

CITY OF URBANA, ILLINOIS DEPARTMENT OF PUBLIC WORKS

ENGINEERING

MEMORANDUM

TO: Mayor Laurel L. Prussing and Members of the City Council

FROM: William R. Gray, Public Works Director

Craig E. Shonkwiler, Assistant City Engineer

DATE: September 22, 2016

RE: Windsor Road Pavement Reconstruction Project - Race Street to Philo Road

Pavement Issue Status

Introduction

City staff has monitored the Windsor Road concrete pavement cracks periodically for over a year. As of August 23, 2016, the pavement has not stopped cracking, with about sixty-one percent of the westbound lane slabs and about thirty-three percent of the eastbound lane slabs showing cracks. For reference, please see the attached summary sheet and crack progression map.

Pavement Crack Issue Timeline

The pavement cracking issue became a serious concern in August and September of 2015. Prior to this date, the contractor, Stark Excavating, Inc. (Stark), repaired less than a handful of slabs with cracks at their cost. After this date, more and more pavement cracks appeared, and at the end of September 2015, the City and Stark agreed the crack issue was unprecedented and required detailed analysis by outside pavement experts. In October of 2015, pavement scanning was performed of a few select joints (i.e., the spaces between concrete panels) to determine the alignment of dowel bars in the eastbound lanes. (Dowel bars are used to connect joints so that the panels do not shift upward or downward thereby creating a bumpy road surface.) The results of that initial analysis showed a need for further analysis. The City and Stark jointly agreed to share the cost of scanning the dowel bar alignment for all joints in the eastbound lanes which were never opened to traffic. In November of 2015, the City made a request to Stark to fix the cracked pavement. Over the remainder of the fall of 2015, the winter of 2015-16, and into the spring of 2016, City staff met with its pavement consultants, Illinois Department of Transportation representatives, Stark and their pavement consultants, and attorneys representing the City and Stark in an effort to resolve the cause of the pavement cracks and determine responsibility for fixing the pavement. For reference, please see attached timeline of activities related to the Windsor Road pavement issue. The designer/engineer of the road (Hanson Professional Services, Inc.) has been included in the meetings and discussions.

Additional Pavement Testing & Results

Additional pavement testing and sampling was performed on August 17 and 18 of 2016 in the open westbound lanes and closed eastbound lanes to obtain a complete set of pavement data and limit future road closures for testing and sampling. The results from that pavement testing and sampling are not available as of the date of this memo.

Possible Crack Causations

To date no definitive source of the cracking problem has been identified and the City and Stark have not agreed on any particular cause. Considerations have been given by pavement consultants to possible crack causations such as base material, slab/base friction, slab spacing, transverse dowel bar size, spacing and friction, longitudinal curb tie steel size and spacing, longitudinal joint tie steel size and spacing, built in curling/warping of the slabs, concrete materials, paving operations, etc.

Road Opening Request

A written request was made to Stark on September 12, 2016 to open the road fully to traffic. The request included pavement removal and replacement of fractured or faulted slabs and replacement of slabs removed for testing. The request also included preparing the traffic signals at the Windsor Road/Race Street and Windsor/Philo Road intersections for full traffic actuation as well as installation of final pavement striping. (See attached road opening checklist and plans.) As of the date of this memo the City has not received a reply from Stark to the City's request to open the road.

