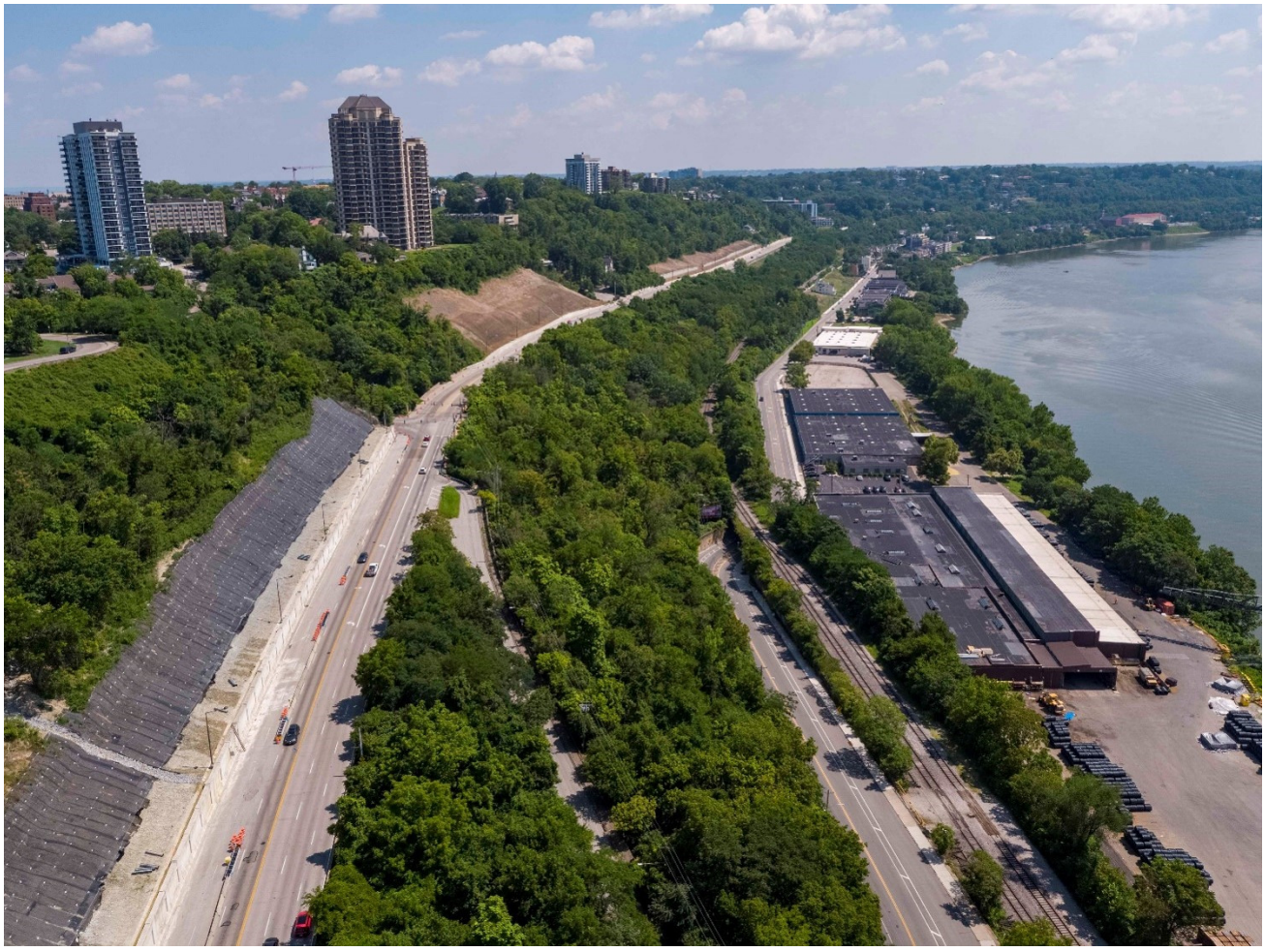
2020-2021 RETAINING WALL AND LANDSLIDE REPORT



Department of Transportation and Engineering
Division of Engineering
Structures and Geotechnical Section

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INTRODUCTION

Retaining walls are an essential part of Cincinnati's transportation network, protecting roadways, sidewalks and stairways from landslides and hillside slippage. Timely maintenance is important for the safety and welfare of the traveling public. The Department of Transportation and Engineering (DOTE) is the city agency responsible for inspecting, maintaining, and improving the transportation system within the City of Cincinnati. The Wall Stabilization & Landslide Correction Program is the specific program within DOTE charged with the responsibility of maintaining the retaining walls within this transportation system and stabilizing landslides within the public right-of-way.

RETAINING WALL DATABASE AND INSPECTION

Essentially every retaining wall within or adjacent to the right-of-way has been inventoried and is included in the Retaining Wall Database (RWD). There is a total of 7,303 retaining walls having a length of approximately 173 miles included in the RWD. DOTE is responsible for maintaining 1,596 walls having an approximate length of 52.5 miles of retaining walls.

Wall Owner	Number	Length-Feet	Length-Miles
Transportation and Engineering	1596	276,982	52.46
Other Departments	222	43,664	8.27
Maintenance Agreements	100	9,494	1.80
Unknown	40	7,638	1.45
Hamilton County	14	5,107	0.97
ODOT	192	54,664	10.35
Private	5139	514,668	97.48
TOTALS:	**7,303**	**912,217**	**172.78**

The Retaining Wall Database (RWD) formerly known as WITS (Wall Inventory Tracking System) was created in 1991. The RWD was upgraded to a geodata system in 2015 and is now directly accessed through ArcGIS. A web supported viewing and reporting system of the retaining walls contained in the RWD is also included in DOTE's Asset Management Portal. Maintenance and updating of the database is highly dependent on assistance from personnel from Enterprise Technology Solutions (ETS).

DOTE personnel inspect DOTE walls and walls owned and maintained by other city departments. The city is divided into six inspection districts (Inspection District Map Section 5 of report). Each district is inspected once every six years. In addition to the individual inspection district, all walls that are rated in poor or critical condition are inspected yearly. Other inspections are performed if a wall is damaged in an automobile accident or if a complaint is received. All newly constructed, replaced, or repaired walls are inventoried and inspected.

The objectives of the inspections are to:

1. Locate and determine the extent of any weakness or damage so that appropriate corrective actions can be taken to ensure public safety.

2. Provide a current information database on the condition of City owned retaining walls within Cincinnati so that maintenance, repair, and replacement projects can be scheduled efficiently.

The goal of the Retaining Wall Program is to preserve the structural integrity of all walls maintained by DOTE. DOTE established the following performance measures to track progress towards accomplishing this objective.

1. DOTE personnel will annually inspect all City walls (excluding flood walls) in one inspection district and all walls that are rated 3 (Poor) or 4 (Critical) condition. DOTE personnel will also inspect new, replaced, repaired, and damaged walls. They will maintain an inventory of all walls that are in or near public streets within the City of Cincinnati and annually submit a report summarizing the condition of City owned walls.

2. Within the limits of available funding, retaining wall personnel will develop and manage a wall maintenance, repair, and replacement work program to maintain a Satisfactory Structural Rating for 80% or more of the walls maintained by DOTE.

DOTE personnel inspected a total of 296 walls having a total length of 9.94 miles in the 2020 inspection district. These walls were in the communities of:

34 – Northside
35 – South Cumminsville
37 – College Hill
38 – Mount Airy
39 – Roll Hill
40 – North Fairmount
41 – South Fairmount
45 - Westwood
50 – East Westwood
51 – Millvale
52 – English Woods

Section 4 of the report summarizes the results of the inspections completed in 2020.

RETAINING WALL CONDITION SUMMARY

Tables and graphs summarizing the condition of DOTE maintained walls and other city-maintained walls are shown in Section 2 of this report. The rating of each wall is based on the structural wall rating which ranges from Excellent (0) to Critical (4). The structural condition ratings are defined in Section 2 of this report. One-hundred-eight (108) of the 1,596 (6.77%) walls maintained by DOTE have a Structural Rating of Poor (3). Eleven (11) walls, 0.69% of DOTE walls have a Structural Rating of Critical (4). Tables of all DOTE walls and walls maintained by others with a Poor (3) or Critical (4) condition rating are also listed in Section 2.

A list of the priority and estimated costs to replace or repair DOTE walls is shown on the Wall Repair Priority and Estimated Funding List in Section 3 of this report. The list identifies whether the cost to replace/repair is a capital or maintenance expense. The estimated costs are conceptual and are primarily based on the inspection reports and photographs. The costs are only intended to establish basic funding needs and are not considered engineer's estimates. The priority for replacement/repair is based on the walls' impact on public safety, performance, the area it supports, further deterioration if not repaired, and degree of consequences if left unrepaired.

A summary of the Wall Repair Priority & Estimated Funding Table is given below.

WALL REPAIR PRIORITY AND ESTIMATED FUNDING SUMMARY

Capital Cost	
High Priority (11 walls)	$1,112,000
Medium Priority (11 walls)	$579,000
Low Priority (40 walls)	$2,677,400
TOTAL (62 walls)	$4,368,400

Maintenance Costs	
High Priority (21 walls)	$60,000
Medium Priority (89 walls)	$248,000
Low Priority (78 walls)	$157,850
TOTAL (188 walls)	$465,850

The total estimated maintenance and capital construction cost to replace/repair the walls to bring all walls to a condition of Satisfactory or better is $4,834,250. This estimated conceptual cost does not account for costs associated with design, construction management, real estate, or inflation.

FUNDING

In 1987, the Smale Commission, which studied Cincinnati's infrastructure, put an emphasis on the need to stabilize a backlog of landslides and the need for the repair and replacement of retaining walls throughout the city. Annual Capital funding for the Wall Stabilization and Landslide Correction Program which began in 1989 has substantially declined over the years from a high point of $1.84 million in 1995 to a low of $550,000 in Fiscal Year (FY) 2016.

Neither DOTE or Public Services receive funding specifically for the maintenance of retaining walls. Maintenance Funds which were at an annual level of $500,000 between 1989 and 1992 and $200,000 between 1993 and 1995 have been eliminated since 1996. Retaining wall repairs must be funded from the same Capital funds used for landslide stabilization projects. Most of the salaries of DOTE personnel within the program are funded directly from the program. Construction management and inspection services are also funded from the program.

Four-hundred fifty-four thousand one hundred thirty-two ($454,132) was available in the Wall Stabilization and Landslide Correction Program on October 13, 2021. This amount includes $100,000 of the $700,000 Fiscal Year (FY) 2022 Capital Fund. This amount also includes the recent $469,319 reimbursement from the Cincinnati Metropolitan Housing Authority (CMHA) owed the Wall Program for costs incurred in stabilizing the hillside on Westwood Northern Boulevard.

The Wall Stabilization & Landslide Correction Six Year Plan included in Section 3 of the report demonstrates that the current level of funding is not sufficient to adequately address the maintenance and replacement of existing retaining walls and the stabilization of landslides which impact the roads. The total projected funding over the six-year period for fiscal years 2022 to 2027 is $4,842,132. Expenses in the six-year plan total $6,200,000 with most of the budget being used for the stabilization of landslides. As previously shown, the estimated conceptual construction cost to repair or replace structurally deficient retaining walls alone is on the order of $4.8 million. The six-year plan places a priority on the stabilization of landslides and does not address the bulk of the structurally deficient walls.

The Wall Stabilization and Landslide Correction Program is highly dependent on securing outside funding. The plan is dynamic and will be revised pending the availability off outside funding or if circumstances, such as prolonged rainfall, cause a change in priorities.

Retaining walls and landslide locations will continually be inspected and evaluated. The program will prioritize allocated funding to address the most critical locations given the constraints of the budget.

CAPITAL IMPROVEMENT PROJECTS COMPLETED IN 2020 – 2021

Summaries of three Capital Improvement projects started in 2019 and completed in 2020 were presented in the 2018-2019 Retaining Wall and Landslide Report. The three projects were the Sunset Avenue Retaining Wall, the Peete Street Retaining Wall Reconstruction, and the Elberon Avenue Hillside Stabilization Project. The summaries of those three projects are repeated in this report.

Summaries of four other major Capital Improvement Projects (CIP) constructed in CY 2020 and the first three-quarters of CY 2021 are also summarized. Those projects are the Westwood Northern Boulevard Hillside Stabilization Project, the Old McMillan Landslide Correction Project, the Berkshire Road Stabilization Project, and the Columbia Parkway Hillside Stabilization Project- Bains Street to Torrence Avenue.

<u>Sunset Avenue Retaining Wall</u> – Project contract price – $302,514

Notice to Proceed 2/3/2020

The toe of a landslide occurring in and below the private driveway accessing the Eagle Watch Apartments slid into the roadway along Sunset Avenue and caused drainage issues in the area. A "solider pile" wall was constructed, then faced with a permanent concrete facing. The wall was completed in April 2020 using Wall Stabilization and Landslide funds.

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Peete Street Retaining Wall Reconstruction - Project contract price – $292,550

Notice to Proceed 11/18/2019

A series of privately-owned mortared limestone retaining walls along Peete Street failed or were failing, resulting Dept. of Buildings and Inspections to issue orders to the Property Owners. At the request of the Homeowners, City Council passed a motion requesting that the City Administration begin the process of designing and constructing a public retaining wall to maintain the right-of-way and assess the Homeowners the project cost. Project funding was established by Ordinance No. 109-2019. This project was bid multiple times due to various circumstances and an acceptable bid was finally executed in November 2019. The wall was completed in April 2020.

<u>Elberon Avenue Hillside Stabilization</u>– Project contract price – $728,240

Notice to Proceed 10/14/2019

The hillside on the outbound side of Elberon Avenue east of Mt. Hope frequently slid into the outbound curb lane requiring the closure of the lane and the removal of soil. Historic and active landslide features were prominent on the slope above Elberon Avenue. An active scarp occurs on the slope approximately 30 feet above the roadway. The prevention of the encroachment of soil into the outbound travel lane required the construction of a 200 ft. long retaining wall having a height on the order of 12 feet. The wall was constructed of H-pile set in drilled shafts anchored in the bedrock with a reinforced cast in place wall face. The project was done as an emergency project because of the potential for sudden and drastic movement. The wall was substantially completed in December 2019 using project specific funds 980x233x192361 (Ordinance 154-2019), and Wall Stabilization and Landslide Program funds. Final completion was in June of 2020.

Elberon Avenue Hillside Stabilization (Continued)

Westwood Northern Boulevard – Project contract price – $365,060

Notice to Proceed NTP 7/13/2020

A large active landslide exists on the north side of Westwood Northern Boulevard (WNB) between Beekman and Sutter Avenues. The landslide caused the hillside to drop ten to fifteen feet below the height of the road over a length of 325 feet. A pier retaining wall constructed by Cincinnati Metropolitan Housing Authority (CMHA) in 1981 was compromised ineffective in supporting the roadway. The loss of soil between the piers of the existing wall impacted the pavement and continued erosion and movement of the hillside would result in the loss of pavement, use of the roadway and damage to public and private utilities.

The stabilization project consisted of the construction of a pier wall on the downhill side of the existing wall and a guardrail system. The emergency acquisition process was used to solicit bids from six contractors who have previously done similar work for the city.

Funding for the project was established through Ordinance No. 159-2020. The original retaining wall, although located within the Right-of-way was owned and was the maintenance responsibility the Cincinnati Metropolitan Housing Authority (CMHA). CMHA agreed to provide reimbursement to the City for the costs the City incurred in stabilizing the hillside. City of Cincinnati Ordinance No. 3-2021 amended Ordinance No. 79-1981 to reflect the agreement between the City and CMHA and to clarify that, upon providing the agreed upon reimbursement of $469,319.00, CMHA would no longer have responsibility for repairing and maintaining the portion of the hillside for which the City repaired.

Westwood Northern Boulevard (Continued)

Old McMillan Street – Project contract price -$109,439

A landslide caused a significant set-down (scarp) in the pavement at the west terminus of Old McMillan Street. DOTE had been maintaining the pavement via various patches over the years, but the movement accelerated to the point that patching was no longer a viable solution. DOTE designed a 66 ft. long "soldier-pile" retaining wall consisting of 12 piers with concrete lagging between steel beams along the north side of the roadway. The project was completed in January of 2021.

Berkshire Lane Pier Wall Project –construction cost – $143,206.48

Notice to proceed 7/12/21

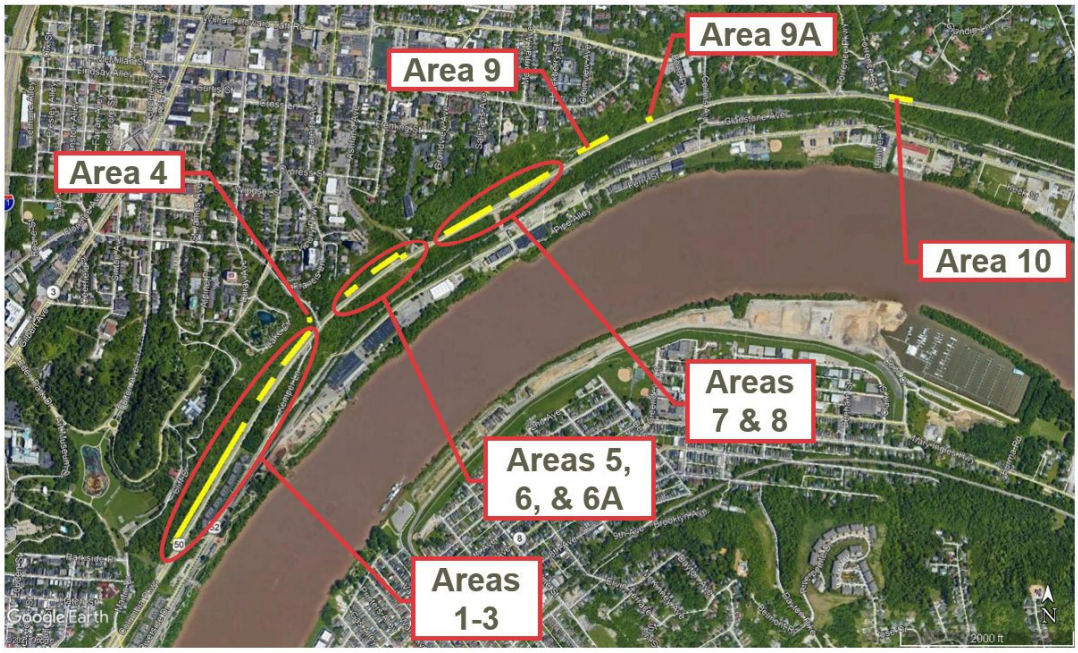
The existing creek bank which supports Berkshire Lane was being severely eroded. The erosion caused settlement of the guardrail and undermined the pavement resulting in the loss of pavement. The repair consisted of the installation of a 166 ft. long pier wall consisting of twenty-eight 30-inch diameter piers and fifty-six 24-inch diameter plug piers. Guardrail upgrades and pavement repair were also included in the project. The project was completed in August of 2021.

<u>Columbia Parkway Hillside Stabilization Project Bains to Torrence</u> – Project cost-$17,612,448.87

The Columbia Parkway Hillside Stabilization Project Bains Street to Torrence Avenue was completed on September 22, 2021. The Design-Build team of the Beaver Excavating Company (Beaver) and their design consultant Geotechnology, Inc. was selected on June 7, 2019.

The project addressed landslides on the uphill side of the Parkway from Bains Street to Torrence Parkway and one slide location east of Torrence. The landslide locations as presented in the 2019 Columbia Parkway Landslide Evaluation and Report, Bains Street to Torrence Parkway is shown below.

Stabilization Areas



Heavy rainfall in June of 2019 triggered hillside movement and caused a significant amount of material to slide onto the pavement in Areas 1-3. Beaver immediately responded and was able to mobilize to remove the slide debris on June 25th, 2019.

Phase I of the contract in the amount of $1,229,800.00 was for exploration and design of the landslide areas. Beaver and Geotechnology began exploration for design in August of 2020.

A summary of each of the Stabilization Areas is given in order of their construction.

Area 10 – East of Torrence Parkway

Construction Start Date: 10/21/2019
Completion Date: 2/30/2020
Cost of Construction: $635,600.00

Area 10 was stabilized by the construction of a 280 ft long Soldier Pile and Lagging Wall composed of thirty-two 36-inch diameter piers. Piles were W24x131, with lengths of 25 to 30 feet and were socketed into bedrock a minimum of 11 feet below the bottom of the lagging. The wall was set back 20 feet from the existing Columbia Parkway wall. Wall aesthetics included precast concrete beam covers and caps to mimic existing walls in this section of the parkway. Replacement of a section of the existing (original) wall that was tilting was also included with construction of Area 10.

