

# INDIGO LAKES

## PAVEMENT EVALUATION

MAY 2008



### PREPARED BY:

**CRAIG A. SMITH & ASSOCIATES**  
1000 West McNab Road, Suite 200  
Pompano Beach, FL 33069  
(954) 782-8222

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## **INTRODUCTION**

Craig A. Smith & Associates (CAS) contracted with Indigo Lakes Community Association, Inc to provide pavement evaluation services for three communities within Indigo Lakes in Coconut Creek, Florida. These communities consist of Lake Como, Lake Windermere and Lake St. Croix.

CAS performed an onsite inspection for each community identifying deficiencies in the asphalt (ie. pavement failure, deterioration, settlement, cracking, etc.), taking measurements of these areas as well as total pavement surface areas and photographed the areas of concern.

Field inspections/evaluations began on April 9, 2008 and were concluded on April 25, 2008. The condition of the pavement in Lake Como which consists of approximately 7,800 square yards of pavement, Lake St. Croix consisting of approximately 13,500 square yards of pavement and Lake Windermere consisting of approximately 9,000 square yards of pavement were similar.

The limits of pavement deficiencies were identified and recorded in preparation of this report. Additionally, we have identified deficiencies in sidewalk, curb & gutter and valley gutter.



# LAKE COMO



AREA OF PAVEMENT DEFICIENCY

CAS



**LAKE COMO**

**AT**

**INDIGO LAKES**

**INSPECTION DETAIL**

**LAKE COMO**  
**AT**  
**INDIGO LAKES**  
**ENTRANCE / GATE**

1. From East Edge/Pavement on Alexandria to 1<sup>st</sup> bull nose/median, asphalt is starting to ravel and pull-apart. Thermo-striping is chipping apart.
2. SE radius – "F" C&G flume to C.B./Flume is lower elevation than C.B. grate.
3. SE radius – sidewalk "ramp" / ramp is cracked and stamped portion is not painted, also – the "F" CG is 35' (+/-) R low, presenting a trip hazard to ramp. (sidewalk and ramp is cracked).
4. NE radius – stamped ramp/sidewalk, not painted. (F-C&G in good shape.)
5. 2-entrance lanes – asphalt, minor cracking near median, and a 9' long crack and separation of asphalt and curbing at F C&G (S. side). (across from 1<sup>st</sup> white skip stripe).
6. Thermo-striping and markings – braking and chipping away. Asphalt at and around the center median is raveling and settling. ("F" C&G – ok).
7. Asphalt – turn-around area/starting to ravel, crack and separate.
8. Gate radius (S. side) at 53<sup>rd</sup> Avenue; South – V.G. low and holding water, (20'+30') dropped 1 1/2" to C.B. from the gate, and 2" drop at the sidewalk-ramp on the SE side of C.B. to the south side of the ramp (trip hazard). (stamped-ramp is not painted).
9. Exit lane from 53<sup>rd</sup> Avenue – asphalt has signs of settlement, cracks, and minor separation, center of median and radius turn out to gate.
10. NW radius V.G. – settling on both sides of the C.B., sidewalk ramp to gate 15' NE and 15' W. (Stamped-ramp is not painted).
11. Asphalt is in good condition with normal wear and tear, to stop bar.

**LAKE COMO**  
**AT**  
**INDIGO LAKES**  
**NW 53<sup>RD</sup> AVENUE**

1. (4911) W. side – 2' V.G. low, holding water at driveway, 30' (+/-). E. side of 53<sup>rd</sup> Avenue – 2' V.G. low, 40' (+/-) around the curve.
2. (5335) asphalt, on the E. side (N. Bound Lane) has 3 – cuts/rips, and shows signs of settling below lip of V.G.
3. (4921) W. side – 2 V.G., holding water at the SW corner of Driveway 12' (+/-) (brick pavers are setting, between V.G. and sidewalk).
4. (4920) E. side, V.G. across driveway is low, 40' (+/-), and has been coated with concrete.
5. (4931) W. Side – V.G. low and holding water at driveway, 40' (+/-)
6. Manhole in center of Rdwy.– asphalt show settlement on both sides of rim (N&S). [M.H. between (4931) & (4941)] 50' +40'.
7. (4930) E. Side – V.G. 4' x 2' repair section (driveway) is cracked and holding water.
8. Thermo-striping (& D/YLW and stop bar) – cracking and chipping, missing RPM's.
9. (4940) E. Side – V.G. low, NE corner of driveway to C.B. at stop bar/sign, 12' (+/-), and 50' (+/-) N. Side of C.B. grate.
10. Manhole, center of roadway, at gate/- asphalt is settling at and around the rim, and "crown" has flattened-out water stains and cracked asphalt for 7'-15' x 10'-12' area.
11. (4960) E. Side – asphalt is cracked and ridged, 4' out from V.G. for 40' (+/-), in the N. Bound lane, between driveway and center line (M.H.) crown.
12. (4961) W. side – center line crown of Roadway asphalt has settled and flattened, water stains & cracked asphalt, 10'-15' long x 2'-3' wide.
13. (4971) W. side & (4970) E. side – asphalt is settled and crown flattened at and around the manhole, both N&S sides, 30' – 35'.
14. Rdwy asphalt, both lanes (N&S) from (4971) to the NW Corner of (4981) Driveway has settled and flattened the center line crown, 80' x 24'.
15. Thermo-striping/cracked and missing RPM's – V.G. in good shape, up to 51<sup>st</sup> Street.
16. Asphalt, from S. Edge/pavement 51<sup>st</sup> to the stop bar on 53<sup>rd</sup> Avenue, is raveling.

**LAKE COMO**  
**AT**  
**INDIGO LAKES**  
**NW 49<sup>TH</sup> COURT**

(W. to E.) from Street sign on S. curve (N. side), 53<sup>rd</sup> Avenue & 49<sup>th</sup> Court  
To Street sign on N. curve (N. side) 49<sup>th</sup> Court and 52<sup>nd</sup> Avenue

1. (5348) S. Side and (5335) N. Side – 2' V.G., low and holding water, 20' (+/-) S. Side driveway and 90' (+/-) N. Side, from Driveway to C.B. at the brick paver crossing. Asphalt is starting to ravel, 40' x 10' area.
2. (5325) and (Brick Crossing) N. Side – V.G., low, dropped 1" – 1 ¼" at the NW corner of Driveway to C.B., and is low to the East, from the Driveway to the street sign, 100 (+/-). Asphalt, E. of crossing – is settling and raveling of both lanes and center line crown, for 60' (+/-), up to the D/YLW thermo-stripes.
3. Asphalt is starting to ravel and separate, from D/YLW. Stripes to sign. D/YLW. Stripes, missing RPMS.



