



2014 RETAINING WALL CONDITION REPORT



City of Cincinnati
Department of Transportation and Engineering
Division of Engineering
Structures and Geotechnical Sections
2014

Table of Contents

Section

1. Introduction
2. Retaining Wall Rating Summary
List of Walls in Poor (3) and Critical Condition (4)
3. Wall Repair Priority and Estimated Funding
Priority and Estimated Funding – Landslide Stabilization Projects
4. 2014 Retaining Wall Inspection Summary
New Walls Added to Inventory
5. Inspection District Map

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 (DOT E) 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 DOT E charged with the responsibility of maintaining the retaining walls within this transportation system. This report is the first of an annual update of the Wall Stabilization and Landslide Correction Program including the condition of DOT E's walls.

Essentially every retaining wall within or adjacent to the right-of-way has been inventoried and is included in the Wall Inventory Tracking System (WITS) database. The database contains the following number of walls grouped by ownership:

Wall Owner	Number	Length - Feet	Length - Miles
Transportation & Engineering (DOT E)	1,548.00	264,203.00	50.04
Other Departments	226.00	41,787.00	7.91
Maintenance Agreements	101.00	9,521.00	1.80
Unknown	40.00	7,638.00	1.45
Hamilton County	14.00	563.00	0.11
ODOT	192.00	4,356.00	0.83
Private	5,125.00	513,096.00	97.18
TOTALS:	7,246.00	841,164.00	159.31

DOT E personnel only inspect DOT E 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 3 (Poor) or 4 (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 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. 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 so as to maintain a Satisfactory Structural Rating for 80% or more of the walls maintained by DOTE.

DOTE personnel inspected a total of 337 walls having a total length of 11.2 miles in the 2014 inspection district. These walls were in the communities of:

1. Northside
2. South Cumminsville
3. College Hill
4. Mt. Airy
5. Fay Apartments
6. North Fairmont
7. South Fairmont
8. Westwood
9. East Westwood
10. Millvale
11. English Woods

Section Four (4) of the report (3) summarizes the results of the 2014 Inspection.

A summary of the Structural Retaining Wall Ratings for DOTE walls and other city maintained walls are shown in Section Two (2) of this report. Tables of all DOTE wall and other city maintained walls with a Poor (3) or Critical (4) condition rating are also listed in Section Two (2) of the report. Eighty-seven (87) of the 1,548 walls maintained by DOTE have a Structural Rating of Poor (3) or Critical (4) Structural Rating.

Section Three (3) of the report lists the priority and estimated costs to repair all of the DOTE walls that are have a Poor (3) or Critical (4) condition rating. The lists identifies whether the cost to repair is a capital or maintenance expense. The total estimated maintenance and capital cost to repair/replace the walls is \$5,865,000. Section Three (3) of the report also includes a list of seven (7) landslide correction projects. The estimated cost to correct the landslides is estimated at \$1,900,000.

Annual Capital funding for the Retaining Wall and Landslide Correction Program has substantially declined over the years from a high point of \$1.84 million in 1995 to lows of \$366,000 in CY13-FY14, \$541,980 in FY15 and \$500,000 recommended in FY 2016. Maintenance Funds which were at an annual level of \$500,000 between 1989 and 1992 and \$200,000 between 1993 and 1995 have been completely eliminated since 1996.

Capital Improvement Projects constructed in CY 2014 included the Stabilization of the Goethe Street landslide which occurred in 2011, the repair of the Groesbeck Road Pier wall originally constructed in 1974 and the stabilization of a landslide on West Fork Road.

- Goethe Street Retaining Wall Project - \$439,013.00
- Groesbeck Road Retaining Wall Repair Road - \$187,719.36
- West Fork Road 2049 Landslide Correction Project - \$128,929.46

Slide debris was removed from above the wall on Columbia Parkway on one occurrence in CY 2014. The slide occurred just east of the Third Street exit ramp. The slide debris which threatened to slide onto the roadway was removed before it actually slid onto the roadway. Removal of slide debris which affect the roadways is funded through Public Services budget under the direction of DOTE.

Four-hundred-and-fifty-thousand (\$450,000) is currently available in the Wall Stabilization and Landslide Correction Program. Capital Improvement Projects that are to be bid in CY 2015 include:

- Hillside Avenue at Tyler Avenue – Est. Cost \$400,000
- Ridgetop Way Pier Wall Extension - \$75,000
- Colerain Avenue Retaining Wall Repairs - \$15,000

SECTION 2

Retaining Wall Rating Summary

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

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.