Area 9A

Construction Start Date: 2/3/2020
Completion Date: 5/22/2020
Cost of Construction: $459,000.00

Area 9A was stabilized using soil nails over an area of 6,600 square feet. One hundred and thirty nails were drilled into the hillside. The nails were No. 9, Grade 75 bars with lengths between 30 and 40 feet. The nails were placed and grouted into 6-inch diameter boreholes drilled at an angle of 15 degrees and extended 25 feet into bedrock. A Turf Reinforcing Mat (TRM) was then placed on the slope for erosion control and to assist in revegetating the slope. A high strength steel mesh was then placed over the TRM. The mesh was bolted to the nails with spike plates. The hillside was then hydroseeded with a mixture of seed, fertilizer, and mulch.

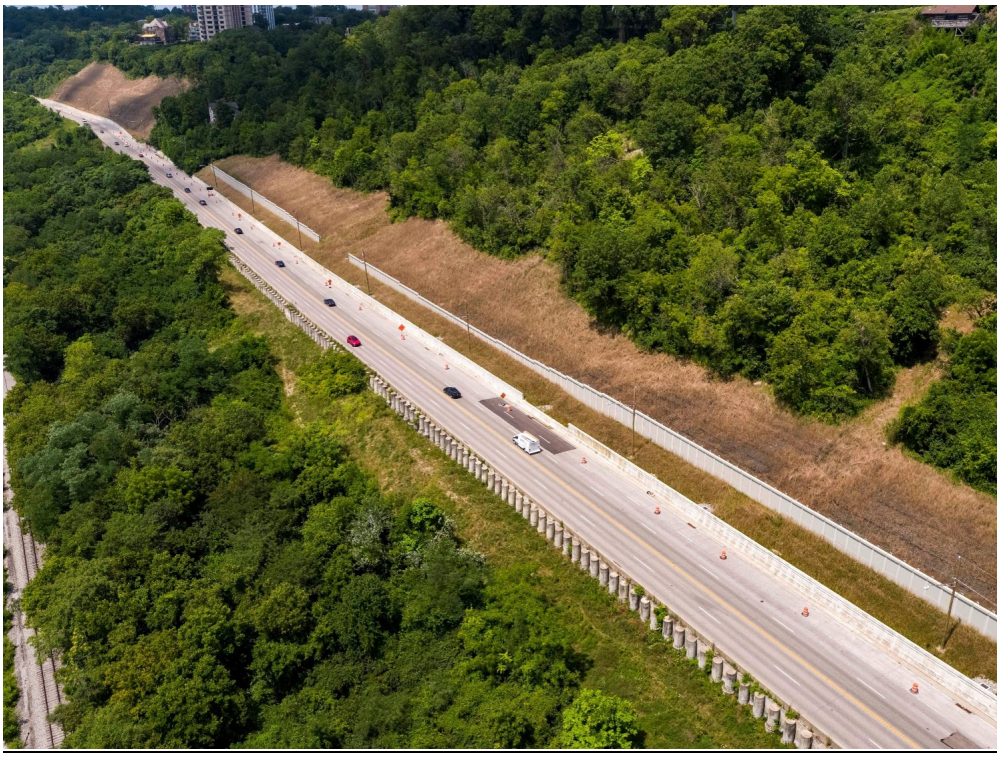
Areas 7 & 8

Construction Start Date: 1/6/2020
Completion Date: 9/10/2020
Cost of Construction: $4,977,828.82

Areas 7 and 8 were stabilized by the construction of a soldier pile and lagging wall having an overall end to end length of 1,450 feet. The two areas were essentially combined leaving only an eighty-foot-wide gap in the wall for an existing sewer line and drainage channel.

Two-hundred and thirty piers were installed at a center to center spacing of six feet. The piers were reinforced with W30x124 or W36x160 piles placed in drilled boreholes having diameters of 36 and 48 inches. Pile lengths ranged from 25 to 34.5 feet and were socketed 13 to 16 feet into the bedrock. Wood lagging followed by precast concrete panels were installed between the piles. A precast concrete cap was installed on top of the piles and panels. A turf reinforcing mat was placed on all disturbed ground and hydroseeded.

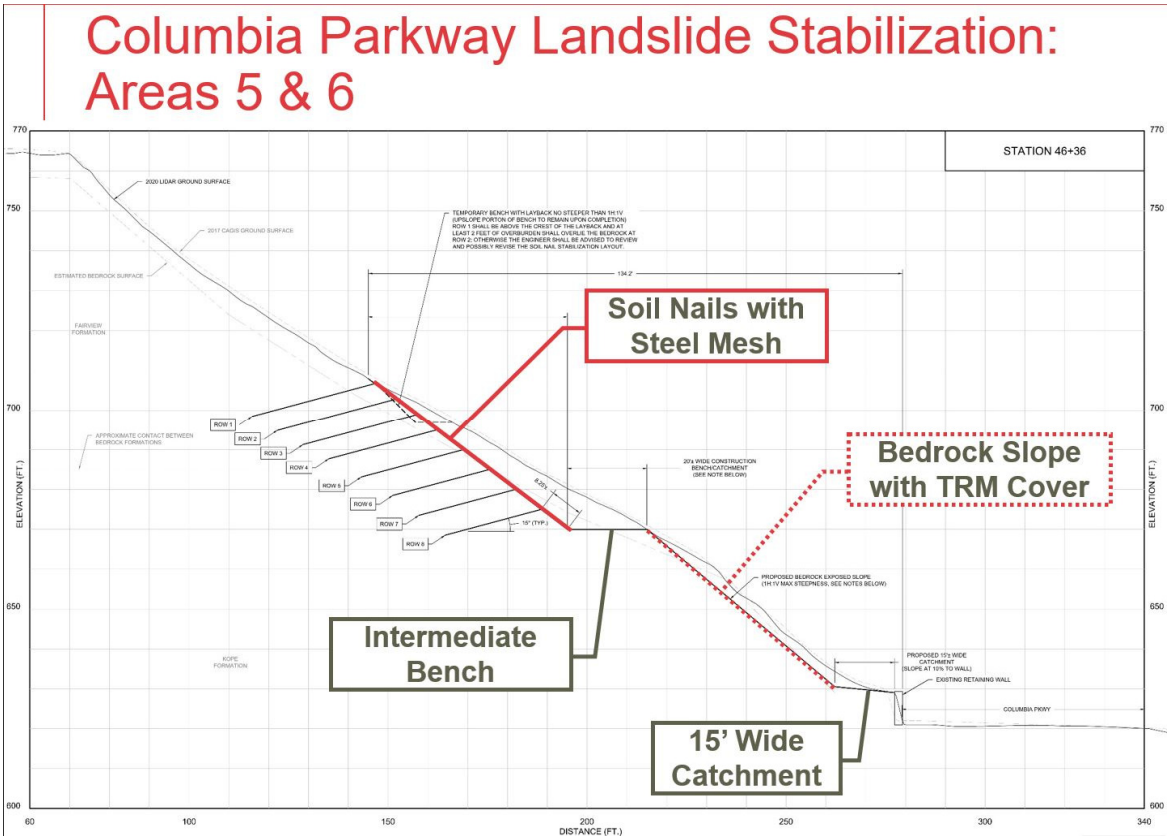
Areas 7 & 8 - (Continued)



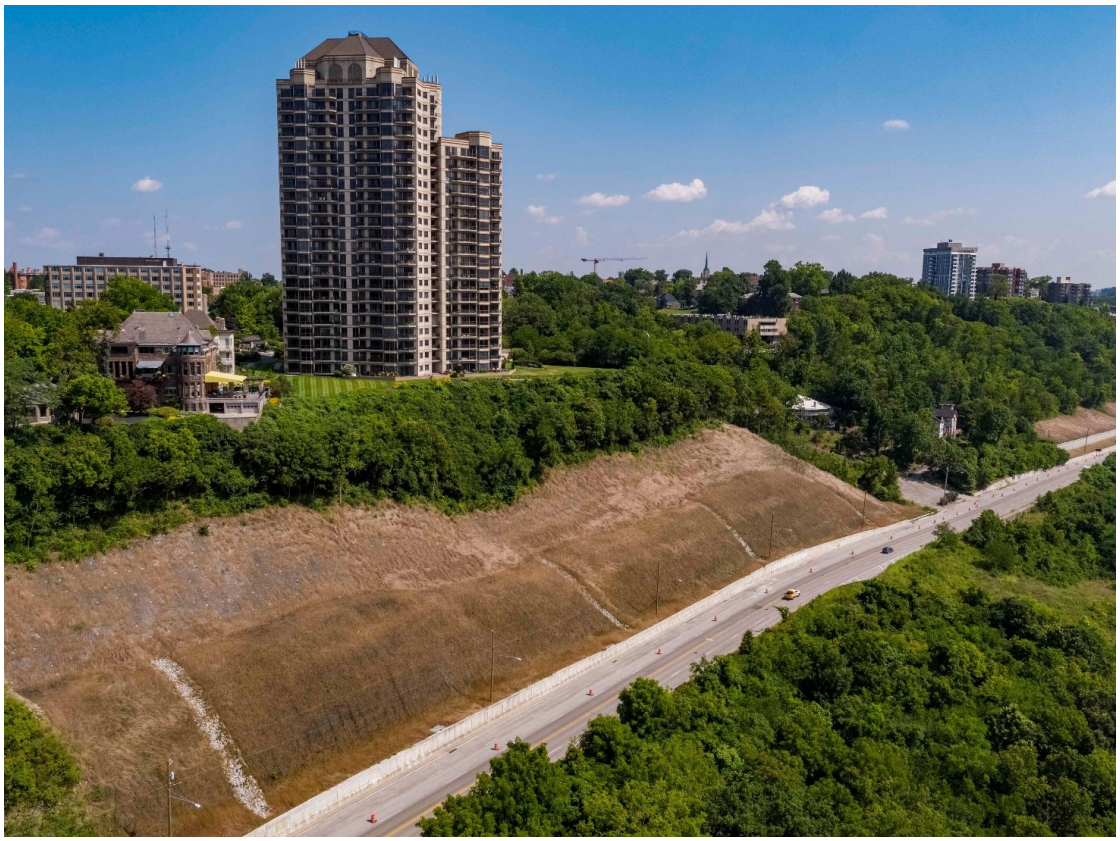
Area 5, 6 & 6a

Construction Start Date: 5/21/2020
Completion Date: 1/14/2021
Cost of Construction: $2,622,965.70

The soil nails stabilization method used at Area 9A was used at Areas 5, 6 & 6A. Eight-hundred-and-seventy nails were installed in the upper slope. The nails and mesh covered an area of 42,000 square feet. A mid-slope bench was constructed at the bottom of the areas that were soil nailed. The lower half of the slope was entirely within shale. This lower slope was cleared of loose material and then covered with a turf reinforcing mat (TRM). Four armored rock channels were installed from the mid-slope bench to newly installed drainage inlets behind the existing wall on Columbia Parkway. A fifteen-foot-wide catchment bench was created at the base of the slope and behind the existing wall. The entire slope was then hydroseeded.



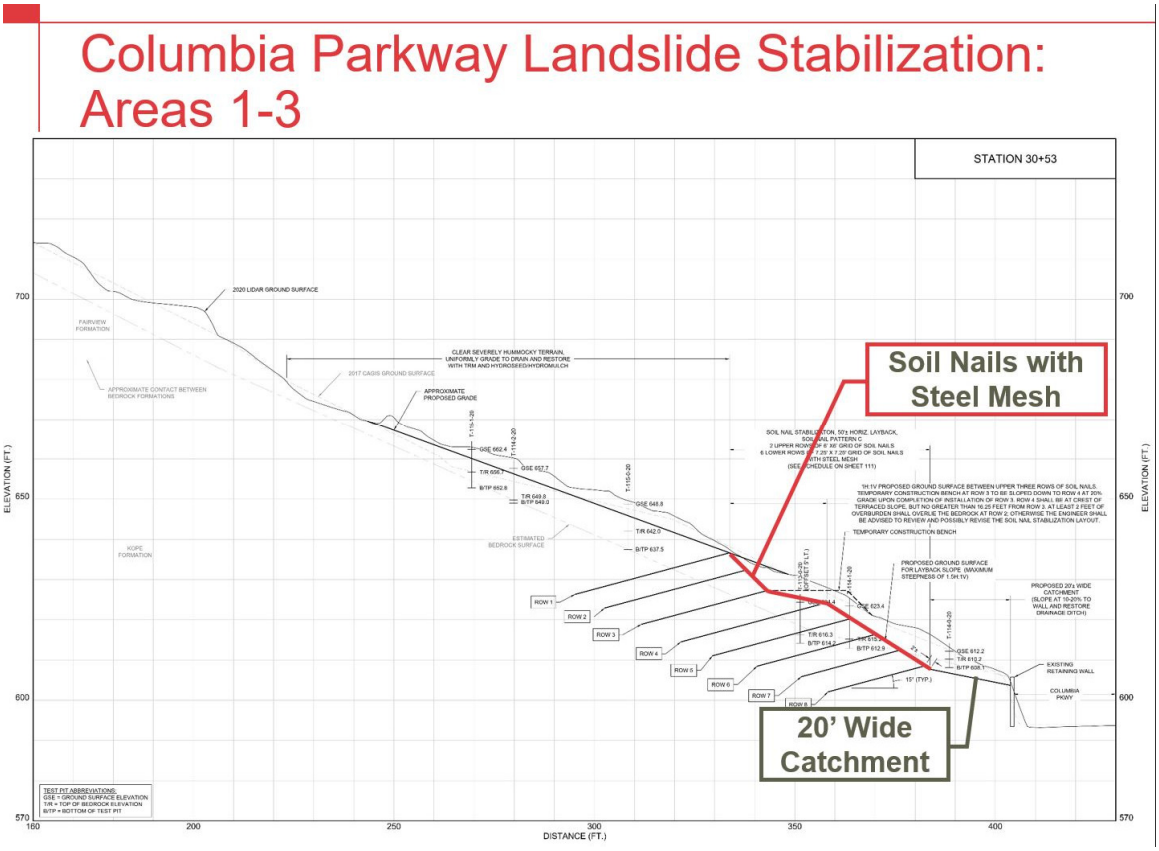
Area 5, 6 & 6a – (Continued)



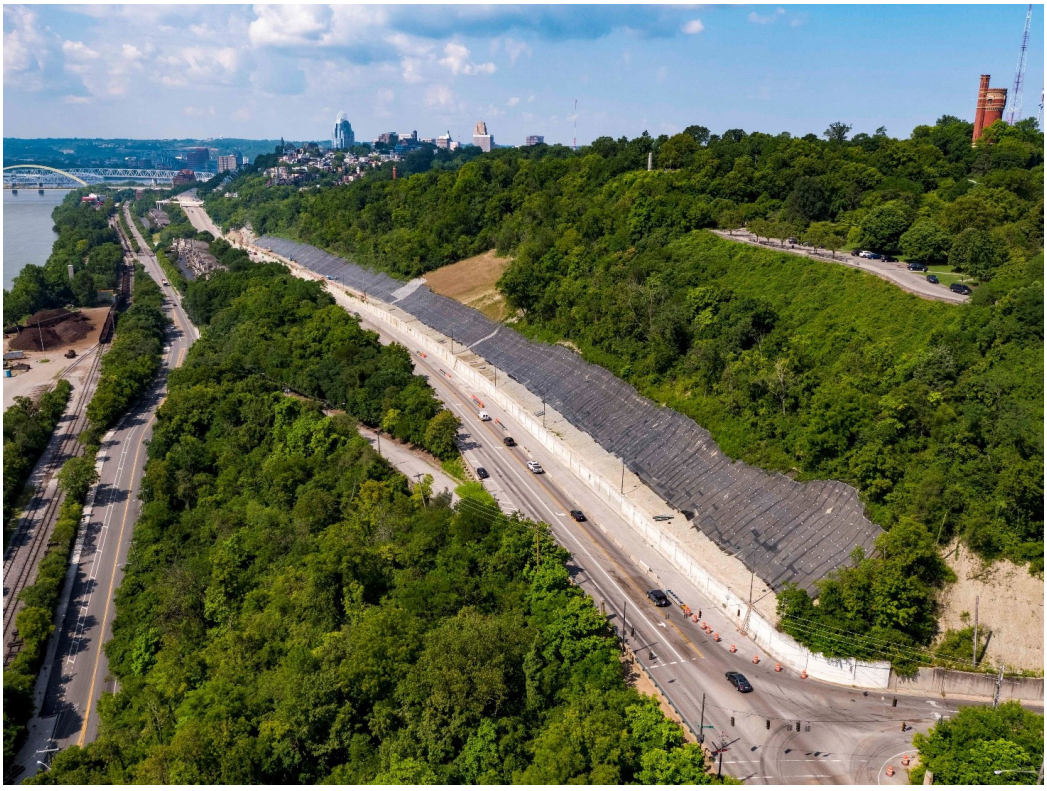
Area 1-3

Construction Start Date: 6/17/2020
Completion Date: 9/22/2021
Cost of Construction: $7,687,254.35

The section of the project from Bains Street to Kemper Lane was initially divided into three separate sections Areas 1, 2 and 3 and include lengths between the Areas where work was not originally proposed. Further inspection of the hillside revealed sections between the defined areas that needed stabilization. Access and constructability also required a continuous path above the existing retaining wall on Columbia Parkway. The entire length of the hillside, 3,045 feet, from Bains Street to Kemper Lane was stabilized with the soil nail stabilization system. Three-thousand-one hundred soil nails were installed on the hillside. The wire mesh covers an area of 169,000 square feet. Over 40,000 cubic yards of soil was removed from the slope.



Area 1-3 – (Continued)



RETAINGING WALLS UNDER CONSTRUCTION 2021

The following walls were designed in 2020-2021 and are under construction as of October 2021.

Boal Street Partial Retaining Wall Replacement – Contract amount - $148,994

The retaining wall behind 440 Milton Street which supports Boal Street was repaired in 2018. The repair consisted of a masonry reconstruction of the stone wall. This same section of wall failed again in 2020. The current project replaced the stone wall with drilled piers and concrete lagging with a stone facing. The project also improved drainage by changing the grades and replacement of the sidewalk to direct water away from the wall. A wall cap and new, upgraded railing are included in the project which is expected to be completed in November of 2021.

Cummins Street Improvement – Contract Amount $3,541,580.75

Notice to proceed 7/6/2021

The Cummins Street Improvement is currently under construction. The established substantial completion date is 1/6/2023. The improvement project includes street rehabilitation of the roadway in addition to the wall improvements described below.

DOTE was awarded an OPWC grant for the repair of the existing wall and concrete railing, and the rehabilitation of the pavement on Cummins Street from Beekman Street to Carll Street. The grant is in the amount of up to $2,475,257. The grant requires local matching funds up to approximately $849,743, which are available in existing capital improvement program project account no. 980x233x202311 "Cummins Street Improvements,". DOTE is also required to provide existing capital resources for engineering and right-of-way tasks such as design, surveying, materials testing, appraisals, property negotiations, right-of-way certifications, and project administration.

The existing retaining wall on Cummins Street was constructed in the 1930's. The retaining wall has a length of 1,810 feet and a maximum height of eighteen feet. The roadway of Cummins Street is two through lanes and one parking lane on the opposite side of the wall. The total width of the roadway is 30 feet.

The existing wall is in fair condition, the coping which is attached to the wall and the concrete railing which is attached to the coping is in a failed to critical condition. Sections of the railing have deteriorated, exposing reinforcing steel. Sections of the railing which appear visually sound crumble with a grasp of the hand. Guardrail sections have been bolted to the pilasters throughout the years to temporarily repair the railing.

The project requires removal of disintegrated concrete down to sound concrete and replacement of concrete removed. Soundings revealed approximately 2,000 square feet of unsound concrete. Joints between the panels will be reconstructed and the entire wall will be sealed. The repairs to the retaining wall are essential to avoid complete replacement of the retaining structure. The existing concrete railing and coping will be replaced with a Texas Style rail mounted on a concrete moment slab which rests on top the existing retaining wall.

Cummins Street Improvement – (Continued)

Sections of concrete railing replaced with guardrail sections bolted to pilasters on Cummins Street.

Retaining wall panel after chipping and prior to patching.

Grandin Road Retaining Wall Extension -Contract bid amount of $205,317.31

Contract has been signed and construction is expected to begin in November of 2021.

The western end of the existing drilled pier retaining wall built in 1995 needs to be extended to stabilize Grandin Road from continued slope movement. The movement has undermined the guardrail and has damaged a paved drainage channel and the roadway shoulder.

The project consists of the construction of a 230-foot drilled pier wall, consisting of 35 reinforced piers with plug piers between the majority of the reinforced piers.

PROJECT DESIGNED COMPLETED IN 2020-2021- TO BE BID 2021

Plans for the following projects have been completed and will be bid in 2021.

Dorchester Avenue Wall Repair (Mt. Auburn) – Estimated construction cost – $100,000 - $150,000

The sidewalk on Dorchester Avenue remains closed due to the collapsed wall. The collapsed wall served as the foundation wall of a private building on Sycamore and was a privately owned wall. DOTE has prepared plans to permanently repair the wall. The repair is included as an alternate in the Auburn Avenue Phase II Project which will be bid in October of in 2021.

