



**Dedicated but Unmaintained County Roads  
(DBUCR) Program  
CIP No. 501117**

***Radnor Road Improvement***



**July 20, 2016**

**Montgomery County Department of Transportation  
Division of Transportation Engineering**

**100 Edison Park Drive, Fourth Floor  
Gaithersburg, Maryland 20878**

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## **I. INTRODUCTION**

Montgomery County Department of Transportation (MCDOT), Division of Transportation Engineering prepared this report for 7404 and 7408 Radnor Road in Bethesda for the Dedicated But Unmaintained County Roads (DBUCR) program. The Eckland Family at House Number 7404 and the McNally Family at House Number 7408 signed a petition requesting the Dedicated But Unmaintained (DBU) portion of Radnor Road to be evaluated as a part of the DBUCR program.

This report describes an overview of the DBUCR program, the existing conditions of the DBU portion of Radnor Road, conceptual design, project schedule, and a budgetary cost estimate for the project.

## **II. BACKGROUND**

### **1. Background of DBUCR Policy**

The following is a chronological order for the establishment of the DBUCR policy:

- The County Council appropriated funds in Fiscal Year (FY) 2008 Capital Budget for developing the DBUCR policy.
- July 2007-June 2008 (FY 2008)-Community stakeholders and representative from the County met periodically and developed the policy.
- September, 2009-the County Executive transmitted a draft policy to the County Council.
- October, 2009 – County Council Transportation and Environment (T&E) Committee reviewed and commented on the draft policy.
- December, 2009-the DBUCR Policy was adopted.
- January, 2010-The County Executive recommended the Capital Improvement Program (CIP) budget for the DBUCR program.
- May, 2010-The County Council approved CIP for DBUCR.
- November, 2015-The County Council approved revisions in the DBUCR Policy Resolution No. 18-321.

## **2. Background of DBUCR Roads and Public Information**

MCDOT compiled the list of DBUCR roads from a report by Montgomery County Civic Federation and the County's inventory utilizing the latest State Highway Administration (SHA) MAARS Report, Geographic Information System (GIS) map/aerial photos, existing subdivision plats, existing deeds, and status of the County maintenance by the County's depots. As a result of the research, a total of sixty roads within the County have been identified as the DBUCR roads. The list is included in Appendix A.

As required by the DBUCR policy, two public information meetings were held for the property owners who reside adjacent to the identified DBUCR roads. The two public information meetings were held to provide every affected property owner an opportunity to attend one of the public information meetings to understand the program better and address any of their concerns regarding the program. The meetings were held on September 22, 2010 and October 12, 2010.

The DBUCR program divides into the following four categories:

1. Self Build/Self Maintain
2. Self Build/County Maintain
3. County Build/County Maintain
4. No Build (Do Nothing)

MCDOT received an application from the Eckland and McNally Families via Mr. Marc Korman of the Maryland House of Delegates on December 7, 2015. The application is included in Appendix B.

The plats related to the 7404 and 7408 Radnor Road properties original subdivision are dated from 1956 and 1960.

## **III. EXISTING CONDITION**

MCDOT developed a plan sheet from an aerial photo for Radnor Road, north of Durbin Road to assist the existing conditions assessment. MCDOT also conducted a site visit to the road on February 25, 2016.

### **1. Roadway**

The DBU section of Radnor Road is in gravel and is approximately 140 feet long with its width varying from 26 feet to 19 feet towards north. There is an existing ditch conveying storm water from the outfall of 18" High Density Polyethylene Pipe (HDPE) to a junction box with a 30" Corrugated Metal Pipe (CMP) with a flapper valve. The outfall from the junction box is a 30" Reinforced Concrete Pipe (RCP).





*Radnor Road Looking North*



*Radnor Road Looking South*



## 2. Traffic and Roadway Characteristics

The DBU section of Radnor Road is a tertiary residential street with the dead end at House No. 7408 that only serves the residents at 7404 and 7408 Radnor Road. There is also no existing sidewalk along the road.

## 3. Drainage

The drainage areas are delineated in aerial GIS map in Appendix C. There are two main drainage areas within the project site. The runoff from Drainage Area No. 1 and the stormwater from the outfall of the 18" HDPE drain into the existing ditch along the east side of the DBU section of Radnor Road. The stormwater in the ditch flows into the junction box with a 30" CMP with a flapper valve. A 30" RCP connects to the curb inlet at the northeast corner of Radnor Road and Durbin Road. The runoff from Drainage Area No. 2 drains into the curb inlet. The curb inlet connects to the manhole that is in the middle of the intersection of Radnor Road and Durbin Road. The manhole connects to the inlet at 7400 Radnor Road. The stormwater from Drainage Area No. 3 drains into the inlet.



*Storm Drain Ditch Along East of Radnor Road*





*Upstream of the Radnor Road Ditch*





*Downstream of the Radnor Road Ditch*

#### **4. Utilities and Streetlights**

MCDOT investigated existing utilities within the project site.

There are 8" water and 8" sewer mains underneath the DBU section of Radnor Road according to the WSSC facility plans. There are two PEPCO poles within the project site. One utility pole is located approximately at the south property line of 7404 Radnor Road and the other utility pole is located at the north property line of 7408 Radnor Road. See Appendix D for utility pole locations.

The two utility poles have cobrahead style street lights.