**LAKE COMO**  
**AT**  
**INDIGO LAKES**  
**NW 52<sup>nd</sup> AVENUE**

**(S.E. to North Curve (sign on north side) to sign on N.W. curve to 51<sup>st</sup> street)**

1. (5308) S. Side – Asphalt is cut and lip of V.G. is chipped, SW Corner of Driveway.
2. (5315) M. Hole in Rdwy asphalt, RT. Of D/YLW stripes – asphalt cracked, Rdwy asphalt, 100 (+/-) N. of M.H. is starting to separate and settle. Water stains in V.G. - - - However, gutter does drain to C.B.
3. (4914) E. Side, V.G. in good shape to CB / Asphalt separating.  
(4917) W. Side, V.G. to C.B. S. of Driveway, 15' on both sides, 30' (deteriorating) concrete is falling apart (needs replacing).
4. M.H. center line Rdwy asphalt cracked. (4916) E. side.
5. (4924) E. Side – V.G. holding water, 20' (+/-), S. of the SE Corner/Driveway. Center line crown of asphalt Rdwy is separating and splitting.
6. (4926) E. Side and (4947) W. Side – Rdwy is separating, cracking and settling and raveling, from the S. End of the (4926) Driveway to the brick-crossing at the NW corner of (4947). 60' (+/-).
7. Asphalt N. of crossing – (S. Bound Lane), raveling and separating center line crown has flattened, up to the D/YWN stripes. (4934) E. Side to (4967) W. Side (4944 E. Side). 100 (+/-)
8. Thermo – D/YLW. stripes, cracked and chipped and missing RPM's, all the way around the curve to 51<sup>st</sup> Street.
9. M.H. center line Rdwy – asphalt cracked (4944) E. Side Asphalt and V.G., in good shape around curve to street sign.

**LAKE COMO**  
**AT**  
**INDIGO LAKES**  
**NW 51<sup>ST</sup> STREET**

(From street sign on NW curve, West to West End cul-de-sac.)

1. (5205) NE Side – Rdwy asphalt is settling and shows signs of dropping elevation and pitch from crown of center line around the curve to (5215) N. Side. 80'x12' (V.G. in good shape).
2. (5222) S. Side and (5225) N. Side – Rdway asphalt, center line crown has flattened, and travel lanes are settling and starting to ravel (from end of D/YLW stripes to the brick paver crossing. 70' x 24'
3. (5232) S. Side and (5235) north side – east bound lane, from brick crossing w to the west corner of 5242 driveway (S. Side), has settled and developed a ridge-crack near the center line crown, and is settling below the lip of V.G. 100' (+/-) x12'.
4. (5311) N. Side, and M.H. center line of 51 Street (N. End of 53<sup>rd</sup> Avenue) – asphalt at and around the manhole, for 30' E. & 35' W. and full width of lands 24', has settled and flattened out, holding water, and cracked.
5. (5315) N. Side – E. Bound Lane (near F. Hydrant), asphalt is settling at the joint-match and starting to separate, 40' x 12' area.
6. (5230) S. Side/SE end of cul-de-sac – 2' V.G. is low, 30' (+/-) from the SE Corner of the Driveway, east around the curve. V.G. around the circle is in fairly good shape.
7. M.H – Asphalt is cracked at and around the rim, and is starting to ravel and separate. (5331) north side.
8. Cul-de-sac Asphalt – separating and pulling apart, in various locations. Valley Gutters in good shape.

**LAKE COMO**  
**AT**  
**INDIGO LAKES**

**RESTORATION OPTIONS**

1. Partial Mill and Resurface  
Mill and resurface existing Asphalt surface in damaged areas located during inspection. Remove and replace thermoplastic striping and pavement markers (RPM's). Remove and replace valley gutter and Type "F" curb and gutter where damaged, low and holding water, concrete deterioration. Estimated cost \$94,557, (See Exhibit "A").
2. Full Mill and Resurface  
Mill and resurface all existing Asphalt surface, replace Thermoplastic striping and pavement markers. Remove and replace valley gutter and Type "F" curb and gutter where damaged, low and holding water, concrete deterioration. Estimated cost \$153,955, (See Exhibit "A").
3. Seal Coat  
Seal coat the existing Asphalt pavement to prolong the life of the original pavement. Estimated cost \$8,575, (See exhibit "A").
4. Do Nothing  
Do nothing at this time, but maintain isolated areas you prefer to address now and set up a reserve account to complete restoration in the future.



**LAKE COMO**

AT

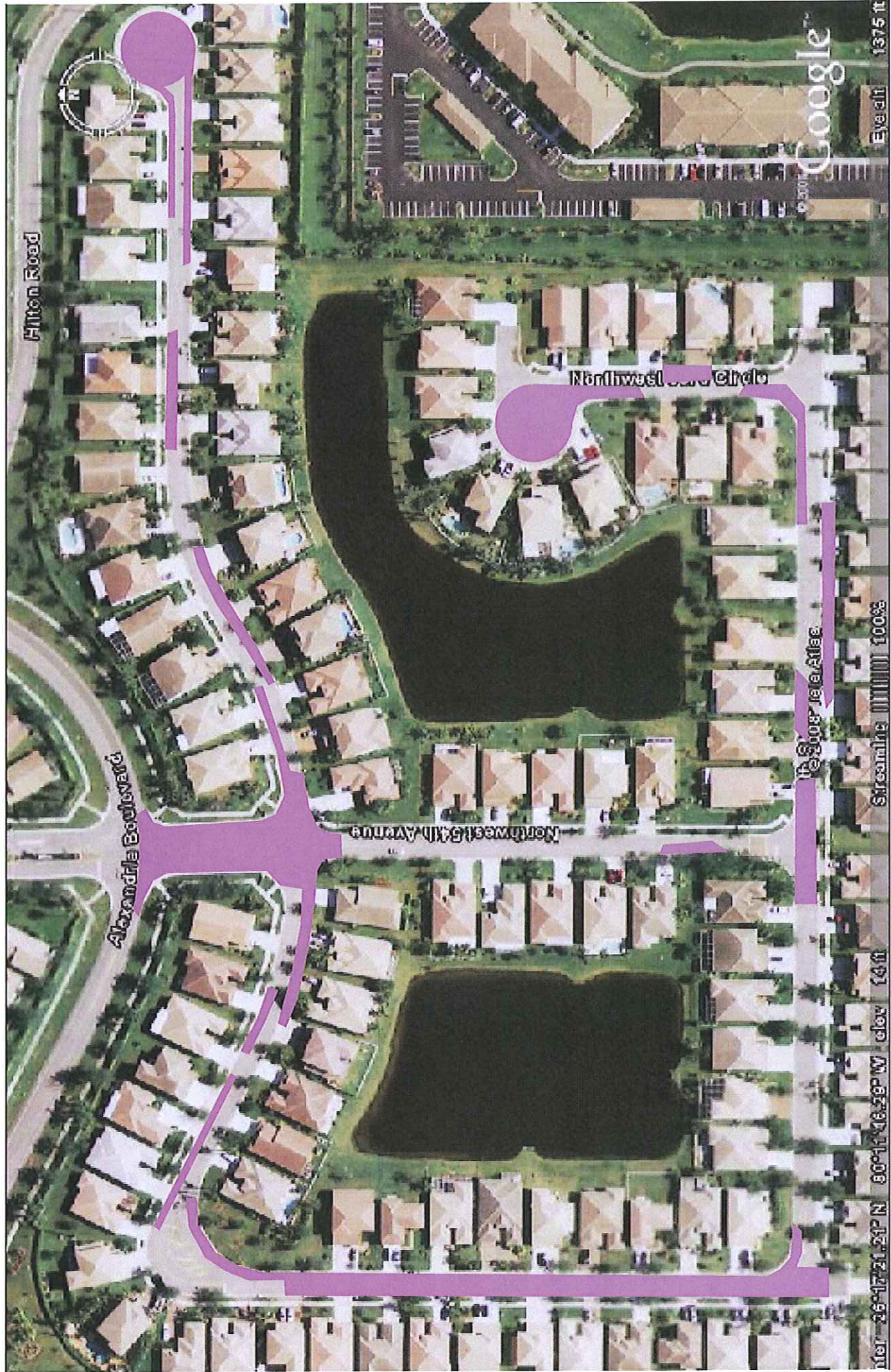
**INDIGO LAKES****EXHIBIT "A"****Engineering Estimate  
Roadway Restoration**