<u>West Galbraith Road (@ 341)</u> – Anticipated project cost –$200,000

A landslide is occurring along the eastbound lane of West Galbraith Road, near 341 W. Galbraith Rd. The slide has moved the curb and guardrail significantly and created a dip in the pavement. DOTE was awarded OPWC funding for the street improvement project that includes this section of roadway. The site has been investigated and plans to remediate the landslide have been completed and will be included with the street improvement project. The repair consists of excavation and compaction of the soil on benches cut into the underlying bedrock. Underdrains are to be installed on the bedrock benches prior to the replacement of the excavated soil. TROD has recently patched the area to temporarily repair the dip in the road.

<u>Beekman Street (@ 3138)</u> - Anticipated project cost –$200,000

A private retaining collapse on the property at 3090 Beekman Street has caused a landslide to occur along the roadway that has resulted in the destruction of the sidewalk and the initiation of curb and pavement distress. Department of Community and Economic Development (DCED) has taken control of the property from foreclosure and intends to make the repair before marketing the property. DOTE designed a soldier pile wall comprised of 12 piers with steel piles and pre-cast concrete lagging panels for DCED.

WALLS CURRENTLY BEING DESIGNED

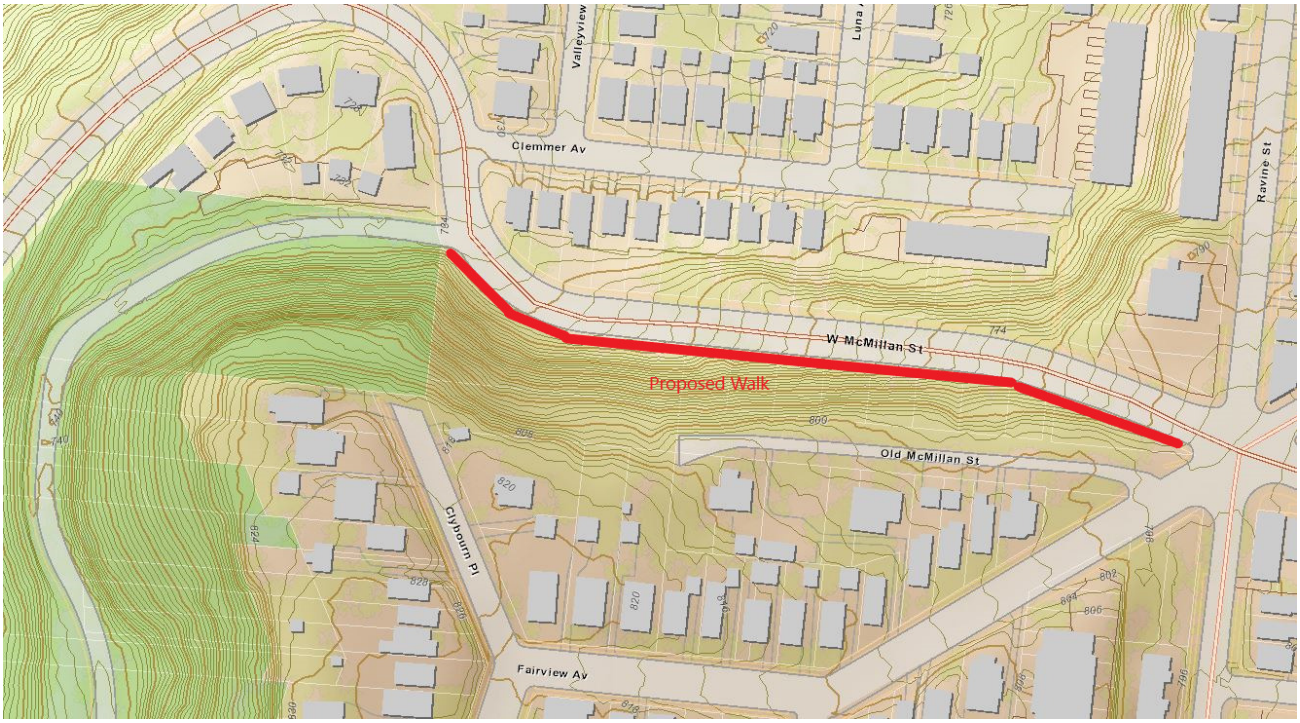
The following projects are currently being designed.

Anderson Ferry Retaining Wall – Anticipated Project cost – upwards of $300,000

Hillside movement is causing the sidewalk on the west side of Anderson Ferry Road, between Hillside Avenue and River Road to buckle. The sidewalk was closed in February of 2020. The road is not affected, and pedestrian traffic is detoured to the sidewalk on the east side of Anderson Ferry. This project was requested by the Riverside Community and is funded as a Capital Improvement Project in the amount of $300,000. Stormwater Maintenance Utility (SMU) is also a team member on the project. The team will apply for OPWC funds in 2021 to assist in funding both the stabilization and stormwater improvements

McMicken Avenue Sidewalk Improvement

The Clifton University Fairview Community requested that a sidewalk be constructed on the south side of W. McMicken Avenue, connecting Ravine Street with Fairview Park Drive. This project was funded as a Capital Improvement Project in the amount of $500,000.00. Installation of the sidewalk will require the construction of a retaining wall along approximately 700 of the 850 ft. length of sidewalk. Design is targeted for a completion date by February of 2022 with construction in the early 2nd quarter of CY 2022.

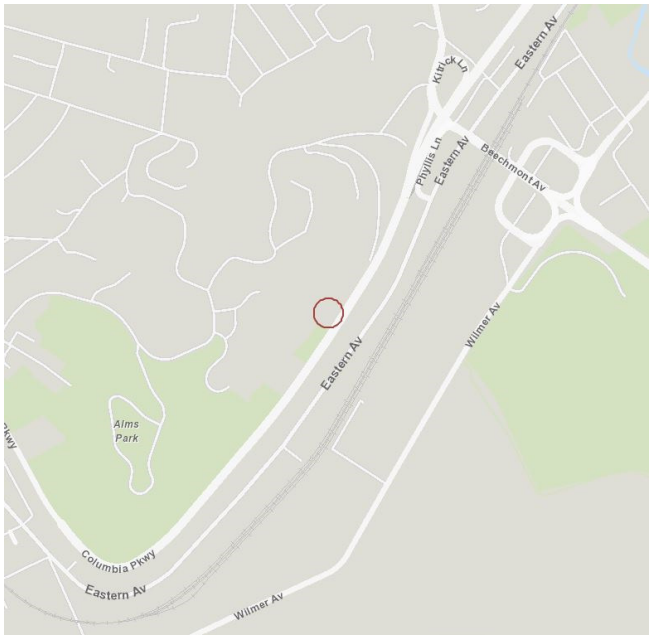


Delhi Avenue (@ 999) - Anticipated cost –$400,000

A slow-moving landslide has been causing Delhi Avenue and the south sidewalk to settle. The area also ponds water because of the movement. The roadway requires regular patching, and the sidewalk is becoming hazardous. Utilities within the road are at risk. DOTE was awarded a state safety enhancement grant for Delhi Avenue and Ohio Department of Public Works (OPWC) State Capital Improvement Program (SCIP) funding. The stabilization of the landslide is included with the street improvements. DOTE has obtained a subsurface investigation, including the installation of an inclinometer to provide slope monitoring. A pier wall is being designed.

Columbia Parkway – South of Beechmont Avenue

Public Services trimmed the vegetation along Columbia Parkway in the summer of 2020. The removal of the vegetation exposed the toe of a landslide on the hillside above the retaining wall between Beechmont Avenue and the curve in the parkway below Alms Park. Comparison of photographs of the area suggest that the slide has existed prior to 2018 with additional movement occurring prior to June of 2019.



A reconnaissance of the hillside revealed that the landslide extends more than halfway up the hillside and that there are at least two internal scarps within the slide mass in addition to the primary head scarp. Many of the trees within the slide mass, which are more than likely Ash trees are dead. The slide remains relatively stable on top of the wall. Removal of the toe can not take place until the slide is thoroughly investigated and more than likely not until the mass is stabilized. The slide mass is routinely observed and appears dormant for now.

A drone flight which includes LIDAR to produce a topographic survey of the landslide and surrounding area is the next step in the investigation of the landslide. The use of a drone with LIDAR proved very useful in obtaining topography and delineating slide features and boundaries on the Columbia Parkway Hillside Stabilization Project.

Corrective measures, if determined to be necessary, will more than likely be soil nails although a second retaining wall may also be a feasible alternative. Construction costs are not known until further investigation is performed but will be above $700,000. Residual funds from the Columbia Parkway Bains to Torrence Project will be used for investigation and possibly for partial funding.

Columbia Parkway – South of Beechmont Avenue – (Continued0

LANDSLIDE DEBRIS REMOVAL and TROD REPAIRS 2020

After an extremely active period for landslides in January to June of 2019 where in addition to landslides on Columbia Parkway, significant slides occurred on Hill Street, Kemper Lane, Westwood Northern, Elberon Avenue, Clifton Avenue and McMillan Avenue, the Transportation and Roadway Operations Division (TROD) did not have to remove any landslide debris from any roadway within the city in 2020.

TROD completed three significant wall construction projects in 2021, the Hamilton Avenue Wall Repair, Wall Replacement at Liberty and Grand Avenues and the construction of a concrete cap on the Guerley Avenue modular block retaining wall.

Hamilton Avenue Segmental Wall Repair – ID Bill to be submitted.

A segmental retaining wall constructed in 2009 as part of a roadway improvement project had been repeatedly struck in vehicle crashes. DOTE received State of Ohio funding for safety upgrades to the roadway, but the matching costs associated with the bids received for the proposed wall repairs and improvements were beyond available funding. Following the completion of the roadway safety improvements the reconstruction and removal of the damaged sections of the retaining wall were done by TROD and funded by DOTE Wall Program.

Hamilton Avenue Segmental Wall Repair- (Continued)

Grand Avenue at West Liberty Retaining Wall – ID Bill to be submitted.

The stone retaining wall on the north side of 1271 Grand Avenue failed and was replacement with a large block modular retaining wall. The wall was constructed by TROD and funded by DOTE Wall Program.

<u>Guerley Road Wall Cap</u> – Construction price $9,116.83

Most of the caps on the wall were loose, broken, severely deteriorated or missing. The prefabricated modular caps were replaced with a cast-in-place wall cap. The cap was constructed by TROD and funded by DOTE Wall Program.

ADDITIONAL PROJECTS AND RESPONSIBILITIES

In addition to the program specific projects, the Engineers and Technicians in the Wall and Landslide Program also design walls and provide consulting services to the other DOTE sections and to other City Departments including Greater Cincinnati Water Works (GCWW), Parks, Building and Inspection, Community and Economic Development Stormwater Maintenance Utility and the Metropolitan Sewer District (MSD). Examples of work performed for other DOTE Sections and City Departments are listed below.

Partial Listing of Transportation Projects that included Retaining Walls Design and/or Construction in 2020 and 2021

Project	Scope
Bassett Road Sidewalk	Construction of 225' long soldier pile wall and 8 pre-cast block walls
Wasson Way, Phase 2	Construction of pre-cast block walls at bridge abutments
Wasson Way, Phase 3	Construction of pre-cast block wall and cast-in-place walls for accessibility ramp
Wasson Way, Phase 4, and 5	Geotechnical Investigation, establishment of design requirements, design review and construction support. Under Construction
Ohio River Trail – Salem to Sutton	Construction of two prefabricated retaining walls having a total length of 600 feet and a maximum exposed height of 10 feet
Ohio River Trail West	Assist in alignment selection to reduce wall requirements and maintain embankment stability. Construction of 166 ft. long modular block retaining wall
Sussex Avenue	Design of two walls having a total length of 170 feet required for sidewalk construction. Bids due in October 2021
River Road	Design and construction of cast-in-place concrete toe wall
Auburn Avenue – Gilman to Dorchester	Completed design of 8 retaining walls. Bids due in October 2021

Engineers in the Wall and Landslide Program review Building Permit applications that are routed to them by the Plans Examiners in the Plans Examination Section of Building and Inspections (B&I). Thirty-six building permits were reviewed in 2020 and seventeen permits have been reviewed to date as of October 2020. The engineers also assist the inspectors in the Building Construction Inspection Section and the Property Maintenance Division. Expert testimony was also provided by the engineers in cases concerning hillside stability.

Wall and Landslide Program personnel responded to nine Customer Service Requests (CSR) in 2020 and twelve CSRs to date in 2021 and numerous requests from the public that were referred directly to them. Twenty inclinometers throughout the city, many of which have a depth greater than 50 ft., are being read every four months.

SIGNIFICANT FUTURE PROJECTS

Significant projects that are included in the 6-Year Plan are summarized below.

Esmonde Street Wall 285-037

The timber crib wall at the bend in Esmonde Street and Van Hart Street has reached it useful life needs to be replaced. A large block modular wall is the most likely type of wall to replace the wood crib wall.

Hillside Avenue (Multiple Locations) - Anticipated project cost –$1,400,000+

Hillside Avenue from the City limits, near Anderson Ferry Road to the east terminus at River Road has numerous areas of instability. Many areas have been repaired over the years, but areas between those sections continue to require pavement work to remain safe. DOTE monitors these areas and intends to remediate the worst areas as funding allows. Hillside movement within the areas is slow but causes continuous, compounded damage over time requiring maintenance. Movement takes place at the soil-bedrock contact and which accelerates during periods of excessive prolonged rainfall. The problematic areas their length and preliminary estimate of repair based on the cost of a pier wall with plug piers are listed below. below.

4291-4261 Hillside Avenue (Area 1)

Area 1 - 4291 to 4261 Hillside

Condition: Landslide scarp in pavement effecting both lanes. Wedge recently placed at west end.

Solution: New pier wall to close gap between 2 existing pier walls

	Units	Quantity	Unit Cost	Extension
Pier Wall	Lin. Ft.	325	$1,000.00	$325,000.00
Pavement Repair	Sq. Yards	433.3333	$250.00	$108,333.33
Guardrail	Lin. Ft.	0	$70.00	$0.00
			TOTAL	**$433,333.33**

Area 2 - 4128 Hillside (west of)

Condition: Intact Pier wall with guardrail missing. 4' - 6' vertical drop at pavement edge, and worsening. Some damage to top of wall/guardrail attachment.

Solution: Replace rail; place control density fill in voids behind piers to reduce /slow additional movement; patch wall concrete.

	Units	Quantity	Unit Cost	Extension
Guardrail	Lin. Ft.	295	$70.00	$20,650.00
Concrete Repair	Sq. Ft.	40	150	$6,000.00
CLSM-CDF Infill	Cu. Yds	40	150	$6,000.00
			TOTAL	**$32,650.00**

Area 3 - 4052 - 4032 Hillside

Condition: Slide impacting pavement, both lanes. Continuously patched and wedged.

Solution: New pier wall and guardrail.

	Units	Quantity	Unit Cost	Extension
Pier Wall	Lin. Ft.	340	$1,000.00	$340,000.00
Pavement Repair	Sq. Yds.	869	$250.00	$217,250.00
Guardrail	Lin. Ft.	340	$70.00	$23,800.00
			TOTAL	**$581,050.00**

Area 4 - 4007 Hillside

Condition: Slide impacting pavement, eastbound lane.

Solution: New pier wall. No rail needed as area is used for parking.

	Units	Quantity	Unit Cost	Extension
Pier Wall	Lin. Ft.	70	$1,000.00	$70,000.00
Pavement Repair	Sq. Yds.	94	$250.00	$23,500.00
			TOTAL	**$93,500.00**

Area 5 - 3797 Hillside

Condition: 1H:1V drop-off, 6' from pavement edge

Solution: Add guardrail

	Units	Quantity	Unit Cost	Extension
Guardrail	Lin. Ft.	340	$70.00	$23,800.00
			TOTAL	**$23,800.00**

Area 6 - 3815-3805 Hillside

Condition: Slide impacting pavement, both lanes. Recently patched and wedged.

Solution: New pier wall and guardrail.

	Units	Quantity	Unit Cost	Extension
Pier Wall	Lin. Ft.	70	$1,000.00	$70,000.00
Pavement Repair	Sq. Yds.	156	$250.00	$39,000.00
Guardrail	Lin. Ft.	70	$70.00	$4,900.00
			TOTAL	**$113,900.00**

Area 7 - 3671 Hillside

Condition: Slide impacting eastbound lane.

Solution: New pier wall and replace guardrail.

	Units	Quantity	Unit Cost	Extension
Pier Wall	Lin. Ft.	50	$1,000.00	$50,000.00
Pavement Repair	Sq. Yds.	56	$250.00	$14,000.00
Guardrail	Lin. Ft.	70	$70.00	$4,900.00
			TOTAL	**$68,900.00**

Area 8 - 3487 Hillside (west of Henrietta)

Condition: Slide impacting eastbound lane.

Solution: New pier wall. No guardrail at this time.

	Units	Quantity	Unit Cost	Extension
Pier Wall	Lin. Ft.	55	$1,000.00	$55,000.00
Pavement Repair	Sq. Yds.	61	$250.00	$15,250.00
			TOTAL	**$70,250.00**

GRAND TOTAL: $1,417,383.33

Faraday Road - Anticipated project cost –$350,000+

A landslide is causing Faraday Road to slip toward an adjacent creek. The total length of the movement is difficult to discern but appears to be 300 feet +/- and the upper limits of the slide (scarp) has resulted in a significant set-down in a sharp bend. DOTE and Stormwater Maintenance Utility (SMU) plan to apply for state funding of a safety enhancement project as well as SCIP funding for an overall street improvement project for Faraday Road. DOTE has initiated an investigation of the subsurface, including installation of an inclinometer to provide slope monitoring. The repair type is not currently known and may consist of a pier wall or earthwork buttressing. The buttress approach may require piping the adjacent creek.

Completion of design and construction dates are dependent on funding. Temporary repairs to the pavement will continue to be made
as needed.

Faraday Road – (Continued)

Art Museum Drive (Mt. Adams) - Estimated construction cost - $625,000

As previously described in Wall Reports. Application for SCIP assistance for the repair of Art Museum Drive was submitted in 2016. The project was not funded. Previous SCIP Applications were also submitted in 2008 and 2009.

Hillside movement affects Art Museum Drive for approximately 500 feet from its intersection with Eden Park Drive. Separation of the sidewalk from the curb, separation of the curb from the roadway and tension cracks within the pavement continues to occur. Sections of the cable guardrail system need repair. DOTE will apply for a Transportation Infrastructure grant in 2022 and will also apply for SCIP funding in 2022.

Thirteen-hundred feet of cable guardrail on Eden Park Drive was replaced with steel-backed timber guardrail in 2017. The section of replaced railing was between Fulton Avenue and Martin Drive.

Patchwork to fill gaps due to hillside movement between curb and pavement.

Riverside Drive - Estimated construction cost $350,000

As previously described Wall Reports. A landslide occurs above the existing retaining wall on the north side of Riverside Drive, US Truck Route 50, immediately west of the Rookwood Railroad Overpass. It extends up the hillside to immediately below Kemper Lane and Columbia Parkway US Route 50. The slide area covers nearly 1.5 acres of hillside. Riverside Drive, US Truck Rt. 50 is one lane in each direction through the Rookwood Overpass. The road curves as it goes under the overpass. Significant movement has not occurred since the spring seasonal rains of 2011. Riverside Drive is routinely inspected following periods of heavy rainfall.

Aerial view of landslide on Riverside Drive west of the Rookwood Overpass. The property above the wall is owned by the Park Board. Note extent of headscarp. Plastic sheet left behind after test pits were dug in 2011 to prevent water from seeping along scarp line into the slide mass. Plastic has since deteriorated and no longer exists.

Riverside Drive Wall 371-050 – Riverside Drive above Friendship Park

Replace 1,380 feet of wall cap and guardrail, wall repairs - $775,000

Riverside Drive Wall 371-050 – (Continued)

SECTION 2

Retaining Wall Rating Summary

List of Walls in Poor (3) and Critical (4) Condition

Structural Condition Rating Definitions

0 to 1 Excellent
No-to-very-low extent of very low distress. Defects are minor, are within the normal range for *newly constructed or fabricated* elements, and may include those resulting from fabrication or construction. Ratings of 0-1 are only given to elements with very minor to no distress whatsoever –conditions typically seen only shortly after wall construction or substantial wall repairs.

1 to 2 Good
Low-to-moderate extent of low severity distress. Distress does not significantly compromise the element's function, nor is there significant severe distress to major structural components. Ratings of 1 to 2 indicate highly functioning wall elements that are only beginning to show the first signs of distress or weathering.

2 to 3 Satisfactory
High extent of low severity distress and/or low-to-medium extent of medium to high severity distress. Distress present does not compromise element function, but lack of treatment may lead to impaired function and/or elevated risk of element failure in the long term.
Ratings of 2 to 3 indicate functioning wall elements with specific distresses that need to be mitigated to avoid significant repairs or element replacement in the longer term.

