

REHOBOTH BEACH POWER AND UTILITY UNDERGROUNDING (P.L.U.G.) - STUDY AND CONCEPTUAL DESIGN

DECEMBER 14, 2021



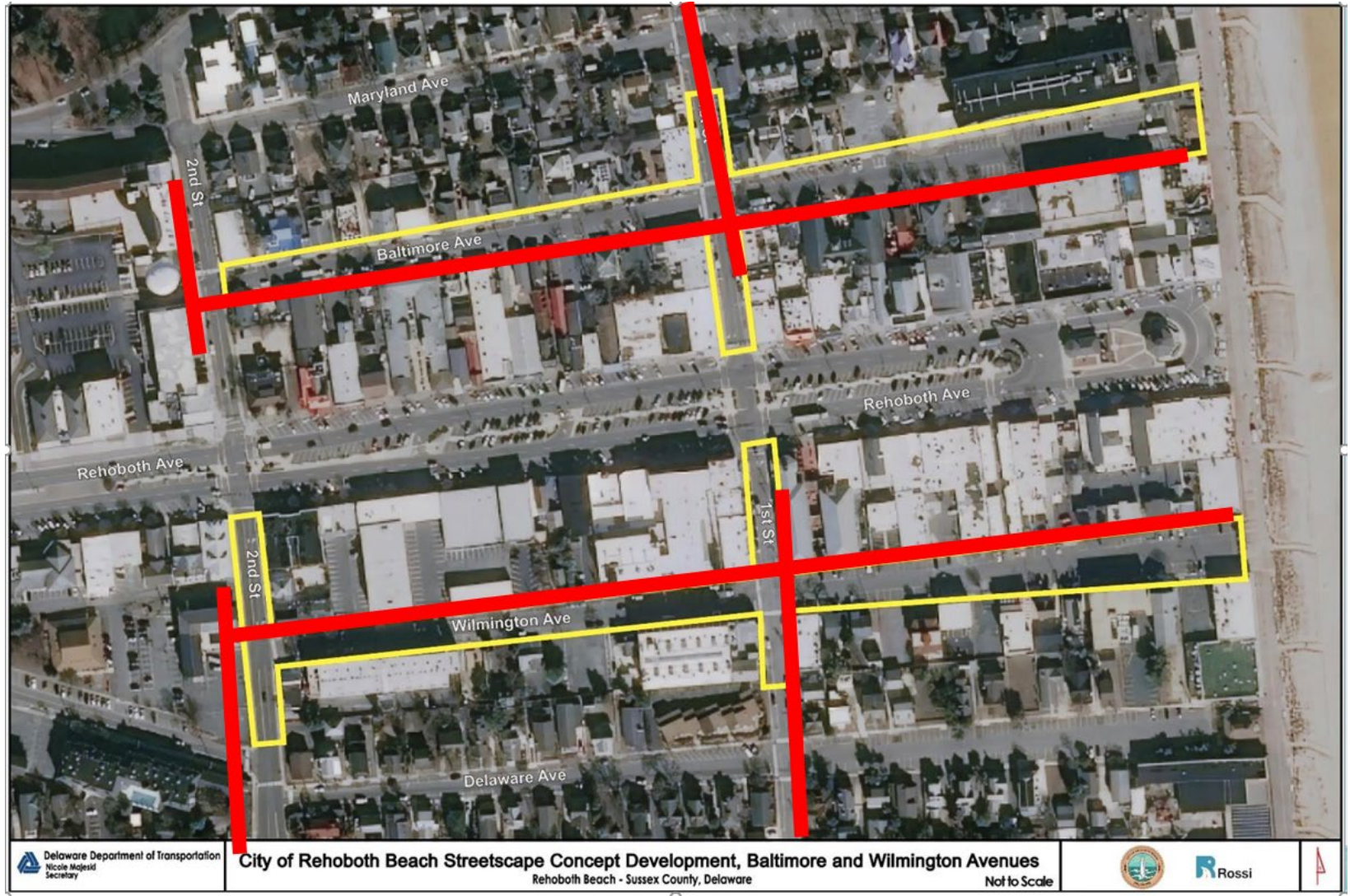
Study Area

- BALTIMORE AVENUE – BOARDWALK TO 2ND STREET
- WILMINGTON AVENUE – BOARDWALK TO 2ND STREET
- 1ST AND 2ND STREET – FROM A POINT NORTH OF BALTIMORE AVENUE SOUTHWARD TO TIE-IN POINT OF REHOBOTH AVENUE UNDERGROUNDED UTILITIES
- 1ST AND 2ND STREET – FROM A POINT SOUTH OF WILMINGTON AVENUE NORTHWARD TO TIE-IN POINT OF REHOBOTH AVENUE UNDERGROUNDED UTILITIES



Study Area

LOCATION OF EXISTING AERIAL UTILITIES – RED LINES DEPICT THE LOCATION OF AERIAL ELECTRIC, TELECOMMUNICATION AND CATV LINES



Scope of Study

- 1. Identify aerial utilities.**
- 2. Feasibility and Scope of Undergrounding.**
- 3. Concept Development.**
- 4. Cost of Undergrounding Work.**
- 5. Constructability and Related Issues**