<b>PARTIAL RESTORATION</b>			
Milling ¾"	4302 SY	\$7.00/SY	\$30,114.00
Resurface ¾"	4302 SY	\$10.00/SY	\$43,020.00
Valley Gutter	598 LF	\$28.00/LF	\$16,744.00
Type "F" C&G (Flume)	20 LF	\$28.00/LF	\$560.00
Sidewalk 4" (5'x10')	10 LF	\$40.00/SY (6SY) =	\$240.00
Handicap Ramp	1 ea.	\$100/ea.	\$100.00
		<b>SUB-TOTAL:</b>	<b>\$90,778.00</b>
4" striping (YLW) solid	295 LF	\$0.80/LF	\$236.00
4" striping (D/YLW) solid	1478 LF	\$0.80/LF	\$1182.40
18" striping (YLW) solid	24 LF	\$2.50/LF	\$60.00
4" striping (WHT) solid	556 LF	\$0.80/LF	\$444.80
18" striping (WHT) solid	12 LF	\$2.50/LF	\$30.00
4" striping (WHT) skip	10 LF	\$0.80/LF	\$8.00
12" stop bar (WHT) solid	50 LF	\$5.00/LF	\$250.00
RPM (amb/amb)	150 ea.	\$7.00/ea.	\$1050.00
RPM (clr/red)	16 ea.	\$7.00/ea.	\$112.00
RPM (amb/red)	58 ea.	\$7.00/ea.	\$406.00
		<b>SUB-TOTAL:</b>	<b>\$3,779.20</b>
		<b>ESTIMATED TOTAL</b>	<b>\$94,557.20</b>
<b>FULL RESTORATION</b>			
Mill & Overlay	\$17/SY@7,796 SY		\$132,532.00
Thermo-RPM's			\$3,779.00
Valley Gutter	598 LF	\$28.00 LF	\$16,744.00
Type "F" Curbs & Gutter (Flume)	20 LF	\$28.00 LF	\$560.00
5' Sidewalk (4" thick)	10 LF	\$40.00/SY/(6SY)=	\$240.00
Handicap Ramp	1 ea	\$100/ea	\$100.00
		<b>ESTIMATED TOTAL</b>	<b>\$153,955</b>

**Asphalt seal-coat:** \$1.10/SY @ 7796 SY = \$8,575.60



# LAKE ST. CROIX



AREA OF PAVEMENT DEFICIENCY





**LAKE ST. CROIX**

**AT**

**INDIGO LAKES**

**INSPECTION DETAIL**



**LAKE ST. CROIX**  
**AT**  
**INDIGO LAKES**  
**ENTRANCE/EXIT GATE**

(SOUTH TO NORTH) PHOTOS – 49<sup>TH</sup> STREET AND 54<sup>TH</sup> AVENUE

1. Center median – asphalt settling and separating , bull nose to edge/pavement on 49<sup>th</sup> street.
2. N.E. Corner (Exit) – 2' V.G, stained and deteriorating (but drains) both sides of C.B grate. (30' north and 30' S.E.). Thermo striping is cracked and chipped. Stop sign is missing the street sign. Asphalt is settling below lip of V.G. at the C.B. 4' – 5' into lane.
3. N.W. corner (Enter) - 2' V.G., deteriorating (but drains), both sides of C.B (35' x 35'). Asphalt is settling at the C.B rim, 4' – 5' into the lane.
4. Turn-a-round area (between medians) – asphalt is cracked and raveling and pulling apart, Thermo striping is cracked and missing RPM's.
5. Asphalt at entrance "key box" oil stains, and the asphalt is starting to brake apart and ravel.
6. 2' separation – median/asphalt settling at the Thermo markings (north end), and near the 2 – gates (enter).
7. Exit lanes – asphalt is settling and deteriorating, 8'-9' out from the lip of F-C & G, ease side, all the way to Alexandria Blvd, (south edge/pavement). Stop bar and striping (Thermo) is cracked and chipped.
8. Enter lanes – asphalt is settling and center line is cracked and pulling apart, along median (east side) to Alexandria Blvd. (West side lane is in good shape – up to the gate.)
9. Center median, Thermo markings and asphalt is deteriorating, cracked and settling, (missing RPM's).
10. Edge of pavement/tie in of 54<sup>th</sup> Avenue to Alexandria blvd – asphalt has settled, pulled apart and cracked. (4 stamped concrete ramps/sidewalk, not painted).