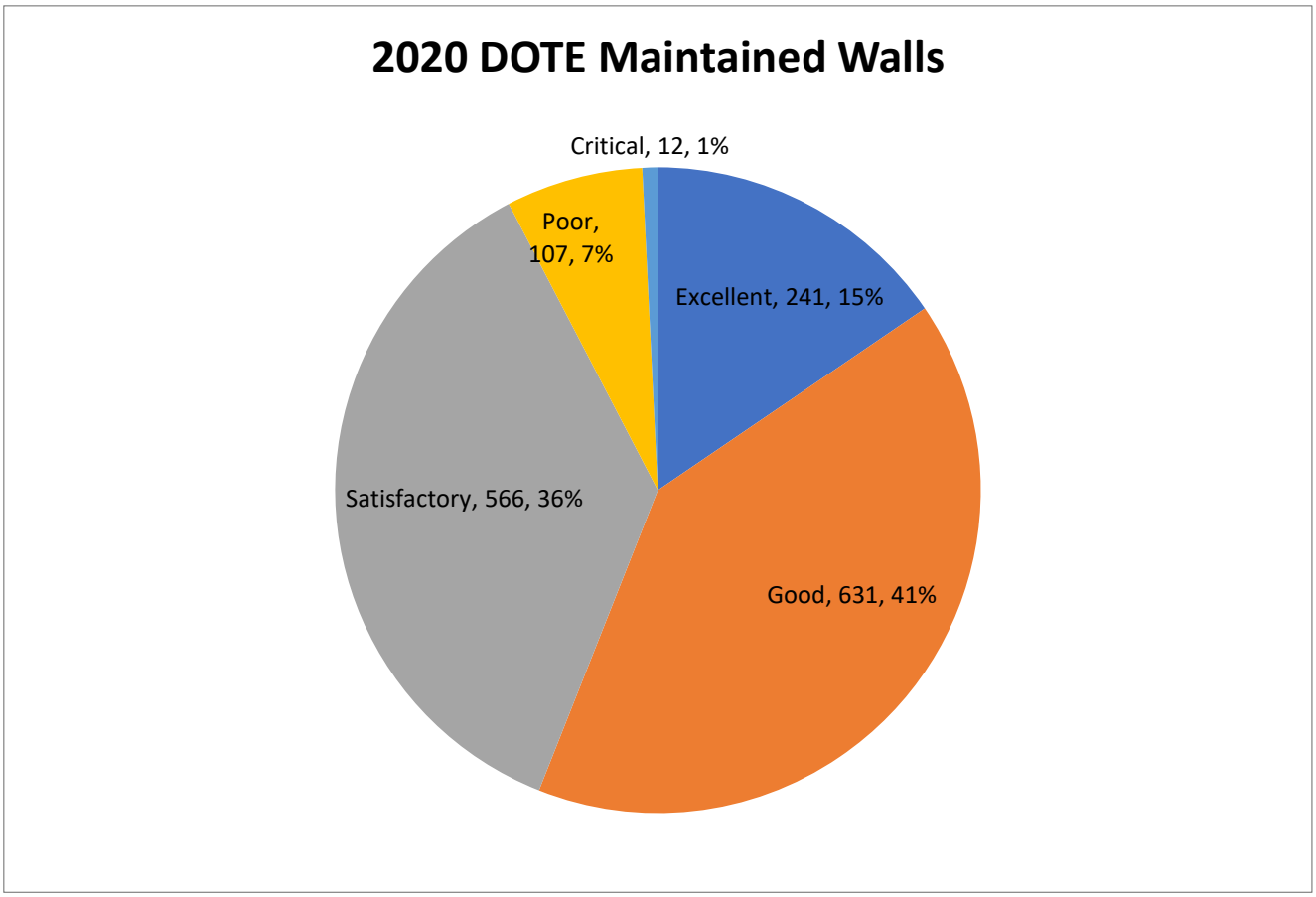
3 to 4 Poor
Medium-to-high extent of medium-to-high severity distress. Distress present threatens element function, and strength is obviously compromised and/or structural analysis is warranted. The element condition does not pose an immediate threat to wall stability. A rating of 3 to 4 indicates marginally functioning, severely distressed wall elements in jeopardy of failing without element repair or in need of repair to prevent further deterioration at an accelerated rate.

4 Critical
Medium-to-high extent of high severity distress. Element is no longer serving intended function. Element performance is threatening overall stability of the wall at the time of inspection.
In practice, a rating of 4 indicates a wall that is no longer functioning as intended, and is in danger of failing.

2020 Stuctural Rating Summary for Walls Maintained by DOTE

RATING	COUNT	PERCENT by COUNT	LENGTH (FEET)	PERCENT by LENGTH	AREA (SQ. FEET)	PERCENT by AREA
Excellent	241	15.48%	39,173	14.48%	220,799	10.71%
Good	631	40.53%	112,921	41.73%	889,663	43.15%
Satisfactory	566	36.35%	95,118	35.15%	773,031	37.49%
Poor	107	6.87%	21,147	7.81%	164,645	7.99%
Critical	12	0.77%	2,243	0.83%	13,720	0.67%
TOTALS	1,557	100%	270,602	100%	2,061,858	100%

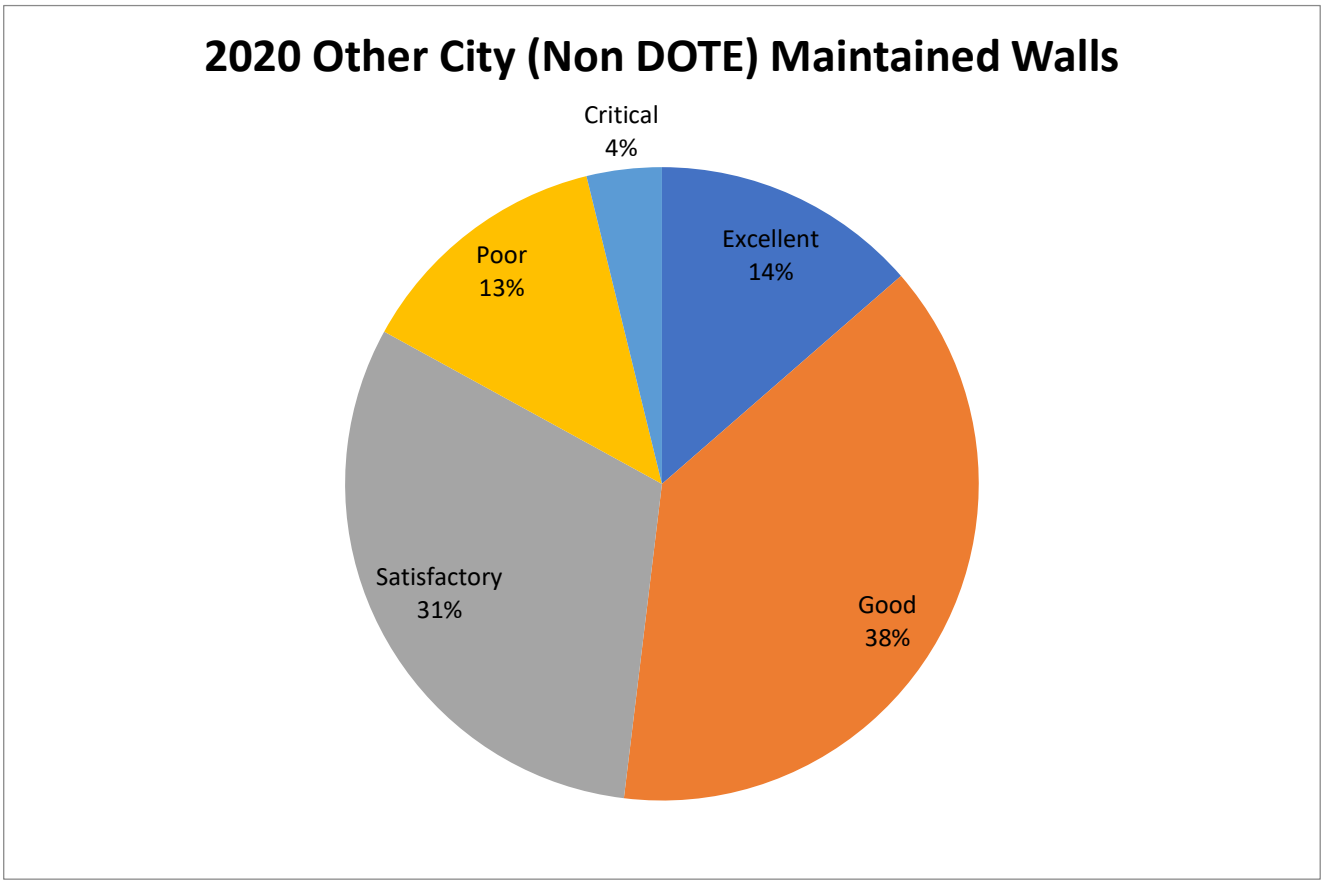
51.25 Miles



2020 Stuctural Rating Summary for City Walls NOT MAINTAINED by DOTE

RATING	COUNT	PERCENT BY COUNT	LENGTH (FEET)	PERCENT by LENGTH	AREA (SQ. FEET)	PERCENT by AREA
Excellent	32	13.62%	4,474	9.94%	44,965	14.43%
Good	90	38.30%	17,543	38.99%	120,547	38.69%
Satisfactory	73	31.06%	16,860	37.47%	118,755	38.12%
Poor	31	13.19%	4,832	10.74%	20,970	6.73%
Critical	9	3.83%	1,284	2.85%	6,300	2.02%
TOTALS	235	100%	44,993	100%	311,537	100%

8.52 Miles



DOTE Maintained Wall with Structural Rating of 3 (Poor Condition) to 4 (Critical Condition)

Wall ID	Side	House Numbers	Street Name	Wall Length	Height (Max)	Wall Type
157-003A	S	5581 to 0	River Road	400	4	Cantilever, Concrete
157-003B	S	5617 to 5643	River Road	400	6	Cantilever, Concrete
198-007B	S	4487 to 4529	River Road	500	10	Cantilever, Concrete
198-007C	S	4531 to 4573	River Road	500	10	Cantilever, Concrete
201-017A	S	4319 to 4331	River Road	390	4.5	Cantilever, Concrete
201-017B	S	4277 to 4277	River Road	412	6.4	Cantilever, Concrete
201-019	N	4294 to 4302	River Road	227	5	Cantilever, Concrete
241-009	W	821 to 881	Nebraska Avenue	431	7.3	Cantilever, Concrete
244-008	S	3645 to 3645	Hillside Avenue	60	2.5	Gravity, Mortared Stone
244-016	N	4001 to 4003	River Road	75	2.8	Gravity, Concrete
244-019	S	0 to 0	Fithian Street	80	6	Gravity, Block
244-026	N	614 to 614	Baurichter Street	105	4.1	Gravity, Concrete
244-073	W	3934 to 3936	Bowditch Street Steps	8	3	Gravity, Mortared Stone
248-011B	N	998 to 1004	Delhi Avenue	276	9	Toe, Concrete
250-059	N	3818 to 3820	Latham Avenue	115	9	Gravity, Dry Stone
251-028	S	2475 to 2481	Queen City Avenue	220	3	Precast Modular
251-029	W	4340 to 4344	Guerley Road	155	4.4	Precast Modular
252-021	N	2726 to 2729	Ruberg Avenue	49	3.7	Gravity, Concrete
253-002	S	3214 to 3220	Mchenry Avenue	146	7.1	Cantilever, Concrete
281-002	W	4929 to 4929	Kirby Avenue	132	5.5	Gravity, Dry Stone
283-024	W	0 to 0	West Fork Road	22	18	Gravity, Concrete
284-002A	E	2094 to 2156	Baltimore Avenue	433	12	Cantilever, Concrete
284-002B	E	2078 to 2092	Baltimore Avenue	433	11.5	Cantilever, Concrete
284-013	W	2315 to 2333	Baltimore Avenue	236	3.6	Toe, Concrete
285-021B	E	2004 to 2022	Baltimore Avenue	365	7.8	Gravity, Concrete
285-022	W	2035 to 2047	Baltimore Avenue	255	8.1	Gravity, Concrete
285-024	W	1941 to 1941	Baltimore Avenue	220	2.7	Gravity, Concrete
285-037	W	2079 to 2087	Baltimore Avenue	132	2.3	Cantilever, Concrete
286-008	W	2431 to 2437	Saffin Avenue	165	3	Gravity, Mortared Stone
286-027	N	1870 to 1898	Biegler Street	330	6	Gravity, Concrete
286-037	S	1823 to 1827	Esmonde Street	97	6	Crib, Tiedback
286-043C	N	1758 to 1760	Harrison Avenue	430	5	Gravity, Mortared Stone
286-088	S	1681 to 1681	Harrison Avenue	32	3.3	Gravity, Concrete
286-090	W	2301 to 2301	Merton Street	35	6	Gravity, Dry Stone
286-119	S	1891 to 1891	Horton Street	10	2	Gravity, Concrete
286-122	S	2165 to 2166	Clara Street	28	3	Gravity, Dry Stone
286-149	N	1884 to 1884	Montrose Street	8	3	Gravity, Mortared Stone
287-001	W	1327 to 1403	Bowman Avenue	149	10.3	Gravity, Dry Stone
287-038	S	0 to 0	Sterrett Avenue	65	5.5	Gravity, Dry Stone
288-022	E	2370 to 2398	Wilder Avenue	436	23.5	Gravity, Concrete
288-025A	W	0 to 0	Glenway Avenue	210	8.1	Gravity, Concrete
288-039	N	2311 to 2327	Wilder Avenue	249	9.4	Gravity, Concrete
288-050	W	2417 to 2417	Glenway Avenue	35	11	Gravity, Concrete
288-080	S	2511 to 2513	Warsaw Avenue	58	4	Gravity, Concrete

DOTE Maintained Wall with Structural Rating of 3 (Poor Condition) to 4 (Critical Condition)

Wall ID	Side	House Numbers	Street Name	Wall Length	Height (Max)	Wall Type
288-107A	N	2630 to 2698	Maryland Avenue	378	7.3	Gravity, Dry Stone
288-107B	N	0 to 0	Maryland Avenue	183	7.5	Gravity, Dry Stone
294-011	E	2452 to 2470	Beekman Street	307	16	Gravity, Mortared Stone
294-052	W	0 to 0	Fargo Alley	200	9	Gravity, Mortared Stone
294-062A	E	0 to 0	Cummins Street	450	18	Cantilever, Concrete
294-062B	E	2528 to 2550	Cummins Street	440	5	Cantilever, Concrete
294-062C	E	2552 to 2622	Cummins Street	440	9	Cantilever, Concrete
294-085	S	0 to 0	Queen City Alley	25	2.3	Gravity, Concrete
299-008	W	0 to 0	Hamilton Avenue	375	2.5	Cantilever, Concrete
299-011B	E	0 to 0	Hamilton Avenue	401	2.5	Precast Modular
300-007	N	1400 to 1404	Groesbeck Road	79	2.5	Toe, Concrete
329-015B	N	512 to 590	Straight Street	245	10.5	Gravity, Dry Stone
329-059	N	244 to 248	Warner Street	87	5.5	Gravity, Concrete
329-081	E	0 to 0	Renner Place	144	4	Gravity, Concrete
329-126A	N	700 to 730	Mcmillan Street, West	380	14.1	Gravity, Concrete
329-126B	N	680 to 700	Mcmillan Street, West	152	6	Gravity, Concrete
329-132	W	0 to 0	Hukill Alley	30	1.5	Cantilever, Concrete
329-147	E	0 to 0	Freeman Avenue Steps	26	5	Gravity, Dry Stone
329-155	S	317 to 317	Klotter Avenue	12	3.6	Gravity, Mortared Stone
330-052	S	2134 to 2135	Ohio Avenue	80	7.2	Gravity, Concrete
330-053B	N	2148 to 2172	Central Avenue	350	13.5	Cantilever, Concrete
330-063	W	0 to 0	East Alley	198	12.5	Gravity, Mortared Stone
330-065	W	0 to 0	East Alley	102	16	Gravity, Mortared Stone
330-154	W	0 to 0	Elysian Place	100	9	Gravity, Dry Stone
335-110	S	0 to 0	St Gregory Place	196	6	Gravity, Concrete
335-125	N	0 to 0	Wareham Drive	187	12.5	Gravity, Concrete
335-165	N	0 to 0	Celestial Steps	41	11	Gravity, Dry Stone
335-217	S	325 to 353	Baum Street	255	20	Gravity, Dry Stone
336-078	S	135 to 145	Dorchester Avenue	91	17	Gravity, Mortared Stone
336-142	S	0 to 0	Ringgold Street Steps	60	1.3	Gravity, Concrete
336-163	W	2027 to 2029	Eleanor Place	41	4.5	Gravity, Mortared Stone
336-199	S	0 to 0	Seitz Street	13	3.5	Gravity, Mortared Stone
336-307	S	121 to 125	Dorchester Avenue	62	12	Gravity, Mortared Stone
337-112	N	144 to 150	Glencoe Place	130	10.5	Cantilever, Concrete
337-192	N	0 to 0	Mcgregor Avenue	100	6	Gravity, Concrete
337-242	W	0 to 0	Presley Alley	150	4	Gravity, Mortared Stone
338-035	E	3400 to 3408	Wilson Avenue	158	6.7	Gravity, Concrete
338-079	W	0 to 0	Alameda Place	97	5.5	Gravity, Concrete
339-065	S	511 to 517	Forest Avenue	84	1	Toe, Concrete
339-091	N	0 to 0	Rockdale Avenue	170	13	Cantilever, Concrete
368-001	W	1015 to 1019	Dana Avenue	159	5.7	Toe, Concrete
371-050A	E	1499 to 1525	Riverside Drive	460	11	Gravity, Mortared Stone
371-050B	S	1451 to 1497	Riverside Drive	460	9	Gravity, Mortared Stone
371-050C	S	1401 to 1449	Riverside Drive	460	7.5	Gravity, Mortared Stone

DOTE Maintained Wall with Structural Rating of 3 (Poor Condition) to 4 (Critical Condition)

Wall ID	Side	House Numbers	Street Name	Wall Length	Height (Max)	Wall Type
371-054	E	0 to 0	Kemper Lane	235	6.2	Gravity, Mortared Stone
371-055	E	0 to 0	Kemper Lane	321	13	Cantilever, Concrete
371-056	E	0 to 0	Kemper Lane	390	14.5	Cantilever, Concrete
371-058	S	2004 to 2005	Edgecliff Point	33	4	Gravity, Mortared Stone
371-074	S	0 to 0	Columbia Parkway	90	16	Cantilever, Concrete
375-007	S	404 to 405	Torrence Court	60	4	Cantilever, Concrete
375-060	S	0 to 0	Elmhurst Avenue	56	12	Gravity, Mortared Stone
376-020	S	1845 to 1845	Duck Creek Road	35	1	Toe, Concrete
376-066	S	2021 to 2021	Duck Creek Road	108	1.6	Toe, Concrete
407-012	N	2718 to 2736	Gregson Place	185	7.8	Toe, Concrete
409-037	S	3101 to 3133	Walworth Avenue	385	15	Cantilever, Concrete
409-050	N	3000 to 3026	Columbia Parkway	460	12	Toe, Concrete
409-051	N	0 to 0	Columbia Parkway	72	2.8	Toe, Concrete
409-056	S	0 to 0	Columbia Parkway	185	7	Crib, Pre-Cast Concrete
409-071	E	268 to 270	Brown Street	50	2.8	Gravity, Concrete
422-057	W	4540 to 4598	Columbia Parkway	430	10	Toe, Concrete
422-081	N	3582 to 3582	Handman Avenue	12	2.5	Precast Modular
452-001B	E	5766 to 5774	Kennedy Avenue	318	4.7	Gravity, Dry Stone

Total Wall Length: 21,097.00

DOTE Maintained Wall with Structural Rating of 4 (Critical Condition)

Wall ID	Side	House Numbers	Street Name	Wall Length	Height (Max)	Wall Type
244-006A	S	3645 to 3645	Hillside Avenue	55	3	Gravity, Mortared Stone
244-006B	S	3645 to 3645	Hillside Avenue	41	3	Gravity, Dry Stone
251-034	S	1999 to 1999	Sunset Lane	15	5	Gravity, Mortared Stone
286-086	W	2497 to 2499	Seegar Avenue	30	5	Gravity, Dry Stone
286-130	N	4218 to 4219	Rankin Street	25	3.5	Gravity, Mortared Stone
287-005	E	1300 to 1302	Lockwood Avenue	70	11.5	Gravity, Mortared Stone
294-062D	E	2624 to 2660	Cummins Street	480	15	Cantilever, Concrete
299-003	E	4800 to 4800	Hamilton Avenue	308	4.5	Precast Modular
299-011A	E	0 to 0	Hamilton Avenue	397	2.5	Precast Modular
329-133A	W	0 to 0	East Alley	310	10.5	Gravity, Mortared Stone
330-036	W	1776 to 1921	Central Parkway	492	5.3	Gravity, Concrete
423-104	W	647 to 647	Delta Avenue	20	2	Gravity, Concrete