*Utility Pole No. 1 at 7404 Radnor Road*



*Utility Pole No. 2 at 7408 Radnor Road*



## 5. Trees

There is a wide range of size of trees in the community. Some of them are 21" and greater in the diameter breast height (DBH). Two trees will be impacted by the construction for the project. One 21" DBH tree is adjacent to the wooden fence on the existing right-of-way line adjacent to 5710 Oldchester Road and one 18" DBH tree is at the top of the embankment to the ditch will be impacted.



*Tree 1 for Removal*



*Tree 2 for Removal*

#### **IV. CONCEPTUAL DESIGN**

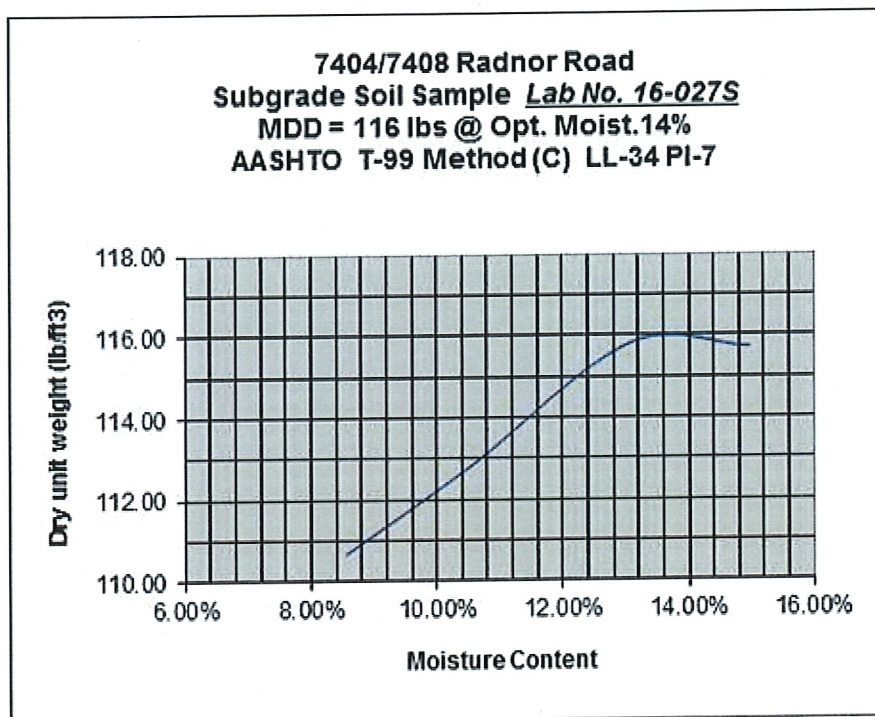
##### **1. Roadway**

The proposed typical section for Radnor Road Improvement is modified MC-210.01 shown in Appendix E. The end of Radnor Road will be designed based on Standard No. MC-223.01. The hammer head turnaround with 48 feet width of road with a closed section is the most feasible option for the end of Radnor Road. See Appendix F for the turnaround layout.

MCDOT standard width for a tertiary residential street is 20 feet. The width of the road currently varies in the range of 19 feet to 26 feet.

MCDOT extracted a couple of pavement samples from Radnor Road and performed a geotechnical test on the subgrade beneath the existing layer of the gravel in the DOT Materials Lab in March, 2016. Based on the test results, the thickness of the existing gravel layer is approximately 10" and the existing soil beneath the gravel meets the County's requirement for the subgrade.





***Figure 1: Testing on Subgrade***

For the proposed pavement design, 2" of bituminous concrete surface and 3" of bituminous concrete base will be placed on the top of the existing layer of gravel for the pavement design.

## **2. Stormwater Management & Drainage**

MCDOT proposes connecting the outfall of the existing 18" HDPE to the existing 30" RCP by a new 33 feet long 18" HDPE. The outfall of the existing 18" HDPE will be connected to the new 18" HDPE at a proposed B-Type Manhole. The new 18" HDPE will be connected to the existing 30" RCP at a proposed J-Inlet. Unlike the existing condition, the proposed condition will be closed section with curb opening to direct the stormwater runoff into the yard inlet. The schematic of the proposed storm drain system is delineated in Appendix D.

## **3. Utilities and Streetlights**

Based on the field observations, MCDOT does not anticipate any relocations of the utilities. MCDOT will coordinate with all the utility companies to determine if any of the utilities are impacted during the design stage.

Streetlights already exist on the two adjacent poles; therefore, no additional streetlights will be included.

#### 4. Trees

Trees will be impacted by the roadway project. There may be a minimum of two trees that need to be removed. One 21" DBH tree at wooden fence on the existing right-of-way line adjacent to 5710 Oldchester Road and an 18" DBH tree on top of the embankment to the ditch may be impacted.

As required by the tree canopy law, MCDOT will replace the trees for each of the trees that will be removed as a part of the project. However, the County cannot guarantee that the same species of trees will be planted in place of removed trees. The landscaping cost has been added to the construction cost estimate.

#### V. PROJECT SCHEDULE

The following is a **tentative schedule** based upon the assumption that the County Executive and the County Council will approve the funding for Radnor Road in the next CIP budget request for FY19-24. The County's FY 19 starts on July 1, 2018.

| Phase                | Duration  | Starting Date | Ending Date  |
|----------------------|-----------|---------------|--------------|
| Design & Permits     | 12 months | July, 2018    | June, 2019   |
| Property Acquisition | 9 months  | July, 2019    | March, 2020  |
| Construction         | 4 months  | April, 2020   | August, 2020 |

MCDOT included the property acquisition phase in case easements are needed for road reconstruction. The minimum duration for the property acquisition phase is nine months.