**LAKE ST. CROIX**  
**AT**  
**INDIGO LAKES**  
**N.W. 54<sup>TH</sup> AVENUE**

**(SOUTH TO NORTH N.W. 48<sup>TH</sup> STREET TO N.W. 49<sup>TH</sup> STREET)**

1. Turn out of 54<sup>th</sup> avenue and 48<sup>th</sup> street – asphalt shows signs of settling at fire hydrant, Right turn from stop bar to water valve, 30' x 35' area and 2' V.G. has dropped (35' R.) and holding water. (missing 1 blue RPM) (Thermo striping and stop bar – cracked and chipped). Asphalt on the S.E. corner is in good shape and V.G is good, (sidewalk stamped ramp is not painted).
2. Brick paver crossing – both (12' wide x 24' long) concrete borders are damaged at center line crown and roadway, and east and west ends of the north end. Paver bricks are starting to settle – center line crown, is flat. V.G. is stained, but drains, missing RPM's/D/YLW. stripes.
3. 2' V.G. – LT (or west side) being lifted up by tree roots, (2 trees). 20' north of crossing to 55' north of crossing. South of (4823) west side. Roadway asphalt is raveling and starting to crack, at lip of V.G. (west to east sides) 2' x 55' asphalt.
4. 2' V.G. – RT (or, east side), low dropped 1/2", holding water 20' (2 joints), 10' to 30' north of crossing (between 2 trees).
5. (4823) west side, asphalt cracking and settling below lip of V.G.
6. (4832) east side, 2' V.G. – 3, 5' and 7' repairs, at the driveway, are separating from each other and the driveway one is cracked, and 2 have dropped 1/2" (+/-), cracks continue up to the C.B grate, and the asphalt is cracked and settling at the V.G. (North of gate).
7. (4843) west side, 2' V.G. is cracked, south of the C.B. grate and the driveway repair sections (5' – 7') have dropped and separated. Asphalt is cracking and settling around the C.B. and 5' into the lane.
8. Roadway and V.G. in good shape from (4843 to 4862).
9. Roadway asphalt approaching intersection to 49<sup>th</sup> street – scratches and cracks, and signs of deterioration, up to the D/YLW. stripes. 80' (+/-).
10. Both, N.E. and N.W. radii – 2' V.G. is low and stained, up to the C.B. grates.



**LAKE ST. CROIX**  
**AT**  
**INDIGO LAKES**  
**N.W. 48<sup>TH</sup> STREET**

**(EAST TO WEST 53<sup>RD</sup> CIRCLE TO 54<sup>TH</sup> AVENUE TO 55<sup>TH</sup> DRIVE)**

1. 2' V.G, north side (5306 south side) low, dropped 1/2", holding water, one joint west of handi –cap ramp (N.E. corner of 48<sup>th</sup> street). 10' (+/-). Asphalt has some cuts and small holes, 5' into lane from lip of V.G. west bound lane (12' x 35' area).
2. Roadway asphalt and V.G. both sides north and south – in good shape from 150' (+/-) (5314) south side to (5324) north side. 2' V.G. low, 20', holding water. (5327) north side, (5314 to 5326) south side/ 2' V.G. in good shape.
3. (5326/5334) south side – 2' V.G. low/holding water, 15' – 20' between driveways.
4. Man hole center line crown, (5334) south side (5333) north side – asphalt is starting to settle and crack around man hole rim, and center line crown has flattened for 45' east and 65' west of man hole. (45' x 24' (+) 65' x 24").
5. C.B. between (5333 and 5337), north side – 2' V.G., dropped 1/2" -1" low 20' at 10' w. to 20' west of C.B. grate, holding water. Asphalt at and around C.B. is cracked and settling. (20' x 5'). (C.B. and V.G. on south side, are in good shape).
6. Roadway and V.G. (north and south) in good shape – 5337 to 5346 south side. 180' (+/-).
7. (5346) South side, V.G. low-holding water, 10' (+/-).
8. Brick pavers crossing, (east side of 54<sup>th</sup> avenue) 12" concrete boarders (east and west) are damaged in the center line crown, and on the S.E. corner, N.E. corner. Paver bricks are settling below the V.G. and flattening the pitch of the roadway from center line north to V.G. and driveway at (5353). V.G. is low and holding water (15' – 20').
9. Man hole center line of 48<sup>th</sup> street and 54<sup>th</sup> Avenue/intersection – man hole rim has settled (5404) South side below asphalt level. Asphalt is cracked around/rim and the center line crown is flat from manhole to crossing (E) & (W). 74' x 24' asphalt. There are scratches, pulls and tears, in the east and west bound lanes.
10. Brick paver crossing, (west side of 54<sup>th</sup> avenue) – 12" concrete boarders, cracked center line (East and West). Paver bricks are settling – below V.G. and boarders. (404/5408) south side, (5402) north side/ V.G. low and holding water 20' north side. Asphalt center line crown, is flat and settling at the west side concrete boarder 2' x 3' area.
11. From (5408) south side to (5413) north side – roadway and V.G. is in good shape, to (5418) south side to (5417) north side.
12. (5417) to (5423) north side – 2' V.G. low-holding water ) 60' (+/-), to C.B.
13. (5424) south side – V.G. , C.B. grate, and asphalt are in good condition.



**LAKE ST. CROIX**  
**AT**  
**INDIGO LAKES**  
**N.W. 48<sup>TH</sup> STREET**

**(EAST TO WEST 53<sup>RD</sup> CIRCLE TO 54<sup>TH</sup> AVENUE TO 55<sup>TH</sup> DRIVE)**

14. (5434) south side – V.G. is being lifted up and asphalt is cracked and split at lip of V.G. from tree roots. Also the sidewalk on the south side of the tree and the S.E. and S.W. corners of the 2 driveways. (5428 S.E.) and (5434 S.W.). V.G. across (5434) driveway (40') is low and holding water. (40' x 3' strip asphalt at V.G.).
15. (5438) South side – asphalt on North side of roadway. (west bound lane), is settling, raveling and separating, from D/YLW stripes to the fire hydrant. (near stop sign). (200' x 12') (Missing RPM's (D/YLW)).
16. Turn out, to 55<sup>th</sup> drive – Asphalt and V.G. in good shape. Side walk stamped ramp is not painted.

**LAKE ST. CROIX**  
**AT**  
**INDIGO LAKES**  
**N.W. 53<sup>RD</sup> CIRCLE**

**(SOUTH TO NORTH FROM 48<sup>TH</sup> STREET TO CUL-DE-SAC)**

1. Turn out/ asphalt center line crown has a flat spot (5' x 8') area, large groove/cut in pavement at north edge/48<sup>th</sup> street and S.E. radius of 53<sup>rd</sup> circle. Water main valve cover/riser, has settled slightly below roadway level, (small puddle) S.W. R. of 53<sup>rd</sup> circle/asphalt (35' x 35') is settling and starting to ravel. Thermo striping to stop bar, cracked and chipped, missing RPM's (sidewalk – stamped ramp is not painted). V.G. – both radii, in good condition and drains.
2. (4819) west side – 2' V.G. low and holding water, 30' (+/-) from the S.W. corner of driveway south to (4809). Asphalt at driveway is groved/cut (5' x 5') next to V.G.
3. Asphalt starting to ravel and settle in center of north bound lane from (4826) east side to (4846) east side, 150' (+/-) x 2' wide. Groves/cuts and chips, in pavement at V.G., ease side. (4826 and 4836). (150' x 12')
4. (4829) West side – V.G. low, holding water at driveway, 30'.
5. C.B. N.W. curve (near fire hydrant) of cul-de-sac/V.G. is cracked and broken at the grate/rim 20'. Asphalt has settled and starting to pull apart, (35' R) at (4839) (35' x 35').
6. C.B. east side, between (4846) and (4856) – V.G. and grate are o.k. The asphalt is settling and starting to drop below the lip and V.G. (58' x 12').
7. (4879) north end of circle and cul-de-sac – asphalt is ripped and grooved/cut, N.W. side of man hole and V.G., roadway asphalt is in good shape from (4856 S.E. corner) to the north end of 53<sup>rd</sup> circle and the dead end east. (4899). The cul-de-sac asphalt is in good shape, with minor scratches and low spots (1/8" – 1/4" depth at 8" – 11" diameter).