IDENTIFY AERIAL UTILITIES

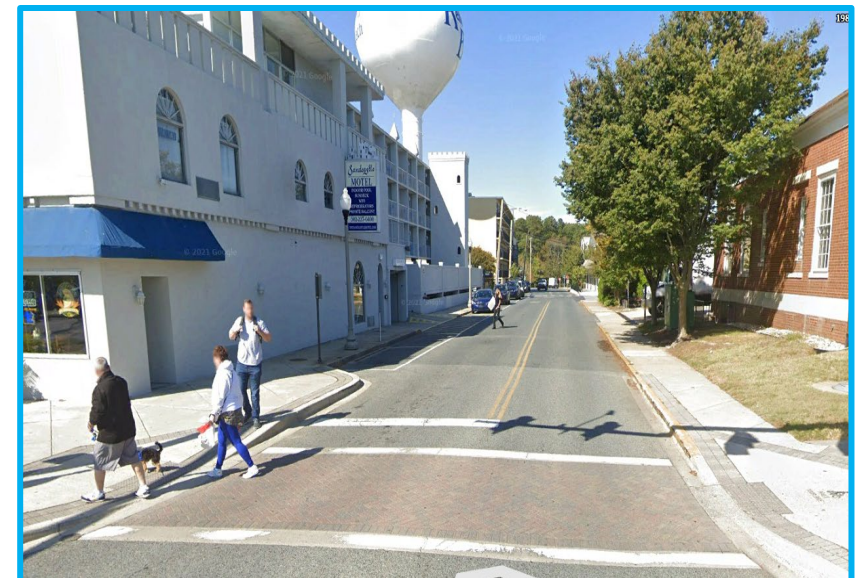
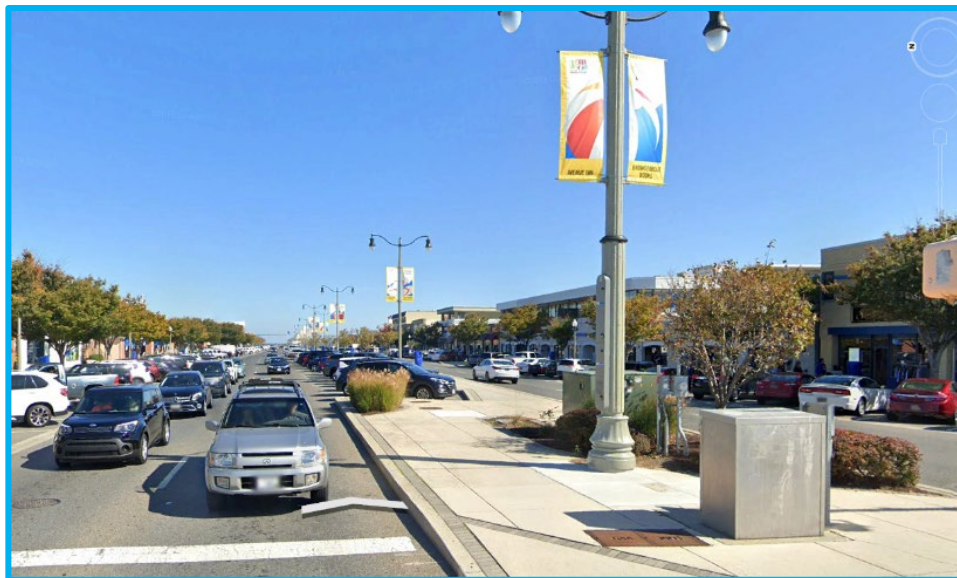
EXISTING UTILITIES AND UTILITY OWNERS

- **DELMARVA POWER**
- **VERIZON**
- **COMCAST**
- CITY OF REHOBOTH BEACH (WATER, SEWER, STORM DRAINAGE, STREET LIGHTING)
- DeIDOT (SIGNALIZATION)
- CROWN CASTLE (MINIMAL)
- AT&T