#### VI. PROJECT COST ESTIMATE

As shown in Appendix G, there are a total number of two affected properties. The total project cost will be equally divided among the two properties.

A construction cost estimate was prepared based on the unit prices in the County's current work order contract. The project cost includes design, property acquisition and construction cost. The design cost includes permit fees for stormwater management concept and erosion and sediment control, a topographic and boundary survey, and engineering design cost. See Appendix H for the construction cost estimate and Appendix I for the cost breakdown for Design, Construction Management and Land.

A total project cost has been estimated for budgetary basis. The total project cost is **\$88,600**. Each household will be responsible for paying the County approximately **\$40,000** after deduction of the County's participation cost which is 10% of the total project cost.

County's Participation Cost

$$\$88,600 \times 0.1 = \$8,860$$

Individual Affected Property Household Cost

$$(\$88,600 - \$8,860) / 2 = \$39,870 \text{ (Say } \$40,000\text{)}$$

The following table is a summary of the total project costs.

|                                |                 |
|--------------------------------|-----------------|
| Design                         | \$17,000        |
| Construction Management        | \$5,300         |
| Land                           | \$5,000         |
| Construction Materials & Labor | \$61,300        |
| <b>Total Project Cost</b>      | <b>\$88,600</b> |

The County will initially fund the improvements if the expenditures are authorized through the biennial capital budget process. Cost participation by the property owners will be assessed on the property tax of each of the subject properties. The tax assessment will be for a 20-year period and at the same interest rate as the bond rate used for the financing of the project by the County. An option of payment in less than 20 years or one lump sum payment will also be available. The cost participation by the subject property owners will commence at the completion of the construction of the roadway.

# **APPENDIX A**

## **List of DBU Roads**

Updated : JULY 14, 2016

| No. | Road Name     | Starting Point (Miles)                  | Ending Point (Miles) | Total (Miles) | Town          |
|-----|---------------|---|----------------------|---------------|---------------|
| 1   | AITCHESON LA  | 0.22 (North of Riding Stable Road)      | 0.70                 | 0.48          | LAUREL        |
| 2   | ANCHORAGE DR  | MACARTHUR BLVD                          | 0.13                 | 0.13          | BETHESDA      |
| 3   | ANCHORAGE PL. | BOLLING LA                              | ANCHORAGE DR/0.08    | 0.08          | BETHESDA      |
| 4   | ANDERSON ST.  | 0.1 (Northwest of Octagon Lane)         | 0.18                 | 0.08          | SILVER SPRING |
| 5   | ARDWICK DR    | GOLF LA.                                | WAYCROFT WAY/0.22    | 0.22          | ROCKVILLE     |
| 6   | ATTLEBORO RD  | NORWOOD RD                              | DUXBURY DR/0.25      | 0.25          | SILVER SPRING |
| 7   | AUTH LA       | 0.09 (South of Hermleigh Road)          | 0.13                 | 0.04          | SILVER SPRING |
| 8   | BELFAST PL    | KINGSGATE RD                            | 0.15                 | 0.15          | POTOMAC       |
| 9   | BELLE COTE DR | KRUHM RD                                | 0.42                 | 0.42          | BURTONSVILLE  |
| 10  | BENTLEY RD    | 0.36 (North of Olney Sandy Spring Road) | 0.50                 | 0.14          | OLNEY         |
| 11  | BIRCHCREST LA | FREDERICK RD                            | 0.22                 | 0.22          | CLARKSBURG    |
| 12  | BISHOP DR     | WINTHROP DR                             | 0.05                 | 0.05          | SILVER SPRING |
| 13  | BLANTON RD    | GOOD HOPE RD                            | 0.15                 | 0.15          | SILVER SPRING |
| 14  | BOLLING LA    | ANCHORAGE DR                            | ANCHORAGE PL./0.11   | 0.11          | BETHESDA      |
| 15  | BRATTON DR    | SUNSET DR                               | BRATTON CT/0.09      | 0.09          | ROCKVILLE     |
| 16  | BROOKS RD     | RIDGE DR                                | KIRK LA/0.15         | 0.15          | ROCKVILLE     |
| 17  | CARNAGIE AVE  | NEEDWOOD RD                             | 0.12                 | 0.12          | DERWOOD       |
| 18  | CINDY LA      | SEVEN LOCKS RD                          | 0.08                 | 0.08          | BETHESDA      |
| 19  | CIRCLE DR     | RIDGE DR/0.68                           | GLEN MILL RD/1.02    | 0.34          | ROCKVILLE     |
| 20  | CLOVER LA     | PERSIMMON TREE RD                       | 0.06                 | 0.06          | POTOMAC       |
| 21  | CREST HILL LA | 0.22 (South of Briggs Chaney Road)      | 0.51                 | 0.29          | SILVER SPRING |
| 22  | CROWFOOT LA   | COPLEY LA                               | 0.09                 | 0.09          | SILVER SPRING |
| 23  | DOMINION DR   | 0.2 (North of Olney Sandy Spring Road)  | 0.25                 | 0.05          | SANDY SPRING  |
| 24  | DUXBURY RD    | ATTLEBORO RD                            | 0.14                 | 0.14          | SILVER SPRING |
| 25  | ECKMOOR RD    | ELDRID DR                               | 0.05                 | 0.05          | SILVER SPRING |
| 26  | EMORY ST      | MUNCASTER MILL RD                       | 0.07                 | 0.07          | GAITHERSBURG  |
| 27  | ERSKINE AVE   | GLENALLAN AVE                           | WALLACE AVE/0.10     | 0.10          | SILVER SPRING |
| 28  | FAWSETT RD    | MACARTHUR BLVD                          | 0.29                 | 0.29          | POTOMAC       |
| 29  | GARDNER PL    | CHAPELGATE RD                           | 0.11                 | 0.11          | GERMANTOWN    |
| 30  | GARRETT RD    | REDLAND RD/0.00                         | 0.21                 | 0.21          | DERWOOD       |
| 31  | GARY RD       | 0.31 (North of River Road)              | 0.35                 | 0.04          | POTOMAC       |
| 32  | GOLF LA       | MIDDLESHERE PL/0.10                     | 0.28                 | 0.18          | ROCKVILLE     |
| 33  | HAW LA        | EDNOR RD                                | 0.21                 | 0.21          | SILVER SPRING |
| 34  | HAWHILL END   | WILDEN LA/0.07                          | 0.13                 | 0.06          | POTOMAC       |

