. Project Purpose

- Scope and Schedule Review (Handout): Future dates were set as follows
 - Work Session: March 25th; 1-4PM; RK&K Wilmington Office
 - Progress Meeting/Conf Call: April 15th in the Afternoon
- SiteOPS Demonstration – Charlie Mitchell led a demo of SiteOPS

III. Programming Questions (Questionnaire)

- Denise led a discussion on the questionnaire (Handout). Notes are combined with the discussions that occurred during the Site Tour (below)

2. Monroe Street Site Tour

Operations

- Phasing: Consider phasing of the development, not to disrupt operations.
- Circulation: Two-way traffic on Monroe street may affect the current site circulation.
- Bus service lane, vault, fueling and wash creates back-ups and prevents in service buses being able to access lot. Buses in service lane stick out in lot travel lane restricting drive-by access for other buses returning to the garage.
- Daily Bus Cycle Sequence: Vault > Fuel > Clean > Wash > Park, One service lane bay all buses cycle through at once beginning at 6:00 PM each day.
- Vault: Cash collection will continue
- Internal circulation model preferred only for parking buses and the service lanes, preferably covered parking to avoid buses idling.

Garage Bus capacity and future service requirements

- No. of buses
 - Conventional: 115 – 100 (40ft), 10 (45ft), 3 (29 ft)/5 (30ft), 102 in wide
Fixed Route Buses Only
Future Fleet – Maybe 125?!
 - Electric: 8
10 or more in near future
 - Articulated: 0
- Maximum Capacity: Current site is designed for 100 35 ft long and 96 in wide buses
- Peak pull-out/in: 85 buses
- DTC Planning to look at a fleet size for a 10-minute bus interval
- Electric or Hydrogen Buses in the future which may require Hydrogen storage, Chargers etc.

Current Operations and Maintenance Facility

- 24/7 facility, Operations and maintenance same union
- 65 maintenance Staff, 25-30 during shift that overlaps
- 6 Maintenance Offices on 1st Floor, 4 Operations office on 2nd Floor
- 85 Bus operators report during peak periods
- Conference /Training room exists
- Operator/Maintenance Breakrooms

Programming Requirements and IssuesMaintenance and Service Bays

- Bus maintenance bays are too narrow and short in length for current bus sizes, affects servicing and safety (tire change, lift capacity,).
- Parts shop too small
- Only bay 1A supports 45ft long bus and with the lift capacity.
- Future lifts: 2/3 post lifts, 1/3-wheel lifts
- 2 fuel tanks
- Back in bays preferred for maintenance.
- Electric Buses can pull in or back on (ports on both ends)
- One transformer / charger per bus
- Mid-County Facility good example of efficient maintenance shop layout

Storage:

- Not enough space in facility to store tires and their servicing. The repair /tools and storage spaces are disconnected. At one time 50-60 new tires – 50-60 old changed tires – refurbished – contractor to pick up.
- Parts Shop and storage split among two floors due to limited space
- Inadequate room for storage of Tools for cleaning, washing, repair etc.
- Storage space required for diagnostic boards

Administration (Air-conditioned spaces)

- Tech library for manuals, training manuals
- Training/conference room with a desktop connected to internet > dedicated preferred
- Operations dispatch prefers windows overlooking the bus yard
- Copier room
- Trim room/Farebox repair secured (expensive) and fare boxes Air conditioned
- Future staff: Safety office, facilities staff, data analytics people, performance management staff

Breakroom/Lockers

- The current breakroom for maintenance is underutilized/inadequate
- The Operators break room and dispatch area enough but need more full lockers and restrooms.
- Lockers/showers - No showers but more full lockers needed
- Kitchenette with vending machine
- Currently operator and maintenance room separated but could be combined.

General Programming comments and issues

- The maintenance floor lacks thermal comfort, good day lighting and ventilation; during summer and busy working hours the indoor air quality and thermal comfort are affected.
- Ceiling height too low, crammed up when bigger buses are inside. Taller, Wider and Open design preferred.
- Noise buffer for offices from the maintenance and circulation spaces
- Operations dispatch prefers windows overlooking the bus yard
- Less space in conduits- MEP issues

Site – parking - layout

- Approx. 125 staff and support vehicle parking spaces
- Operational Vehicles Also require Parking
- DPL Parking Spaces: Need to Determine
- Need for long term storage exists but quantity of buses varies
- Prefer Concrete surface for circulation area
- White line on pavement area for maintenance circulation. With all buses on site (at night), can't pull out of maintenance bays.
- Unable to secure main lot at night due to configuration.
- There are some large utilities passing through the site (Look into GIS Data)
- Lots 4,3,2,5 relocate to lots 1,6, developer site

3. Recap/Next Steps

Action Items

- DTC Planning to determine Fleet Size for 10 Min Bus Intervals/Headway
- Bill Thatcher to compile Mid-County Plans and provide to RK&K
- Mark Tudor to schedule Work Session for March 15th from 1-4PM at RK&K's Wilmington Office
- Mark Tudor to schedule Progress Meeting on April 15th in the Afternoon