EXISTING UTILITIES AND UTILITY OWNERS

- REHOBOTH AVENUE STREETScape – PREVIOUS UNDERGROUNDING PROJECT
 - ❑ EXAMPLE OF UNDERGROUNDED UTILITIES

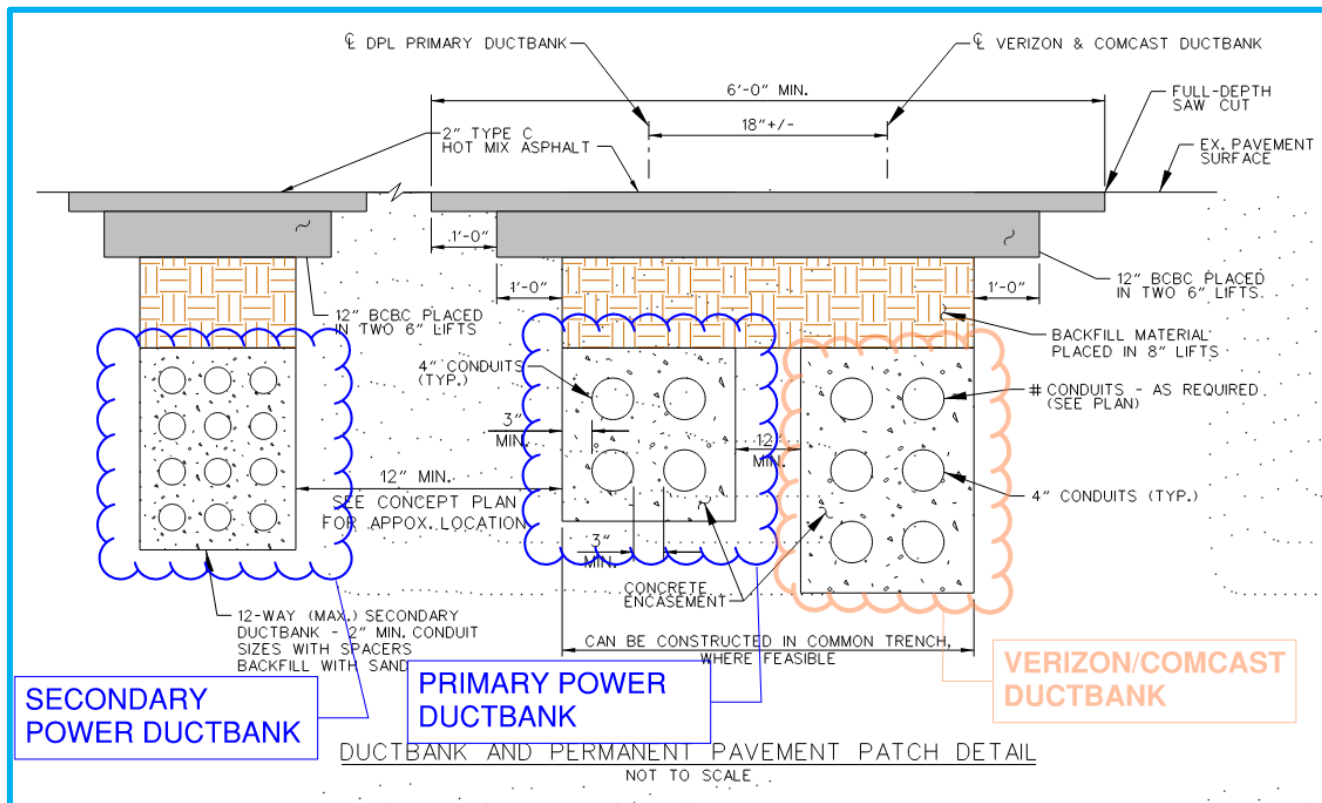


REHOBOTH AVENUE

2ND STREET (E. OF REHOBOTH AVE)

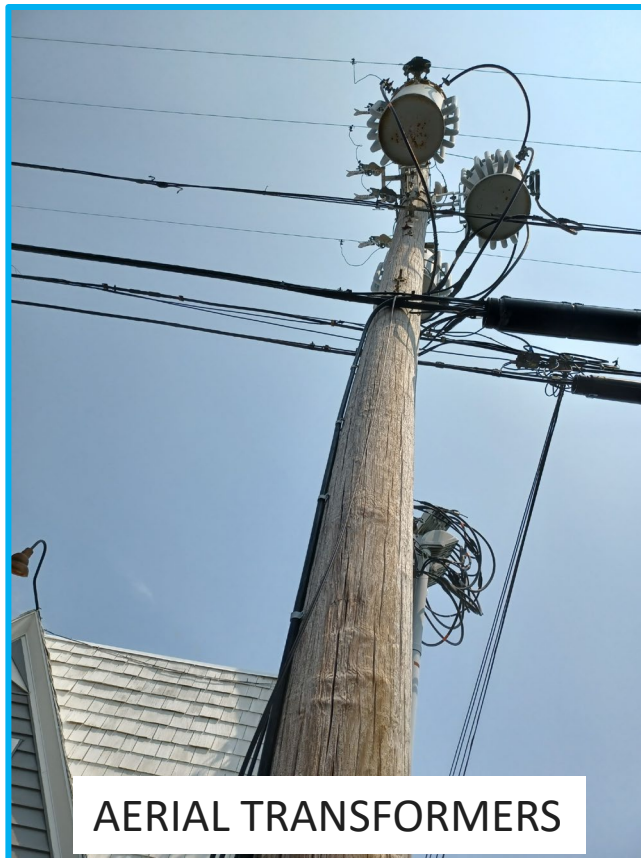
FEASIBILITY AND SCOPE OF UNDERGROUNDING

- DELMARVA POWER
 - 12.47KV PRIMARY POWER AND SECONDARY FOR SERVICES
 - RELOCATE UNDERGROUND (CITY INSTALLED INFRASTRUCTURE)
 - ❑ 4 -WAY - 4" DUCTBANK FOR PRIMARY
 - ❑ MAX. 12-WAY - 4" DUCTBANK FOR SECONDARY POWER



FEASIBILITY AND SCOPE OF UNDERGROUNDING

- DELMARVA
 - SECONDARY POWER – RELOCATE TO GROUND LEVEL
 - MINIMAL RIGHT-OF-WAY AVAILABLE TO ACCOMMODATE GROUND MOUNTED DELMARVA TRANSFORMERS & EQUIPMENT