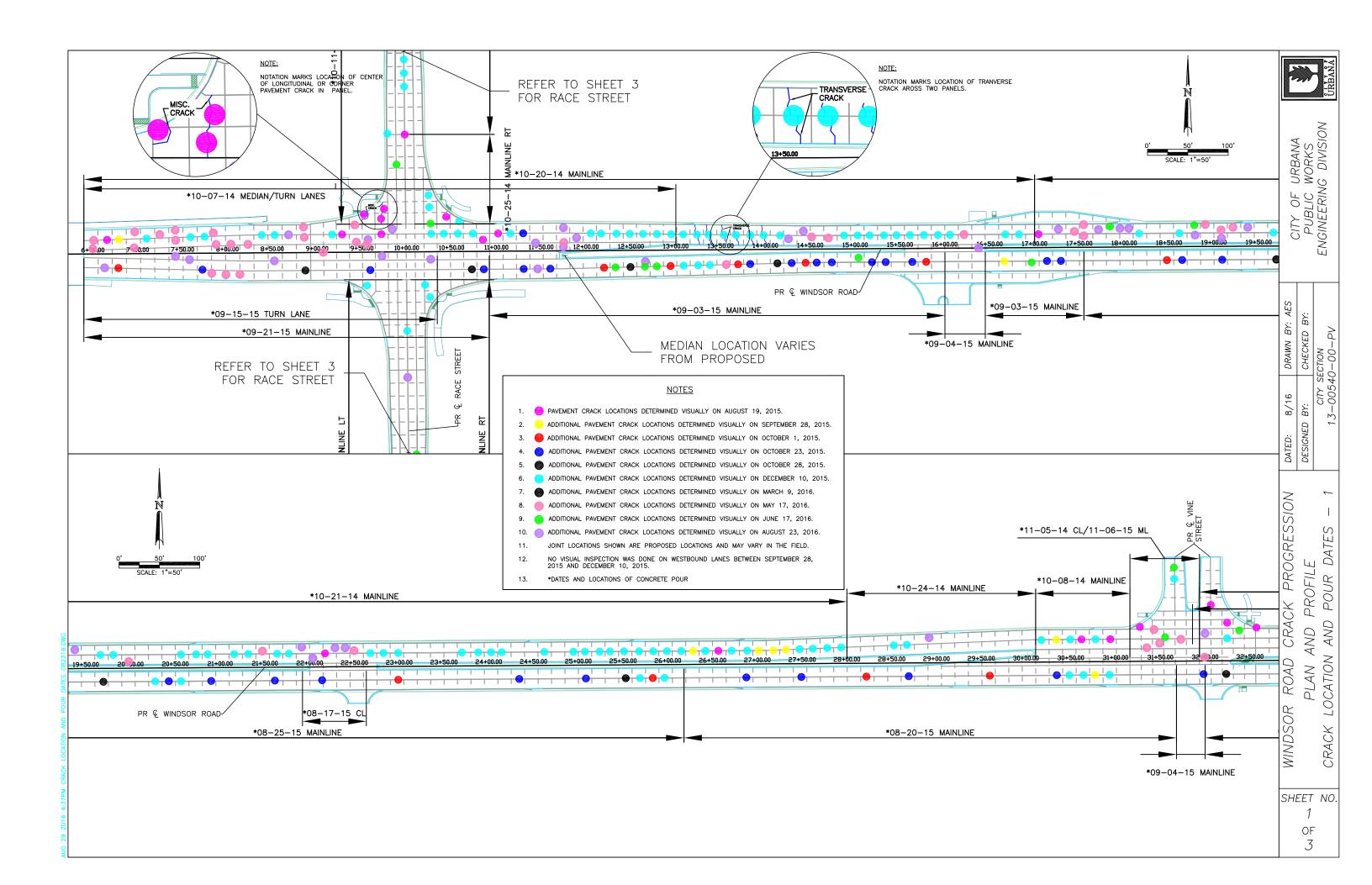
It should be noted that opening the road does not mean the City has final-accepted the road.