Total Wall Length: 2,243.00

City owned Walls Not Maintained by DOTE
with Structural Rating of 3 (Poor Condition) to 4 (Critical Condition)

Wall ID	Side	House Numbers	Street Name	Wall Length	Height (Max)	Wall Type
115-011	S	6901 to 6941	River Road	300	3	Gravity, Dry Stone
281-029	E	0 to 0	Kirby Avenue	11	4	Precast Modular
283-001	W	0 to 0	Todd Avenue	45	6.5	Tee-Wall
286-141	E	0 to 0	Clifford Street Steps	70	4	Gravity, Concrete
286-150	N	1710 to 1710	Harrison Avenue	13	4	Gravity, Concrete
287-100	N	0 to 0	Lockwood Place Steps	40	13	Gravity, Mortared Stone
287-101	N	0 to 0	Lockwood Place Steps	50	6	Gravity, Mortared Stone
289-028	S	0 to 0	Pavillion Drive	339	4.8	Pier, Cantilever
297-099	N	4123 to 4125	Virginia Avenue	46	3	Gravity, Mortared Stone
327-003	N	500 to 502	Mcalpin Avenue	288	6	Gravity, Mortared Stone
327-015	N	328 to 328	Mcalpin Avenue	234	2	Gravity, Concrete
330-237	S	6 to 12	Hust Alley	90	12	Cantilever, Concrete
331-026	S	0 to 0	Clark Street	133	2	Cantilever, Concrete
335-211	W	1301 to 1301	Sycamore Street	316	3	Tee-Wall
335-349	N	0 to 0	Celestial Street Steps	150	4	Gravity, Mortared Stone
336-268	E	1799 to 1799	Art Museum Drive	648	3.5	Gravity, Concrete
336-309	E	0 to 0	Gilbert Avenue	580	3.5	Gravity, Dry Stone
336-376	E	2044 to 2056	Gilbert Avenue	164	3.5	Gravity, Dry Stone
337-055	E	2520 to 2520	Euclid Avenue	33	2.8	Gravity, Mortared Stone
337-311	E	2600 to 2600	Van Street Parking Lot	60	5	Toe, Concrete
339-077	S	0 to 0	Forest Avenue	187	4	Gravity, Mortared Stone
339-078	S	0 to 0	Forest Avenue	90	4	Gravity, Mortared Stone
339-079	S	0 to 0	Forest Avenue	131	3	Gravity, Mortared Stone
368-029	S	897 to 897	Clinton Springs Avenue	90	1.5	Gravity, Mortared Stone
371-052	W	619 to 619	Kemper Lane	50	5.7	Gravity, Mortared Stone
371-088	E	0 to 0	Martin Drive	233	2.2	Gravity, Mortared Stone
372-008	N	0 to 0	Columbia Parkway	120	9	Gravity, Mortared Stone
375-118	S	2425 to 2445	Riverside Drive	124	3	Gravity, Mortared Stone
375-155	N	2342 to 2352	Gladstone Av (Private)	180	9	Gravity, Dry Stone
409-068	N	2998 to 2998	Riverside Drive	8	2	Gravity, Brice
409-069	N	3000 to 3000	Riverside Drive	9	2	Gravity, Brice

Total Wall Length: 4832.00

City owned Walls Not Maintained by DOTE with Structural Rating of 4 (Critical Condition)

Wall ID	Side	House Numbers	Street Name	Wall Length	Height (Max)	Wall Type
282-007	W	0 to 0	Colerain Avenue (Below)	120	8	Gravity, Dry Stone
283-017	W	0 to 0	West Fork Road	28	15	Gravity, Mortared Stone
283-023	W	0 to 0	West Fork Road	70	14	Cantilever, Concrete
286-078	S	1731 to 1745	Harrison Avenue	410	7	Gravity, Mortared Stone
288-130	W	611 to 615	Maryland Avenue	108	7.3	Gravity, Mortared Stone
330-152A	E	0 to 0	Elysian Place	36	7	Gravity, Mortared Stone
335-269	S	0 to 0	Bolivar Alley	40	5	Gravity, Mortared Stone
336-162	W	0 to 0	Eleanor Place	72	6.5	Gravity, Mortared Stone
375-161	S	2539 to 2539	Riverside Drive	400	10	Gravity, Concrete

Total Wall Length: 1,284.00

SECTION 3

Wall Repair Priority and Estimated Funding

Wall Stabilization & Landslide Correction
Six Year Plan

WALL REPAIR PRIORITY & ESTIMATED FUNDING

Wall #	Street	Length	Area	Type	Comments	Priority	Fund	Estimate
285-022	Baltimore Av	255	1050	CC	repair deteriorated cap & railing	HIGH	capital	$30,000
286-037	Esmonde St	97	500	T	replace rotten railroad ties with modular wall	HIGH	capital	$150,000
286-088	Harrison Av	32	160	CC	replace delaminated wall cap & railing	HIGH	capital	$15,000
288-022	Wilder Av	436	9500	CC	deteriorated & cracked chip and patch	HIGH	capital	$85,000
288-039	Wilder Av	249	2400	CC	chip and patch delaminations	HIGH	capital	$35,000
336-163	Eleanor Place	41	4.5	G2	Replace wall	HIGH	capital	$12,000
337-081B	Maplewwod Av	79	400	G5	replace wall with modular wall	HIGH	capital	$60,000
371-050A	Riverside Dr	460	5200	G2	deteriorated cap, replace and mortar	HIGH	capital	$225,000
371-050B	Riverside Dr	460	4400	G2	deteriorated cap, replace and mortar	HIGH	capital	$225,000
371-050C	Riverside Dr	460	2500	G2	deteriorated cap, replace and mortar	HIGH	capital	$225,000
409-056	Kennedy Avenue	318	4.7	G1	Crib Wall along road deteriorating	HIGH	capital	$50,000
					11 WALLS	**HIGH**	**capital**	**$1,112,000**
241-009	Nebraska Av	431	2260	CC	deteriorated, cracks , chip and patch	MED	capital	$40,000
251-030B	Queen City	357	1900	PM	Replace broken/missing wall cap & blocks.	MED	capital	$30,000
285-037	Baltimore Av	132	320	CC	replace wall cap & railing	MED	capital	$30,000
329-126A	McMillan St	380	2200	CC	broken end & railing, patch and replace	MED	capital	$76,000
329-126B	McMillan St	152	1200	CC	broken cap, chip and patch	MED	capital	$31,000
329-129	Vine St	179	950	G5	patch/repair wall cap	MED	capital	$150,000
329-133B	East Alley	190	2600	G2	reset tilted wall cap; reanchor rail post	MED	capital	$10,000
330-036	Central Pkwy	492	1700	CC	tilted, deteriorated cap	MED	capital	$40,000
330-053B	Central Av	350	3700	CC	broken cap & spalled face, chip and patch	MED	capital	$74,000
337-047	Mcmillan St	110	500	G5	underpin wall	MED	capital	$60,000
371-074	Col. Pkwy	90	1400	CC	delaminated face, chip, patch and repaint	MED	capital	$38,000
					11 WALLS	**MED**	**capital**	**$579,000**
244-006A	Hillside Av	55	150	G2	deteriorated, replace with modular	LOW	capital	$22,000
244-006B	Hillside Av	41	120	G2	deteriorated, replace with modular	LOW	capital	$16,400
244-008	Hillside Av	60	120	G2	moved and settled, replace with modular	LOW	capital	$24,000
244-019	Fithian St	80	450	G2	bulged, replace with modular	LOW	capital	$32,000
244-026	Baurichter St	105	450	CC	cracked, leaning, replace with modular	LOW	capital	$28,000
248-011A	Delhi Av	198	750	CC	delaminated toewalk, chip and patch toe	LOW	capital	$10,000
248-011B	Delhi Av	276	2500	CC	delaminated toewalk, chip and patch toe	LOW	capital	$10,000
249-014	Olive Av	94	280	CC	leaning, replace with concrete	LOW	capital	$10,000
250-059	Latham Av	50	850	G2	stones missing, replace with modular	LOW	capital	$15,000
251-028	Queen City Av	220	800	PM	wrecked & salt damage, replace with modular	LOW	capital	$40,000
251-030B	Queen City Av	357	1900	PM	wrecked & salt damage, replace with modular	LOW	capital	$85,000
251-034	Sunset Ln	15	70	G2	tilted wall & eroded area, replace with modular	LOW	capital	$12,000
253-002	McHenry Av	146	720	CC	replace leaning panel	LOW	capital	$5,000
286-008	Saffin St	165	450	G2	deteriorated wall & steps, rebuild existing	LOW	capital	$30,000
286-122	Clara Street	28	3	G1	Failed wall, replace with modular	LOW	capital	$25,000
286-150	Harrison Av	13	65	CC	replace wall w/ modular	LOW	capital	$10,000
287-001	Bowman Av	149	1500	G2	broken cap & steps, replace cap mortar stone	LOW	capital	$28,000
287-005	Lockwood Av	70	900	G2	cracked corner, repair stone replace cap	LOW	capital	$35,000
287-022	Grand Av	60	325	TC	Toe removed, check tilt, will need replaced	LOW	capital	$40,000
287-038	Sterrett Avenue	65	6	G1	damaged wall, replace with modular	LOW	capital	$30,000
288-080	Warsaw	20	350	CC	leaning, replace with CIP	LOW	capital	$18,000
288-107A	Maryland Av	378	2700	G2	deteriorated & bulged, rebuild stone	LOW	capital	$300,000
288-107B	Maryland Av	183	1300	G2	deteriorated & bulged, rebuild stone	LOW	capital	$150,000
329-015B	Straight St	245	2400	G2	bulged & tilted, replace	LOW	capital	$280,000
329-133A	East Alley	310	3000	G2	bulge fell, rebuild stone in sections	LOW	capital	$40,000
330-063	East Alley	198	2400	G2	bulged, rebuild stone in sections	LOW	capital	$40,000
330-065	East Alley	102	1800	G2	bulged, rebuild stone in sections	LOW	capital	$40,000
330-069	East Alley	114	1500	G2	bulged, rebuild stone in sections	LOW	capital	$40,000
335-110	St Gregory Pl	196	650	CC	delaminated upper part, repair cap	LOW	capital	$20,000
336-307	Dorchester St	62	750	G2	deteriorated cap, replace with modular	LOW	capital	$35,000
337-048	Eucleden Alley	130	1100	TC	replace tilted panel	LOW	capital	$6,000
337-242	Presley Al	150	700	G2	bulged and moved, rebuild stone , railing	LOW	capital	$40,000
339-091	Rockdale Av	170	1600	CC	deteriorated concrete, replace with CIP	LOW	capital	$150,000
370-125	Wm H Taft Rd	32	125	G2	bulged under sidewalk, replace cap	LOW	capital	$10,000
371-054	Kemper Ln	235	1300	G2	cap partially missing, replace wall	LOW	capital	$235,000
371-055	Kemper Ln	321	3600	CC	top delaminated, replace wall	LOW	capital	$321,000
371-056	Kemper Ln	390	3400	CC	moved, replace wall	LOW	capital	$390,000
423-104	Delta Av	20	40	CC	damaged wall, replace with modula4r	LOW	capital	$25,000
452-001A	Kennedy Av	318	1900	G2	bulged, rebuild existing	LOW	capital	$15,000
452-001B	Kennedy Av	318	1900	G2	bulged & moved, rebuild existing	LOW	capital	$15,000
					40 WALLS	**LOW**	**capital**	**$2,677,400**
201-017A	River Road	390	4.5	CC	Deteriorated/Cracks, Chip and Patch, Clear and Gub	HIGH	maint.	$6,000
244-016	River Road	75	3	G5	Deteriorated Bus Stop landing, chip and patch, removal and replacement of railing	HIGH	maint.	$3,000
253-031	Broadbeck Pl.	130	850	CC	Remortar stones on top.	HIGH	maint.	$2,000
253-033	Broadbeck Pl.	150	1350	CC	Remortar stones on top.	HIGH	maint.	$3,000
281-029	Kirby Ave.	11	40	PM	Restack/replace missing blocks.	HIGH	maint.	$1,000
281-037	Kirby Ave.	12	40	PM	Restack/replace missing blocks.	HIGH	maint.	$1,000
294-011	Beekman St	307	5600	G2	repair stone barrier	HIGH	maint.	$4,000
296-028	Blue Rock Av	296	1500	G5	replace missing blocks	HIGH	maint.	$2,500
298-034	Kirby Ave.	145	250	PC	Replace missing railing section; grout rail post pockets; patch wall cap/sidewalk	HIGH	maint.	$3,000
330-029	Central Pkwy	129	1550	G5	reset railing.	HIGH	maint.	$1,000
330-149	Rice St	180	900	CC	replace section of deformed rock catchment fence.	HIGH	maint.	$5,000
335-062	Carney St	36	280	TC	replace missing section of railing.	HIGH	maint.	$500
336-266	Eden Park Dr	523	2200	G5	Replace cracked/delaminated wall panels.	HIGH	maint.	$3,000
340-001	Clinton Springs Av	137	950	CC	Repair railing	HIGH	maint.	$1,000
367-006	Paddock Rd	361	1700	TC	Repair Toewalk/sidewalk (cracked, holed).	HIGH	maint.	$4,000
368-001	Dana Av	159	850	CC	delaminated toewalk, repair	HIGH	maint.	$5,000
371-047	Riverside Dr	146	1200	G2	Reset GR, remove big tree from top of wall	HIGH	maint.	$2,000
372-007	Col. Pkwy	225	1350	G2	broken cap, mortar and patch	HIGH	maint.	$3,000
409-050	Col. Pkwy	460	5900	CC	deteriorated end, chip and patch	HIGH	maint.	$5,000
422-049A	Col. Pkwy	345	4500	CP	Cut down trees growing through wall.	HIGH	maint.	$2,500
422-049B	Col. Pkwy	345	4500	CP	Cut down trees growing through wall.	HIGH	maint.	$2,500
					21 WALLS	**HIGH**	**maint.**	**$60,000**
157-003A	River Road	400	4	CC	Deteriorated/Cracks, Chip and Patch, Clear and Gub	MED	maint.	$5,000
157-003B	River Road	400	6	CC	Deteriorated/Cracks, Chip and Patch, Clear and Gub	MED	maint.	$6,000
198-007B	River Road	500	10	CC	Deteriorated/Cracks, Chip and Patch, Clear and Gub	MED	maint.	$6,000
198-007C	River Road	500	10	CC	Deteriorated/Cracks, Chip and Patch, Clear and Gub	MED	maint.	$6,000
201-017B	River Road	412	6	CC	Deteriorated/Cracks, Chip and Patch wall and curb	MED	maint.	$5,000
244-073	Bowditch Street Steps	8	3	G2	stones loose, fallen, mortar in place	MED	maint.	$800
251-011A	Queen City	315	8200	TW	Repair fence/ clean out drain trench above.	MED	maint.	$500
251-011B	Queen City	315	4100	TW	Clean out trench above/ cut trees growing through fence.	MED	maint.	$2,000
251-021	Queen City	182	700	PM	Trim bushes on top affecting wall; replace missing stones/wall cap	MED	maint.	$1,000
251-022	Queen City	346	1700	PM	Replace loose or missing stones.	MED	maint.	$1,000
251-030A	Queen City	360	1600	PM	Replace missing wall cap pieces; trim trees/bushes affecting wall.	MED	maint.	$1,000
281-010	Colerain Ave.	160	1400	PC	Investigate settlement @ S.	MED	maint.	$3,000
284-002A	Baltimore Av	433	4500	CC	patch holes	MED	maint.	$4,000
284-002B	Baltimore Av	433	3700	CC	chip and patch delaminations	MED	maint.	$5,000
284-010A	McHenry Av	62	525	CC	patch holes	MED	maint.	$2,000
284-010B	McHenry Av	130	670	CC	chip and patch delaminations	MED	maint.	$3,000
285-016	Sutter Av	500	5400	MSE	replace stolen fence	MED	maint.	$5,000
285-040	Bickel Av	65	800	CC	patch holes	MED	maint.	$1,000