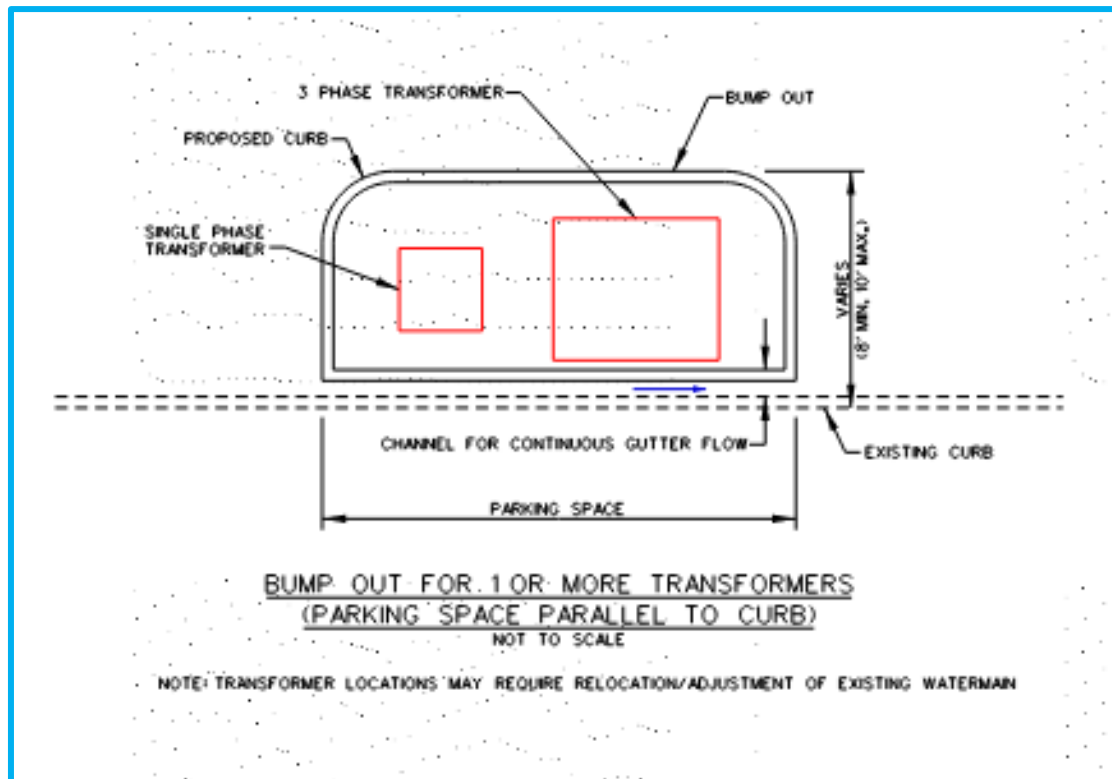
AERIAL TRANSFORMERS



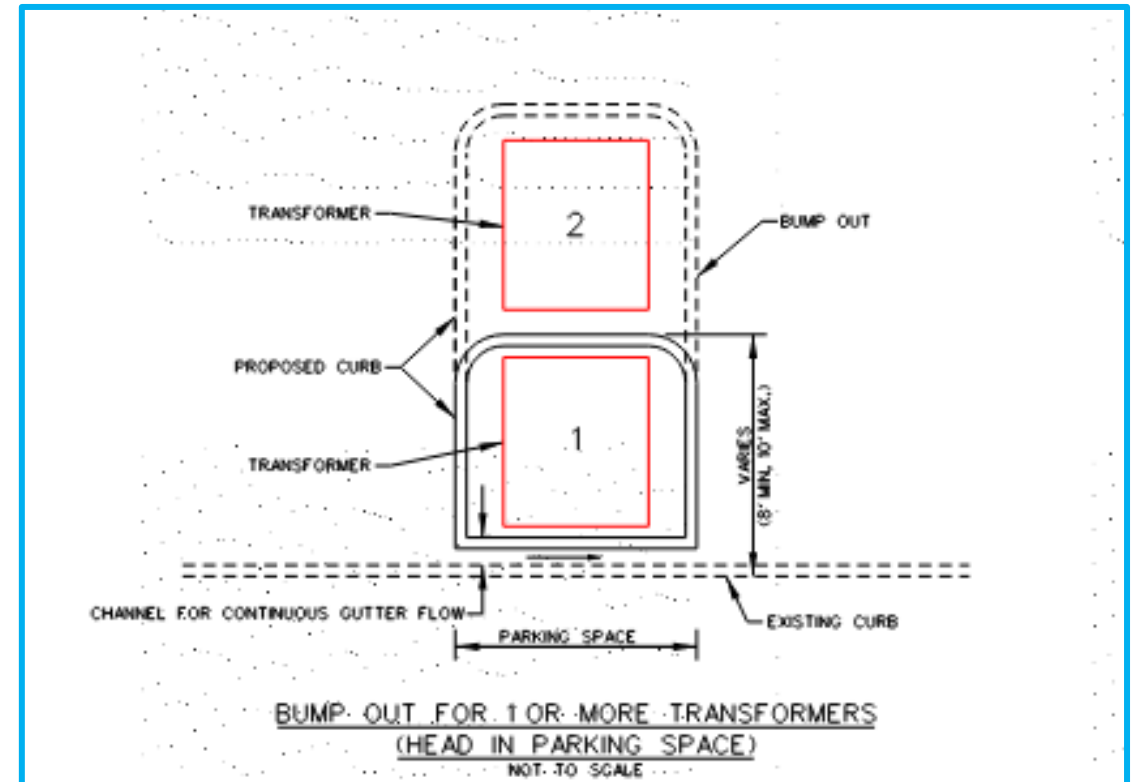
REHOBOTH AVENUE TRANSFORMER

FEASIBILITY AND SCOPE OF UNDERGROUNDING

- DELMARVA
 - SECONDARY POWER – RELOCATE TRANSFORMERS TO GROUND LEVEL
 - ACCOMMODATING TRANSFORMERS AND SWITCHGEAR IN CURB ‘BUMP-OUTS’



BALTIMORE AVE – PARALLEL PARKING



WILMINGTON AVE – HEAD-IN PARKING

FEASIBILITY AND SCOPE OF UNDERGROUNDING

- DELMARVA
 - ACCOMMODATING TRANSFORMERS AND SWITCHGEAR IN CURB ‘BUMP-OUTS’



