



November 23, 2020  
2020089.04

**Mr. John Picuri, P.E.**  
**District Deputy Director**  
**ODOT District 12**  
**5500 Transportation Boulevard**  
**Garfield Heights, Ohio 4425**

**Attn: Ms. Keri Welch, P.E.**

## CUY-271-8.14 Investigation

Dear Ms. Welch,

GPD Group has been tasked with completing an investigation on I-271 NB surrounding the Brainard Road / Cedar Road interchange. I-271, between I-480 and I-90, has an ADT of over 150,000 vehicles and is one of the busiest sections of freeway in the State of Ohio. Due to the high traffic demand, I-271 contains both local and express lanes in the section being investigated. For this investigation, there are two primary areas of concern, the first is related to the distance between the ramp that allows traffic from the express lanes to switch into the local lanes to take the exit ramp to the Brainard Road / Cedar Road interchange. The second area of concern is the queuing from the I-271 NB / Brainard Road ramp terminal intersection. Traffic attempting to exit I-271 NB to Brainard Road frequently queues along the ramp and onto the I-271 mainline, which creates operational and safety concerns.

### ***Express Lane Crossover Location***

As traffic travels through the I-271 / I-480 / US 422 systems interchange, traffic wishing to travel along I-271 is given the option to travel in local lanes or express lanes. The local lanes can access every exit ramp to leave the interstate facility, while the express lanes have ramps less frequency which allows traffic to travel from the express lanes to the local lanes and vice versa. Ramps from the express lanes to local lanes have signage to alert motorists intending to use a particular interchange, that they must exit the express lanes via this ramp. As currently configured, I-271 NB traffic traveling in the express lanes has a ramp approximately 4,800 feet south of the Brainard / Cedar interchange to switch from the express lanes into the local lanes to use the exit. This may seem like sufficient space between the two gore areas for traffic from the express lanes to exit at Brainard Cedar. However, given the fact that there are three I-271 NB local lanes and a large volume of traffic traveling on the roadway, traffic frequently has difficulty making the lane changes in time to access this exit ramp. That situation is exacerbated when the queues from the Cedar / Brainard exit backs onto the mainline, reducing the distance to reach the exit. These movements create safety and operational issues along this section of I-271 NB. Vehicles are slowing down in the local lanes to queue for the exit ramp, while other vehicles are attempting to cross the three high speed lanes, making aggressive maneuvers to cut into the queue or stopping in the adjacent lane to enter the queue.

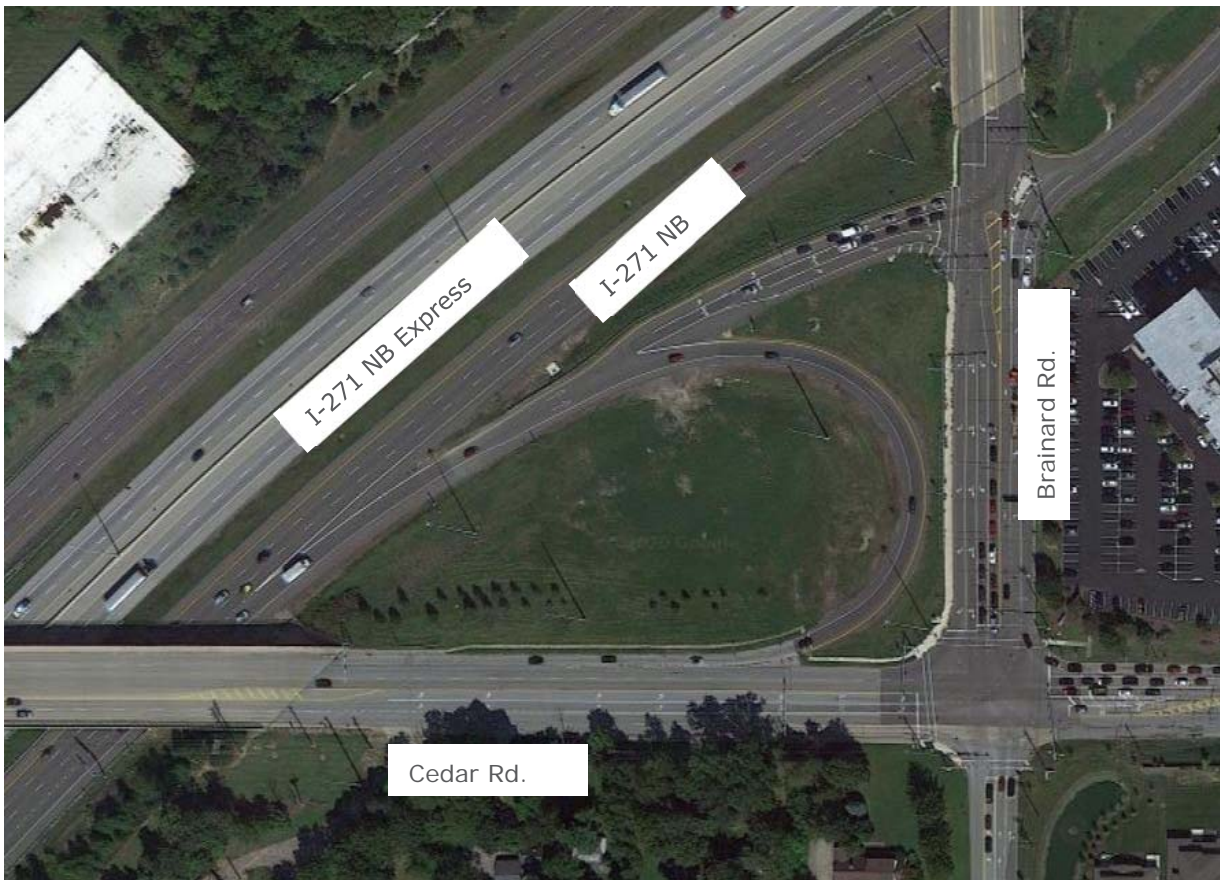
The improvement plan that is being investigated would be to switch the location of the express lane ramps that exist today. As previously mentioned, a ramp exits allowing traffic to go from the express lanes to local lanes approximately 4,800 feet south of the interchange. Additionally, a ramp exists approximately 7,800 feet south of the interchange that allows traffic to enter the express lanes from the local lanes. Reversing these ramps would provide I-271 NB traffic an additional 3,000' to make the required 3 lane changes to exit I-271. Additionally, this change would increase the distance for I-271 NB traffic entering from Chagrin Boulevard to make the lane changes to access the express lanes.