DTC Monroe Street Garage Fesibility Study/Master Plan

Project Kick-off Meeting

February 26, 2020 | 1:00 PM -4:00 PM

DTC Administration Office

119 Lower Beech Street, Wilmington, DE 19805

Sign In Sheet

	NAME	AGENCY	EMAIL	PHONE
X	John Sisson	DTC	john.sisson@delaware.gov	
X	Bill Thatcher	DTC	bill.thatcher@delaware.gov	
X	Alan Bowser	DTC	alan.bowser@delaware.gov	
X	Tigist Zegeye	WILMAPCO	tzegeye@wilmapco.org	
X	Dave Gula	WILMAPCO	dgula@wilmapco.org	
X	Mark Tudor	RK&K	mtudor@rkk.com	
X	Denise Watkins	RK&K	dwatkins@rkk.com	
X	Steve McCarthy	RK&K	smccarthy@rkk.com	
X	Charlie Mitchell	RK&K	cmitchell@rkk.com	
X	Sminu Sudhakaran	RK&K	ssudhakaran@rkk.com	
	Charles Megginson	DTC	charles.megginson@delaware.gov	
	Rich Paprcka	DTC	rich.paprcka@delaware.gov	

Attachment B
April 15, 2020 Work Session Presentation and Summary

Work Session
April 15, 2020

DTC Monroe Street Feasibility Study/ Master Plan



Work Session Agenda:

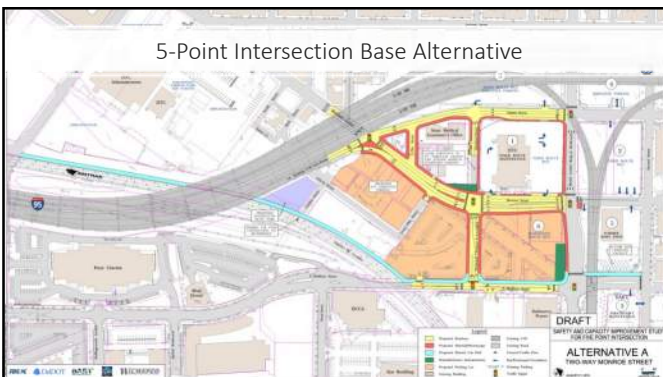
- Project to Date
- Objectives for Site and Building program
- Concepts
- Building Program
- Next Steps

Project To Date

- Since Kick Off meeting/ site visit on February 26, 2020
 - Developed proposed building program
 - Developed Option One: Decking over Lot 1 and Lot 6; Surface Parking on lot west of Chestnut Extended
 - Explored Option Two: Decking over Lot 6 and lot west of Chestnut Extended; Surface Parking on Lot 1
 - Developed Option Three: Decking over Delmarva and Developer lots west of Chestnut St; Surface parking Lots 2 and 6



5-Point Intersection Base Alternative



Objectives of Study

from site visit on February
26, 2020

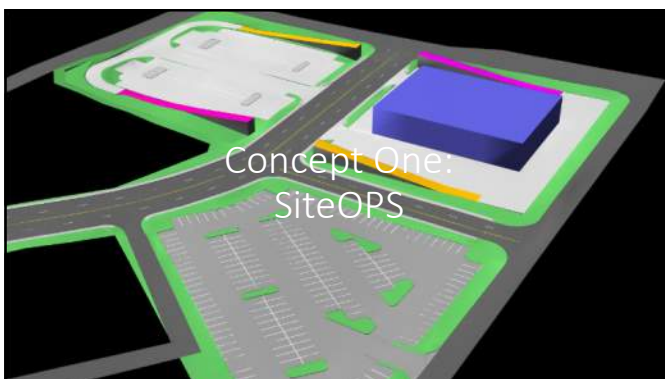
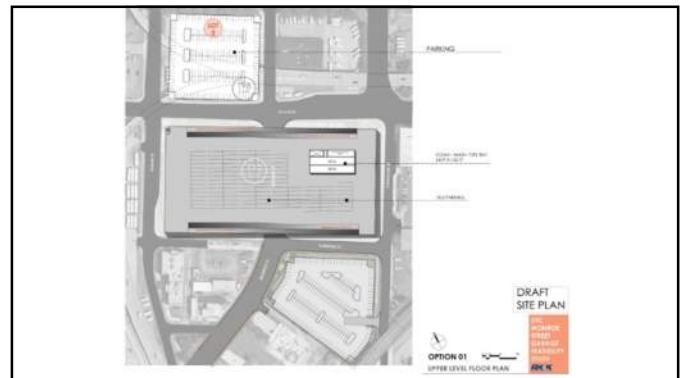
- **Site Circulation / Parking**
 - Address site circulation once Monroe St. becomes 2 way divided
 - Separate bus park, vault, fuel/wash from maintenance traffic
 - Provide parking for 125 +/- buses (preferably in one area)
 - Provide covered parking for buses
 - Provide parking for DTC employees and support vehicles
 - Provide parking for Delmarva employees
 - Consider decked structure
- **Building Program**
 - Consider phasing
 - Increase Maintenance bay widths
 - Provide more tire storage (interior) next to work area
 - Provide additional Break Room and Locker Room area
 - Provide additional support space for offices (copy, training,)

Three Concepts:

- Concept 1: Deck Over Lot 1 and Lot 6
- Concept 2: Deck Over Lot 6 and Lot West of Chestnut
- Concept 3: Deck Over Lot west of Chestnut and Rybold property

Concept 1

Provide Deck over Lot 1 and Lot 6 (in phased construction)
 Maintenance Building on Lower Level Lot 6
 Fuel/ Wash / Vault on Upper Level Deck
 Bus Parking on Upper Level Deck
 2 sets of ramps to circulate without crossing Monroe Street
 Surface parking for DTC employees on Lot 1, Delmarva employees Lot w of Chestnut, DTC support vehicles on Lot 2



Concept One: Phasing

- Monroe Street Operations/Maintenance maintained during construction
- Most aspects of Transportation Grid Reconfiguration will likely need to be constructed before new the DTC Building/Garage construction is started
- Challenges will be access along Monroe Street and parking (bus and employee)
- Construction Timeline: Approximate 24 – 36 months completion

Concept One: Phase 1

Current to Remain Operational	New Operational	Construction 18-24 Months	Notes
Lot 1: DTC Maintenance		Monroe Street Realignment	How to access existing Maintenance facility while Monroe St is being realigned?
Lot 2: Bus Parking		West Chestnut Street extension	
Delmarva Parking (current lot west of Chestnut)		Lot 6: Construction of new DTC Maintenance Facility and Deck Phase One (on Lot 6 only)	Bus Parking on Lot 6 to be temporarily relocated
		West Chestnut property retained and optional sewer outfall utility relocation (currently used for Delmarva employee parking)	Delmarva Employee Parking temporarily relocated



Concept One: Phase 2

Current to Remain Operational	New Operational	Construction 12-18 Months	Notes
	Monroe Street Realignment	Lot 1: Demolition of existing DTC Maintenance Facility Construction of Surface Parking, access ramps and deck for new DTC Maintenance facility (Phase two)	Bus Parking to be temporarily relocated (Deck not yet accessible)
Lot 2: Bus Parking	West Chestnut Extension		
	New DTC Maintenance Facility Phase One (Lower Level only)		New Wash/ Fuel not yet accessible on new deck/ Wash/ Fuel off site?
	West Chestnut property surface parking (Delmarva Employees)		



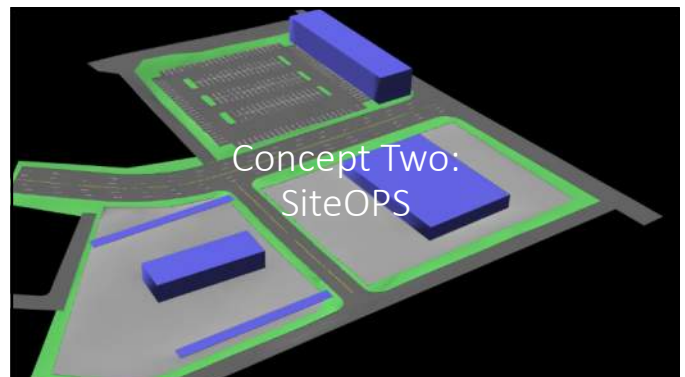
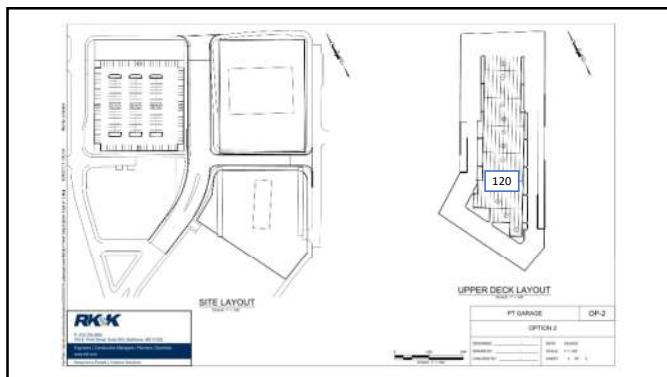
Concept One: Phase 3

Current to Remain Operational	New Operational	Construction 4 - 6 Weeks	Notes
	Monroe Street Realignment	Lot 2: Resurface and rescape	
	West Chestnut Extension		
	Lot 3 and Lot 6: New DTC Maintenance Facility with Wash/ Fuel and Bus Parking on upper deck level Surface parking and optional Massimo parking on Lot 1		
	West Chestnut property surface parking (Delmarva Employees)		



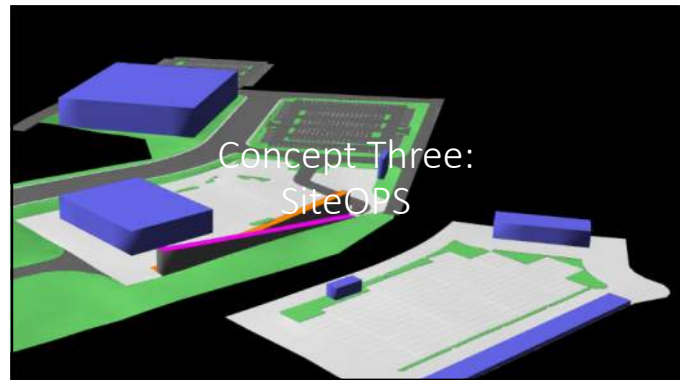
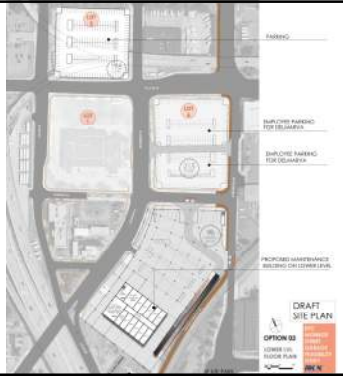
Concept Two:

- Provide Deck over Lot 6 and Lot west of Chestnut
- Maintenance Building on Lower Level Lot 6
- Fuel/ Wash / Vault on Lower Level at west lot (on area where current combined sewer is located-possible relocation)
- Bus Parking on upper deck level
- Buses enter site and circulate across Chestnut
- Surface parking for employees, Delmarva, support vehicles on Lot 1 and lot west of Chestnut
- **CONCEPT TWO IS NOT RECOMMENDED FOR FURTHER STUDY**



Concept 3

Provide deck over Delmarva and Reybold properties west of Chestnut St
 Buses enter site on Chestnut St and/or Madison St.
 Access to DTC Beech St from Liberty Street
 Maintenance Building on lower level of Reybold Property
 Bus Parking on upper deck level
 Fuel/ Wash / Vault on Upper Level
 Surface parking for DTC support vehicles on lower level
 DTC employee/Delmarva parking on Lot 2 and Lot 6
 Potential land swap with Reybold for Lot 1



Concept Three: Phasing

- Monroe Street Operations/Maintenance maintained during construction
- Site can be developed with minimal impacts to DTC Operations
- Transportation Grid Reconfiguration can be constructed after DTC Building/Garage is completed
- Construction Timeline: Approximate 24 – 36 months completion

Concept Three: Phase 1

Current to Remain Operational	New Operational	Construction 18 – 24 Months	Notes
Lot 1: DTC Maintenance		West Chestnut Street extension	Delmarva Employee Parking lot current partial Lot 6 only. All other Delmarva parking temporarily relocated
Lot 2: Bus Parking		New DTC Maintenance Facility and Deck on site west of new Chestnut Street and Reybold Property	
Existing Monroe St. (if desired)			
Lot 6: Bus Parking			



Concept Three: Phase 2

Current to Remain Operational	New Operational	Construction 12-18 Months	Notes
	New DTC Maintenance Facility and Deck on site west of new Chestnut Street and Rayfield Property	Lot 1: Demolition of DTC Maintenance Facility	
	West Chestnut Street extension	Monroe Street Realignment	
		Lot 6: Surface Parking for Delmarva	Delmarva temp parking on Lot 2 since bus parking moved to new deck



Concept Three: Phase 3

Current to Remain Operational	New Operational	Construction 4-6 Weeks	Notes
	New DTC Maintenance Facility and Deck on site west of new Chestnut Street and Rayfield Property	Lot 2: Resurface and restripe	
	West Chestnut Street extension		
	Monroe Street Realignment		
	Lot 3: Ready for re-development		
	Lot 6: Surface Parking for Delmarva		



New Building Program Overview

- Maintenance Building: 27,000 sf footprint
 - Fuel/ Wash: 2 bays
 - Operations Offices: Increased SF
 - Breakroom/ Lockers : Increased SF and lockers
 - Total SF: 47,900 SF (on 2 floors) vs. 29,200 SF (existing)
- *All SF is approximate*

Building Program SF Comparison:

Building Program	Existing SF	HDR Program SF (based upon 125 buses fleet)	New SF
Maintenance Service Bays + Tools and parts storage + repair	19,456 (11 bays, 20 ft. W x 58 ft. L)	28,699	25,628 (11 bays, 22 ft. W x 60 ft. L)
Maintenance Offices + Training conference	1,040 (5 offices + Training room)	2,024	1,960 (7 offices + Training + Conference)
Fuel -Wash+ storage	3,268 (1 bay)	6,738 (2 bays)	6,536 (2 bays)
Operations including combined Break Room, Lockers, offices	5,747	7,800	7,000
Circulation + Mech room+ Services	3,739	Included in Program Elements	3,050
Total	33,250 SF	45,261 SF	44,174 SF