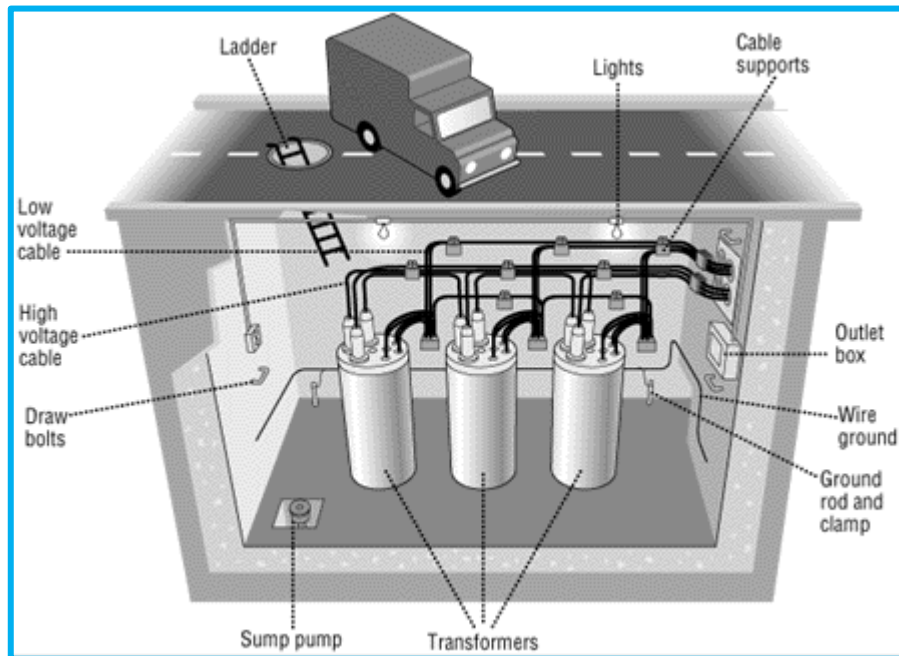
REHOBOTH AVE ‘BUMP-OUT’



OCEAN CITY, MD ‘BUMP-OUT’

FEASIBILITY AND SCOPE OF FULLY UNDERGROUNDING

- DELMARVA
 - INSTALLATION OF UNDERGROUND TRANSFORMERS
 - NOT PREFERRED BY DELMARVA, NO STAFF AVAILABLE LOCALLY FOR MAINTENANCE
 - DELMARVA HAS NO UNDERGROUND TRANSFORMERS IN THIS REGION
 - LARGE MAN-ENTRY VAULTS REQUIRED
 - CONCERNS ABOUT MAINTENANCE, FLOODING, WATER INTRUSION



U.G. TRANSFORMER VAULT EXAMPLES

FEASIBILITY AND SCOPE OF UNDERGROUNDING

- **DELMARVA – ISSUE AFFECTING # OF TRANSFORMERS**
 - **SECONDARY POWER – TWO VOLTAGE SYSTEMS CURRENTLY**
 - 1) **OPEN DELTA, 3-PHASE 120/240V**
 - 2) **3-PHASE 120/208V**

ISSUES THAT NEED TO BE ADDRESSED DURING FINAL DESIGN

- **DELMARVA WOULD LIKE TO CONSOLIDATE TO ONE SYSTEM – 3-PHASE 120/208V**
- **EXTENSIVE INVESTIGATION OF CUSTOMER LOAD REQUIREMENTS AND COORDINATION WITH CUSTOMERS TO ESTABLISH SERVICE REQUIREMENTS**
- **IF CUSTOMER WILL NOT CONVERT, 2 – SINGLE PHASE 120/208V TRANSFORMERS WILL BE REQUIRED**
- **WITH 2 SYSTEMS, # OF TRANSFORMERS WILL DOUBLE_±**

FEASIBILITY AND SCOPE OF UNDERGROUNDING

- METERS AND SERVICES**



Electrical Service/Meter Inventory		
Location	Street Limit	# of <u>Electrical Meters</u>
Baltimore Ave	2 nd Street to 1 st Street	61 _±
Baltimore Ave	1 st Street to Boardwalk	10 _±
Wilmington Ave	2 nd Street to 1 st Street	28 _±
Wilmington Ave	1 st Street to Boardwalk	46 _±

FEASIBILITY AND SCOPE OF UNDERGROUNDING

- METERS AND SERVICES

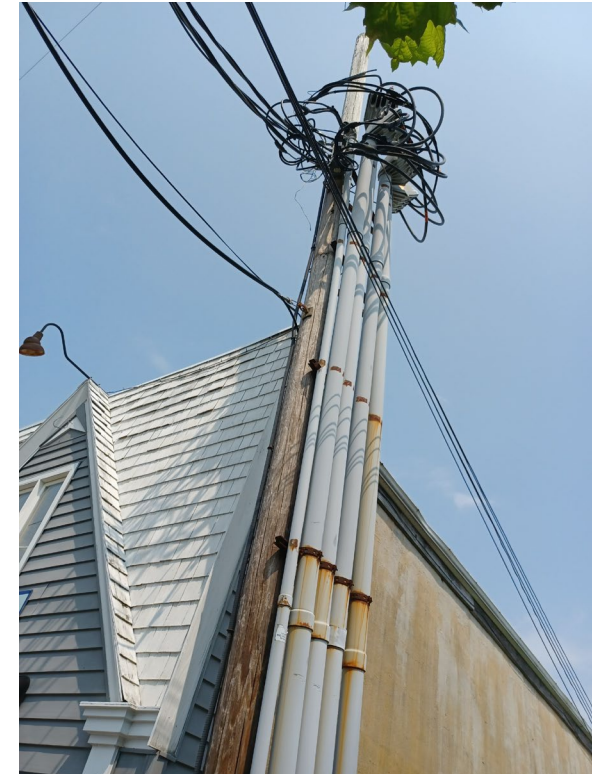
ELECTRICAL SERVICES WILL NEED TO BE CONVERTED FROM AERIAL TO UNDERGROUND.

RESIDENTIAL SERVICES

- ✓ DELMARVA WILL COVER MOST OF THE COST OF THE WORK FOR A RESIDENTIAL SERVICE; PROVIDE METER AND NEW CONDUCTORS
- ✓ CITY OF REHOBOTH NEEDS TO INSTALL INFRASTRUCTURE, CONVERT AERIAL METER SOCKET TO UNDERGROUND METER SOCKET AND PROVIDE LOAD SIDE (CUSTOMER) RELATED ELECTRICAL WORK.