WALL REPAIR PRIORITY & ESTIMATED FUNDING

Wall #	Street	Length	Area	Type	Comments	Priority	Fund	Estimate
286-043C	Harrison Av	430	2700	G2	repair broken pilasters	MED	maint.	$5,000
286-049	Harrison Av	14	100	CC	patch holes	MED	maint.	$500
286-112	Bickel Av	38	1000	PM	replace missing blocks	MED	maint.	$1,500
287-053	Ring Place	165	400	G5	chip and patch delaminations	MED	maint.	$5,000
288-095	Kingston Place	67	400	G5	patch cracks, chip and patch delamination	MED	maint.	$5,000
293-049	Radcliff Dr	510	5100	MSE	remove rocks piling behind wall	MED	maint.	$5,000
294-043	Central Parkway	390	3400	G5	patch railing; patch lower wall; remove plants from railing.	MED	maint.	$5,000
295-027	Liddel St	99	400	CC	replace missing railing, repair wall cap	MED	maint.	$4,000
295-037	W. Northern Blvd.	316	3200	G2	repair and replace stone sections	MED	maint.	$15,000
326-001	Lafayette Av	269	2200	CC	patch delaminated area's	MED	maint.	$2,000
327-054B	Lafayette Av	362	1000	PC	repair 1 section of damaged wood guard railing.	MED	maint.	$1,000
327-054C	Lafayette Av	362	1000	PC	repair 1 section of damaged wood guard railing.	MED	maint.	$1,000
329-003	Hallmar Av	174	500	CC	patch wall cap	MED	maint.	$1,000
329-131	Thill St	281	1900	G5	repair wall cap and patch wall	MED	maint.	$5,000
329-147	Freeman Avenue Steps	26	5	G1	stones loose, fallen, mortar in place	MED	maint.	$1,200
329-261	Tafel St	57	175	G3	regrout post holes to better secure loose railing	MED	maint.	$500
330-032	Central Pkwy	49	300	G5	patch wall cap at fence posts.	MED	maint.	$1,000
330-043	Clifton Av	50	300	CC	patch exposed rebar in railing.	MED	maint.	$500
330-071	Gage St	161	1300	CC	patch vertical joints where severly delaminated.	MED	maint.	$2,500
330-072	Rice St	376	2800	CC	patch joint that is deteriorating.	MED	maint.	$2,500
330-073	Mulberry St	52	175	CC	patch cracks	MED	maint.	$2,000
330-078	Mulberry St	180	700	CC	patch wall cap at railing post popouts.	MED	maint.	$1,000
330-084	Wendell Alley	65	1500	G2	replace fallen stones under upper stair landing.	MED	maint.	$5,000
330-086	Wendell Alley	65	450	G2	replace/resecure the fence/railing.	MED	maint.	$7,000
330-206	Stark St	180	700	G5	patch hole in old part of wall.	MED	maint.	$1,000
330-237	Hust Alley	90	1700	CC	patch wall cap; cover exposed rebar.	MED	maint.	$2,000
332-010	Third St	65	1350	G2	repair upper masonry pilaster railing wall cap	MED	maint.	$4,000
335-066	Carney St	83	330	CC	patch bad joint; patch big horizontal crack below wall cap	MED	maint.	$1,000
335-072	Carney St	289	2500	CC	patch railing & wall cap/curb	MED	maint.	$5,000
335-137	Martin Dr	190	2400	CC	patch exposed rebar	MED	maint.	$3,000
335-141	Hill St	153	0	PC	repair wall cap at railing posts.	MED	maint.	$2,000
335-146	Elsinore Av	116	600	PC	repair railing	MED	maint.	$1,500
335-153	Col. Pkwy	320	3800	CC	patch exposed rebar in railing.	MED	maint.	$3,000
335-154A	Col. Pkwy	480	4200	CC	patch exposed rebar	MED	maint.	$3,000
335-154B	Col. Pkwy	425	3300	CC	patch exposed rebar	MED	maint.	$3,000
335-154A	Col. Pkwy	480	4200	CC	patch exposed rebar	MED	maint.	$3,000
335-154B	Col. Pkwy	425	3300	CC	patch exposed rebar	MED	maint.	$3,000
335-158	Col. Pkwy	175	3200	TC	patch steps, pilasters, and exposed rebar areas.	MED	maint.	$3,000
335-164A	Col. Pkwy	330	5000	CC	patch delaminated joint	MED	maint.	$3,000
335-164B	Col. Pkwy	420	12000	TC	patch delaminated joint	MED	maint.	$3,000
335-167	Col. Pkwy	65	1400	CC	patch exposed rebar	MED	maint.	$3,000
335-217	Baum Street	255	20	G1	stones loose, mortar in place	MED	maint.	$2,000
335-269	Bolivar Alley	40	250	G2	restack stone wall , replace missing stones	MED	maint.	$3,000
335-338	Hill St	92	200	G5	repair wall cap at railing posts.	MED	maint.	$1,000
336-021	Highland Av	356	1700	G2	replace bent railing opposite milton st.	MED	maint.	$3,000
336-066	Boal St	20	50	G5	patch deteriorated 90 degree angle in wall at steps.	MED	maint.	$1,000
336-078	Dorchester Av	50	500	CC	stabilize E corner of wall that is falling apart.	MED	maint.	$1,500
336-082	Dorchester Av	235	850	G2	replace missing horiz rail (1 piece); remortar	MED	maint.	$2,000
336-182	Main St	42	200	G2	patch wider cracks in gunite/wall	MED	maint.	$2,000
336-193	Sycamore St	177	1100	G2	repair N end of wall(taller part), where wall is sliding/slumping over.	MED	maint.	$4,000
336-267	Eden Park Dri	475	1900	G5	Replace cracked panels; tighten guardrail cables.	MED	maint.	$3,000
337-186	Burbank St	90	450	HC	Remove fallen tree from wall/ check mud sliding into wall.	MED	maint.	$1,000
338-065	Hickory St	180	1400	CC	Resecure railing.	MED	maint.	$2,000
338-069	Hickory St	158	700	TC	Trench behind wall needs cleaning.	MED	maint.	$1,000
338-079	Alameda Pl	97	700	G5	Wall could use some patching of delaminated area's.	MED	maint.	$5,000
367-005	Paddock Rd	400	1800	TC	cracked, holed toewalk/sidewalk.	MED	maint.	$3,000
369-097	MLK Dr	488	3900	CC	Cut down tree growing in top of wall that is causing bulge/loose stones.	MED	maint.	$1,500
370-080	Victory Pky	109	700	G5	Resecure loose handrail; patch 10' section of wall cap.	MED	maint.	$1,500
371-101	Alpine Pl	84	2200	G1	Remove trees from wall	MED	maint.	$3,000
375-007	Berkshire Lane	350	0	LS	Wall cracked at each side of inlet, chip/remove concrete and repour	MED	maint.	$2,500
375-054	Johnstone Pl	134	700	G2	Remortar loose stones @ S.	MED	maint.	$500
407-012	Gregson Pl	185	1500	CC	Patch exposed rebar, and joints.	MED	maint.	$3,000
409-064	Eastern Av	173	650	CC	Replace handrail where missing or loose/ patch sidewalk holes.	MED	maint.	$3,000
409-129	Kellogg Av	23	50	PM	Replace broken wall blocks.	MED	maint.	$1,000
410-001	Tennyson St	82	350	CC	Replace damaged handrail.	MED	maint.	$2,000
410-002	Tennyson St	111	400	CC	Replace damaged handrail.	MED	maint.	$1,000
421-045	Donham Av	75	600	G5	Repatch corner where cracked and broken.	MED	maint.	$2,000
422-011	Church Pl	500	9000	CC	patch exposed rebar	MED	maint.	$3,000
422-051	Col. Pkwy	380	6450	CC	patch joints{exposed rebar}.	MED	maint.	$5,000
423-005	Totten Av	138	1050	CC	Cut tree repair handrail.	MED	maint.	$3,000
425-016	Madison Rd	215	2700	CC	Patch delam @ E end of wall.	MED	maint.	$2,000
450-007	Crestview Av	43	0	OT	Remove large, fallen tree from wall.	MED	maint.	$2,000
456-015	Heekin Av	513	5000	TC	Put railing over blocked off steps.	MED	maint.	$500
					89 WALLS	**MED**	**maint.**	**$248,000**
153-009	Gracely Drive	50	290	G5	chip and patch delaminations	LOW	maint.	$3,000
201-019	River Rd	227	1200	CC	chip and patch delaminations	LOW	maint.	$3,000
201-019	River Road	227	5	CC	Patch steps, sidewalk and curb	LOW	maint.	$800
205-001	Glencrossing	300	3300	PM	Trim bushes growing through blocks.	LOW	maint.	$1,000
239-008	Boudinot Av			CC	patch chipped sidewalk	LOW	maint.	$1,000
251-020	Queen City	48	230	PM	Clear walk of broken blocks/ cut bushes affecting wall.	LOW	maint.	$500
251-030B	Queen City Avenue	357	5.6	PM	Deterioration due to road salt, replace wall cap, replace fallen block	LOW	maint.	$2,000
252-021	Ruberg Avenue	49	3.7	G5	chip and patch wall cap	LOW	maint.	$500
281-002	Kirby Av	132	650	M	replace deteriorated wall	LOW	maint.	$5,000
281-003	Kirby Ave	302	2800	G2	Wall has new driveway through midwall/ railing missing on half of wall.	LOW	maint.	$3,000
281-005	Colerain Av	360	1700	PC	replace guardrail	LOW	maint.	$2,000
281-036	Kirby Av	410	2000	PC	replace guardrail	LOW	maint.	$2,000
282-016	Colerain Ave.	357	3000	PC	Patch broken wall cap @ fire hydrant.	LOW	maint.	$1,500
283-006	Cass Ave.	254	1200	CC	Patch wall cap @ wall where necessary.	LOW	maint.	$1,500
283-009	Cass Ave.	120	450	CC	Remove/repair loose gate.	LOW	maint.	$500
284-002B	Baltimore Avenue	433	12	CC	Deteriorated/Cracks, Chip and Patch	LOW	maint.	$1,000
284-010B	Mchenry Avenue	130	6	G5	Deteriorated/Cracks, Chip and Patch	LOW	maint.	$500
284-018	Westwood Northern Blvd.	277	1150	TC	Clean out trench behind wall.	LOW	maint.	$2,500
285-021B	Baltimore Avenue	365	7.8	G5	Deteriorated/Cracks, Chip and Patch	LOW	maint.	$800
285-031	Baltimore Av	240	4000	CC	patch holes	LOW	maint.	$100
285-21B	Baltimore Av	365	2600	G5	chip and patch delaminations	LOW	maint.	$3,000
286-043B	Harrison Ave.	663	4532	G2	Replace missing stones & mortar.	LOW	maint.	$750
286-111	Jonte	31	100	PM	Replace all wall cap blocks.	LOW	maint.	$4,000
286-122	Clara Ave.	28	50	G1	Rebuild stacked stone wall, esp @ midwall.	LOW	maint.	$5,000
286-154A	Fairmount Ave.	65	1162	CS	Clean trench above wall.	LOW	maint.	$3,000
286-193A	Queen city bypass	351	2800	PC	Clean out trench above wall/ erosion channel @ S.	LOW	maint.	$2,000
286-193B	Queen city bypass	368	4700	PC	Clean out trench above wall. Reseat conc. drain caps above.	LOW	maint.	$2,000
286-193C	Queen city bypass	432	7100	PC	Clean out trench above wall/investigate leakage onto walk.	LOW	maint.	$3,000
288-025A	Glenway Avenue	210	8.1	G5	Deteriorated/Cracks, Chip and Patch, Steps closed signage	LOW	maint.	$1,000
288-050	Glenway Avenue	35	11	G5	Deteriorated/Cracks, Chip and Patch	LOW	maint.	$500
288-055	Glenway Av	24	400	G5	chip and patch delaminations	LOW	maint.	$3,000
294-030A	Harrison Ave.	95	1317	G5	Clean out trench above wall.	LOW	maint.	$3,000
294-046	McMillan St	108	800	G5	patch full length vertical cracks	LOW	maint.	$3,000
294-063	Linden St.	267	3000	G5	Replace missing railing.	LOW	maint.	$2,000
294-085	Queen City Alley	25	2.3	G5	chip and patch wall cap	LOW	maint.	$500
295-029	Baltimore Avenue	633	10.5	PM	Clear and Gurb,	LOW	maint.	$1,000
295-102	Baltimore Avenue	155	4	PC	Clear and Gurb,	LOW	maint.	$500
298-013	Cresap				chip and patch delaminations	LOW	maint.	$5,000
298-013	Cresap Avenue	136	3.8	G5	Deteriorated/Cracks, Chip and Patch, Remove fallen tree on top of wall	LOW	maint.	$1,000
298-057	Hamilton Ave.	103	400	PC	Grout rail posts recess to avoid moisture retention.	LOW	maint.	$1,000

WALL REPAIR PRIORITY & ESTIMATED FUNDING

Wall #	Street	Length	Area	Type	Comments	Priority	Fund	Estimate
298-095	Coppice Lane	201	6	PC	Fix wall cap	LOW	maint.	$500
299-001A	Hamilton Ave.	385	2900	G2	Replace/remortar loose and fallen top stones.	LOW	maint.	$1,000
299-009	Hamilton Avenue	586	3.5	PC	Sidewalk sunken	LOW	maint.	$2,500
299-010	Hamilton Avenue	100	1.5	CC	Sidewalk sunken	LOW	maint.	$500
299-014	Rockford Ave	205	2100	PC	Patch 4' of broken wall cap.	LOW	maint.	$2,000
299-015	Rockford Ave	215	2000	PC	Patch 4' of broken wall cap.	LOW	maint.	$2,000
300-007	Groesbeck Rd.	79	235	TC	Repair 2' section of loose wall.	LOW	maint.	$1,000
300-020	Hillcrest Ave.	132	2150	PC	Grout rail posts recess to avoid moisture retention.	LOW	maint.	$1,200
326-028	Clifton Avenue	115	1	PM	Deteriorated/Cracks, Chip and Patch	LOW	maint.	$500
329-059	Warner Street	87	5.5	G5	Deteriorated/Cracks, Chip and Patch	LOW	maint.	$500
329-081	Renner Place	144	4	G5	Deteriorated/Cracks, Chip and Patch	LOW	maint.	$500
329-132	Hukill Alley	30	1.5	CC	Deteriorated/Cracks, Chip and Patch	LOW	maint.	$1,500
330-025	Back St	258	800	G2	replace missing portion of wall cap.	LOW	maint.	$2,000
330-268	Winkler St	71	200	G2	remove tree growing through wall.	LOW	maint.	$2,000
330-301	John St	25	50	G5	patch wall cap.	LOW	maint.	$1,000
331-002	Vine St	16	120	G5	recaulk joints	LOW	maint.	$500
331-003	Vine St	100	500	G5	recaulk joints	LOW	maint.	$500
331-026	Clark Street	133	300	CC	patch wall cap at gate post.	LOW	maint.	$500
332-008	Third St	292	2300	CC	reset railing; patch wall cap.	LOW	maint.	$2,000
335-020	Butler St	212	800	CC	patch pop out in wall cap	LOW	maint.	$500
335-056	Jerome St	100	800	G5	patch crack at joint in wall	LOW	maint.	$500
335-118	Baum St	78	600	CC	replace bent railing	LOW	maint.	$200
335-121	Oregon St	234	2400	CC	patch railing where rebar is exposed	LOW	maint.	$500
335-125	Wareham Dr	187	2900	CC	delaminated cap, Development to Repair	LOW	maint.	$0
335-129	Louden St	306	2300	G2	Remove fallen tree trunk from top of wall.	LOW	maint.	$500
335-136	Martin Dr	302	4200	TC	patch spall w exposed rebar	LOW	maint.	$1,500
335-165	Celestial St	41	550	G2	cracked corner, rebuild	LOW	maint.	$5,000
335-220B	Oregon St	14	50	PM	restack wall, add missing blocks.	LOW	maint.	$1,000
336-002	Bunker Alley	32	175	CC	replace railing	LOW	maint.	$1,500
336-067	Boal St	42	275	CC	patch over exposed rebar.	LOW	maint.	$500
336-142	Ringgold St	60	80	G5	patch spall/delaminated area(1); patch void/hole in side of curbwall	LOW	maint.	$500
336-195	Mulberry St	31	80	G5	patch exposed rebar at corner	LOW	maint.	$500
336-238	Reading Rd	468	1050	TC	unclog weep holes, patch corner	LOW	maint.	$1,000
336-257	Dorsey St	475	5000	PC	repair top tube rail where seperation has occurred.	LOW	maint.	$1,000
336-304	Main St	31	60	CC	patch 2 areas of spalled concrete at bottom of fence post	LOW	maint.	$500
336-345	Mulberry St	25	75	G3	remove shrub growing in wall, fill gap with stone	LOW	maint.	$500
336-376	Cogswell Alley	75	0	G2	Reset bulge in wall.	LOW	maint.	$1,000
337-055	Euclid Av	33	120	G2	some loose stones on top course need re mortaring	LOW	maint.	$500
337-192	McGregor Av	100	500	CC	crumbled foundation/ abandon, regrade if necessary	LOW	maint.	$3,000
337-214	Wellington Pl	58	450	G2	replace 1 missing stone, regrout 1 loose stone.	LOW	maint.	$100
337-281	Van St	72	200	TC	Grout railing post	LOW	maint.	$100
338-035	Wilson Av.	158	1000	G5	chip and patch delaminations	LOW	maint.	$5,000
338-102	MLK Dr	226	1100	CC	repair/replace bent railing section	LOW	maint.	$1,000
339-065	Forest Av	84	100	CC	tilted panel, replace w/ curb wall	LOW	maint.	$10,000
339-077	Forest Av	187	950	G2	replace missing stone	LOW	maint.	$5,000
339-088	Forest Av	397	1700	CC	broken toewalk, repair	LOW	maint.	$5,000
368-029	Mitchell Av	38	0	G2	loose stones need remortaring/restacking.	LOW	maint.	$2,000
371-022	St Paul Dr	310	75	G2	Repair 10' of loose top course toward E end.	LOW	maint.	$500
371-049	Riverside Dr	505	900	TC	Remove metal edge from curb.	LOW	maint.	$500
375-060	Elmhurst Avenue	56	12	G2	Deteriorated/Cracks, Chip and Patch	LOW	maint.	$500
375-112	Wold Av	54	150	G2	Re mortar loose stones.	LOW	maint.	$500
375-143	Grandin Rd	135	0	G5	Patch wall cap where crushed. 2 locations	LOW	maint.	$1,000
376-016	Duck Creek Rd	90	200	CC	Close 1' gap in wall	LOW	maint.	$1,000
376-020	Duck Creek Road	35	1	TC	Steps Deteriorated/Cracks, Chip and Patch, Replace Handrail	LOW	maint.	$500
376-066	Duck Creek Road	108	1.6	TC	Wall Hit remove section and replace	LOW	maint.	$1,000
381-003	Losantiville Av	226	1600	CC	Prevent backfill (pebbles) from coming out of weep holes @ E.	LOW	maint.	$500
409-037	Walworth Av	385	5700	CC	Patch 2 holes in wall.	LOW	maint.	$3,000
409-071	Salem Road	86	8	G3	Chip and Patch Wall	LOW	maint.	$800
422-053	Col. Pkwy	490	3200	G2	Remortar loose stones.	LOW	maint.	$1,000
					78	**LOW**	**maint.**	**$157,850**

Total Capital & Maintenance Costs **$4,834,250**

WALL REPAIR PRIORITY AND ESTIMATED FUNDING SUMMARY

Capital Cost

High Priority (11 walls)	$1,112,000
Medium Priortiy (11 walls)	$579,000
Low Priority (40 walls)	$2,677,400
TOTAL (62 walls)	$4,368,400

Maintenance Costs

High Priority (21 walls)	$60,000
Medium Priortiy (89walls)	$248,000
Low Priority (99 walls)	$157,850
TOTAL (177 walls)	$465,850

WALL TYPE KEY

CC	Cantilever, Concrete	LS	Landslide
CM	Ccrib, Metal	LT	Landscaping Timber
CP	Crib, Pre-Cast Concrete	MS	Mechanically Stabilized
CT	Crib, Tiedback	OT	Other, See Comments
CW	Crib, Wood Timbers	PC	Pier, Cantilever
FW	Floodwall	PM	Precast Modular
G1	Gravity, Dry Stone	PT	Pier, Tiedback
G2	Gravity, Mortared Stone	RB	Rock Fall Barrier
G3	Gravity, Block	RE	Reinforced Earth
G4	Gravity, Brice	SE	Slope Easement
G5	Gravity, Concrete	ST	Settlement
GB	Gabion	TC	Toe, Concrete
HC	H-Pile, Cantilever	TD	Turned Down
HM	Hillside Movement	TW	Tee-Wall
HT	H-Pile, Tiedback		

SIX YEAR PLAN 2021-2026

Program Expenses Carry over date 10-13-2021

Carry-Over City Capital Funds	City Capital Funds	Projects by Calendar Year Contract Awarded	Estimated Total Project Cost	*Fund Split* % Local	% Match	Outside Funding Secured	Estimated Remaining Funds
$454,132	$600,000	**2021**					
		Wall Inspection & Program Management	$65,000	100%	0%	N/A	
		Project Design & Management	$275,000	100%	0%	N/A	
		TROD and Contract Wall Work	$60,000	100%	0%	N/A	
		Boal Street Retaining Wall Replacement	$150,000	100%	0%	N/A	Encumbered
		Berkshire Road Pier Wall	$160,000	100%	0%	N/A	Encumbered
		Hamilton Avenue	$75,000	100%	0%	N/A	
		Liberty St. and Grand Avenue Retaining Wall	$75,000	100%	0%	N/A	
		Grandin Road Pier Wall Extension	$210,000	100%	0%	N/A	
		West Galbraith Road	$200,000	50%	50%	Yes	
		Total Program Expenses	**$1,270,000**				**$194,132**
$194,132	$712,000	**2022**					
		Wall Inspection & Program Management	$66,500	100%	0%	N/A	
		Project Design & Management	$280,000	100%	0%	N/A	
		TROD and Contract Wall Work	$75,000	100%	0%	N/A	
		Esmonde Street Retaining Wall Replacement	$150,000	100%	0%	N/A	
		Anderson Ferry Landslide	$300,000	0%	100%	Yes	
		Delhi Avenue	$350,000	30%	70%	Yes	
		Harrison Avenue opposite Tremont	$125,000	100%	0%	N/A	
		Eleanore Place at Gage Stairway	$150,000	100%	0%	N/A	
		Total Program Expenses	**$1,496,500**				**($45,368)**
($45,368)	$766,000	**2023**					
		Wall Inspection & Program Management	$68,000	100%	0%	N/A	
		Project Design & Management	$285,000	100%	0%	N/A	
		TROD and Contract Wall Work	$90,000	100%	0%	N/A	
		Hillside Avenue	$600,000	40%	60%	No	
		Faraday Road	$350,000	30%	70%	No	
		Total Program Expenses	**$1,393,000**				**($67,368)**
($67,368)	$778,000	**2024**					
		Wall Inspection & Program Management	$69,500	100%	0%	N/A	
		Project Design & Management	$290,000	100%	0%	N/A	
		TROD and Contract Wall Work	$75,000	100%	0%	Yes	
		Art Museum Drive	$600,000	50%	50%	No	
		Total Program Expenses	**$1,034,500**				**($23,868)**
($23,868)	$760,000	**2025**					
		Wall Inspection & Program Management	$71,000	100%	0%	N/A	
		Project Design & Management	$295,000	100%	0%	N/A	
		TROD and Contract Wall Work	$100,000	100%	0%	N/A	
		Hillside Avenue	$600,000	50%	50%	N/A	
		Total Program Expenses	**$1,066,000**				**($29,868)**
($29,868)	$772,000	**2026**					
		Wall Inspection & Program Management	$72,500	100%	0%	N/A	
		Project Design & Management	$300,000	100%	0%	N/A	
		TROD and Contract Maintenance Work	$100,000	100%	0%	N/A	
		Retaining Walls (Riverside Drive)	$600,000	50%	50%	N/A	
		Total Program Expenses	**$1,072,500**				**($30,368)**

$1,500,000 of Unsecured Outside Funding 2023 through 2026

SECTION 4

2020 Retaining Wall Inspection Summaries

Retaining Wall Inspection Criteria

DIVISIONS (# of items in each Division)

- Structural (12 items)
- Drainage (5 items)
- Cosmetic (4 items)
- Miscellaneous (5 items)

Each Item Rated
0 = No Problems
1 = Minor Problems
2 = Moderate Problems
3 = Severe Problems
4 = Critical Problems
N/A = Not Applicable

Each Division – Given an Average Rating (Sum of Individual Items in Division / # of Items rated)

OVERALL WALL RATING (General Condition)

Sum of the average of the total number of items in the four Divisions (Structural, Drainage, Cosmetic, Misc.) Excludes any N/ Ratings Example:

Overall Wall Rating = 35 (Sum of Ratings for Items) / 15 (Number of Items) = 2.3 (Rating)