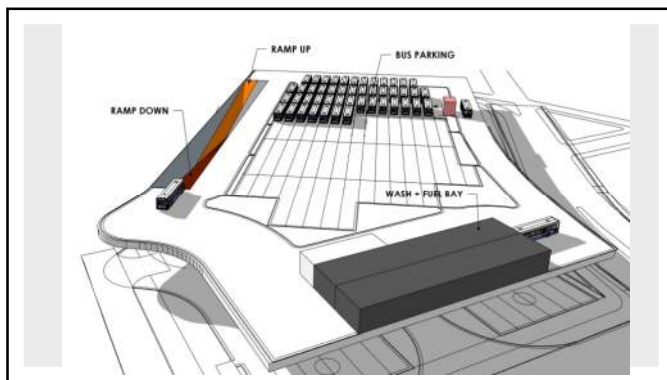
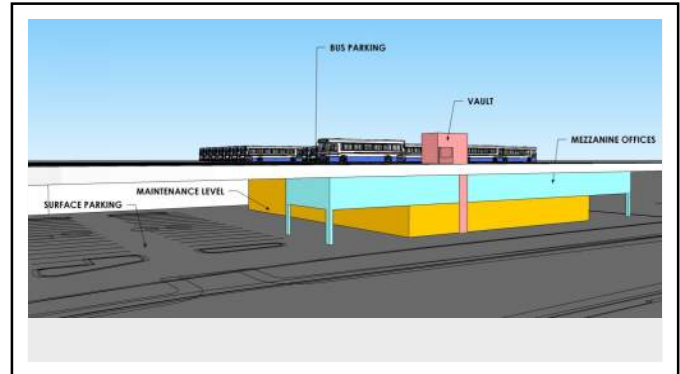
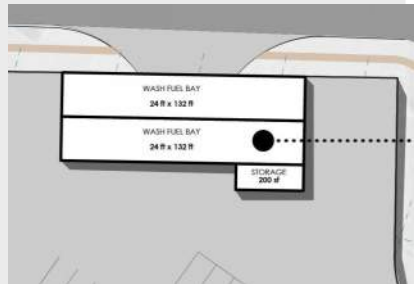
Building Program: Lower Level



Building Program: Mezzanine Level



Building Program: Upper Level



Next Steps:

- Questions/ Comments
- Order of Magnitude Cost Estimates
- Meeting with Other Stakeholders
- Development of Brief Written Report to Include as part of 5-Point Intersection Study

WILMAPCO/DTC Monroe Street Garage Concepts Work Session

April 15, 2020 Meeting Notes

Attendees:

John Sisson – DTC
Bill Thatcher, DTC
Charlie Megginson – DTC
Tigist Zegeye – WILMAPCO
Dave Gula – WILMAPCO
Mark Tudor – RKK
Denise Watkins – RKK
Charlie Mitchell – RKK
Sminu Sudhakaran – RKK
Steve McCarthy – RKK

Concept 1

- Denise W. introduced Concept 1 and highlighted the program features for each building level
- John S. asked if providing covered parking for bus deck would be possible.
 - Mark T. noted that covered parking will be explored with all concepts
- During review of bus parking deck level Charlie Megginson questioned bus circulation relating to the need for a service lane and wash/fuel options, he confirmed the current sequence; park>vault>wash/fuel>park
- Charlie Mitchell began the SiteOPS presentation and discussed bus circulation options for the bus parking deck to address DTC's concerns.
 - DTC was comfortable with the proposed bus circulation on the parking deck
 - Charlie Mitchell continued SiteOPS overview of building circulation for maintenance level and ramping to/from each level.
- DTC questioned access to Monroe St during AM/PM peak times due to potential of bus cueing
 - Charlie Mitchell added new access point in SiteOPS model to show potential of new access to abandoned Chestnut St to address DTC's concerns.
 - DTC agreed new access seemed feasible. RKK will assess alternate access point in more detail

Concept 1 Phasing

- DTC raised concerns about fueling options until the bus parking deck is completed.
 - DTC to consider options

Concept 2

- Denise W. reviewed Concept 2 addressing concerns with feasibility of the concept supporting DTC's program needs.
- Charlie Mitchell reviewed same concerns in SiteOPS and noted many circulation constraints
- DTC agreed with project team's recommendation that Concept 2 will not work and recommended removal from further consideration

Concept 3

- Denise W. introduced Concept 3 and highlighted the program features for each building level
- Charlie Mitchell began the SiteOPS presentation and discussed bus parking/maintenance circulation options
- The concept provides the maximum available building area on mezzanine level if needed for future.
- Charlie Megginson questioned if the proposed fueling and wash occurred in same service lane
 - Denise confirmed that fuel/wash occurs in same service lane similar to current maintenance operations. Denise noted the concepts proposed an additional fuel/wash service lane for redundancy/efficiency.
 -

Concept 3 Phasing

- Denise W. reviewed proposed phasing for Concept 3 and the limited impact to DTC maintenance/operations activities during construction
- DTC noted big concern in need of land swap with private developer

Next Steps

- Overall, DTC likes Concepts 1 and 3, but for all concepts has concerns about how to address need for off-site temporary bus parking/maintenance activities during construction.
- DTC requested conceptual costs be developed for each concept
- Bill T mentioned if there is a way to not have a decked structure and have a new maintenance building for them with split parking on lots. Charlie looked at in SiteOps the maximum number of bus parking they would get at Lot 1. Decision may be made after cost analysis.