COMMERCIAL SERVICES

- ✓ DELMARVA WILL PROVIDE THE METER
- ✓ CITY OF REHOBOTH
 - NEEDS TO INSTALL INFRASTRUCTURE, CONVERT AERIAL METER SOCKET TO UNDERGROUND METER SOCKET
 - INSTALL ALL CONDUCTORS - TRANSFORMER TO SERVICE, AND PROVIDE LOAD SIDE (CUSTOMER) RELATED ELECTRICAL WORK.



FEASIBILITY AND SCOPE OF UNDERGROUNDING

- METERS AND SERVICES

ASSUMPTIONS FOR COST ESTIMATING FOR CUSTOMER SIDE ELECTRICAL WORK.

- CITY MAY PERFORM OR REIMBURSE CUSTOMER FOR ELECTRICAL WORK RELATED TO AERIAL TO U.G. SERVICE CONVERSION

ELECTRICAL SERVICES – SERVICE TYPE USED FOR CUSTOMER SIDE ELECTRICAL WORK ESTIMATING		
SERVICE TYPE	SERVICE SIZE	*ESTIMATED # OF SERVICES
RESIDENTIAL OR SMALL COMMERCIAL	200 AMP SINGE PHASE, 120/240V	*36±
MEDIAN SIZE COMMERCIAL	400 AMP 3-PHASE 120/208V	*73±
LARGE COMMERCIAL	600 AMP 3-PHASE 120/208V	*36±

* ASSUMED # OF SERVICES NEEDS TO BE VERIFIED DURING DETAILED DEIGN PHASE WITH EXTENSIVE CUSTOMER COORDINATION

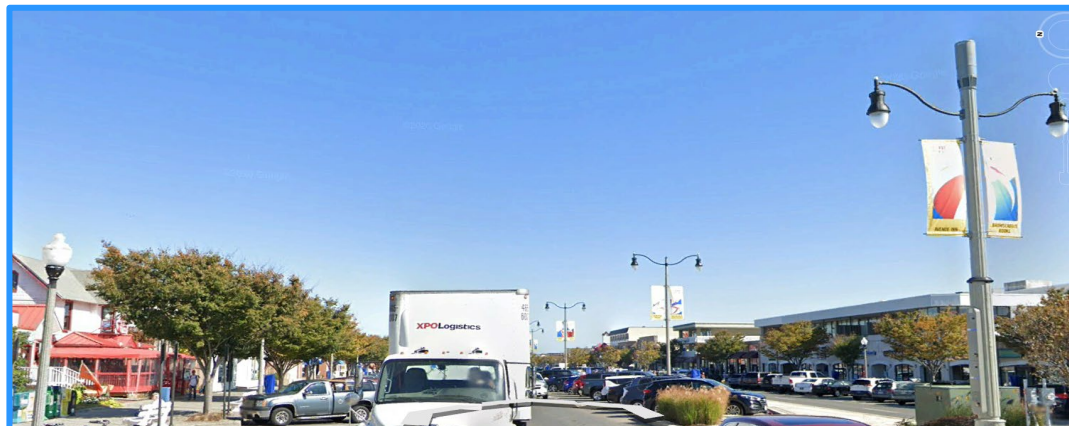
FEASIBILITY AND SCOPE OF UNDERGROUNDING

- **STREET LIGHTING**

- ❑ DELMARVA WILL INSTALL AND MAINTAIN STREET LIGHTING AT MINIMAL COST IF FIXTURE IS PART OF 'TARIFF SYSTEM'
- ❑ CITY WOULD THEN PAY A STANDARD YEARLY RATE BASED ON THE FIXTURE TYPE
- ❑ LIMITED OPTIONS FOR FIXTURE TYPES

- **ALTERNATIVE**

- **CITY INSTALLS FIXTURE OF CHOICE AT CITY COST AND THEN POWER FOR LIGHTING WILL BE METERED**



FEASIBILITY AND SCOPE OF UNDERGROUNDING

VERIZON AND COMCAST – SCOPE OF WORK

- VERIZON - SCOPE OF CITY INSTALLED WORK
 - ❑ BALTIMORE AND WILMINGTON AVE – 4 X 4” DUCTBANK
 - ❑ 1ST AND 2ND STREET – 6 OR 8 X 4” DUCTBANK
 - ❑ CONDUITS FOR SERVICES
 - ❑ HANDHOLES – 2’ X 3’ OR 3’ X 5’ SPACED EVERY 300₊ FEET WITH INTERMITTENT CROSSINGS OF THE STREET SO SERVICES CAN BE ACCOMMODATED (HANDHOLES AND MANHOLES PROVIDED BY VERIZON).
- VERIZON – VERIZON SCOPE
 - ❑ INSTALL ALL CABLES AND SERVICE UPDATES – AERIAL TO UNDERGROUND
 - ❑ PROVIDE ALL MANHOLES AND HANDHOLES