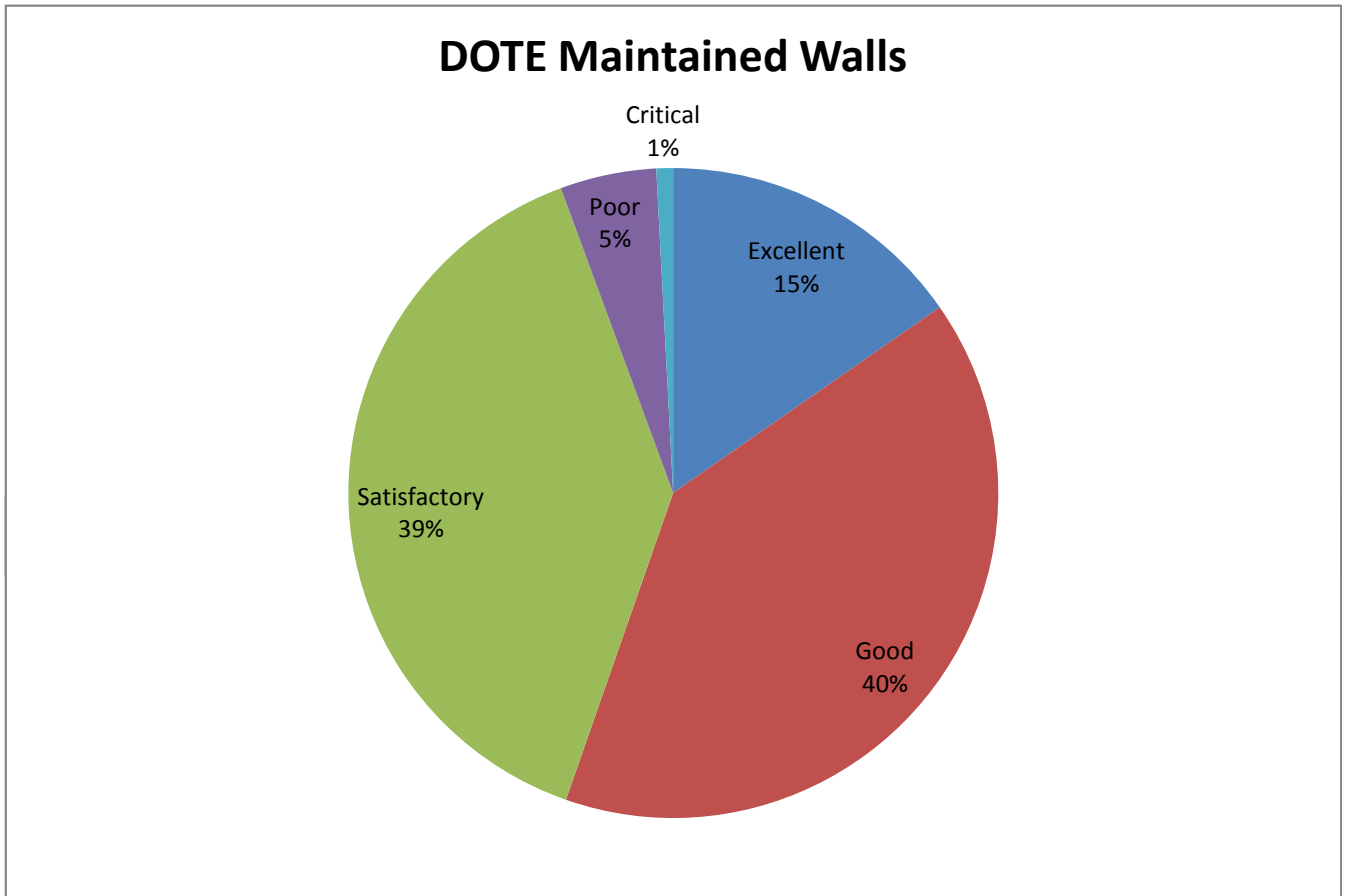
4 Critical

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.

Structural Rating Summary for Walls Maintained by DOTE

RATING	COUNT	PERCENT by COUNT	LENGTH (FEET)	PERCENT by LENGTH	AREA (SQ. FEET)	PERCENT by AREA
Excellent	237	15.31%	38,341	14.51%	222,759	10.91%
Good	620	40.05%	110,526	41.83%	899,780	44.05%
Satisfactory	604	39.02%	98,334	37.22%	787,064	38.54%
Poor	74	4.78%	15,093	5.71%	118,780	5.82%
Critical	13	0.84%	1,909	0.72%	14,070	0.69%
TOTALS	1,548	100%	264,203	100%	2,042,453	100%

50.04
MILES

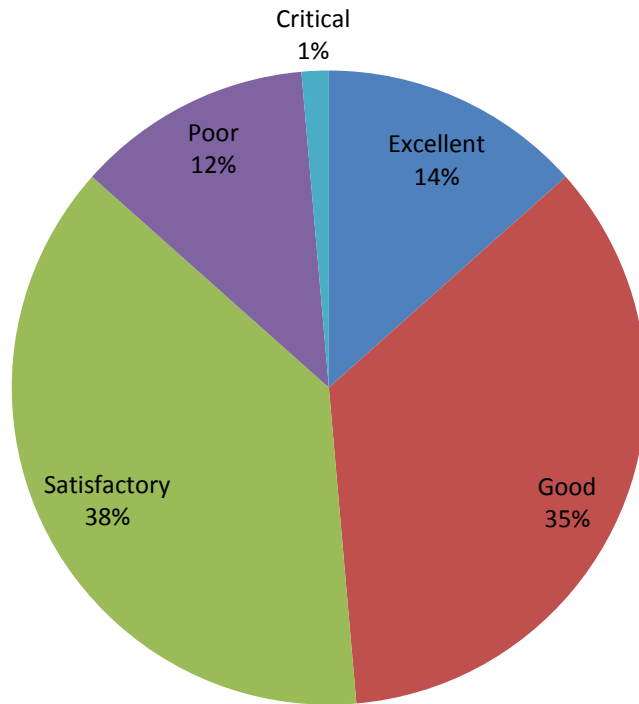


Structural Rating Summary for City Walls NOT MAINTAINED by DOTE

RATING	COUNT	PERCENT BY COUNT	LENGTH (FEET)	PERCENT by LENGTH	AREA (SQ. FEET)	PERCENT by AREA
Excellent	29	13.43%	2,347	5.03%	16,105	4.61%
Good	76	35.19%	20,602	44.11%	173,140	49.58%
Satisfactory	82	37.96%	18,734	40.11%	130,315	37.31%
Poor	26	12.04%	4,854	10.39%	28,730	8.23%
Critical	3	1.39%	169	0.36%	940	0.27%
TOTALS	216	100%	46,706	100%	349,230	100%