**LAKE ST. CROIX**  
**AT**  
**INDIGO LAKES**  
**N.E. 55<sup>TH</sup> DRIVE**

**(SOUTH TO NORTH 48<sup>TH</sup> STREET TO THE N.E. CURVE AND STREET SIGNS TO 49<sup>TH</sup> STREET)**

1. (4809) West side – Asphalt is settling and raveling, from V.G. to center line and around the man hole rim, (50' +/- x 15' +/-) and from sidewalk (south end) to 48<sup>th</sup> street (south edge/pavement), intersection. V.G. is in good shape.
2. Roadway asphalt center line crown is starting to split/separate, and flatten, (4811) and intersection of 48<sup>th</sup> street, 45' x 50' (+/-).
3. (4810) east side V.G. low, north side of C.B grate, 15' – 25' . (4821) west side – V.G. low, north side of C.B. grate, 15'–25'. (Driveway)
4. Roadway asphalt from (4820) east side to (4840) east side and (4831) west side, is failing, settling, cracking and pulling apart, center line of crown to (180' +/-) 10' west and 10' east of center line. V.G – 35'-40', is low at driveway (4829) west side.
5. Center line is flat and north bound lane is cracked and separating for 15' (+/-), between (4840) and (4850) east side. 15' x 12'.
6. Roadway, asphalt, center line crown is flat and settling, edge of pavement on the east side is below lip of V.G. & C.B. grate. 50' – 60'. Asphalt cracked and settling around the man hole center line, up to the crossing. (60' x 12').
7. Brick paver crossing – in good shape, with a minor chip in concrete, S.E. corner.

NOTE: Center line of roadway, continues to "wave up and down (flatten) in areas of 15', 30' and 80' lengths x 3', 7', 9' and 10' wide, man hole to man hole 120' x 24'.

8. (4851) west side, 2 LVG, low 20', S.W. corner of driveway.
9. Roadway asphalt and V.G. (east and west) are in good shape, from (4851) west side to (4869) west side (C.B., M.H, C.B.), 150' – 160'. The asphalt is cracked around the manhole. The V.G. east side, around the curve, is stained and deteriorating 100' (+/-). (Drains).
10. The big curve (alt. lanes) – asphalt and V.G. is in good shape. Thermo striping and markings –cracked and chipped, missing RPM's.



**LAKE ST. CROIX**  
**AT**  
**INDIGO LAKES**  
**N.W. 49<sup>TH</sup> STREET**

**(WEST TO EAST STREET SIGN (SOUTH SIDE) N.E. CURVE 55<sup>TH</sup> DRIVE TO EAST  
END, CUL-DE-SAC)**

1. (5457) north side, 2' V.G. low at driveway, holding water 45' (+/-) 25' east of dr.
2. Roadway asphalt – center line crown has settled and sinking, cracked/flattened- from man hole (curve) to driveway at (5470) south side and (5447) north side, 55' – 60' long x 15' -18' wide (60' x 24').
3. Minor cuts/grooves in asphalt at V.G. – (5460) south side, 10' east of driveway (10' x 12') .
4. Roadway asphalt – (RT.) east bound lane, center line to V.G./ settling, raveling and separating, from (5460) south side to (5440) south side, (120' x 12').
5. Minor cuts/grooves in asphalt at V.G. – (5417) north side, 10' east of driveway. (10' x 12').
6. Man hole center line crown, (5407) north side and (5420) South side – asphalt cracked around rim, and settling/flattend, 10' – 15' E & 5'-7' W of man hole x 5' wide (60' x 12') . Also there are numerous cuts, cracks and raveling of asphalt up to the stop sign of 54<sup>th</sup> avenue, of the (RT) east bound lane.
7. (5430) south side, 2' V.G. low holding water at driveway 30' (+/-).
8. Thermo striping and markings – intersection, 54<sup>th</sup> Avenue and 49<sup>th</sup> street/cracked and chipped, missing RPM's, (D/YLW. stripes). (Both sides of inter/exit gate).
9. Asphalt, intersection – center line crown has flattened, and asphalt is cracked around the man hole and settling and raveling, from west "joint" to E. stop bar, 80' long x 5', 8', & 11' wide areas. (80' x 24').
10. N.E. corner of 54<sup>th</sup> avenue and exit, gate – 2' V.G. low, holding water, 10', north side. (5390/5380) south side, V.G. low, 10'.
11. Man hole (5395- 5385) north side center line asphalt cracked around man hole rim, roadway, shows signs of separation and raveling at lip of V.G. north and south sides, to (5360) south side (5375) north side, 100' (+/-) x 24' (V.G. in good shape).
12. Roadway asphalt starting to settle and ravel, minor cuts and grooves, full width from (5375) north side, around the curve, to the brick paver crossing, (5325) north & (5320) south (250' – 255' x 24').
13. (5345) north side – V.G. low, 20' (+/-), at N.W. side of driveways.
14. (5335) north side – V.G. low, 10' (+/-), at 5' east of driveway.