Attachment C
June 15, 2020 Presentation

June 16
Update
Meeting

DTC Monroe Street Feasibility Study/ Master Plan



April 15th
Work Session
Agenda:

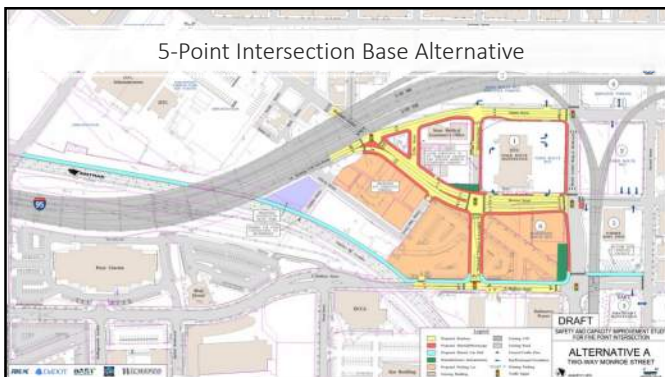
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Project To
Date

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 - **Explored Option Two:** Decking over Lot 6 and lot west of Chestnut Extended; Surface Parking on Lot 1
 - **Developed Option Three:** Decking over Delmarva and Developer lots west of Chestnut St; Surface parking Lots 2 and 6



5-Point Intersection Base Alternative



Objectives of Study

from site visit on February 26, 2020

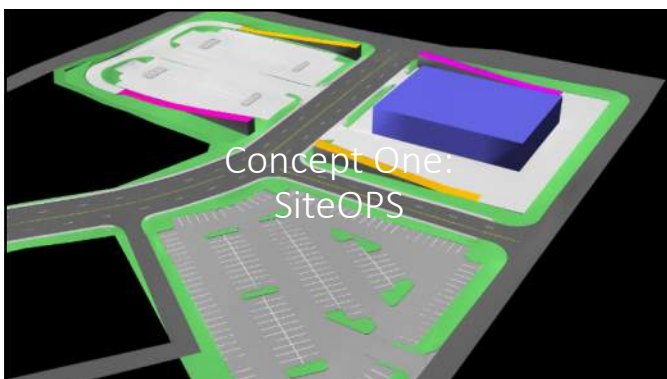
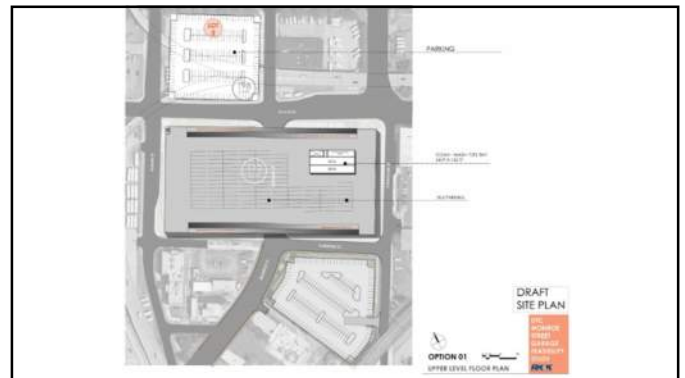
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Three Concepts:

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Concept 1

Provide Deck over Lot 1 and Lot 6 (in phased construction)
 Maintenance Building on Lower Level Lot 6
 Fuel/ Wash / Vault on Upper Level Deck
 Bus Parking on Upper Level Deck
 2 sets of ramps to circulate without crossing Monroe Street
 Surface parking for DTC employees on Lot 1, Delmarva employees Lot w of Chestnut, DTC support vehicles on Lot 2



Concept One: Phasing

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Concept One: Phase 1

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Lot 2: Bus Parking		West Chestnut Street extension	
Delmarva Parking (partial lot current lot west of Chestnut)		Lot 6: Construction of new DTC Maintenance Facility and Deck Phase One (on Lot 6 only)	Bus Parking on Lot 6 to be temporarily relocated
		West Chestnut property retained and optional sewer outfall utility relocation (currently used for Delmarva employee parking)	Delmarva Employee Parking temporarily relocated



Concept One: Phase 2

Current to Remain Operational	New Operational	Construction 12-18 Months	Notes
	Monroe Street Realignment	Lot 1: Demolition of existing DTC Maintenance Facility Construction of Surface Parking, access ramps and deck for new DTC Maintenance facility (Phase two)	Bus Parking to be temporarily relocated (Deck not yet accessible)
Lot 2: Bus Parking	West Chestnut Extension		
	New DTC Maintenance Facility Phase One (Lower Level only)		New Wash/ Fuel not yet accessible on new deck/ Wash/ Fuel off site?
	West Chestnut property surface parking (Delmarva Employees)		



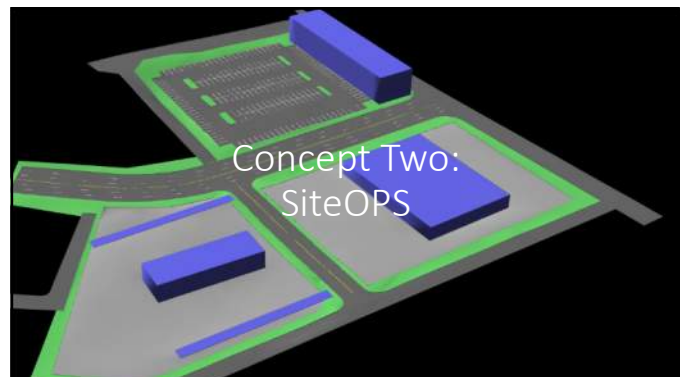
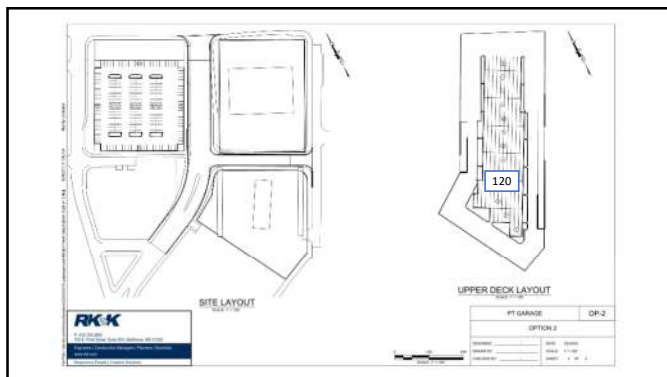
Concept One: Phase 3