8.81
MILES

Other City (Non DOTE) Maintained Walls



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

<u>Wall ID</u>	<u>Side</u>	<u>House Numbers</u>	<u>Street Name</u>	<u>Wall Length</u>	<u>Height (Max)</u>	<u>Wall Type</u>
201-016	S	4235 to 4235	RIVER ROAD	100	3.6	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
244-019	S	0 to 0	FITHIAN STREET	80	6	Gravity, Block
244-026	N	614 to 614	BAURICHTER STREET	105	4.1	Gravity, Concrete
248-011A	N	986 to 996	DEHLI AVENUE	198	4	Toe, Concrete
248-011B	N	998 to 1004	DELHI AVENUE	276	9	Toe, Concrete
249-014	E	916 to 932	OLIVE AVENUE	94	2.6	Gravity, 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
251-034	S	1999 to 1999	SUNSET LANE	15	5	Gravity, Mortared Stone
252-021	N	2726 to 2729	RUBERG AVENUE	49	3.7	Gravity, Concrete
281-002	W	4929 to 4929	KIRBY AVENUE	132	5.5	Gravity, Dry Stone
282-016	W	4703 to 4741	COLERAIN AVENUE	357	8.5	Pier, Cantilever
285-022	W	2035 to 2047	BALTIMORE AVENUE	255	8.1	Gravity, Concrete
286-008	W	2431 to 2437	SAFFIN AVENUE	165	3	Gravity, Mortared Stone
286-037	S	1823 to 1827	ESMONDE STREET	97	6	Cantilever, 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
287-001	W	1327 to 1403	BOWMAN AVENUE	149	10.3	Gravity, Dry Stone
288-022	E	2370 to 2398	WILDER AVENUE	436	23.5	Gravity, Concrete
288-039	N	2311 to 2327	WILDER AVENUE	249	9.4	Gravity, Concrete
288-080	S	2511 to 2513	WARSAW AVENUE	58	4	Gravity, Concrete
288-107A	N	2630 to 2698	MARYLAND AVENUE	378	7.3	Gravity, Dry 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
295-003	W	1115 to 1115	HOPPLE STREET	52	5.2	Gravity, Concrete
325-017	W	4543 to 4547	MITCHELL AVENUE, WES	123	2.6	Precast Modular
325-018	N	0 to 0	ESTE AVENUE	96	3.6	Precast Modular

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

<u>Wall ID</u>	<u>Side</u>	<u>House Numbers</u>	<u>Street Name</u>	<u>Wall Length</u>	<u>Height (Max)</u>	<u>Wall Type</u>
329-015B	N	512 to 590	STRAIGHT STREET	245	10.5	Gravity, Dry Stone
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
329-138	E	339 to 340	CITY VIEW PLACE	37	3	Gravity, Mortared Stone
329-147	E	0 to 0	FREEMAN AVENUE STEPS	26	5	Gravity, Dry Stone
330-036	W	1776 to 1921	CENTRAL PARKWAY	492	5.3	Gravity, Concrete
330-053B	N	2148 to 2172	CENTRAL AVENUE	350	13.5	Cantilever, Concrete
330-057	E	0 to 0	PEETE STREET STEPS	33	5.2	Gravity, 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
330-069	W	0 to 0	EAST ALLEY	114	11	Gravity, Mortared Stone
330-170	S	1 to 3	CLIFTON AVENUE, EAST	15	6.7	Gravity, Concrete
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
336-307	S	121 to 125	DORCHESTER AVENUE	62	12	Gravity, Mortared Stone
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
339-065	S	511 to 517	FOREST AVENUE	84	1	Toe, Concrete
339-088	S	34 to 62	FOREST AVENUE	397	4.4	Toe, Concrete
339-091	N	0 to 0	ROCKDALE AVENUE	170	13	Cantilever, Concrete
367-013	N	0 to 684	LINTON SPRINGS AVENUE	330	7.4	Cantilever, Concrete
368-001	W	1015 to 1019	DANA AVENUE	159	5.7	Toe, Concrete
370-125	N	1708 to 1708	WILLIAM HOWARD TAFT ROAD	32	4.3	Gravity, Mortared Stone
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
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

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

<u>Wall ID</u>	<u>Side</u>	<u>House Numbers</u>	<u>Street Name</u>	<u>Wall Length</u>	<u>Height (Max)</u>	<u>Wall Type</u>
372-007	N	0 to 0	COLUMBIA PARKWAY	225	7.6	Gravity, Mortared Stone
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
422-057	W	4540 to 4598	COLUMBIA PARKWAY	430	10	Toe, Concrete
452-001A	E	5776 to 5794	KENNEDY AVENUE	305	4.2	Gravity, Dry Stone
452-001B	E	5766 to 5774	KENNEDY AVENUE	318	4.7	Gravity, Dry Stone

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

<u>Wall ID</u>	<u>Side</u>	<u>House Numbers</u>	<u>Street Name</u>	<u>Wall Length</u>	<u>Height (Max)</u>	<u>Wall Type</u>
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
252-016	W	2907 to 2935	HOADLY COURT	312	4.6	Gravity, Mortared Stone
286-086	W	2497 to 2499	SEEGAR AVENUE	30	5	Gravity, Dry Stone
287-005	E	1300 to 1302	LOCKWOOD AVENUE	70	11.5	Gravity, Mortared Stone
288-107B	N	0 to 0	MARYLAND AVENUE	183	7.5	Gravity, Dry Stone
294-062D	E	2624 to 2660	CUMMINS STREET	480	15	Cantilever, Concrete
299-002B	E	5358 to 5368	HAMILTON AVENUE	198	5	Gravity, Mortared Stone
329-133A	W	0 to 0	EAST ALLEY	310	10.5	Gravity, Mortared Stone
339-085	E	3604 to 3606	HARVEY AVENUE	33	1.1	Other, See Comments
422-080	N	3596 to 3598	HANDMAN AVENUE	95	5.5	Mechanically Stabilized
423-104	W	647 to 647	DELTA AVENUE	20	2	Gravity, Concrete
460-002	S	0 to 0	SALEM ROAD	82	5	Gravity, Mortared Stone