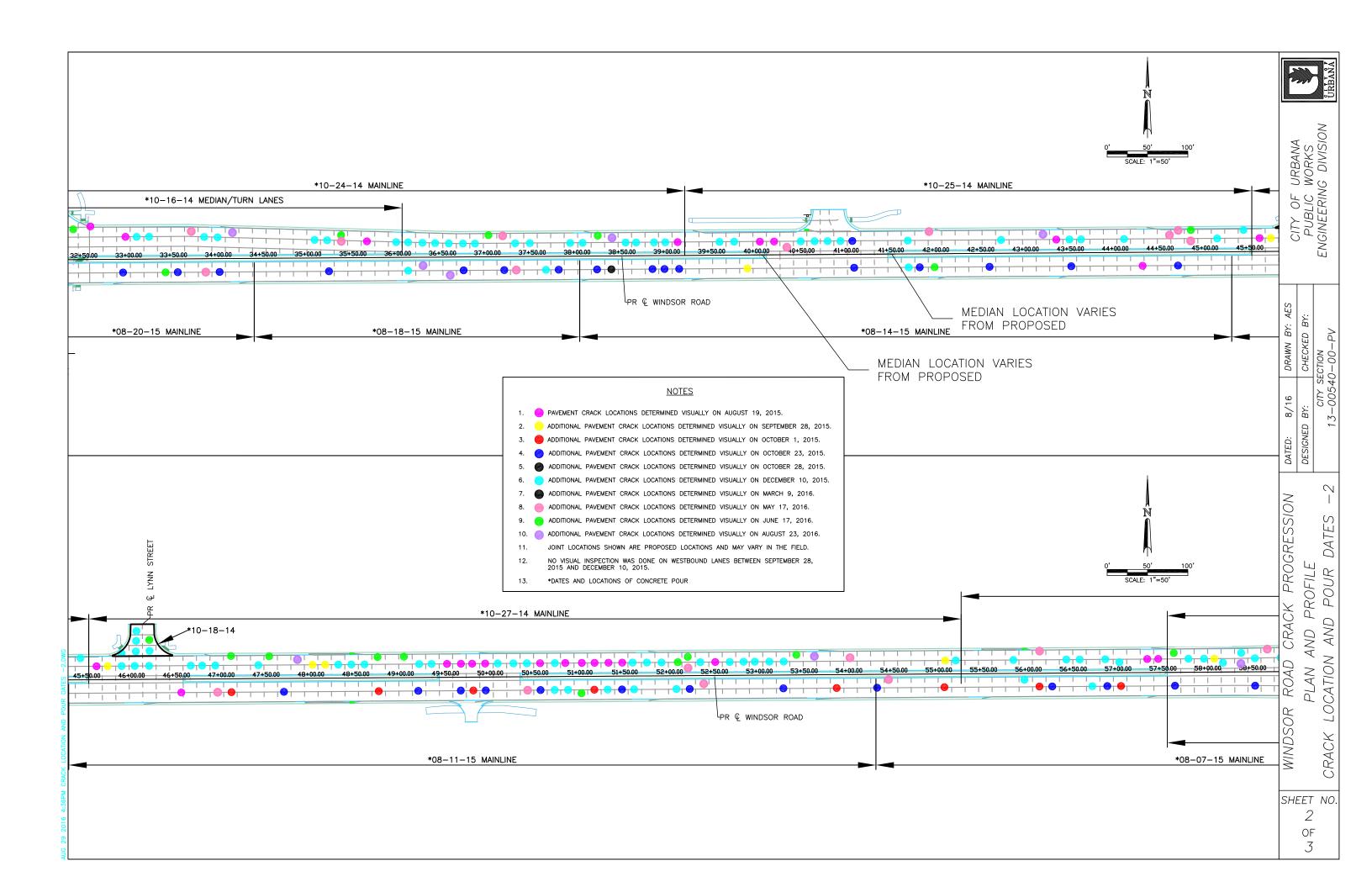
Path Forward

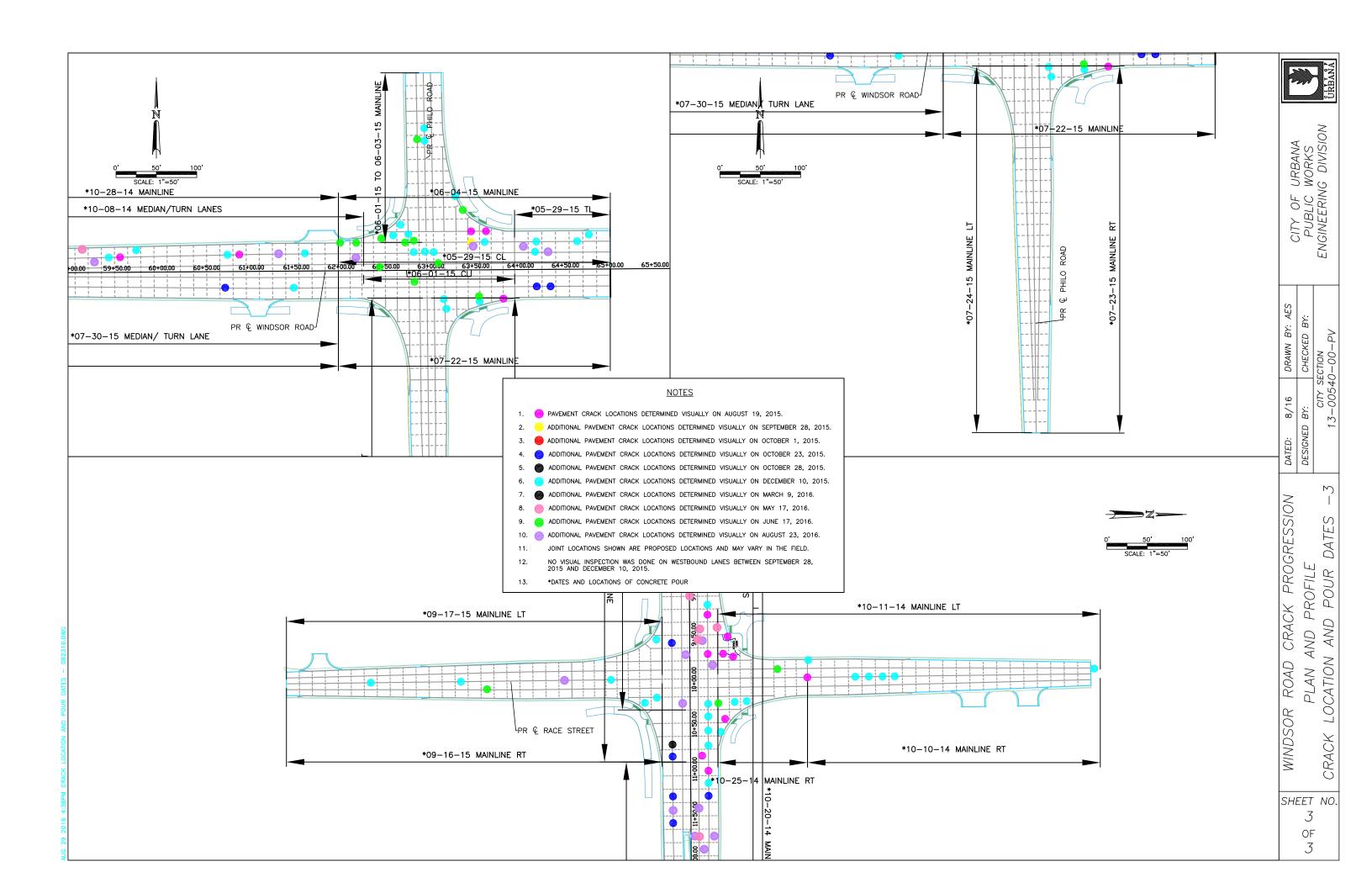
City staff is hopeful Stark will cooperate to fully open Windsor Road to traffic before winter sets in. Pending the results of the pavement testing, City staff anticipates continuing to work with Stark to resolve this unprecedented pavement issue so the City can receive a road that can serve the public adequately for an acceptable period of time and future resources can be dedicated to other roads in the City as was originally intended. However, it must be noted that, absent a mutual resolution of the dispute, litigation will occur.

Windsor Road Cracked Slab Quantity - 8-23-16

	Cracked	Total	Percentage		
	Slabs	Slabs	of Slabs		
Windsor Road Mainline					
EB Lanes - Inside	136	404	33.7%		
EB Lanes - Outside	130	404	32.2%		
WB Lanes - Inside	231	404	57.2%		
WB Lanes - Outside	265	404	65.6%		
Crossroads Mainline					
Race St. North	21	124	16.9%		
Race St. South	17	128	13.3%		
Vine SB	3	14	21.4%		
Vine NB	2	12	16.7%		
Lynn	5	6	83.3%		
Philo Rd. North	9	56	16.1%		
Philo Rd. South	1	126	0.8%		
Consequent Missellessess					
<u>Crossroad - Miscellaneous</u> <u>(Fillets, odd shaped</u>					
panels)					
Race N	9	15	60.0%		
Race S	5	14	35.7%		
Vine SB	2	5	40.0%		
Vine NB	2	5	40.0%		
Lynn	1	2	50.0%		
Philo N	12	26	46.2%		
Philo S	3	18	16.7%		
	J	10	10.770		
Turn Lane/Crossover					
(Median openings, turn					
<u>lanes)</u>					
Center	111	340	32.6%		
Right Turn lane at Philo	3	7	42.9%		