Current to Remain Operational	New Operational	Construction 4 - 6 Weeks	Notes
	Monroe Street Realignment	Lot 2: Resurface and rescape	
	West Chestnut Extension		
	Lot 3 and Lot 6: New DTC Maintenance Facility with Wash/ Fuel and Bus Parking on upper deck level Surface parking and optional Mezzanine parking on Lot 1		
	West Chestnut property surface parking (Delmarva Employees)		



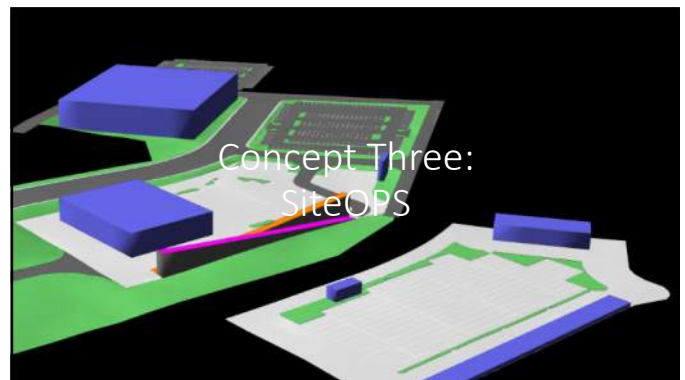
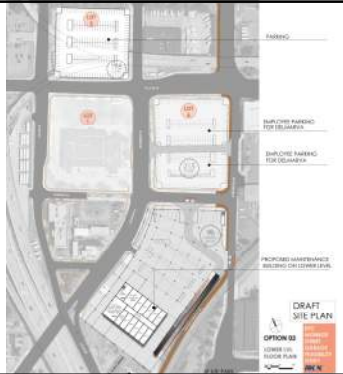
Concept Two:

- Provide Deck over Lot 6 and Lot west of Chestnut
- Maintenance Building on Lower Level Lot 6
- Fuel/ Wash / Vault on Lower Level at west lot (on area where current combined sewer is located-possible relocation)
- Bus Parking on upper deck level
- Buses enter site and circulate across Chestnut
- Surface parking for employees, Delmarva, support vehicles on Lot 1 and lot west of Chestnut
- **CONCEPT TWO IS NOT RECOMMENDED FOR FURTHER STUDY**



Concept 3

Provide deck over Delmarva and Reybold properties west of Chestnut St
 Buses enter site on Chestnut St and/or Madison St.
 Access to DTC Beech St from Liberty Street
 Maintenance Building on lower level of Reybold Property
 Bus Parking on upper deck level
 Fuel/ Wash / Vault on Upper Level
 Surface parking for DTC support vehicles on lower level
 DTC employee/Delmarva parking on Lot 2 and Lot 6
 Potential land swap with Reybold for Lot 1



Concept Three: Phasing

- Monroe Street Operations/Maintenance maintained during construction
- Site can be developed with minimal impacts to DTC Operations
- Transportation Grid Reconfiguration can be constructed after DTC Building/Garage is completed
- Construction Timeline: Approximate 24 – 36 months completion

Concept Three: Phase 1

Current to Remain Operational	New Operational	Construction 18 – 24 Months	Notes
Lot 1: DTC Maintenance		West Chestnut Street extension	Delmarva Employee Parking lot current partial Lot 6 only. All other Delmarva parking temporarily relocated
Lot 2: Bus Parking		New DTC Maintenance Facility and Deck on site west of new Chestnut Street and Reybold Property	
Existing Monroe St. (if desired)			
Lot 6: Bus Parking			



Concept Three: Phase 2

Current to Remain Operational	New Operational	Construction 12-18 Months	Notes
	New DTC Maintenance Facility and Deck on the west of new Chestnut Street and Rayfield Property	Lot 1: Demolition of DTC Maintenance Facility	
	West Chestnut Street extension	Monroe Street Realignment	
		Lot 6: Surface Parking for Delmarva	Delmarva temp parking on Lot 2 since bus parking moved to new deck



Concept Three: Phase 3

Current to Remain Operational	New Operational	Construction 4-6 Weeks	Notes
	New DTC Maintenance Facility and Deck on the west of new Chestnut Street and Rayfield Property	Lot 2: Resurface and restripe	
	West Chestnut Street extension		
	Monroe Street Realignment		
	Lot 3: Ready for re-development		
	Lot 6: Surface Parking for Delmarva		