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

<u>Wall ID</u>	<u>Side</u>	<u>House Numbers</u>	<u>Street Name</u>	<u>Wall Length</u>	<u>Height (Max)</u>	<u>Wall Type</u>
289-005	W	351 to 379	ELBERON AVENUE	485	18.6	Gravity, Mortared Stone
327-003	N	500 to 502	MCALPIN AVENUE	288	6	Gravity, Mortared Stone
335-349	N	0 to 0	CELESTIAL STREET STEPS	150	4	Gravity, Mortared Stone
336-162	W	0 to 0	ELEANOR PLACE	72	6.5	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
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	LINTON SPRINGS AVENUE	90	1.5	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
375-155	N	2342 to 2352	GLADSTONE AV (PRIVATE)	180	9	Gravity, Dry Stone
337-108	S	0 to 0	LEROY COURT	148	7.3	Gravity, Brick
337-311	E	2600 to 2600	LAN STREET PARKING LOT	60	5	Toe, Concrete
371-052	W	619 to 619	KEMPER LANE	50	5.7	Gravity, Mortared Stone
330-237	S	6 to 12	HUST ALLEY	90	12	Cantilever, Concrete
286-150	N	1710 to 1710	HARRISON AVENUE	13	4	Gravity, Concrete
409-068	N	2998 to 2998	RIVERSIDE DRIVE	8	2	Gravity, Brick
409-069	N	3000 to 3000	RIVERSIDE DRIVE	9	2	Gravity, Brick
297-099	N	4123 to 4125	VIRGINIA AVENUE	46	3	Gravity, Mortared Stone
327-015	N	328 to 328	MCALPIN AVENUE	234	2	Gravity, Concrete
330-025	N	20 to 40	BACK STREET	258	2.5	Gravity, Mortared Stone
375-118	S	2425 to 2445	RIVERSIDE DRIVE	124	3	Gravity, Mortared Stone

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

<u>Wall ID</u>	<u>Side</u>	<u>House Numbers</u>	<u>Street Name</u>	<u>Wall Length</u>	<u>Height (Max)</u>	<u>Wall Type</u>
375-115	S	333	COLUMBIA PARKWAY	50	1.8	Gravity, Mortared Stone
288-130	W	611 to 615	MARYLAND AVENUE	108	7.3	Gravity, Mortared Stone
281-029	E	0 to 0	KIRBY AVENUE	11	4	Precast Modular