**LAKE ST. CROIX**  
**AT**  
**INDIGO LAKES**  
**N.W. 49<sup>TH</sup> STREET**

**(WEST TO EAST STREET SIGN (SOUTH SIDE) N.E. CURVE 55<sup>TH</sup> DRIVE TO EAST  
END, CUL-DE-SAC)**

15. Brick paver crossing – (5325) north side/(5320) south side center line concrete “joint” on the east side, is chipped and separating. (West side has an expansion joint). Paver bricks are starting to settle at lip of V.G. and center line crown, (man hole is o.k). V.G. on north side is low – 10’ (+/-), and could be caused by some concrete in gutter of V.G.
16. (5315) north side – V.G. is low, 10’ (+/-), at driveway.
17. Roadway asphalt – (5310) south side to (5245) north side/80’-90’ x 24 (+/-), is settling, cracking and raveling at V.G., both sides.
18. C.B. south side (5300) – asphalt settled and cracked 40’ x 3’, V.G. 5’ section, at 5’ east of C.B. is cracked and V.G. dropped ¼” – ½” low. V.G. at driveway is low and holding water. 25’ – 30’ (+/-).
19. (5260) south side, (5245) north side/roadway asphalt – is settling and starting to ravel, all the way to the cul-de-sac, (5230) south side, (5215) north side, ( 150’ (+/-) x 24).
20. Cul-de-sac, east end – (5230 south to 5215 north) to (5210 south. East end) – asphalt is starting to settle in center of circle and ravel, 80’ x 15’ wide areas. Settling around manhole rim, raveling at lip of V.G. (around circle). Cuts/grooves in asphalt, N.W. radius of circle to west bound lane. V.G. 10’ low, 50’ N.E. of radius and cracked for another 50’ +/- - N.E. (North side of cul-de-sac) (50’ x 5’)

## **LAKE ST. CROIX**

### **AT INDIGO LAKES**

## **RESTORATION OPTIONS**

1. **Partial Mill and Resurface**

Mill and resurface existing Asphalt surface in damaged areas located during inspection. Remove and replace thermoplastic striping and pavement markers (RPM's). Remove and replace valley gutter and Type "F" curb and gutter where damaged, low and holding water, concrete deterioration). Estimated cost \$191,109, (See Exhibit "B").

2. **Full Mill and Resurface**

Mill and resurface all existing Asphalt surface, replace Thermoplastic striping and pavement markers. Estimated cost \$276,961, (See Exhibit "B").

3. **Seal Coat**

Seal coat the existing Asphalt pavement to prolong the life of the original pavement. Estimated cost \$14,874, (See Exhibit "B").

4. **Inspection of Sanitary Sewer Pipes**

On N.W. 55<sup>th</sup> drive, from N.W. 48<sup>th</sup> street to N.W. 49<sup>th</sup> street, to check for any Possible leaks in main line, (T.V./C.D. type inspection), prior to any milling and Overlay of roadway Asphalt.

5. **Do Nothing**

Do nothing at this time, but maintain isolated area you prefer to address and set up a reserve account to complete restoration in the future.



**LAKE ST. CROIX**  
**AT**  
**INDIGO LAKES**

**EXHIBIT "B"**

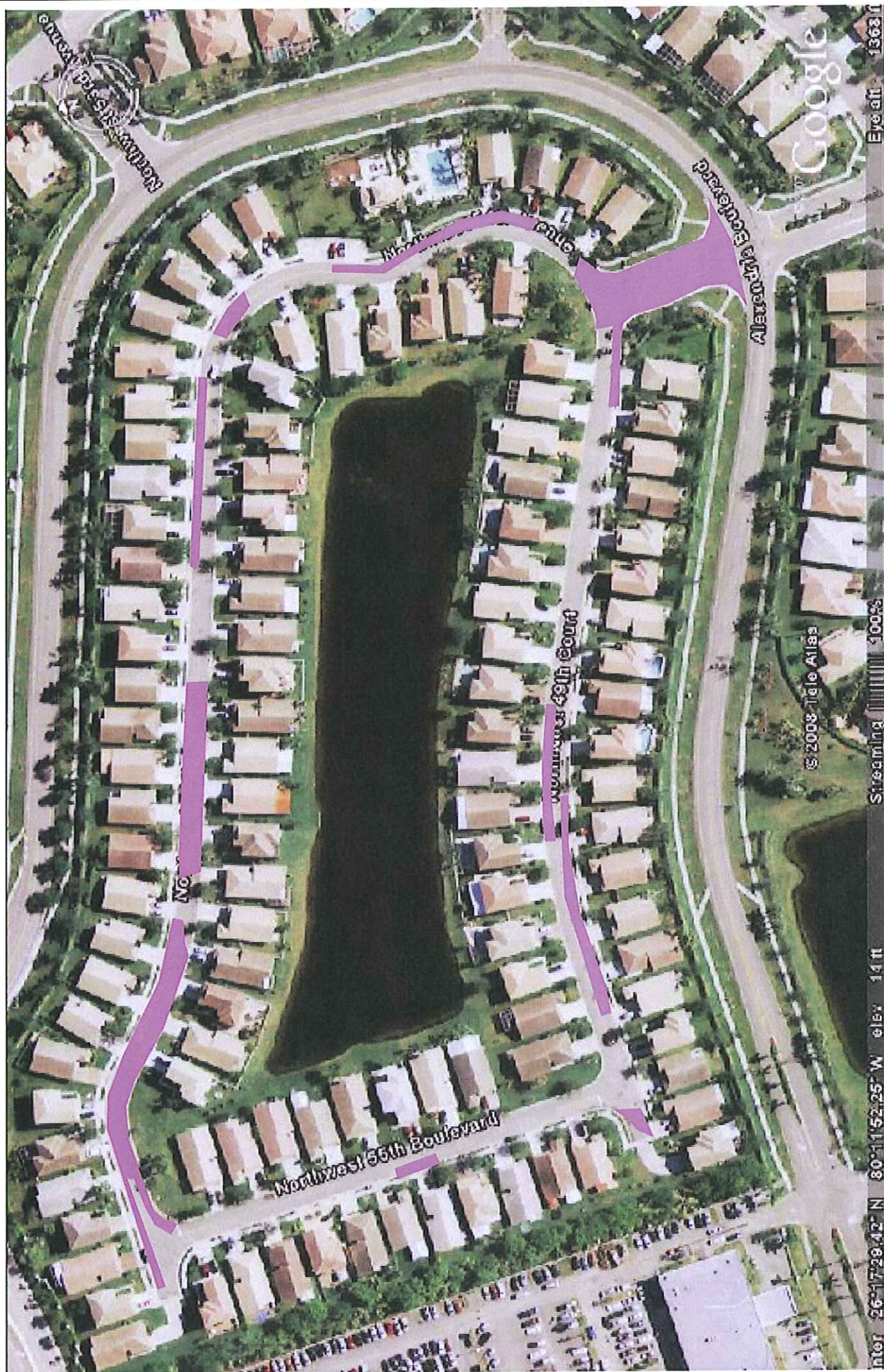
**Engineering Estimate  
Roadway Restoration**