|    |                  |                              |           |      |               |
|----|------------------|------------------------------|-----------|------|---------------|
| 35 | HEIL RD          | NEW HAMPSHIRE AVE            | 0.15      | 0.15 | SILVER SPRING |
| 36 | HILLER WAY       | ROCKVILLE PIKE               | 0.10      | 0.10 | ROCKVILLE     |
| 37 | HILLSDALE DR     | HILLSDALE DR/.06             | 0.10      | 0.04 | KENSINGTON    |
| 38 | KINGSGATE RD     | ROCK RUN DR                  | 0.15      | 0.15 | POTOMAC       |
| 39 | KIRK LA          | BROOK RD                     | 0.04      | 0.04 | OLNEY         |
| 40 | LAUX ST          | ROSEMERE AVE                 | 0.03      | 0.03 | SILVER SPRING |
| 41 | LONG BRANCH PKWY | DEARBORN AVE                 | 0.06      | 0.06 | SILVER SPRING |
| 42 | MAPLE RIDGE CT   | HOLLY RIDGE ROAD             | 0.15      | 0.15 | ROCKVILLE     |
| 43 | MARTIN AVE       | ARCOLA AVE                   | 0.08      | 0.08 | WHEATON       |
| 44 | MERRICK RD       | WILSON LA                    | 0.13      | 0.13 | BETHESDA      |
| 45 | MOULTRIE PKWY    | LOGAN DR                     | 0.06      | 0.06 | POTOMAC       |
| 46 | OLD ORCHARD RD   | 0.38 (South of Ednor Road)   | 0.52      | 0.14 | SILVER SPRING |
| 47 | OLNEY LA         | BREADY RD                    | 0.26      | 0.26 | OLNEY         |
| 48 | OVERHILL RD      | GARRETT RD                   | 0.21      | 0.21 | DERWOOD       |
| 49 | PEMBROKE RD      | BRADLEY RD                   | 0.14      | 0.14 | BETHESDA      |
| 50 | POE RD           | 0.12 (South of Bradley Blvd) | 0.16      | 0.04 | BETHESDA      |
| 51 | POPLAR HILL RD   | PAREV TERR                   | 0.70      | 0.70 | GERMANTOWN    |
| 52 | RADNOR RD        | SPUR TO DURBIN RD            | 0.02      | 0.02 | BETHESDA      |
| 53 | SILVERWOOD LA    | MARYLAND AVE                 | 0.21      | 0.21 | BETHESDA      |
| 54 | STONE RD         | KIRK LA                      | 0.09      | 0.09 | OLNEY         |
| 55 | SUNCREST AVE     | FREDERICK RD                 | 0.18      | 0.18 | CLARKSBURG    |
| 56 | UNITY LA         | GLEN MILL RD                 | 0.31      | 0.31 | POTOMAC       |
| 57 | UPLAND DR        | GOOD HOPE RD                 | 0.17      | 0.17 | SILVER SPRING |
| 58 | WAYCROFT WAY     | GOLF LA                      | 0.27      | 0.27 | ROCKVILLE     |
| 59 | WILLOW LA        | PINETREE ROAD                | 0.25      | 0.25 | ROCKVILLE     |
| 60 | WINDSWEPT LA     | NEW HAMPSHIRE AVE            | 0.67      | 0.67 | BRINKLOW      |
| 61 | WINNPENNY LA     | CAPE MAY RD                  | 0.07      | 0.07 | SILVER SPRING |
| 62 | WINTHROP DR      | PIPING ROCK DR               | BISHOP RD | 0.06 | SILVER SPRING |

## **APPENDIX B**

**Application Submitted by Residents on the DBU Section of  
Radnor Road**



MARC KORMAN  
Legislative District 16  
Montgomery County

Appropriations Committee

Education and Economic Development  
Subcommittee



Annapolis Office  
The Maryland House of Delegates  
6 Bladen Street, Room 210  
Annapolis, Maryland 21401  
410-841-3649 • 301-858-3649  
800-492-7122 Ext. 3649  
Marc.Korman@house.state.md.us

THE MARYLAND HOUSE OF DELEGATES  
ANNAPOLIS, MARYLAND 21401

December 2, 2015

Al Roshdieh  
Acting Director  
Montgomery County Department of Transportation  
101 Monroe Street, 10th Floor  
Rockville, MD 20850

Dear Acting Director Roshdieh:

Enclosed is a letter from two families in my legislative district requesting a preliminary analysis, cost estimate, and report consistent with the County's Dedicated but Unmaintained Road Policy.