SECTION 3

Wall Repair Priority and Estimated Funding

Priority and Estimated Funding – Landslide
Stabilization Projects

WALL REPAIR PRIORITY & ESTIMATED FUNDING

WALL#	STREET	T	COMMENTS	PR	LEN	AREA	FUND	COMMENTS	EST.
201-016	River Rd	C	deteriorated, cracks	HIGH	100	700	maint.	TROD, chip and patch	\$3,000.00
241-009	Nebraska Av	C	deteriorated, cracks	MED	431	2260	capital	Chip and patch	\$40,000.00
244-006A	Hillside Av	S	deteriorated	LOW	55	150	capital	monitor, replace with modular	\$22,000.00
244-006B	Hillside Av	S	deteriorated	LOW	41	120	capital	monitor	\$16,400.00
244-008	Hillside Av	S	moved and settled	LOW	60	120	capital	monitor, replace with modular	\$24,000.00
244-019	Fithian St	B	bulged	LOW	80	450	capital	monitor, replace with modular	\$32,000.00
244-026	Baurichter St	C	cracked, leaning	LOW	105	450	capital	monitor, replace with modular	\$28,000.00
248-011A	Delhi Av	C	delaminated toewalk	LOW	198	750	capital	monitor, chip and patch toe	\$10,000.00
248-011B	Delhi Av	C	delaminated toewalk	LOW	276	2500	capital	monitor, chip and patch toe	\$10,000.00
249-014	Olive Av	C	leaning	LOW	94	280	maint.	monitor, replace with concrete	\$10,000.00
250-059	Latham Av	S	stones missing	LOW	50	850	capital	replace with modular	\$15,000.00
251-028	Queen City Av	B	wrecked & salt damage	LOW	220	800	capital	monitor, replace with modular	\$30,000.00
251-029	Guerley Rd	B	loose caps & salt damage	HIGH	155	600	capital	CIP cap and repair	\$15,000.00
251-034	Sunset Ln	S	tilted wall & eroded area	LOW	15	70	capital	monitor, replace with modular	\$12,000.00
252-016	Hoadly Ct	S	deteriorated stones	LOW	312	1300	capital	monitor, replace with modular	\$62,000.00
252-021	Ruberg Av	C	delaminated cap	LOW	49	300	maint.	TROD, chip and patch	\$3,000.00
281-002	Kirby Av	M	replace deteriorated wall	LOW	132	650	maint.	TROD, rebuild areas with stone	\$5,000.00
282-016	Colerain Av	C	wrecked busstop area	HIGH	357	3000	capital	TROD, Reconstruct CIP	\$15,000.00
285-022	Baltimore Av	C	deteriorated cap	LOW	255	1050	maint.	TROD	\$4,000.00
286-008	Saffin St	S	deteriorated wall & steps	LOW	165	450	capital	moniter, rebuild existing	\$30,000.00
286-037	Esmonde St	T	rotten railroad ties	HIGH	97	500	capital	replace with modular	\$35,000.00
286-043C	Harrison Av	S	broken pilasters	MED	430	2700	maint.	repair existing	\$10,000.00
286-086	Seegar Av	S	mostly fallen	LOW	30	140	maint.	abandon	\$0.00
286-088	Harrison Av	C	delaminated wall & cap	HIGH	32	160	capital	replace CIP cap and railing	\$15,000.00
286-090	Merton St	S	moved and settled	LOW	35	100	capital	repair existing stone	\$15,000.00
287-001	Bowman Av	S	broken cap & steps	LOW	149	1500	capital	Replace cap, mortar	\$28,000.00
287-005	Lockwood Av	S	cracked corner	LOW	70	900	capital	monitor, repair stone replace cap	\$35,000.00
288-022	Wilder Av	C	deteriorated, cracks	HIGH	436	9500	capital	chip and patch	\$85,000.00
288-039	Wilder Av	C	delaminations	HIGH	249	2400	capital	chip and patch	\$3,600.00
288-080	Warsaw	C	leaning	LOW	20	350	capital	monitor, replace with CIP	\$18,000.00
288-107A	Maryland Av	S	deteriorated & bulged	LOW	378	2700	capital	rebuild stone	\$300,000.00
288-107B	Maryland Av	S	deteriorated & large gap	LOW	183	1300	capital	future Structure's project	\$150,000.00
294-052	Fargo Al	S	bulge, broken end & cap	LOW	200	1350	capital	monitor, rebuild stone	\$30,000.00
294-062A	Cummins St	C	delaminated cap & railing	HIGH	450	5500	capital	monitor, new CIP barrier	\$450,000.00
294-062B	Cummins St	C	delaminated cap & railing	HIGH	440	1600	capital	monitor, new CIP barrier	\$444,000.00
294-062C	Cummins St	C	delaminated cap & railing	HIGH	440	3000	capital	monitor, new CIP barrier	\$444,000.00
294-062D	Cummins St	C	delaminated cap & railing	HIGH	480	5000	capital	monitor, new CIP barrier	\$480,000.00
294-085	Queen City Al	C	broken end & cap	LOW	25	100	maint.	abandon	\$0.00
295-003	Hopple St	C	large crack	LOW	52	320	maint.	removed by I-75 project	\$0.00
299-002B	Hamilton Av	S	loose stones	MED	198	1050	maint.	remortar stones	\$10,000.00
325-017	Mitchell Av	PM	wrecked ends	LOW	50	100	maint.	gateway, coordinate with Architecture	\$3,000.00
325-018	Este Av	PM	four wrecked areas	LOW	96	400	maint.	gateway, coordinate with Architecture	\$3,000.00
329-015B	Straight St	S	bulged & tilted	LOW	245	2400	capital	monitor, replace	\$280,000.00
329-126A	McMillan St	C	broken end & railing	MED	380	2200	capital	TROD	\$76,000.00
329-126B	McMillan St	C	broken cap	MED	152	1200	capital	TROD	\$31,000.00
329-132	Hukill Al	C	broken cap	LOW	30	65	capital	abandon	\$0.00
329-133A	East Alley	S	bulge fell	LOW	310	3000	capital	Monitor, rebuild stone in sections	\$40,000.00
329-138	City View Pl	S	broken ends	HIGH	37	130	maint.	Repaired in 2015	\$0.00
329-147	Freeman Av	S	large cracks	LOW	26	225	maint.	abandon	\$0.00
330-036	Central Pkwy	C	tilted, deteriorated cap	MED	492	1700	capital	monitor, chip and patch	\$40,000.00
330-053B	Central Av	C	broken cap & spalled face	MED	350	3700	maint.	Chip and patch	\$74,000.00
330-057	Peete St	C	delaminated face	HIGH	33	250	maint.	Chip and patch	\$5,000.00
330-063	East Alley	S	bulged	LOW	198	2400	capital	Monitor, rebuild stone in sections	\$40,000.00
330-065	East Alley	S	bulged	LOW	102	1800	capital	Monitor, rebuild stone in sections	\$40,000.00
330-069	East Alley	S	bulged	LOW	114	1500	capital	Monitor, rebuild stone in sections	\$40,000.00
330-170	Clifton Av	C	delaminated face	HIGH	15	125	maint.	Chip and patch	\$3,000.00
335-110	St Gregory Pl	C	delaminated upper part	LOW	196	650	capital	repair cap	\$20,000.00
335-125	Wareham Dr	C	delaminated cap	LOW	187	2900	maint.	repair cap, gunite face, pvt. Development	\$79,000.00
335-165	Celestial St	S	cracked corner	LOW	41	550	maint.	monitor, rebuild stone	\$10,000.00
335-217	Baum St (rear)	S	3 fallen areas	LOW	255	3200	capital	monitor, supports City park, rebuild	\$25,000.00
336-307	Dorchester St	S	deteriorated cap	LOW	62	750	capital	replace with modular	\$35,000.00
337-192	McGregor Av	C	crumbled foundation	LOW	100	500	maint.	abandon, regrade if necessary	\$3,000.00
337-242	Presley Al	S	bulged and moved	LOW	150	700	capital	monitor, rebuild stone, railing	\$40,000.00
339-065	Forest Av	C	tilted panel	LOW	84	100	maint.	replace w/curb wall	\$10,000.00