<b>PARTIAL RESTORATION</b>			
Milling ¾"	7092 SY	\$7.00/SY	\$49,644.00
Resurface ¾" (S-3)	7092 SY	\$10.00/SY	\$70,920.00
Valley Gutter	1124 LF	\$28.00/LF	\$31,472.00
Type "F" C&G	428 LF	\$28.00/LF	\$11,984.00
Sidewalk 4"	8 SY	\$40.00/SY	\$320.00
Sidewalk 6" Driveway	49 SY	\$42.00/SY	\$2,058.00
Brick Paver – Crossing	214 SY	\$100.00/SY	\$21,400.00
Includes 12" concrete Borders			
		<b>SUB-TOTAL:</b>	<b>187,798.00</b>
4" striping (YLW) solid	570 LF	\$0.80/LF	\$456.00
4" striping (D/YLW) solid	367 LF	\$0.80/LF	\$293.60
18" striping (YLS) solid	112 LF	\$2.50/LF	\$280.00
4" striping (WHT)	458 LF	\$0.80/LF	\$366.40
18" striping (WHT) solid	10 LF	\$2.50/LF	\$25.00
4" striping (WHT) skip	10 LF	\$0.80/LF	\$8.00
12" stop bar (WHT) solid	102 LF	\$5.00/LF	\$510.00
RPM (amb/amb)	150 ea	\$7.00/ea.	\$1,050.00
RPM (clr/red)	14 ea	\$7.00/ea.	\$98.00
RPM (amb/red)	32 ea	\$7.00/ea.	\$224.00
		<b>SUB-TOTAL:</b>	<b>\$3,311.00</b>
		<b>ESTIMATED TOTAL</b>	<b>\$191,109.00</b>
<b>FULL RESTORATION</b>			
Mill & Overlay		\$17/SY@ 13,522 SY	\$229,874.00
Valley Gutter	1124 LF	\$28.00/LF	\$31,472.00
Thermo-RPMS=			\$3,311.00
Type "F" Curbs & Gutter (Flume)	428 LF	\$28/LF	\$11,984.00
5' Sidewalk (4" thick)	8 SY	\$40.00/SY	\$320.00
		<b>ESTIMATED TOTAL</b>	<b>\$276,961.00</b>

**Asphalt seal-coat:** \$1.10/SY @ 13,522 SY = \$14,874.20



# LAKE WINDERMERE



## AREA OF PAVEMENT DEFICIENCY





**LAKE WINDERMERE**

**AT**

**INDIGO LAKES**

**INSPECTION DETAIL**



**LAKE WINDERMERE**  
**AT**  
**INDIGO LAKES**  
**GATE/ENTRANCE AND EXIT**

1. Asphalt is cracking at and around the sanitary sewer man hole rim, and shows signs of starting to ravel. N of gate/n. end of median. Both – lanes, enter and exit. (134' x 12' and 134' x 24')
2. Same conditions of the asphalt for the turn-around, between medians (before gate). (10' x 17')
3. "F" – C & G in good shape (needs cleaning) / Thermoplastic stripping is cracked and chipped and missing RPM's
4. Small – 2' x 3' area of asphalt at entrance Key box, cutting away and raveling (oil).
5. Asphalt (2' x 8' & 3' x 8') Turn out of entrance lane, and (12' x 15') of exit lane, separating and raveling. S.E. radius/Concrete sidewalk ramp is not painted.

(Thermo – Striping and markings are cracked and chipped, and missing RPM's).

## **LAKE WINDERMERE**

### **AT INDIGO LAKES**

#### **54<sup>th</sup> Avenue, E of Gate to 50<sup>th</sup> Court North East Curve in Roadway**

1. 100' of 2' V.G. – Low/ N. Curve from 49<sup>th</sup> court to 54<sup>th</sup> avenue. Asphalt. (86' x 24') cracking and settling.
2. (4922) S. Side/ 2' V.G. Low (1/4" (+/-) water stained, and asphalt (80' x 12') at edge of pavement. side of V.G., is starting to ravel and break apart. The V.G. is low from 4922 to 4952 approximately 80' (2 driveway).
3. (4942) E. Side/2' V.G. dropped 2 1/2" (+/-) at driveway, and V.G. is low all the way around the curve (pool side) for approximately 100' (to the C.B.) asphalt ( 5' x 100'). Raveling.
4. (4915/4925) man hole, center line roadway – asphalt is cracking around the man hole and dropping in elevation (10' x 10').
5. (4935) man hole, center line roadway – asphalt is cracking around the man hole and dropping in elevation (10' x 10'). Thermo striping is cracked and chipped (200' x +/-) and missing RPM's. (4935) N.W. side/2' V.G. is low at driveway to C.B. 50' +/- asphalt cracked at C.B. (5' x 3')
6. 2' V.G., on both sides of roadway is low around the curve (50' x +/-)/ (4965 – 5406). Old handicap markings are faded/concrete parking at the pool area.
7. 2' V.G., (5405) at driveway has been filled in with concrete (40') full width.

**LAKE WINDERMERE**  
**AT**  
**INDIGO LAKES**

**50<sup>th</sup> Court West to W. End (& 55<sup>th</sup> Blvd)**

1. (5407) N. Side/ Asphalt in west bound lane – minor raveling and pulling – apart. (30' x 12').
2. (5410) South side, C.B./2' V.G. cracked on w. side of C.B. S.E. Corner of drive (10').
3. (5413) N. Side, C.B./2' V.G is low (30') and separating from asphalt. The C.B. rim is cracking and raveling. (30' x 10').

**NOTE:** Square holes in central line of roadway, - Surveyor's (5412), (5414), (5416)

4. (5418) S. side/M.H (High point) central line roadway - Asphalt cracked (10' x 10').
5. (5423) N. side/edge of pavement, chipped out at V.G. (14"-16") (3' x 5')
6. (5424) S. side / 2' V.G. dropped 1/2", 10' (J to J) at driveway (E. end)
7. (5426) S. side/ C.B. – 2' V.G., O.K, but holding water (20').
8. (5431) N. side/ C.B. – 2' V.G. low and cracked (E.side) 10' (+/-), Dropped 10' (+/-) (west side).
9. Roadway asphalt – (Rt) W. Bound lane, 5' – 7' wide from V.G. edge, for 5 lots long (200 x 12' ) is raveling and separating (around curve).
10. 2' V.G. low, all the way around the curve S. side to 55<sup>th</sup> blvd (C.B.) in the radius 100' (+/-) N.E.
11. (5441) N. side/2' V.G. 100' (+/-) low holding water, but drains to C.B. at (5453) N. side, and asphalt is raveling. (100' x 12').
12. (5455) N. side/2' V.G. dropped 2" at sidewalk and driveway 15' (+/-)



**LAKE WINDERMERE**  
**AT**  
**INDIGO LAKES**  
**N.W. 55<sup>th</sup> Blvd, N to 50<sup>th</sup> Court**

(N. edge/pavement 49<sup>th</sup> court to S. edge/pavement 50<sup>th</sup> court)

1. (4913) W. side/ 2' V.G. low – 10' (J to J) Asphalt 2' x 10' edge/pavement - asphalt repair patch, is raveling.
2. (4937) private brick pavers low, between 2' V.G and sidewalk.
3. (4953) 2' V.G. dropped ½" – 1", at driveway, 8' south of C.B. to 20' south of C.B. 2' x 50' strip of Asphalt, Raveling.
4. Asphalting and V.G. are in good shape.