FEASIBILITY AND SCOPE OF UNDERGROUNDING

VERIZON AND COMCAST – SCOPE OF WORK

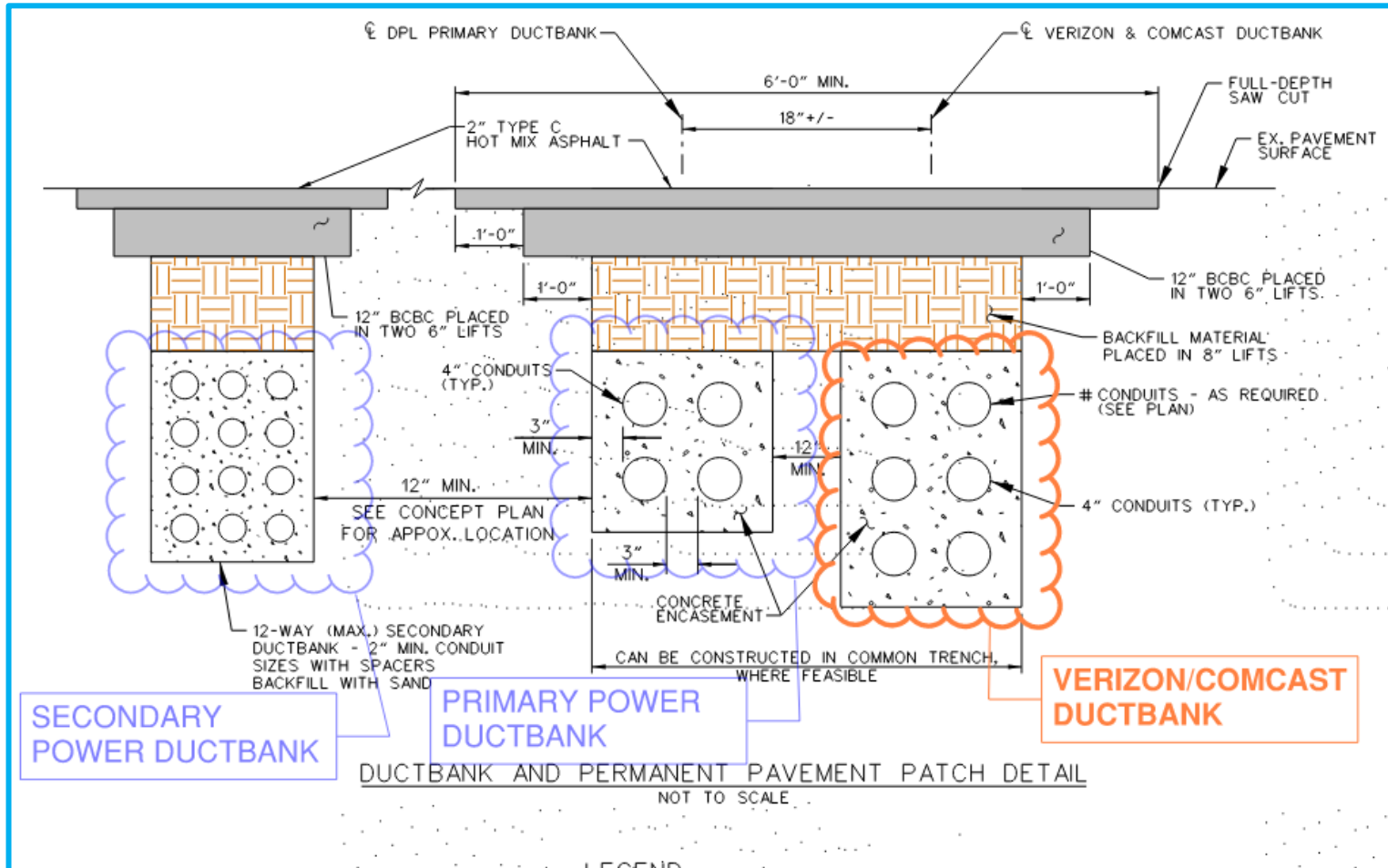
- **COMCAST - SCOPE OF CITY INSTALLED WORK**
 - ❑ **COMCAST REQUESTED ONE MAIN 4” DUCT**
 - ❑ **DUCTBANK - AS DESCRIBED FOR VERIZON; SAME DUCTBANK ASSUMED TO ACCOMMODATE COMCAST CABLING**

- **COMCAST – COMCAST SCOPE**
 - ❑ **INSTALL ALL CABLES AND SERVICE UPDATES – AERIAL TO UNDERGROUND**
 - ❑ **ADDITIONAL COORDINATION REQUIRED WITH COMCAST DURING DETAILED DESIGN PHASE TO FURTHER DEFINE SCOPE**