339-085	Harvey Av	C	wall is too low	LOW	33	60	capital	Trans. Design Project	\$0.00
339-088	Forest Av	C	broken toewalk	LOW	397	1700	maint.	repair toe	\$5,000.00
	WALL#	STREET	COMMENTS	PR	LEN	AREA	FUND	COMMENTS	EST.
339-091	Rockdale Av	T	deteriorated concrete	LOW	170	1600	capital	Replace wall with CIP	\$85,000.00
367-013	Clinton Sprngs	C	moved, survey biannually	HIGH	330	2250	capital	2015 Structure's project	\$200,000.00
368-001	Dana Av	C	delaminated toewalk	HIGH	159	850	maint.	repair toe	\$5,000.00
370-125	Wm H Taft Rd	S	bulged under sidewalk	LOW	32	125	capital	monitor, replace cap	\$10,000.00
371-050A	Riverside Dr	S	deteriorated cap	MED	460	5200	capital	replace cap & mortar	\$225,000.00
371-050B	Riverside Dr	S	deteriorated cap	MED	460	4400	capital	replace cap & mortar	\$225,000.00
371-050C	Riverside Dr	S	deteriorated cap	MED	460	2500	capital	replace cap & mortar	\$225,000.00
371-054	Kemper Ln	S	cap partially missing	LOW	235	1300	capital	Replace Wall	\$235,000.00
371-055	Kemper Ln	C	top delaminated	LOW	321	3600	capital	Replace Wall	\$321,000.00
371-056	Kemper Ln	C	moved	LOW	390	3400	capital	Replace Wall	\$390,000.00
371-058	Edgecliff Pt	S	tilted	HIGH	33	350	maint.	replace cap & mortar	\$12,000.00
371-074	Col. Pkwy	C	delaminated face	HIGH	90	1400	capital	Chip and patch, repaint	\$18,000.00
372-007	Col. Pkwy	S	broken cap	HIGH	225	1350	maint.	Mortar and patch	\$3,000.00
409-050	Col. Pkwy	C	deteriorated end	HIGH	460	5900	maint.	Chip and patch	\$5,000.00
409-051	Col. Pkwy	C	deteriorated end	HIGH	72	250	maint.	Chip and patch	\$5,000.00
422-057	Col. Pkwy	C	toewalk broken & heaved	LOW	430	4000	maint.	Chip and patch	\$5,000.00
422-080	Handman Av	PM	large utility gap by others	HIGH	95	550	maint.	private development to repair	\$0.00
423-104	Delta Av	C	damaged wall	LOW	20	40	capital	replace with modular	\$25,000.00
452-001A	Kennedy Av	S	bulged	LOW	318	1900	capital	monitor,rebuild existing	\$15,000.00
452-001B	Kennedy Av	S	bulged & moved	LOW	318	1900	capital	monitor,rebuild existing	\$15,000.00
460-002	Salem Rd	S	half fell 1/2012	HIGH	82	450	capital	Replaced 2014	\$0.00

TOTAL Maintenance & Capital Costs \$5,865,000.00

T = Wall Type
PR = Priority
LEN = Length

Maintenance Cost
HIGH \$41,000.00
MED \$94,000.00
LOW \$140,000.00
TOTAL \$275,000.00

Capital Improvement Costs
HIGH \$2,204,600.00
MED \$862,000.00
LOW \$2,523,400.00
TOTAL \$5,590,000.00

Landslide Correction Projects & Estimated Funding

LOCATION	PRIORITY	EST.
Hillside Avenue @ Tyler Avenue	HIGH	\$400,000.00
Dorchester Rock Cut Stabilization	HIGH	\$125,000.00
Ridgetop Way Pier Wall Extension	HIGH	\$75,000.00
Tusculum Avenue	MED	\$250,000.00
Riverside Drive @ Rookwood Overpass	MED	\$350,000.00
Art Museum Drive Retaining Wall	LOW	\$400,000.00
Hillside Ave. @ Henrietta Ave	LOW	\$300,000.00

TOTAL COST **\$1,900,000.00**

SECTION 4

2014 Retaining Wall Inspection Summary

New Walls Added to Inventory

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 four Divisions (Structural, Drainage, Cosmetic, Misc.) Excludes any N/A Ratings

Example:

Structural Avg. - 2.0

Drainage Avg. – 3.0

Cosmetic Avg. – 2.0

Miscellaneous Avg. N/A

Overall Wall Rating = 7 (Sum of Ratings) / 3 (Number of Subjects) = 2.3 (Rating)

TOTAL AVERAGES OF WALLS INSPECTED IN 2014 CYCLE

2014 INSPECTION CYCLE

Maintenance	Wall Count	Total Length (Lin. Ft.)	Total Exposed Area (Sq. Ft.)	Avg. Structural	Avg. Drainage	Ave. Cosmetic	Avg. Misc.	Avg. Overall
MSD	4	383	1,490	0.47	0.50	0.33	0.64	0.48
Park Board	4	879	3,450	0.27	0.30	0.69	1.07	0.44
Recreation Department	4	603	5,400	0.30	0.65	0.81	0.66	0.46
Transportation And Engineering	313	56,732	395,859	0.37	0.63	0.87	0.96	0.57
Water Department	12	403	755	0.11	0.19	0.31	0.26	0.17
2014 TOTALS:	337	59,000.00	406,954.00	0.30	0.46	0.60	0.72	0.43
		11.17 Miles						