The office of Councilman Berliner, the district councilmember for the street at issue, has been made aware of this request. Please contact me with any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Marc Korman".

Marc Korman

CC: Councilman Roger Berliner  
Bruce Johnston, Chief, Division of Transportation Engineering  
Eckland Family  
McNally Family

November 24, 2015

Al Roshdieh  
Acting Director  
Montgomery County Department of Transportation  
101 Monroe Street, 10th Floor  
Rockville, MD 20850

Dear Acting Director Roshdieh:

We are the two homeowners with driveways affronting Radnor Road north of Durbin Road and south of Oldchester Road. Our small stub of Radnor Road is not paved or maintained by the County. This letter is to serve as a petition for preliminary analysis, cost estimate, and report, as provided for by the County's Dedicated but Unmaintained County Roads Policy.

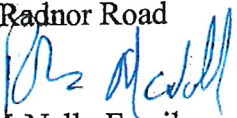
Following the County's preliminary analysis, cost estimate, and report, the County's Department of Transportation will make a ballot to determine how many affected property owners would support construction of the proposed improvements. We acknowledge that at that time, if support is expressed by the affected property owners for the activity, we will have a financial obligation to repay the County for 90% of the cost over a twenty year period as part of our property tax assessment. To clarify, we are interested in having the road paved and maintained, but we cannot make a final commitment until the costs are presented by the preliminary analysis, cost estimate, and report.

Please let us know if you have any questions.

Thank you,



The Eckland Family  
7404 Radnor Road

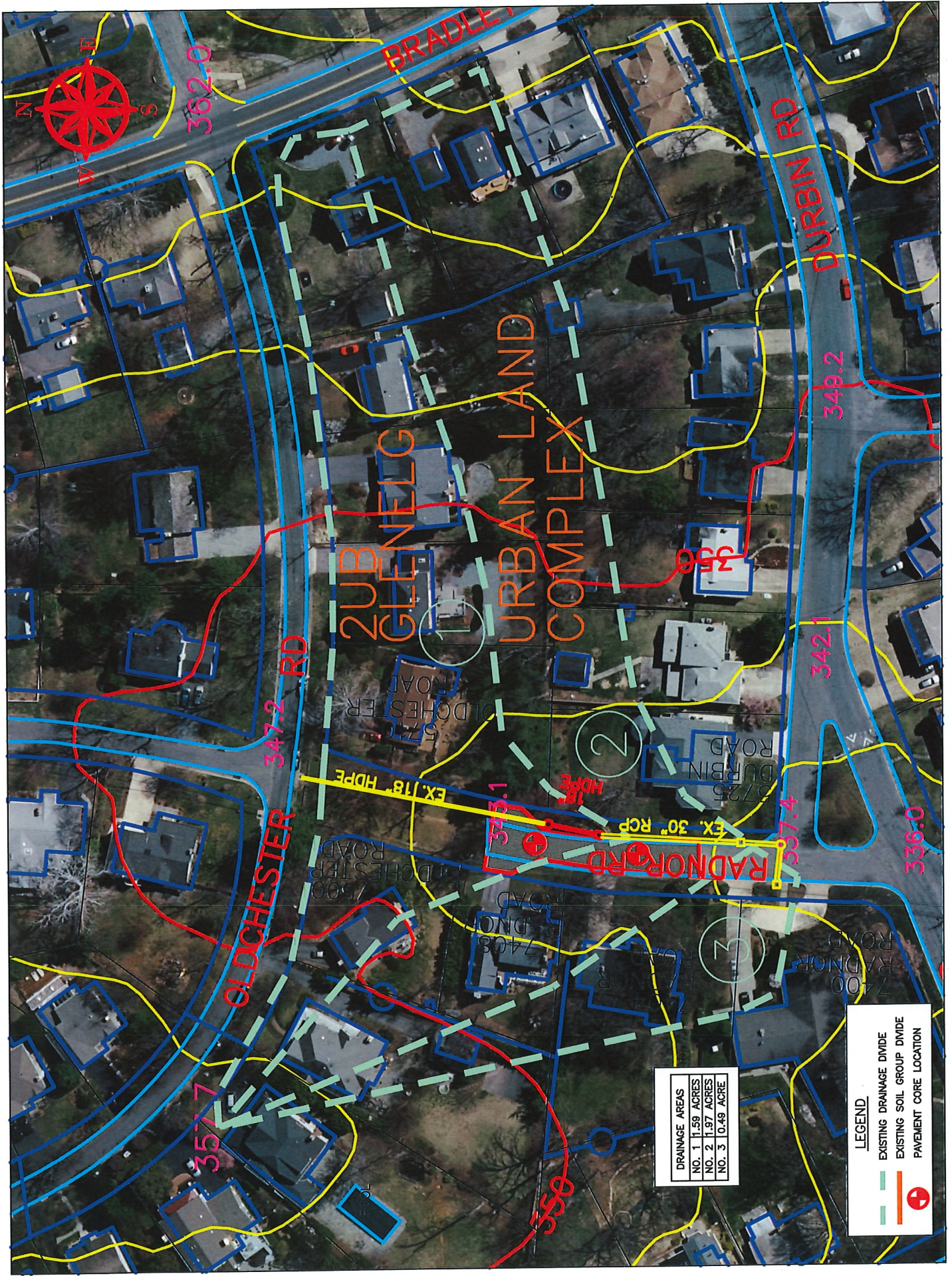


The McNally Family  
7408 Radnor Road

# **APPENDIX C**

**Aerial GIS Map with Soil and Drainage Boundaries**





| DRAINAGE AREAS |             |
|----------------|-------------|
| NO. 1          | 11.59 ACRES |
| NO. 2          | 1.97 ACRES  |
| NO. 3          | 10.48 ACRES |