FEASIBILITY AND SCOPE OF UNDERGROUNDING

VERIZON AND COMCAST – SCOPE OF WORK

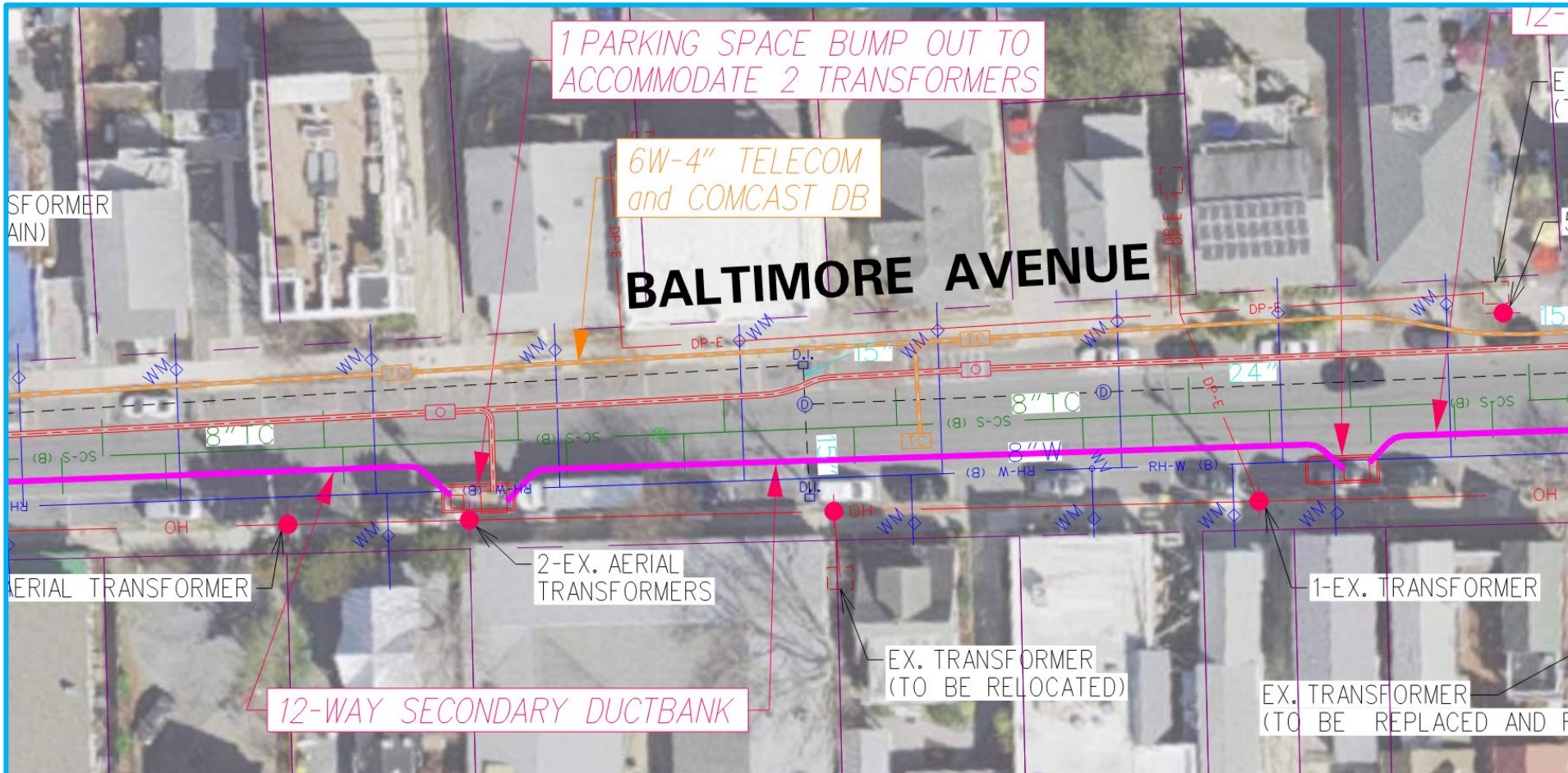
- SCOPE OF CITY INSTALLED WORK – SECTIONAL VIEW**



FEASIBILITY AND SCOPE OF UNDERGROUNDING

UTILITY UNDERGROUNDING LAYOUT AND CONCEPT

- SEE EXHIBITS IN REPORT – MAIN GOAL – AVOID EXISTING UTILITIES



CONSTRUCTABILITY AND RELATED ISSUES

CONSTRUCTION PHASING

- **SEASONAL CONSTRUCTION PHASING**
- **MID-SEPTEMBER TO LATE APRIL – OFF-SEASON PERIOD FOR CONSTRUCTION**
- **LIMITS CONSTRUCTION PERIOD TO 8-MONTHS PER YEAR**
- **CONSTRUCTION PERIOD INCLUDES WINTER MONTHS**

OPTIONS FOR PHASING OF CONSTRUCTION WORK

- **CONSTRUCT ONE BLOCK AT A TIME**
- **AWARD MULTIPLE CONTRACTS – DIVIDE WORK UP PER CONTRACT FOR MULTIPLE BLOCKS**
- **CONTRACT EXTENDS OVER MULTIPLE 8-MONTH CONSTRUCTION PERIODS**
- **TWO CONSTRUCTION CONTRACTS – 1) UTILITY UNDERGROUNDING FIRST 2) THEN CONSTRUCT STREETSCAPING IMPROVEMENTS**
- **ONE CONSTRUCTION CONTRACT TO COMPLETE UNDERGROUNDING AND STREETSCAPING**

CONSTRUCTABILITY AND RELATED ISSUES

KEY ISSUES TO ADDRESS

- **SEASONAL CONSTRUCTION PHASING – MINIMIZE IMPACTS ON BUSINESSES AND VISITORS**
- **LIMITED CONSTRUCTION PERIOD - 8-MONTHS PER YEAR**
- **COORDINATION AND SCHEDULING OF UTILITY COMPANY DESIGN AND CONSTRUCTION**
- **PROVIDE INCENTIVES AND DISINCENTIVES TO CONTRACTOR TO COMPLETE WORK WITHIN SEASONAL CONSTRUCTION PERIOD**
- **EARLY DESIGN FUNDING FOR UTILITY COMPANY DESIGN EFFORTS**
- **CONSTRUCT UTILITY UNDERGROUNDING UNDER A SEPARATE CONTRACT**
- **CONSTRUCT UTILITY UNDERGROUNDING AND STREETSCLAPING UNDER ONE CONTRACT**
- **CONSIDERATION FOR DESIGN-BUILD OPTION – PLACING RISK ON THE CONTRACTING TEAM**

UTILITY UNDERGROUNDING COST ESTIMATING

KEY ISSUES TO ADDRESS TO BETTER DEFINE COSTS

- EXTENSIVE INVESTIGATION OF CUSTOMER SERVICE REQUIREMENTS
- COORDINATION WITH UTILITY COMPANIES TO FINALIZE DESIGN AND ESTIMATE UTILITY COMPANY VS. CITY COSTS
- COORDINATION WITH STREETSCAPING DESIGN TO RECOGNIZE ANY OVERLAPPING COST
- IMPACTS OF PHASING ON ESTIMATED COSTS

UTILITY UNDERGROUNDING COST ESTIMATING

ESTIMATED CONCEPT LEVEL COSTS

Rehoboth Aerial Utility Undergrounding – Estimated Costs	
Entity	Estimated Total Cost
City of Rehoboth Infrastructure Cost	\$9,011,674.
Delmarva Power	\$1,080,040.
Verizon	\$884,000.
Comcast	\$125,000.
TOTAL ESTIMATED COST	\$11,100,714.



Questions