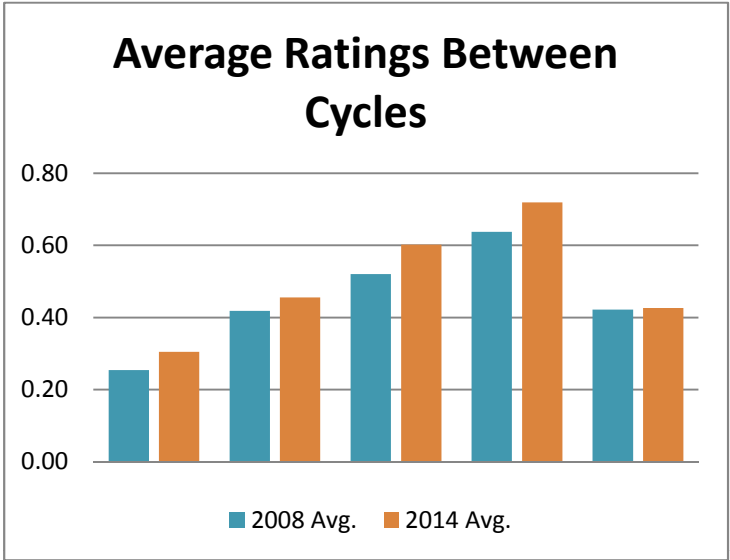
2008 INSPECTION CYCLE

Maintenance	Wall Count	Total Length (Lin. Ft.)	Total Exposed Area (Sq. Ft.)	Avg. Structural	Avg. Drainage	Ave. Cosmetic	Avg. Misc.	Avg. Overall
MSD	4	383	1,490	0.47	0.78	0.50	1.22	0.63
Park Board	4	879	3,450	0.44	0.55	1.08	0.86	0.60
Recreation Department	4	603	5,400	0.25	0.41	0.16	0.16	0.24
Transportation And Engineering	310	56,091	390,354	0.00	0.35	0.69	0.82	0.54
Water Department	12	403	755	0.11	0.00	0.17	0.13	0.10
2008 TOTALS:	334	58,359.00	401,449.00	0.25	0.42	0.52	0.64	0.42
		11.05 Miles						

TOTAL AVERAGES OF WALLS INSPECTED IN 2014 CYCLE

	Transportation & Engineering Owned Walls			
	0-1	1-2	2-3	3-4
Avg. Structural	316	20	1	0
<i>Avg. Structural</i>	<i>316</i>	<i>17</i>	<i>1</i>	<i>0</i>
Avg. Drainage	265	56	16	0
<i>Avg. Drainage</i>	<i>271</i>	<i>51</i>	<i>12</i>	<i>0</i>
Avg. Cosmetic	268	66	3	0
<i>Avg. Cosmetic</i>	<i>278</i>	<i>53</i>	<i>3</i>	<i>0</i>
Avg. Miscellaneous	232	78	27	0
<i>Avg. Miscellaneous</i>	<i>242</i>	<i>76</i>	<i>16</i>	<i>0</i>
Avg. Overall	290	46	1	0
<i>Avg. Overall</i>	<i>297</i>	<i>36</i>	<i>1</i>	<i>0</i>

2008 Averages are Italicized



Transportation and Engineering Maintained Walls - Changes from 2008 to 2014

Increases in Structural Average

<u>Wall ID.</u>	<u>Community</u>	<u>Street Name</u>	<u>Wall Height (Max)</u>	<u>Wall Length</u>	<u>Wall Type</u>	<u>2008 Structural Average</u>	<u>2014 Structural Average</u>
255-001	Northside	West Fork Road	5	272	Pier, Cantilever	0.18	1.09
294-063	North Fairmount	Linden Street	13	267	Gravity, Concrete	0.30	1.10
295-029	North Fairmount	Baltimore Avenue	10.5	633	Precast Modular	0.55	1.09

Walls Inspected and Added to Inventory

<u>Wall ID.</u>	<u>Community</u>	<u>Street Name</u>	<u>Wall Height (Max)</u>	<u>Wall Length</u>	<u>Wall Type</u>	<u>2008 Structural Average</u>	<u>2014 Structural Average</u>
280-002B	Mt. Airy	Kirby Road	3	54	Pier, Cantilever	----	0.00
280-002C	Mt. Airy	Kirby Road	3.4	56	Pier, Cantilever	----	0.36
286-196	South Fairmount	Everglade Place	3	314	Pier, Cantilever	----	0.00