Pavement Issue Timeline

Date: 9/22/16

Windsor Road Pavement Reconstruction Project Windsor Road - Race Street to Philo Road

Urbana, IL

Section No.: 13-00540-00-PV

Contract No.: 91515

Date	Item			
	2014			
7/18/2014	Bids opened.			
8/18/2014	Road construction started.			
10/7/2014	Start of westbound lane construction, west of Race Street.			
11/6/2014	End of westbound lane construction, west of Philo Road.			
12/13/2014	End of 2014 construction, start of winter shut-down period.			
	2015			
4/17/2015	End winter shut-down period, start of 2015 construction.			
5/29/2015	Start of westbound lane construction, east of Philo Road.			
6/4/2015	End of westbound lane construction, west of Philo Road.			
7/22/2015	Start of eastbound lane construction, east of Philo Road.			
August 2015'	Pavement cracks started appearing.			
8/19/2015	Pavement crack locations determined by Urbana visually this date. First crack			
	progression map created.			
September 2015'	More than 25 pavement cracks appeared overnight after low temperatures in 40's.			
9/21/2015	End of eastbound lane construction, west of Race Street.			
9/23/2015	Urbana & Stark meet.			
9/28/2015	Additional pavement crack locations determined by Urbana & crack progression map			
	updated.			
10/1/2015	Additional pavement crack locations determined by Urbana & crack progression map			
	updated.			
10/6/2015	Select eastbound lane joints between panels are scanned.			
10/19/2015	Urbana and Urbana's pavement consultant meet with Stark.			
10/21/2015	All eastbound lane joints are scanned.			
10/23/2015	Additional pavement crack locations determined by Urbana & crack progression map			
	updated.			
10/26/2015	Urbana and Urbana's pavement consultant meet with Stark.			
10/28/2015	Additional pavement crack locations determined by Urbana & crack progression map			
	updated.			
11/9/2015	Urbana meets with IDOT central office materials engineer & FHWA engineer on site to			
	look at cracks.			
11/12/2015	Urbana sends memo to Stark asking for cracked pavement to be fixed.			
11/17/2015	Urbana & Stark meet.			
11/17/2015	Stark gives response memo to Urbana 11/12/15 memo.			
11/20/2015	Urbana reaches out to other pavement professionals about cracking issue.			

Pavement Issue Timeline

Date: 9/22/16

Windsor Road Pavement Reconstruction Project Windsor Road - Race Street to Philo Road

Urbana, IL

Section No.: 13-00540-00-PV

Contract No.: 91515

Data	H-viii		
Date	Item		
12/10/2015	Additional navament arealy locations determined by Hubana 9 arealy progression man		
12/10/2015	Additional pavement crack locations determined by Urbana & crack progression map		
42/22/2045	updated.		
12/22/2015	Urbana visits project site with other pavement professionals.		
	2016		
1/27/2016	1/27/2016 Urbana makes request to IDOT for assistance in determining cause of uncontrolled		
	cracks.		
1/29/2016	Stark & materials testing company perform material sampling of westbound lanes.		
February 2016'	Stark retains outside pavement consultant.		
2/29/2016	Stark or their consultants perform pavement sampling and testing in eastbound lanes.		
3/1/2016	Stark & their consultants perform pavement sampling and testing in westbound lanes.		
3/8/2016	Urbana receives response from IDOT concerning request for assistance.		
3/9/2016	Additional pavement crack locations determined by Urbana & crack progression map		
, ,	updated.		
3/29/2016	Urbana, Urbana's engineering consultant, Urbana's pavement consultant meet with		
-, -, -	Stark & Stark's pavement consultants.		
3/29/2016	Stark pavement consultants release copies of their pavement analysis.		
3, 23, 2020	Stark parement consultants release copies of their parement analysis.		
4/6/2016	Urbana releases Urbana's engineering consultant's pavement design information to		
1, 0, 2010	Stark.		
4/11/2016	Urbana, Urbana's pavement consultant & IDOT meet.		
4/15/2016	Urbana & IDOT meet with Stark.		
4/18/2016			
4/18/2016	Urbana sends letter to Stark formally requesting repair of pavement.		
	Urbana meets with legal counsel.		
4/28/2016	Urbana, Urbana attorney, Urbana's engineering consultant, Urbana's pavement		
	consultant & IDOT meet with Stark, Stark's bonding company, Stark's pavement		
= /2 /2 2 4 C	consultants & Stark's attorney.		
5/2/2016	Urbana sends letter to Stark formally suspending the charging of working days.		
5/17/2016	Additional pavement crack locations determined by Urbana & crack progression map		
	updated.		
5/18/2016	Urbana meets with legal counsel.		
5/19/2016	Urbana, Urbana's legal counsel, Urbana's engineering consultant & Urbana's		
	pavement consultant meet.		