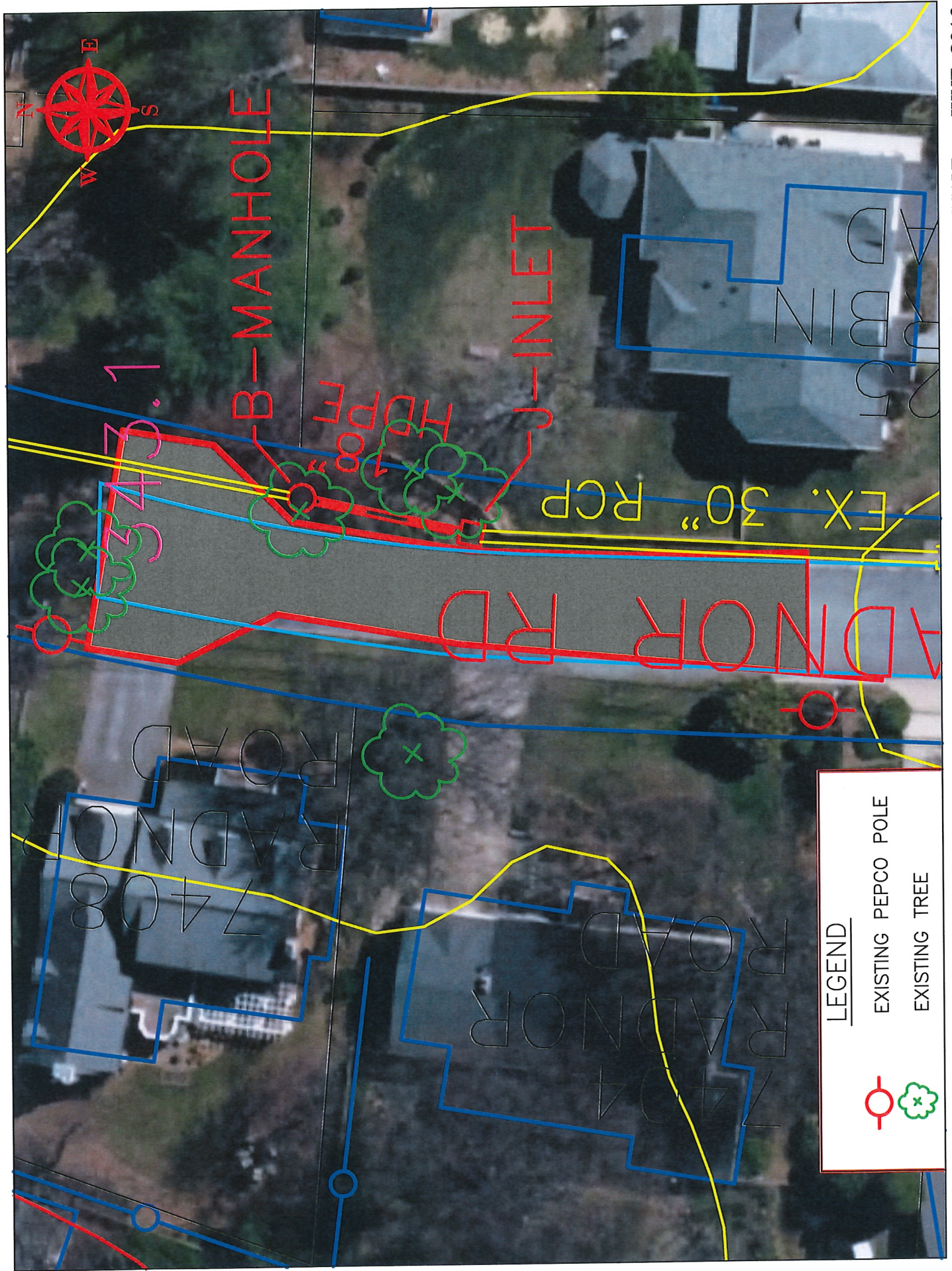
**LEGEND**

- EXISTING DRAINAGE DIVIDE
- EXISTING SOIL GROUP DIVIDE
- PAVEMENT CORE LOCATION



## **APPENDIX D**

**Aerial GIS Map with PEPCO and Tree Locations**



# LEGEND

EXISTING PEPCO POLE

EXISTING TREE



RADNOR ROAD

NOT TO SCALE

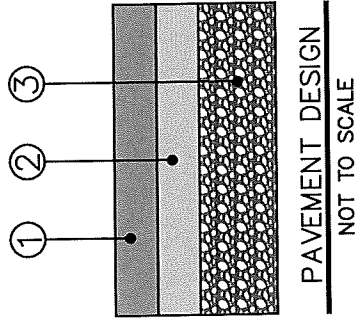
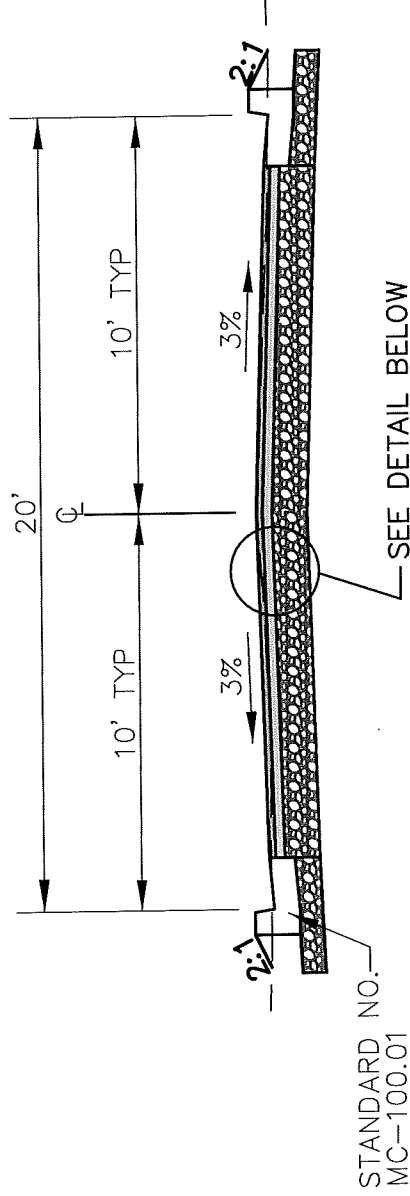
JUNE 2016

# **APPENDIX E**

**Proposed Typical Section**

**MC-210.01 (Modified)**





- ① 2" HMA SUPERPAVE, TYPE 12.5 mm, PG 64-22, SURFACE, LEVEL 2
- ② 3" HMA SUPERPAVE, TYPE 19 mm, PG 64-22, BASE, LEVEL 2
- ③ EXISTING GRAVEL SUB BASE

TYPICAL SECTION  
MODIFIED STD NO. MC-210.01

RADNOR ROAD IMPROVEMENT

SCALE 1"=5'

JUNE 2016

# **APPENDIX F**

**Standard No. MC-223.01**  
**Temporary Turnaround Curb and Gutter Roads**

STANDARD NO. MC-223.01

# **APPENDIX G**

## **List of Affected Properties**

**List of Affected Property Properties**

| <b>House Number</b> | <b>Owner's Last Name (as of July 1, 2016)</b> |
|---------------------|---|
| House No. 7404      | Eckland                                       |
| House No. 7408      | McNally                                       |

-----  
**Total Number of Affected Properties:      2**

# **APPENDIX H**

## **Itemized Construction Cost Estimate**

**MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION  
DIVISION OF TRANSPORTATION ENGINEERING  
WORK ORDER PROPOSAL**