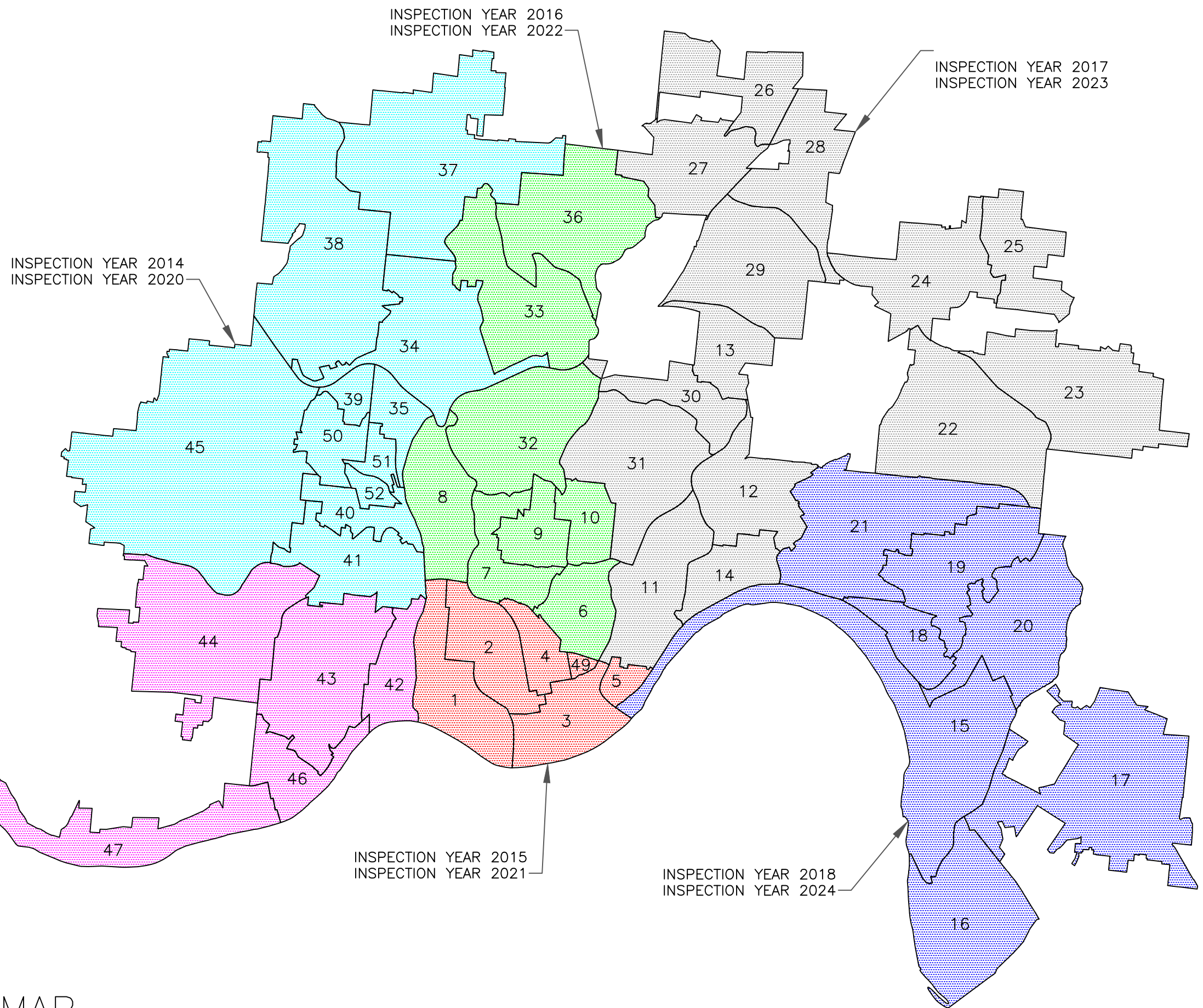
NEW WALLS ADDED TO INVENTORY IN 2014 (CITY WIDE)

Year Build	Maintenace	Community	Wall Number	Street Name	Wall Length (Lin. Ft.)	Exposed Area (Sq. Ft.)	Wall Type	Wall Type Discription	Date Inventoried
2014	DOTe	6	336-406	Walker St.	385	3168	PC	Pier, Cantilever	25-Aug-14
TOTAL:		1.00			385.00	3,168.00			
2013	DOTe	33	324-009A	Winton Road	138	0	PC	Pier, Cantilever	29-May-14
2013	DOTe	33	324--006	Winton Road	284	886	G5	Gravity, Concrete	08-May-14
2013	DOTe	33	324-007	Winton Road	374	767	G5	Gravity, Concrete	08-May-14
2013	DOTe	33	324-008	Winton Road	353	645	G5	Gravity, Concrete	08-May-14
2013	DOTe	33	324-009	Winton Road	211	581	G5	Gravity, Concrete	08-May-14
2013	DOTe	33	324-010	Winton Road	350	479	G5	Gravity, Concrete	08-May-14
2013	DOTe	33	324-011	Winton Road	511	1216	G5	Gravity, Concrete	08-May-14
2013	DOTe	33	324-003	Winton Road	70	31	G5	Gravity, Concrete	07-May-14
2013	DOTe	33	324-004	Winton Road	85	120	G5	Gravity, Concrete	07-May-14
2013	DOTe	33	324-005	Winton Road	40	46	G5	Gravity, Concrete	07-May-14
TOTAL:		10.00			2,416.00	4,771.00			
2013	DOTe	36	323-012	Winton Road	466	1248	G5	Gravity, Concrete	14-May-14
2013	DOTe	36	323-007	Winton Road	78	245	G5	Gravity, Concrete	07-May-14
2013	DOTe	36	323-008	Winton Road	36	62	G5	Gravity, Concrete	07-May-14
2013	DOTe	36	323-009	Winton Road	212	697	G5	Gravity, Concrete	07-May-14
2013	DOTe	36	323-010	Winton Road	84	143	G5	Gravity, Concrete	07-May-14
2013	DOTe	36	323-011	Winton Road	298	810	G5	Gravity, Concrete	07-May-14
2013	DOTe	36	323-013	Winton Road	1096	2302	G5	Gravity, Concrete	07-May-14
TOTAL:		7.00			2,270.00	5,507.00			
2013	DOTe	41	286-154A	Fairmont Ave	65	1162	CS	Cantilever, Stone Facing	27-Jul-14
2013	DOTe	41	286-197	Harrison Ave	344	10150	PT	Pier, Tiedback	25-Jul-14
2013	DOTe	41	286-042A	Harrison Ave	153	955	CS	Cantilever, Stone Facing	22-Jul-14
2014	DOTe	41	294-030A	Harrison Ave	95	1317	G5	Gravity, Concrete	27-Jun-14
2014	DOTe	41	294-031A	Harrison Ave	289	4322	G5	Gravity, Concrete	27-Jun-14
TOTAL:		5.00			946.00	17,906.00			
2013	Private	45	206-015	Glenway Ave	100	300	G3	Gravity, Block	07-May-14
TOTAL:		1.00			100.00	300.00			
OVERALL TOTAL:		24.00		OVERALL TOTAL	6,117.00	31,652.00			

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