TOTAL AVERAGES OF WALLS INSPECTED IN 2020 CYCLE

2020 INSPECTION CYCLE

Maintence	Wall Count	Total Length (Lin. Ft.)	Total Exposed Area (Sq. Ft.)	Avg. Structural	Avg. Drainage	Ave. Cosmetic	Avg. Misc.	Avg. Overall
Agreement	11	1,085.00	5,295.00	0.94	1.09	1.90	1.76	1.07
Hamilton County	2	264.00	1,500.00	0.35	0.70	0.63	0.50	0.48
MSD	2	325.00	1,175.00	0.20	0.50	0.75	1.17	0.47
ODOT	1	46.00	0.00	1.40	1.67	1.50	1.00	1.39
Park Board	3	719.00	3,150.00	0.22	0.11	1.11	0.22	0.30
Recreation Department	3	348.00	4,400.00	0.43	0.33	0.94	0.64	0.52
Transportation & Engineering	263	49,278.00	355,848.00	0.37	0.62	0.99	0.88	0.57
Greater Cincinnati Water Works	11	393.00	715.00	0.27	0.23	1.18	0.34	0.39
2020 TOTALS:	**296**	**52,458.00**	**372,083.00**	**0.52**	**0.66**	**1.13**	**0.81**	**0.65**
		9.94 Miles						

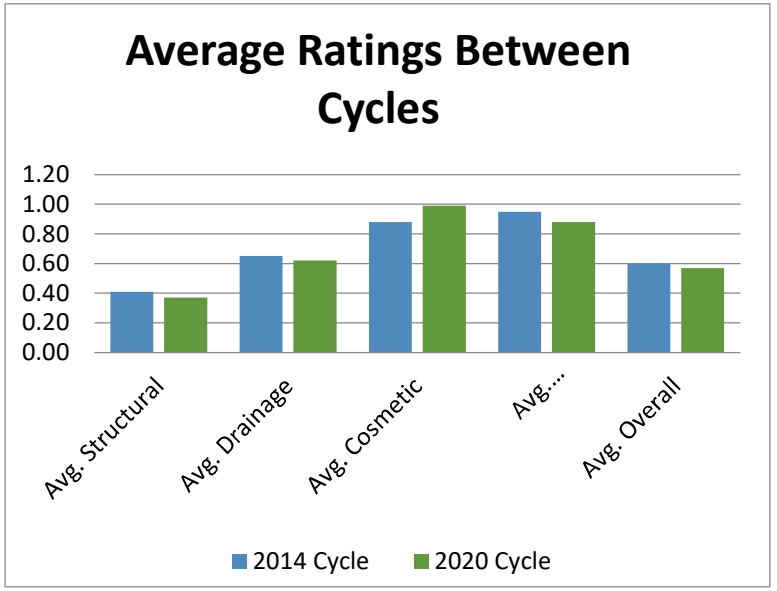
2014 INSPECTION CYCLE

Maintence	Wall Count	Total Length (Lin. Ft.)	Total Exposed Area (Sq. Ft.)	Avg. Structural	Avg. Drainage	Ave. Cosmetic	Avg. Misc.	Avg. Overall
MSD	2	325.00	1175.00	0.41	0.50	0.50	1.00	0.53
Park Board	4	879.00	3450.00	0.20	0.08	0.38	0.29	0.23
Recreation Commission	3	384.00	4400.00	0.46	0.42	0.83	0.86	0.57
Transportation And Engineering	276	46757.00	339679.00	0.41	0.65	0.88	0.95	0.60
Greater Cincinnati Water Works	11	393.00	715.00	0.15	0.00	0.64	0.32	0.21
2014 TOTALS:	**276**	**48,738.00**	**348,244.00**	**0.41**	**0.65**	**0.88**	**0.95**	**0.60**
		9.23 Miles						

TOTAL AVERAGES OF WALLS INSPECTED IN 2020 CYCLE

	Transportation & Engineering Owned Walls			
	0-1	1-2	2-3	3-4
Avg. Structural	250	11	2	0
Avg. Structural	*257*	*16*	*1*	*0*
Avg. Drainage	219	36	8	0
Avg. Drainage	*215*	*48*	*11*	*0*
Avg. Cosmetic	174	85	4	0
Avg. Cosmetic	*204*	*66*	*4*	*0*
Avg. Miscellaneous	200	48	13	2
Avg. Miscellaneous	*185*	*67*	*22*	*0*
Avg. Overall	233	28	2	0
Avg. Overall	*231*	*42*	*1*	*0*

2014 Averages are Italicized



Transportation and Engineering Maintained Walls - Changes from 2014 to 2020

Wall No	Community	Street	Wall Height	Wall Length	Wall Type	Avg Struct '14	Avg Struct '20
206-001	Westwood	Federal Place	4.6	110	Toe, Concrete	0.73	0.80
237-003	Westwood	Boudinot Avenue	10.9	157	Cantilever, Concrete	0.27	0.10
238-003	Westwood	Koenig Avenue	1.8	46	Cantilever, Concrete	0.73	0.30
238-004	Westwood	Meyer Place	2.4	92	Gravity, Mortared Stone	0.25	0.33
239-012	Westwood	Werk Road	2	78	Toe, Concrete	0.45	0.40
240-008	Westwood	West Park Drive	3	127	Toe, Concrete	0.36	0.30
240-009	Westwood	West Park Drive	3.1	60	Cantilever, Concrete	0.18	0.10
240-019	Westwood	Boudinot Avenue	6.4	100	Cantilever, Concrete	0.09	0.10
240-020	Westwood	Queen City Avenue	2.5	67	Gravity, Mortared Stone	0.00	0.09
251-011A	Westwood	Queen City Avenue	30	315	Tee-Wall	0.09	0.17
251-011B	Westwood	Queen City Avenue	19	315	Tee-Wall	0.00	0.08
251-012	Westwood	Queen City Avenue	2	14	Gravity, Mortared Stone	0.00	0.10
251-019	Westwood	Wahl Terrace	3.7	58	Gravity, Concrete	0.64	0.50
251-020	Westwood	Queen City Avenue	4	48	Precast Modular	0.10	0.60
251-021	Westwood	Queen City Avenue	3.5	182	Precast Modular	0.33	0.58
251-022	Westwood	Queen City Avenue	5.8	346	Precast Modular	0.40	1.00
251-023	Westwood	Queen City Avenue	5.1	203	Precast Modular	0.10	0.20
251-025	Westwood	Queen City Avenue	4.5	44	Precast Modular	0.10	0.20
251-027	Westwood	Queen City Avenue	11	363	Mechanically Stabilized	0.20	0.10
251-028	Westwood	Queen City Avenue	3	220	Precast Modular	0.80	0.90
251-030B	Westwood	Queen City Avenue	5.6	357	Precast Modular	0.40	0.50
251-034	Westwood	Sunset Lane	5	15	Gravity, Mortared Stone	2.33	2.88
251-047	South Fairmont	Wyoming Avenue	2.1	60	Precast Modular	0.00	0.10
251-055	Westwood	Ridgetop Way	16.5	570	Precast Modular	0.40	0.10
252-016	Westwood	Hoadly Court	4.6	312	Gravity, Mortared Stone	1.45	0.67
252-021	South Fairmont	Ruberg Avenue	3.7	49	Gravity, Concrete	0.70	0.80
252-029	Westwood	Kline Avenue	2.5	50	Gravity, Dry Stone	0.90	1.00
253-002	Westwood	Mchenry Avenue	7.1	146	Cantilever, Concrete	0.64	0.73
253-003	Westwood	Mchenry Avenue	4.1	182	Cantilever, Concrete	0.36	0.30
253-008	East Westwood	Mchenry Avenue	7	173	Gravity, Concrete	0.91	0.70
253-021	Westwood	Cavanaugh Avenue	7	77	Cantilever, Concrete	0.45	0.55
253-022	Westwood	Westwood Northern Blvd.	1.5	173	Toe, Concrete	0.36	0.00
253-023	Westwood	Meyer Place	3.9	183	Cantilever, Concrete	0.17	0.25
253-027	Westwood	Gobel Avenue	2.6	48	Cantilever, Concrete	0.25	0.18
253-029	Westwood	Gobel Avenue	5.4	35	Cantilever, Concrete	0.00	0.08
253-031	Westwood	Brodbeck Place	6.7	130	Cantilever, Concrete	0.17	0.18
253-033	Westwood	Brodbeck Place	9.3	150	Cantilever, Concrete	0.08	0.18
254-007	Mt. Airy	West Fork Road	12	45	Crib, Pre-Cast Concrete	0.18	0.50
254-008	Mt. Airy	West Fork Road	12	50	Crib, Pre-Cast Concrete	0.27	0.45
254-009A	Westwood	Montana Avenue	13	372	Mechanically Stabilized	0.10	0.20
254-009B	Westwood	Montana Avenue	7.4	346	Mechanically Stabilized	0.10	0.20
255-001	Northside	West Fork Road	5	272	Pier, Cantilever	0.09	0.10
255-003	Northside	West Fork Road	11	182	Pier, Cantilever	0.18	0.10
255-004	Northside	West Fork Road	12.5	215	Cantilever, Concrete	0.27	0.20
255-005	Northside	West Fork Road	13	155	Cantilever, Concrete	0.64	0.55
255-006	Mt. Airy	West Fork Road	6.5	275	Gravity, Dry Stone	0.45	0.40

Transportation and Engineering Maintained Walls - Changes from 2014 to 2020

Wall No	Community	Street	Wall Height	Wall Length	Wall Type	Avg Struct '14	Avg Struct '20
255-008	Mt. Airy	Shepherd Road	13.5	515	Pier, Cantilever	0.00	0.09
255-009	Mt. Airy	Shepherd Road	8.6	160	Precast Modular	0.20	0.30
255-010	Mt. Airy	West Fork Road	6	157	Precast Modular	0.10	0.20
255-018	Mt. Airy	Shepherd Road	3	12	Precast Modular	0.10	0.40
257-002	Mt. Airy	North Bend Road, West	6	121	Toe, Concrete	0.64	0.73
280-002	Mt. Airy	Kirby Avenue	10	190	Pier, Cantilever	0.00	0.09
280-006	Mt. Airy	Kirby Avenue	6	90	Pier, Cantilever	0.36	0.18
280-018	College Hill	Kirby Avenue	4	10	Precast Modular	0.20	0.30
281-002	Mt. Airy	Kirby Avenue	5.5	132	Gravity, Dry Stone	1.64	1.78
281-006	Mt. Airy	Colerain Avenue	3.3	295	Gravity, Mortared Stone	0.27	0.10
281-013	College Hill	Kirby Avenue	3.2	197	Cantilever, Concrete	0.45	0.20
281-014	Mt. Airy	Colerain Avenue	6.6	136	Pier, Cantilever	0.09	0.18
281-015	Mt. Airy	Colerain Avenue	4.3	123	Cantilever, Concrete	0.00	0.18
281-016	Mt. Airy	Colerain Avenue	7	175	Pier, Cantilever	0.00	0.18
281-035	Mt. Airy	Kirby Avenue	6	385	Pier, Cantilever	0.09	0.00
282-012	Mt. Airy	Colerain Avenue	4.7	350	Pier, Cantilever	0.09	0.18
282-013	Mt. Airy	Colerain Avenue	4	150	Cantilever, Concrete	0.09	0.18
282-014A	Mt. Airy	Colerain Avenue	6	396	Pier, Cantilever	0.09	0.18
282-014B	Mt. Airy	Colerain Avenue	5	430	Pier, Cantilever	0.09	0.18
282-014C	Mt. Airy	Colerain Avenue	4.8	400	Pier, Cantilever	0.09	0.18
282-014D	Mt. Airy	Colerain Avenue	4	400	Pier, Cantilever	0.09	0.18
282-015	Mt. Airy	Colerain Avenue	3	250	Cantilever, Concrete	0.09	0.18
282-016	Mt. Airy	Colerain Avenue	8.5	357	Pier, Cantilever	0.83	0.25
282-017B	Mt. Airy	Colerain Avenue	5	450	Cantilever, Concrete	0.09	0.18
282-017C	Mt. Airy	Colerain Avenue	4.3	475	Cantilever, Concrete	0.09	0.18
282-017D	Mt. Airy	Colerain Avenue	5	467	Cantilever, Concrete	0.09	0.18
283-002A	East Westwood	Baltimore Avenue	5.1	448	Cantilever, Concrete	0.55	0.64
283-009	South Comminsville	Cass Avenue	4.1	120	Cantilever, Concrete	0.27	0.36
283-010	South Comminsville	Cass Avenue	5.8	78	Cantilever, Concrete	0.82	0.91
283-012	South Comminsville	Powers Street	4.5	39	Gravity, Concrete	0.20	0.11
283-013	South Comminsville	Powers Street	2.1	100	Gravity, Concrete	0.73	0.40
283-014	South Comminsville	Powers Street	6	100	Gravity, Concrete	0.50	0.56
284-007	East Westwood	Baltimore Avenue	7.1	184	Cantilever, Concrete	0.27	0.20
284-010A	East Westwood	Mchenry Avenue	6	62	Cantilever, Concrete	0.64	0.60
284-012	East Westwood	Westwood Northern Blvd.	8.8	86	Gravity, Mortared Stone	0.64	0.73
284-013	East Westwood	Baltimore Avenue	3.6	236	Toe, Concrete	0.64	0.80
284-018	English Woods	Westwood Northern Blvd.	4.1	277	Toe, Concrete	0.17	0.33
285-009	North Fairmont	Casper Street	9.4	112	Gravity, Concrete	0.55	0.73
285-010	South Fairmont	Arthur Place	2.2	26	Toe, Concrete	0.55	0.40
285-016	English Woods	Sutter Avenue	12.5	500	Mechanically Stabilized	0.20	0.11
285-024	North Fairmont	Baltimore Avenue	2.7	220	Gravity, Concrete	0.64	0.73
285-025	North Fairmont	Baltimore Avenue	2.2	89	Gravity, Concrete	0.36	0.27
285-026	South Fairmont	Baltimore Avenue	2	104	Gravity, Concrete	0.45	0.40
285-036	South Fairmont	Brestel Road	5	221	Pier, Cantilever	0.09	0.18
286-008	South Fairmont	Saffin Avenue	3	165	Gravity, Mortared Stone	1.64	1.55
286-024	South Fairmont	Harrison Avenue	1.7	55	Gravity, Concrete	0.64	0.60

Transportation and Engineering Maintained Walls - Changes from 2014 to 2020

Wall No	Community	Street	Wall Height	Wall Length	Wall Type	Avg Struct '14	Avg Struct '20
286-027	South Fairmont	Biegler Street	6	330	Gravity, Concrete	0.82	0.73
286-028	South Fairmont	Biegler Street	4.1	61	Gravity, Concrete	0.73	0.70
286-029	South Fairmont	White Street	7.9	99	Gravity, Concrete	0.36	0.27
286-037	South Fairmont	Esmonde Street	6	97	Crib, Tiedback	1.60	1.78
286-043A	South Fairmont	Harrison Avenue	6	425	Gravity, Mortared Stone	1.00	0.00
286-043B	South Fairmont	Harrison Avenue	5.8	663	Gravity, Mortared Stone	1.00	0.83
286-084	North Fairmont	Seegar Avenue	13.7	235	Gravity, Concrete	0.64	0.55
286-086	South Fairmont	Seegar Avenue	5	30	Gravity, Dry Stone	1.67	2.13
286-089	South Fairmont	Merton Street	2	157	Gravity, Concrete	1.27	1.09
286-093	South Fairmont	Merton Street	3.7	60	Gravity, Concrete	0.27	0.36
286-111	South Fairmont	Jonte Avenue	3	31	Precast Modular	0.20	0.40
286-112	South Fairmont	Forbus Street	3	38	Precast Modular	0.20	0.50
286-119	South Fairmont	Horton Street	2	10	Gravity, Concrete	0.80	1.00
286-120	South Fairmont	Grand Avenue	3.5	40	Cantilever, Concrete	0.60	0.33
286-122	South Fairmont	Clara Street	3	28	Gravity, Dry Stone	1.40	1.50
286-124	South Fairmont	Lydia Street	5	280	Gravity, Concrete	0.73	0.80
286-148	South Fairmont	Wickham Alley	3	19	Gravity, Mortared Stone	0.20	0.11
286-149	South Fairmont	Montrose Street	3	8	Gravity, Mortared Stone	0.00	0.30
286-193B	South Fairmont	Queen City By-Pass	12	368	Pier, Cantilever	0.18	0.09
286-193C	South Fairmont	Queen City By-Pass	14.5	432	Pier, Cantilever	0.18	0.09
286-193D	South Fairmont	Queen City By-Pass	6	161	Pier, Cantilever	0.18	0.09
286-194	South Fairmont	Queen City By-Pass	6.5	126	Pier, Cantilever	0.18	0.09
293-034	South Fairmont	Ernst Street	2.4	20	Gravity, Concrete	0.50	0.00
293-049	South Fairmont	Radcliff Drive	4.9	510	Gravity, Dry Stone	0.00	0.30
294-033	South Fairmont	Queen City Avenue	2.2	282	Cantilever, Concrete	0.27	0.20
294-109	South Fairmont	Waverly Avenue	2.5	33	Gravity, Concrete	0.42	0.09
294-116	South Fairmont	Fairmount Avenue Steps	3	25	H-Pile, Cantilever	0.36	0.45
294-117	South Fairmont	Fairmount Avenue Steps	7.5	45	Gravity, Mortared Stone	0.70	0.80
295-077	North Fairmont	Linden Street	3.5	46	Gravity, Mortared Stone	1.00	0.50
296-028	South Comminsville	Dreman Avenue	4.6	330	Mechanically Stabilized	0.09	0.18
297-001	South Comminsville	Beekman Street	6.4	73	Cantilever, Concrete	0.45	0.20
297-007	South Comminsville	Sylvan Avenue	14.2	216	Cantilever, Concrete	0.36	0.30
297-008	South Comminsville	Beekman Street	3	54	Cantilever, Concrete	0.18	0.10
298-012	Northside	Cresap Avenue	4	212	Gravity, Concrete	0.64	0.70
298-024	Northside	Innes Avenue	20	231	Cantilever, Concrete	1.09	0.91
298-028	Northside	Glen Parker Avenue	5.4	92	Cantilever, Concrete	0.64	0.70
298-029	Northside	Innes Avenue	7.1	78	Cantilever, Concrete	0.45	0.64
298-033	Northside	Kirby Avenue	7	71	Gravity, Concrete	0.18	0.20
298-034	Northside	Kirby Avenue	2	145	Pier, Cantilever	0.09	0.18
298-038	Northside	Glen Parker Avenue	5.8	97	Gravity, Mortared Stone	0.60	0.30
298-050	Northside	Barvac Avenue	2.7	90	Gravity, Mortared Stone	1.00	1.11
299-002B	College Hill	Hamilton Avenue	5	198	Gravity, Mortared Stone	0.50	0.44
300-002	College Hill	Hamilton Avenue	12	250	Cantilever, Concrete	0.27	0.36
300-007	College Hill	Groesbeck Road	2.5	79	Toe, Concrete	0.36	0.60
300-018	College Hill	Groesbeck Road	2.1	40	Toe, Concrete	0.18	0.10
301-006	College Hill	Devonwood Dr. Walkway	1.7	31	Cantilever, Concrete	0.20	0.11