**Radnor Road Improvement**

| ITEM #                 | ITEM   | QUANTITY | UNIT      | UNIT PRICE | TOTAL COST         |
|------------------------|--|----------|-----------|------------|--------------------|
| 1001                   | CLEARING   | 4        | CH        | \$150.00   | \$600.00           |
| 1002                   | UNCLASSIFIED GRUBBING EXCAVATION   | 37       | CY        | \$5.00     | \$185.00           |
| 1008                   | TEMPORARY TRAFFIC SIGNS  | 72       | SF        | \$13.50    | \$972.00           |
| 1032                   | CRUSHER RUN AGGREGATE CR-6 FOR MAINTENANCE OF TRAFFIC  | 50       | TONS      | \$1.00     | \$50.00            |
| 1034                   | CONSTRUCTION STAKEOUT  | 8        | CH        | \$100.00   | \$800.00           |
| 2001                   | UNCLASSIFIED ROADWAY EXCAVATION  | 52       | CY        | \$20.00    | \$1,040.00         |
| 2002                   | COMMON BORROW  | 41       | CY        | \$4.00     | \$164.00           |
| 2008                   | REMOVAL OF EXISTING MASONRY INCLUDING PRECAST STRUCTURES AND ANY SIZE AND ANY TYPE OF PIPE   | 30       | CY        | \$2.00     | \$60.00            |
| 3001                   | CLASS 3 EXCAVATION FOR STORM DRAIN AND MISCELLANEOUS CONSTRUCTION: TOTAL DEPTH OF EXCAVATION LESS THAN OR EQUAL TO 4 VERTICAL FEET | 50       | CY        | \$54.00    | \$2,700.00         |
| 3004                   | SELECTED BACKFILL USING No. 57 AGGREGATE   | 30       | TONS      | \$65.00    | \$1,950.00         |
| 3024                   | 18 INCH TYPE S, HIGH DENSITY POLYETHYLENE PIPE   | 33       | LF        | \$13.75    | \$453.75           |
| 3038                   | CLEAN EXISTING PIPE (ANY TYPE, ANY SIZE)   | 285      | LF        | \$1.00     | \$285.00           |
| 3046                   | "J" INLET MCDOT STANDARD No. MC-506.01   | 4        | VF        | \$389.00   | \$1,556.00         |
| 3051                   | TYPE "B" MANHOLE MCDOT STANDARD No. MC-515.01: FOR THE PORTION OF VERTICAL DEPTH UP TO AND INCLUDING 6 FEET                        | 5        | VF        | \$424.00   | \$2,120.00         |
| 3095                   | SILT FENCE   | 409      | LF        | 2          | \$818.00           |
| 3096                   | REMOVE AND RESET SILT FENCE  | 409      | LF        | 1.5        | \$613.50           |
| 3097                   | INLET PROTECTION   | 24       | LF        | 10         | \$240.00           |
| 3098                   | STABILIZED CONSTRUCTION ENTRANCE   | 19       | TONS      | 20         | \$380.00           |
| 3099                   | REHABILITATE STABILIZED CONSTRUCTION ENTRANCE  | 19       | TONS      | 1          | \$19.00            |
| 5003                   | HOT MIX ASPHALT BASE PAVEMENT FOR ROADWAYS: SUPERPAVE 25.0 MM, PG 64-22  | 78       | TONS      | 75         | \$5,850.00         |
| 5004                   | HOT MIX ASPHALT SURFACE PAVEMENT FOR ROADWAYS: SUPERPAVE 12.5 MM, PG 64-22 (only for 2" surface)                                   | 52       | TONS      | 100        | \$5,200.00         |
| 5005                   | HOT MIX ASPHALT BASE PAVEMENT FOR DRIVEWAYS AND BIKE PATHS: SUPERPAVE 19.0 MM, PG 64-22  | 3        | TONS      | 110        | \$330.00           |
| 5006                   | HOT MIX ASPHALT SURFACE PAVEMENT FOR DRIVEWAYS AND BIKEPATHS: SUPERPAVE 9.5 MM, PG 64-22   | 3        | TONS      | 115        | \$345.00           |
| 6002                   | COMBINATION CONCRETE CURB & GUTTER (ANY TYPE)  | 390      | LF        | 26         | \$10,140.00        |
| 6033                   | REMOVE AND RESET/RELOCATE EXISTING FENCE (ANY SIZE, ANY TYPE)  | 918      | SF        | 10         | \$9,180.00         |
| 6042                   | REMOVE & RESET/RELOCATE EXISTING MAIL BOX (ANY SIZE, ANY TYPE)   | 2        | EA        | 10         | \$20.00            |