New Building Program Overview

- Maintenance Building: 27,000 sf footprint
- Fuel/ Wash: 2 bays
- Operations Offices: Increased SF
- Breakroom/ Lockers : Increased SF and lockers
- Total SF: 47,900 SF (on 2 floors) vs. 29,200 SF (existing)

**All SF is approximate*

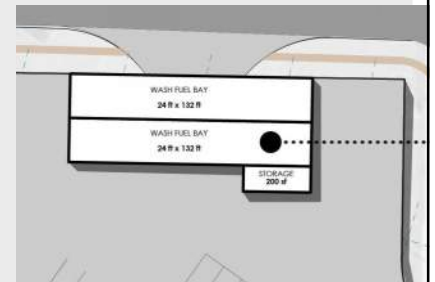
Building Program: Lower Level

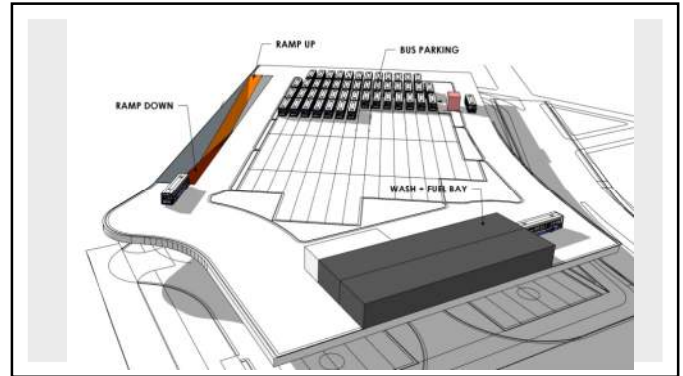
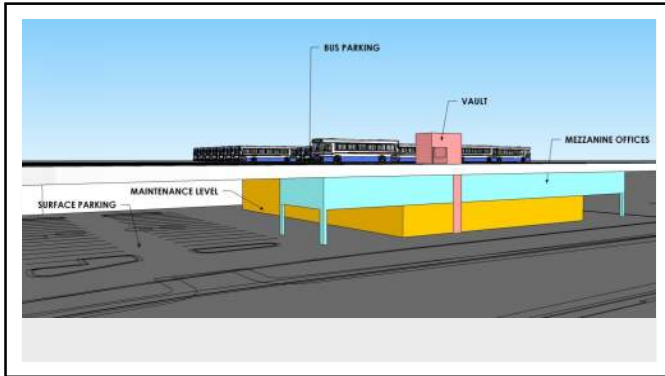


Building Program: Mezzanine Level



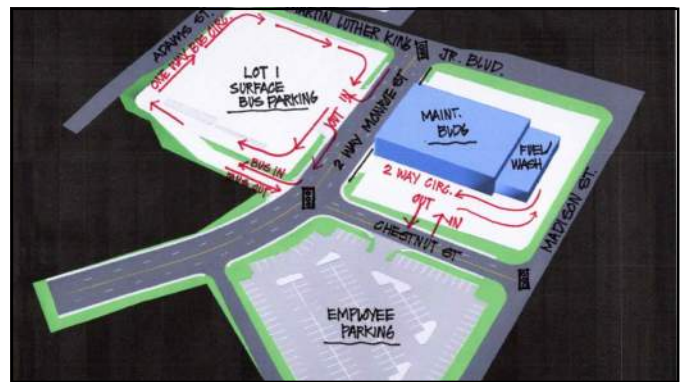
Building Program: Upper Level





Next Steps:

- Questions/ Comments
- Order of Magnitude Cost Estimates
- Meeting with Other Stakeholders
- Development of Brief Written Report to Include as part of 5-Point Intersection Study



DTC Monroe Facility
Cost Estimates
16-Jun-20

	Concept 1		Concept 3		Concept 4	Concept 4
	Bus Parking on Top	Bus Parking on Bottom	Bus Parking on Top	Bus Parking on Bottom	w/ Employee Garage	
Buildings	\$36,130,890	\$36,130,890	\$36,130,890	\$36,130,890	\$36,130,890	\$36,130,890
Parking Structure	\$30,921,660	\$30,921,660	\$25,821,180	\$25,821,180	\$0	\$17,123,040
80% Solar Panel Cover	\$21,859,300	\$0	\$18,899,100	\$0	\$0	\$0
Other Site Costs	\$10,811,250	\$10,811,450	\$12,008,830	\$12,007,930	\$9,829,110	\$9,831,070
Total Cost Estimate	\$99,725,000	\$77,865,000	\$92,860,000	\$73,960,000	\$45,960,000	\$63,085,000
Bus Parking Spaces	110 +/-	120 +/-	146 +/-	127 +/-	140 +/-	140 +/-
Employee Parking Spaces	520 +/-	380 +/-	460 +/-	400 +/-	150 +/-	300 +/-

*Assumes Solar Panels not needed for Bus Parking on Bottom since buses will be covered, but could be added later for energy reasons

*If Concept 4 is modified to allow two way access to Lot 1 from Chestnut Street, then Bus Parking Spaces are reduced 5-10 spaces

*Daimaru needs 225 +/- Employee Parking Spaces

*DTC needs 100+ Employee Parking Spaces

*Total Cost Estimate does not include real estate costs