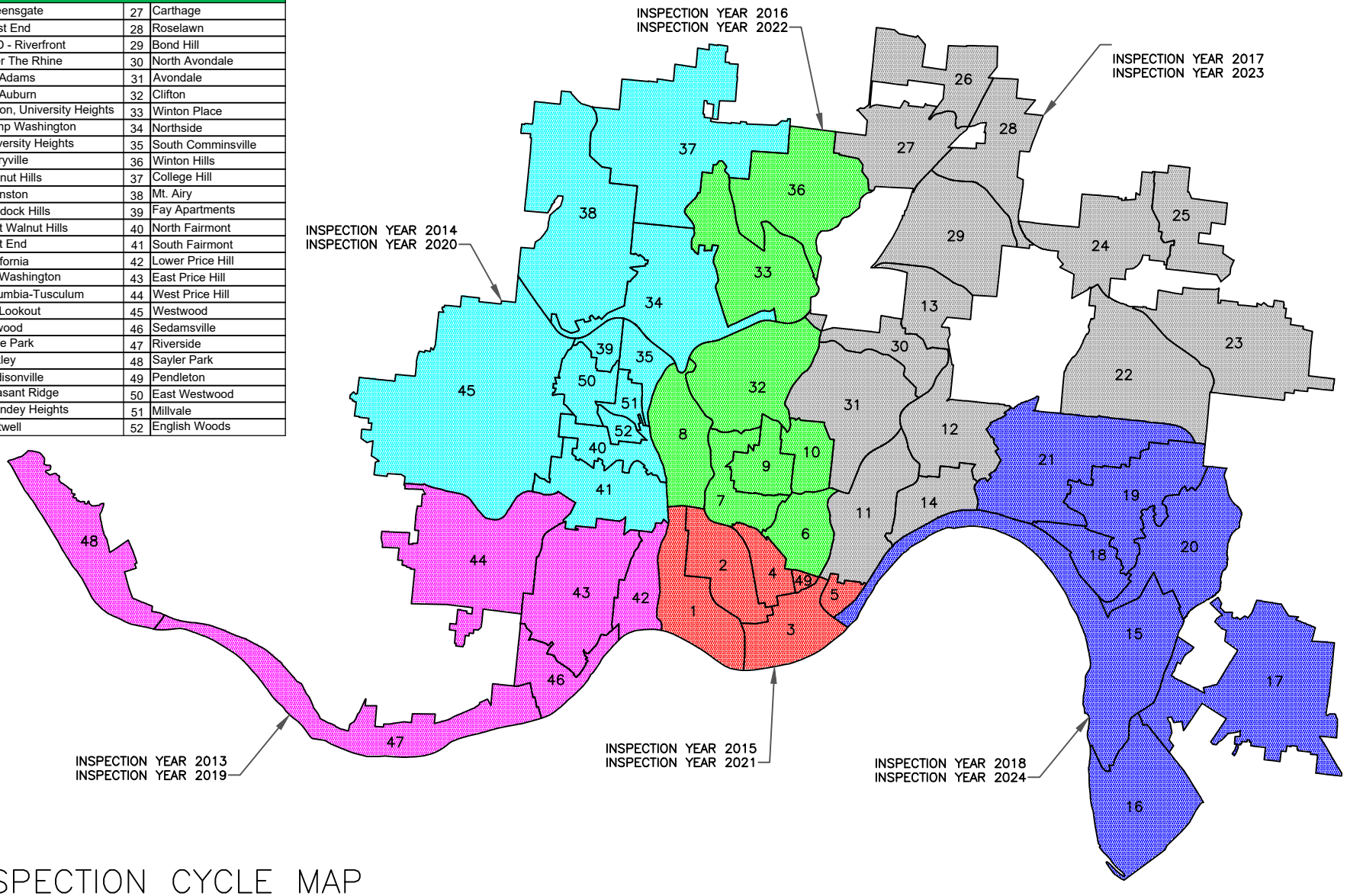
Transportation and Engineering Maintained Walls - Changes from 2014 to 2020

Wall No	Community	Street	Wall Height	Wall Length	Wall Type	Avg Struct '14	Avg Struct '20
301-011	College Hill	Argus Road	4.8	133	Cantilever, Concrete	0.27	0.20
301-012	College Hill	Argus Road	1.6	47	Toe, Concrete	0.55	0.50
301-014	College Hill	Argus Road	5.1	202	Toe, Concrete	0.36	0.30
322-001	College Hill	Center Hill Avenue	5.3	305	Cantilever, Concrete	0.36	0.20
322-002	College Hill	Oakfield Avenue	3.6	95	Toe, Concrete	0.55	0.40

SECTION 5

Inspection District Map

COMMUNITIES			
1	Queensgate	27	Carthage
2	West End	28	Roselawn
3	CBD - Riverfront	29	Bond Hill
4	Over The Rhine	30	North Avondale
5	Mt. Adams	31	Avondale
6	Mt. Auburn	32	Clifton
7	Clifton, University Heights	33	Winton Place
8	Camp Washington	34	Northside
9	University Heights	35	South Comminsville
10	Corryville	36	Winton Hills
11	Walnut Hills	37	College Hill
12	Evanston	38	Mt. Airy
13	Paddock Hills	39	Fay Apartments
14	East Walnut Hills	40	North Fairmont
15	East End	41	South Fairmont
16	California	42	Lower Price Hill
17	Mt. Washington	43	East Price Hill
18	Columbia-Tusculum	44	West Price Hill
19	Mt. Lookout	45	Westwood
20	Linwood	46	Sedamsville
21	Hyde Park	47	Riverside
22	Oakley	48	Sayler Park
23	Madisonville	49	Pendleton
24	Pleasant Ridge	50	East Westwood
25	Kenndey Heights	51	Millvale
26	Hartwell	52	English Woods



INSPECTION CYCLE MAP

SECTION 6

Retaining Wall Inspection Form

RETAINING WALL INSPECTIONS

city of CINCINNATI TRANSPORTATION & ENGINEERING

Wall Number: _____

Street: _____

	DIVISION Structure	RATING	COMMENTS
1	Cracking----------		
2	Bulging----------		
3	Sliding----------		
4	Tilt----------		
5	Settlement----------		
6	Delamination----------		
7	Joints----------		
8	Wall Cap----------		
9	Stone/Block----------		
10	Footing----------		
11	Landslide Damage-------		
12	Tree Damage----------		
			Average Structural Condition
	Drainage		
13	Backdrains----------		
14	Weep Holes----------		
15	Ditch Behind Wall---------		
16	Erosion----------		
17	Leakage----------		
			Average Drainage Condition
	Cosmetic		
18	Discoloration----------		
19	Graffiti----------		
20	Gunite----------		
21	Paint/Miracoat----------		
			Average Cosmetic Condition
	Miscellaneous		
22	Brush/Undergrowth--------		
23	Railing/Fence----------		
24	Curb----------		
25	Sidewalk/Roadway--------		
26	Steps----------		
			Average Miscellaneous Condition
	General Condition		
27	Overall Wall Rating		

Community No.: Community: #N/A

Inspected By: Inspection Date:

Last Overall Wall Rating: Change in Rating:

Last Inspection Date: ("+" = getting better / "-" = getting worse)

RETAINING WALL INSPECTION FORM

The technician/inspector uses this form in the field to write down inspection data. A form is filled out for each wall that is inspected. As of 01/01/2011 only DOTE and other City department walls are inspected on an annual basis. Inspect walls that have Maintenance Code letters B, D, F, G, H, M, R, S, T, & W. At the top of the form, the technician/inspector fills out data that pertains to the community number that the wall is located in, the retaining wall number, the street the wall is located on, who inspected the wall and the date the wall was inspected.

The rest of the retaining wall inventory form is divided into five divisions and these are: Structural, Drainage, Cosmetic, Miscellaneous and General Condition. The Structural, Drainage, Cosmetic and Miscellaneous Divisions have various categories and each category is assigned a sequential number. There are 25 categories in all. Each category is rated from 0 to 4 and the rating system is shown below.

0 = No Problems
1 = Minor Problems
2 = Moderate Problems
3 = Severe Problems
4 = Critical Problems
NA = Category Not Graded
Because It Is Non-Applicable

Each division has three columns, one for category, one for rating and one for comments. The technician/inspector carefully examines the wall for each category, rates the category by consulting the attached guide and enters pertinent comments that relate to the category.

Each division has an average rating box at the bottom of the rating column. The average rating is the sum of all the ratings in that division. An NA rating is not included in the average rating. An example is shown below.

COSMETIC DIVISION

CATEGORY	RATING	COMMENTS
18. DISCOLORATION……	2	rust from fence
19. GRAFFITI……	3	patches from graffiti cover-up
20. GUNITE……..	NA	there is no gunite
21. PAINT/MIRACOAT……	1	private paint job
TOTAL SUM OF CATERGORIES	6	

Sum of Ratings (6) divided by (Number of Categories (3) = 2.0 Average Rating.

The General Condition Division has one line to list the overall wall rating. This is sum of all rated categories divided by the number of rated categories. Do not include NA categories. The computer inspection form includes a large Additional Comment box. Use this comment box to input information about repairs required including measurements and amounts.

STRUCTURAL DIVISION

The Structural Division is the most important because the categories impact the stability of the wall. The inspector should carefully inspect these categories, especially cracking, bulging, sliding, tilt, settlement and delaminations. Severe or
critical problems in these categories should be addressed ASAP. Technician should maintain a spreadsheet of walls with severe and critical problems to coordinate maintenance with engineers, Public Service Department and contractors.

1. CRACKING
   0 = None
   1 = Minor; hairline
   2 = Moderate; partial penetration, width < 1/8”
   3 = Severe; deep cracks, width 1/8” or more, exposed rebar
   4. = Critical: full or partial wall failure

   Suggested Comments: numbers, locations, sizes, direction, causes and previous repairs

2. BULGING
   0 = None
   1 = Minor; pushed out 3” or less
   2 = Moderate; pushed out 3” to -6”
   3 = Severe; pushed out more than 6”
   4 = Critical; wall failure due to collapsed bulge

   Suggested Comments: numbers, locations, pushed out measurements, settlement above bulge, causes and previous repairs

3. SLIDING
   0 = None
   1 = Minor; offset 3” or less at joint
   2 = Moderate; offset 3” to -6” at joint
   3 = Severe; offset more than 6” at joint
   4 = Critical; wall failure due to sliding

   Suggested Comments: number, locations, offset measurements, damage to property supported by wall, causes and previous repairs

4. TILT
   0 = None
   1 = Minor; less than 1” per foot
   2 = Moderate; 1” to 2” per foot
   3 = Severe; more than 2” per foot
   4 = Critical; wall failure due to tilting

   Suggested Comments; numbers, location, tilt measurements, damage to property supported by wall, causes and previous repairs

5. SETTLEMENT
   0 = None
   1 = Minor; less than 3”
   2 = Moderate; 3”+ to 6”
   3 = Severe; more than 6”
   4 = Critical; wall failure due to settlement

   Suggested Comments: numbers, locations, measurements, causes and previous repairs

6. DELAMINATIONS
   0 = None
   1 = Light; sporadic small areas
   2 = Moderate; sporadic medium areas
   3 = Severe; exposed rebar
   4 = Critical; wall failure due to delaminations

   Suggested Comments: numbers, locations, sizes, causes and previous repairs

7. JOINTS
   0 = None
   1 = Minor; joint material missing or deteriorated
   2 = Moderate; broken and less than 2” wide
   3 = Severe; broken and 2” to 4” wide
   4 = Critical; broken and wider than 4”

   Suggested Comments: numbers, location, measurements, causes and previous repairs

8. WALL CAP
   0 = None
   1 = Minor; small cracks
   2 = Moderate; cracks & delaminations
   3 = Severe; cracks & delaminations with exposed rebar
   4 = Critical; large sections of cap deteriorated or missing

   Suggested Comments: numbers, location, measurements, causes and previous repairs

9. STONE OR BLOCK
   0 = None
   1 = Minor; isolated missing and or loose units
   2 = Moderate; small areas of missing and loose units
   3 = Severe; large areas of missing and loose units
   4 = Critical; very large areas of missing and loose units

   Suggested Comments: numbers, locations, measurements, causes and previous repairs

10. FOOTING
    0 = None
    1 = Minor; cracked

2 = Moderate; cracked and spalled
3 = Severe; cracked, spalled and broken
4 = Critical; cracked, spalled, broken and exposed rebar

Suggested Comments: numbers, locations, measurements, causes, previous repairs and for footers underground and unable to inspect write NA

11. LANDSLIDE DAMAGE
0 = None
1 = Minor; debris overtopping wall, but no damage to wall
2 = Moderate; minor damage to wall
3 = Severe; damage to wall requires repairs
4 = Critical; wall failure caused by landslide

Suggested Comments: locations, causes, property effected and previous repairs

12. TREE DAMAGE
0 = None
1 = Minor; light damage
2 = Moderate; cracking and movement
3 = Severe; damage to wall requires repairs
4 = Critical; wall failure caused by trees

Suggested Comments: numbers, location, damage and previous repairs

DRAINAGE DIVISION

13. UNDERDRAINS AND BACKDRAINS
0 = None
1 = Minor; pipe leaking onto sidewalk or roadway
2 = Moderate; partial blockage
3 = Severe: full blockage
4 = Critical: collapsed pipe

Suggested Comments: inspect outlet after heavy rain, inform Stormwater of problem, most pipes are underground and cannot be inspected, therefore the most common comment is NA

14. WEEP HOLES
0 = None
1 = Minor; some holes clogged and or buried
2 = Moderate; 1/3 of holes are clogged and or buried
3 = Severe; 2/3 of holes are clogged and or buried
4 = Critical; all holes are clogged and or buried

Suggested Comments: numbers, holes are weeping, roots in hole and debris in hole

15. DITCHES AND TRENCHES
    0 = None
    1 = Minor; ditch partially blocked
    2 = Moderate; ditch fully blocked and or slightly settled
    3 = Severe; ditch settled enough to impede flow of water
    4 = Critical; ditch damaged and non-functional

    Suggested Comments: clean ditch and or inlet, measurements, and inform Stormwater

16. EROSION
    0 = None
    1 = Minor; light overtopping or one end eroded
    2 = Moderate; moderate overtopping and or both ends eroded
    3 = Severe; heavy overtopping and erosion at ends which requires cleanup or slight undermining of wall
    4 = Critical; wall undermined by erosion

    Suggested Comments: description of erosion, causes and previous repairs

17. SEEPAGE
    0 = None
    1 = Minor; slight seepage through joints and or cracks
    2 = Moderate; moderate seepage through joints and or cracks
    3 = Severe; heavy seepage through joints and or cracks
    4 = Critical; constant flow of water through joints and or cracks

    Suggested Comments: numbers, locations, water ponding, slick surfaces, algae, possible spring or broken sewer pipe behind wall

COSMETIC DIVISION

18. DISCOLORATION
    0 = None
    1 = Minor; 25% or less
    2 = Moderate; 25%+ to 50%
    3 = Severe; 50%+ to 75%
    4 = Critical; more than 75%

    Suggested Comments: types, locations and causes

19. GRAFFITI
    0 = None
    1 = Minor; patches from previous cover-up
    2 = Moderate; small amounts
    3 = Severe; large amounts
    4 = Critical; ugly surface due to repeated graffiti & cover-ups

    Suggested Comments: notify graffiti removal and or notify Police gang unit

20. GUNITE
    0 = None
    1 = Minor; sporadic flaking
    2 = Moderate; small portions fallen
    3 = Severe; large amounts fallen
    4 = Critical; mostly gone and non-functioning

    Suggested Comments: numbers, locations and causes

21. PAINT OR MIRACOAT
    0 = None
    1 = Minor; sporadic flaking
    2 = Moderate; small portions missing
    3 = Severe; large portions missing
    4 = Critical; mostly missing

    Suggested Comments: numbers, location and causes

MISCELLANEOUS

22. BRUSH OR OVERGROWTH
    0 = None
    1 = Minor; landscaping
    2 = Moderate; over hanging wall
    3 = Severe; over hanging and in front of wall
    4 = Critical; wall completely overgrown, inaccessible

    SUGGESTED COMMENTS: location and notify Public Services

23. RAILING OR GUARDRAIL
    0 = None
    1 = Minor; light damage or rusted
    2 = Moderate; moderate damage
    3 = Severe; heavy damage or rusted through, requires repairs
    4 = Critical; mostly wrecked and or missing, requires replacement

    Suggested Comments: location, amount, notify Public Services and research Police Report

24. CURB
    0 = None
    1 = Minor; light deterioration or damage
    2 = Moderate; moderate deterioration or damage
    3 = Severe; heavy deterioration or damage, requires repairs
    4 = Critical; mostly deteriorated, damaged or missing, requires replacement

    Suggested Comments: location, amount, causes and notify proper agency

25. ROADWAY OR SIDEWALK
    0 = None
    1 = Minor; light cracking and or settlement
    2 = Moderate; moderate cracking and or settlement
    3 = Severe; heavy deterioration, requires repairs
    4 = Critical; unusable, requires replacement

    Suggested Comments: location, amount, causes and notify proper agency

26. STEPS
    0 = None
    1 = Minor; light deterioration
    2 = Moderate; moderate deterioration
    3 = Severe; heavy deterioration, requires repairs
    4 = Critical; unusable, requires replacement

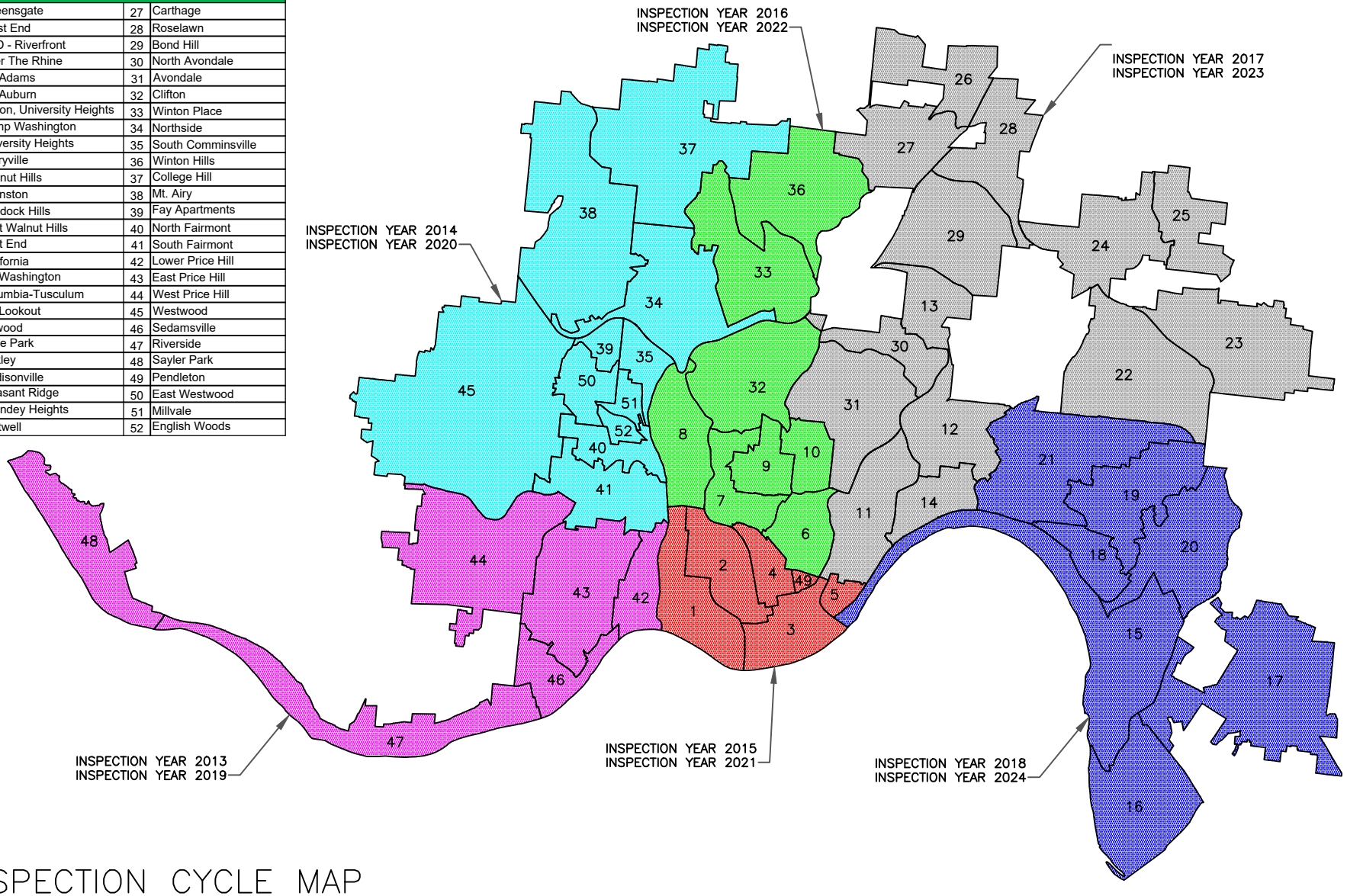
    Suggested Comments: location, amount, causes and notify proper agency

GENERAL CONDITION

27. OVERALL WALL RATING
    0 = Excellent Condition: No Problem
    1 = Good Condition: Minor Movement, Cracking, settlement and Discoloration
    2 = Fair Condition: Wall stable but Need Minor Repairs
    3 = Poor Condition: Excessive deterioration, Major Rehab Work Required
    4 = Wall Failure: Immediate Replacement Required

    Suggested Comments: location, amount, causes and notify proper agency

COMMUNITIES			
1	Queensgate	27	Carthage
2	West End	28	Roselawn
3	CBD - Riverfront	29	Bond Hill
4	Over The Rhine	30	North Avondale
5	Mt. Adams	31	Avondale
6	Mt. Auburn	32	Clifton
7	Clifton, University Heights	33	Winton Place
8	Camp Washington	34	Northside
9	University Heights	35	South Comminsville
10	Corryville	36	Winton Hills
11	Walnut Hills	37	College Hill
12	Evanston	38	Mt. Airy
13	Paddock Hills	39	Fay Apartments
14	East Walnut Hills	40	North Fairmont
15	East End	41	South Fairmont
16	California	42	Lower Price Hill
17	Mt. Washington	43	East Price Hill
18	Columbia-Tusculum	44	West Price Hill
19	Mt. Lookout	45	Westwood
20	Linwood	46	Sedamsville
21	Hyde Park	47	Riverside
22	Oakley	48	Sayler Park
23	Madisonville	49	Pendleton
24	Pleasant Ridge	50	East Westwood
25	Kenndey Heights	51	Millvale
26	Hartwell	52	English Woods



INSPECTION CYCLE MAP