Thermo-Striping and Stop bars – cracked and chipped, and missing RPM's.

## **LAKE WINDERMERE**

### **AT INDIGO LAKES 49<sup>th</sup> Court to Gate**

N.W corner and 49<sup>th</sup> court and 65<sup>th</sup> blvd 7'x10' asphalt patch

1. 2' V.G. 1" drop in driveway @ (5492) south side 5' (+/-).
2. 2' V.G. ½" drop in driveway @ (5472) south side 7' (+/-).
3. 2' V.G. ½" to 1" drop on East and west side of C.B gate (5462 & 5466) S, 40', 60' x 10' asphalt crown flattened.
4. (5466) North side, cracks in Asphalt at C.B. 2' V.G. – ½" drop East side of driveway at (5456) S, 10' (J. to J.)
5. 2' V.G. 1 ½"-2" drop @(5441) (N. side/49<sup>th</sup> Court) at brick driveway and brick crossing ( N.W. corner), old/water stains in V.G. – falling below 12" concrete and brick pavers. 40' (+/-), Asphalt – raveling (5' x 10') at driveway.
6. 2' V.G. , @ (5431) north side/ 49<sup>th</sup> court – dropped ¾" at driveway N.W. side 15' +/-, (5415) north side/49<sup>th</sup> court asphalt slowly sinking at C.B.) (5' x 25')
7. (5415) 2' V.G. dropped 2" (+) at C.B. and 5' E./10' W, 20' dropping below asphalt and grass yard. (12' x 50' area of Asphalt is settling.)
8. (5416) 2' V.G. dropped 1 ½" – 2" at C.B and driveway, to 30' E of C.B. (S.W corner of drive) Asphalt (30' x 12') setting at C.B.

**LAKE WINDERMERE**  
**AT**  
**INDIGO LAKES**

**RESTORATION OPTIONS**

1. Partial Mill and Resurface

Mill and resurface existing Asphalt surface in damaged areas located during inspection. Remove and replace thermoplastic striping and pavement markers (RPM's). Remove and replace valley gutter and Type "F" curb and gutter where damaged, low and holding water, concrete deterioration. Estimated cost \$66,949, (See Exhibit "C").

2. Full Mill and Resurface

Mill and resurface all existing Asphalt surface, replace Thermoplastic striping and pavement markers. Remove and replace valley gutter and Type "F" curb and gutter where damaged, low and holding water, concrete deterioration. Estimated cost \$193,670, (See Exhibit "C").

3. Seal Coat

Seal coat the existing Asphalt pavement to prolong the life of the original pavement. Estimated cost \$9,973, (See exhibit "C").

4. Do Nothing

Do nothing at this time, but maintain isolated areas you prefer to address now and set up a reserve account to complete restoration in the future.



# **LAKE WINDERMERE**

**AT  
INDIGO LAKES**

## **EXHIBIT "C"**

### **Engineering Estimate Roadway Restoration**

<b>PARTIAL RESTORATION</b>			
Milling ¾"	1500 SY	\$7.00/SY	\$10,500.00
Resurface ¾" (S-3)	1500 SY	\$10.00/SY	\$15,000.00
Valley Gutter	917 LF	\$28.00/LF	\$25,676.00
Type "F" C&G	400 LF	\$28.00/LF	\$11,200.00
Brick Pavers – Driveway	19 SY	\$100.00/SY	\$1,900.00
		<b><u>SUB-TOTAL:</u></b>	<b><u>\$64,276.00</u></b>
4" striping (YLW) solid	236 LF	\$0.80/LF	\$188.80
4" striping (D/YLW) solid	550 LF	\$0.80/LF	\$440.00
18" striping (YLW) solid	55 LF	\$2.50/LF	\$137.50
4" striping (WHT) solid	538 LF	\$0.80/LF	\$430.40
12" stop bar (WHT) solid	60 LF	\$5.00/LF	\$300.00
RPM (amb/amb)	128 ea	\$7.00/ea.	\$896.00
RPM (clr/red)	12 ea	\$7.00/ea.	\$84.00
RPM (amb/red)	28 ea	\$7.00/ea.	\$196.00
		<b><u>SUB-TOTAL:</u></b>	<b><u>\$2,672.70</u></b>
		<b><u>ESTIMATED TOTAL</u></b>	<b><u>\$66,948.70</u></b>
<b>FULL RESTORATION</b>			
Mill & Overlay		\$17/SY@ 9,066 SY =	\$154,122.00
Valley Gutter	917 LF	\$28.00/SY	\$25,676.00
Thermo-RPM's			\$2,672.70
Type "F" Curbs & Gutter (Flume)	400 LF	\$28.00/LF	\$11,200.00
		<b><u>ESTIMATED TOTAL</u></b>	<b><u>\$193,670.07</u></b>

**Asphalt seal-coat:** \$1.10/SY @ 9066 SY = \$9,972.60

## **CONCLUSIONS/RECOMENDATIONS**

Craig A. Smith & Associates has performed a thorough inspection of the roadways throughout the Indigo Lakes communities. The three communities, (Lake Como, Lake St. Croix & Lake Windermere) which were constructed in the 1997/1998 timeframe are in similar condition. The roadway pavement is in fair and typical condition for its age. Some areas, as indicated in the Detail Inspection Report, are in a more deteriorated condition than others. This deteriorated condition exists for different reasons (ie. traffic volumes, tree roots, continuous ponding of water, etc.).

While the roadway pavement, valley gutters and sidewalks remain functional, there are some safety concerns which exist. These concerns are primarily within the sidewalk areas which can easily be repaired for nominal cost.

### **RECOMMENDATIONS**

The majority of the asphalt pavement (while it may not look pretty) is functional and should remain so for the next 5 to 10 years. The existing asphalt consists of a good "mix" with substantial aggregate. We recommend retaining the existing asphalt and provide "spot" repairs as needed. Also, we recommend repairing or replacing any asphalt, sidewalk or gutter identified as a potential safety hazard. Based on our detail inspection report we are happy to assist Indigo Lakes Homeowners Association through that process. Lastly, we have prepared a detailed cost estimate of how much each item will cost to repair or replace should you choose to do so. We recommend the Homeowners Association set up reserves for these improvements to be made within the next 5 to 7 years.

Alternatively, you may choose any of the Restoration Options offered in our report or any combination of those options. Note that unit prices utilized for estimating cost are best known prices as of May 2008 and are subject to change at any time.