Pavement Issue Timeline

Date: 9/22/16

Windsor Road Pavement Reconstruction Project Windsor Road - Race Street to Philo Road Urbana, IL

Section No.: 13-00540-00-PV

Contract No.: 91515

Date	Item
Date	
6/17/2016	Urbana meets with Urbana pavement consultant in office and field to discuss
	causation of pavement cracks.
6/17/2016	Additional pavement crack locations determined by Urbana & crack progression map updated.
7/12/2016	Urbana & their engineering consultant meet.
7/20/2016	Urbana, Urbana's engineering consultant, Urbana's pavement consultant & IDOT meet.
7/29/2016	Urbana, Urbana's legal counsel, Urbana's engineering consultant & their attorney, &
	Urbana pavement consultant.
8/11/2016	Urbana, Urbana's legal counsel, Urbana's engineering consultant & their attorney, &
	Urbana pavement consultant.
8/17/2016	Urbana's pavement consultant performs overnight pavement testing and sampling.
	Scanning of westbound lane joints is included. Stark's pavement consultants are
	present during testing.
8/18/2016	Urbana's pavement consultant performs overnight pavement testing and sampling.
	Scanning of westbound lane joints is included. Stark's pavement consultants are
	present during testing.
8/23/2016	Additional pavement crack locations determined by Urbana & crack progression map updated.
8/24/2016	Urbana retains outside legal counsel.
9/2/2016	Urbana meets with outside legal counsel.
9/8/2016	Urbana meets with outside legal counsel.
9/12/2016	Urbana requests Stark open Windsor Road fully to traffic.
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Road Opening Check List

Windsor Road Pavement Reconstruction Project Windsor Road - Race Street to Philo Road Urbana, IL