| 7014                   | SODDING  | 101      | SY        | 6          | \$606.00           |
| 7017                   | SELECTIVE TREE TRIMMING: 6 1/4 INCHES IN CALIPER OR LARGER   | 4        | CH        | 150        | \$600.00           |
| 7018                   | SELECTIVE TREE FELLING AND REMOVAL: 6 1/4 INCHES IN CALIPER OR LARGER  | 4        | CH        | 550        | \$2,200.00         |
| 7019                   | ADDITIONAL WATERING OF SOD, PLANTS, AND SEEDED AREAS   | 5        | 1000 GAL. | 1          | \$5.00             |
| 7020                   | TREE ROOT PRUNING  | 153      | LF        | 2          | \$306.00           |
| 8003                   | RELOCATE EXISTING GROUND MOUNTED SIGN USING NEW SUPPORTS   | 1        | SF        | 12         | \$12.00            |
| <b>SUBTOTAL</b>        |  |          |           |            | \$49,800.25        |
| <b>20% CONTINGENCY</b> |  |          |           |            | \$9,960.05         |
|                        |  |          |           |            | \$1,500.00         |
|                        |  |          |           |            | \$61,260.30        |
|                        |  |          |           |            | <b>\$61,300.00</b> |

LANDSCAPING COST/REPLACEMENT TREES

TOTAL



# **APPENDIX I**

## **Design, Property Acquisition and Construction Management Cost Estimate**

Date: 7/11/2016

**Project Name: Radnor Road**

**Design (12)** Duration: 12 months

| FY19  |             |                  |                 | Total            | Rounded       |
|---|-------------|------------------|-----------------|------------------|---------------|
|   | Hourly Rate | Duration (month) | Hours per Month | Cost             |               |
| Transportation Design (In-House Engineering Design) | 100         | 12               | 6               | 7,200            |               |
| Transportation Design (In-House Survey)             |             |                  |                 | 3,000            |               |
| Permit Fees (SWM Concept)                           |             |                  |                 | 2,903            |               |
| Permit Fees (E&S)                                   |             |                  |                 | 4,011            |               |
| <b>Total Cost</b>                                   |             |                  |                 | <b>\$ 17,114</b> | <b>17,000</b> |

**Construction Mgt (13)** Duration: 4 months = 3 months prior to construction + 1 month construction duration

| FY20                 |             |                  |                 | FY21          |                 |
|----------------------|-------------|------------------|-----------------|---------------|-----------------|
|                      | Hourly Rate | Duration (month) | Hours per Month | Cost          |                 |
| Construction Section | 100         | 3                | 1               | 300           | 50              |
| <b>Total Cost</b>    |             |                  |                 | <b>\$ 300</b> | <b>\$ 5,000</b> |

**Property (14)**

Duration: 9 months

| FY20                            |             |                  |                 | Total           | Rounded      |
|---------------------------------|-------------|------------------|-----------------|-----------------|--------------|
|                                 | Hourly Rate | Duration (month) | Hours per Month | Cost            |              |
| Property Acquisition Section    | 100         | 9                | 5               | 4,500           |              |
| Temporary Construction Easement |             |                  |                 | 800             |              |
| <b>Total Cost</b>               |             |                  |                 | <b>\$ 5,300</b> | <b>5,000</b> |