Section No.: 13-00540-00-PV

Contract No.: 91515

				Quantity		
No.		ltem	Location	Length	Width	Area
				(Feet)	(Feet)	(Square Yard)
	Pav	vement Removal & Replacement				
		Remove & replace panel (fractured)	EB Windsor - W of Race	15.8	11.2	19.7
	b.	Remove & replace panels (faulted)	WB Windsor - W of Race	14.4	3.6	5.8
				14.4	11.0	17.6
				14.4	11.0	17.6
				14.3	9.0	14.3
	c.	Remove & replace panels (fractured)	WB Windsor - W of Race	14.6	11.0	17.8
				14.5	11.0	17.7
				14.5	8.9	14.3
				14.2	11.0	17.4
				14.5	11.0	17.7
				14.7	8.9	14.5
	d.	Remove panel (Urbana testing location)	EB Windsor - E of Race	11.0	11.0	13.4
		Replace panel (Urbana testing location)		13.5	11.0	16.5
	e.	Remove & replace panel (previously sawcut)	EB Windsor - near CLV Entrance	15.1	11.0	18.5
		Replace panel (Stark testing location-agg backfill)		15.1	11.0	18.5
	f.	Remove & replace panels (fractured)	WB Windsor - near CLV Entrance	15.2	10.9	18.4
		, , ,		15.2	11.0	18.6
				14.9	10.9	18.0
				14.9	11.0	18.2
				15.0	10.9	18.2
	ø.	Remove panel (Urbana testing location)	EB Windsor - near Vine	9.5	11.0	11.6
	ο.	Replace panel (Urbana testing location)	25 Triniasor fiedi Tinie	12.0	11.0	14.7
	h.	Remove & replace panel (previously sawcut)	EB Windsor - near Sta. 40+00	7.3	11.0	8.9
		Themove & replace parier (previously surreat)	ES Willasor Fical Stat. 10.00	7.3	11.0	8.9
	i.	Remove & replace panel (previously sawcut)	EB Windsor - W of Lynn	10.7	11.1	13.2
		Replace panel (Stark testing location-agg backfill)	ES Willason W of Lynn	10.7	10.9	13.0
	i	Remove & replace panel (previously sawcut)	EB Windsor - W of Lynn	15.1	10.9	18.3
	k	Remove & replace panel (previously sawcut)	EB Windsor - E of Lynn	11.0	9.7	11.9
		Replace panel (Stark testing location-agg backfill)	ES Willason E of Eyrin	10.9	9.7	11.7
	l.	Remove panel (Urbana testing location)	EB Windsor - W of Philo	10.6	11.0	13.0
	١.	Replace panel (Urbana testing location)	EB Willasof W of Fillio	13.0	11.0	15.9
	m	Remove & replace panel (fractured)	WB Windsor at Philo	12.4	10.9	15.0
		Remove & replace panel (fractured)	NB Race - N of Windsor	6.0	10.0	6.7
		Nemove & replace parier (mactarea)	No nace it of windsor		EMOVAL =	405.2
			то	TAL REPLA	H	420.8
	Cu	rb & Gutter Removal & Replacement	10			120.0
-		Remove & replace B-6.24 (adjacent to fractured panel)	EB Windsor - W of Race	15.8		
		Remove & replace B-6.24 (adjacent to faulted panels)	WB Windsor - W of Race	13.5		
		Remove & replace B-6.24 (adjacent to fractured panels)	WB Windsor - W of Race	14.0		
		Remove & replace B-6.12 (adjacent to fractured panels)	EB Windsor - near CLV Entrance	15.1		
	۳.	Remove & replace B-6.24 (adjacent to fractured panels)	Thinds. The CEV End direct	15.1		
	e	Remove & replace B-6.24 (adjacent to fractured panels)	WB Windsor - near CLV Entrance	15.2		
	٠.	Remove & replace B-6.12 (adjacent to fractured panels)	TIS WINGSON HEAT CEV ENGINEE	15.2		
	f.	Remove & replace B-6.24 (previously sawcut)	EB Windsor - near Sta. 40+00	7.3		
	_	Remove & replace B-6.24 (previously sawcut) Remove & replace B-6.24 (previously sawcut)	EB Windsor - W of Lynn	10.7		
		Remove & replace B-6.24 (fractured)	SB Race - N of Windsor	4.0		
	11.	nemove & replace 5-0.24 (mactured)	TOTAL REMOVE & REPLACE B-6.12=	30.3		
	l		TOTAL REMOVE & REPLACE B-0.12-			
			TOTAL REIVIOVE & REPLACE B-0.24=	95.6		

Date: 9/12/16

3.	Expansion Joints		
	a. Seal unsealed expansion joints	Entire project	
4.	Core drilled holes		
	a. Fill core drilled holes	EB Windsor - W of Lynn	
5.	Traffic Signal Items		
	a. Remove bags on all traffic signal heads		
	b. Adjust cameras and install proper detection zones	Road & Philo Road	
	c. Install new traffic signal timings	Noau & Fillio Roau	
	d. Repair damaged handhole	NW Windsor Road & Philo Road	
	e. Install streetlight photocell	SW Windsor Road & Race Street	
6.	Survey Vault & Monument		
	a. Install survey vault and monument	Windsor Road median - E of Vine	
7.	Erosion Control		
	a. Removal erosion control items	Entire project	
8.	Pavement Striping		
	a. Remove temporary pavement striping	Entire project	
	b. Install final pavement striping per plans	Entire project	
9.	Traffic Signage		
	a. Reinstall removed W1-7 "Two Direction Large Arrow" Sign	Windsor Road at Vine Street	
10.	Crack measuring equipment		
	a. Remove crack measuring equipment	Select locations on project	
11.	Work Zone Traffic Control		
	a. Remove work zone traffic control	Entire project	
12.	Sweep road	Windsor Road EB lanes	