From a geometrics perspective, the major concern with this improvement is the need to add a fourth lane on I-271 NB (local lanes) under the Fairmount Boulevard Bridge over I-271. The geometric evaluation determined that four (4) 12' lanes of traffic can fit under the existing bridge with 17' of shoulder-width remaining. To achieve this width underneath the bridge, a concrete d-wall integral to the bridge piers would need to be constructed as part of the improvement project. The proposed geometric layout of the improvement, which is shown in **Attachment A**, proposes to provide a 7' inside shoulder width with a 10' outside shoulder width. Achieving this condition would require shifting the I-271 NB local lanes traffic 3' to the east to create the 7' inside shoulder width. It should be noted that the geometric layout as shown was created based on discussions with ODOT District 12 staff and the design standards published in the [ODOT Location and Design Manual, Volume 1](#). The 7' inside shoulder would require a design exception to be less than 10'. The IMS for these recommendations was approved on June 22, 2015.

The opinion of probable cost for these improvements is estimated to be \$1,780,000. The detailed opinion of probable cost can be found in **Attachment B**.

### ***Brainard Road / Cedar Road Exit Ramp***

The exit ramp from I-271 NB to Brainard / Cedar frequently queues onto the I-271 mainline, which creates operational and safety concerns along the interstate. The current exit ramp splits to allow traffic to access both Brainard Road and WB Cedar Road. After the split, the ramp provides a left, a left/right, and a right turn lane onto Brainard Road. The other part of the split provides a single lane loop to WB Cedar Road, which becomes an add lane on Cedar. Before the ramp split, approximately 1,400 feet of queuing is available before traffic would back up onto the I-271 mainline. During peak hours, this queue frequently stacks onto the mainline. This is the safety concern that needs to be addressed in this area.



The improvement plan that is being investigated is to lengthen the exit ramp and provide a second lane for traffic to exit I-271 NB. As shown in **Attachment A**, the existing exit ramp is formed at around Sta. 583+00 and provides approximately 1,400 feet of storage before the ramp split. The proposed conditions show the first lane diverging from the I-271 NB mainline at Sta. 562+00 and then a second exit lane is opened at Sta. 578+00. This configuration would create one exit lane with approximately 3,600 feet of storage before the ramp split and a second with approximately 2,000 feet of storage for a combined total of nearly 5,600 feet, which is quadruple the distance provided today. This improvement project would significantly reduce the likelihood and frequency of I-271 NB traffic queueing onto the I-271 mainline, which is frequently occurring and creates operational and safety issues along the interstate.

There are two possible geometric concerns with this proposed improvement plan which GPD has investigated to ensure this improvement is feasible. The first is the need to add a fifth travel lane under the Cedar Road bridge that travels over I-271. The geometric evaluation of the existing bridge found that five (5) 12' travel lanes can fit under the existing bridge with 18' of shoulder-width remaining. To achieve this width underneath the bridge, a concrete d-wall integral to the bridge piers would need to be constructed as part of the improvement project. The proposed geometric layout of the improvement, which is shown in **Attachment A**, proposes to provide a 10' inside shoulder width and an 8' outside shoulder width. It should be noted that the geometric layout as shown was created based on discussions with ODOT District 12 staff and the design standards published in the [ODOT Location and Design Manual, Volume 1](#). This layout would not require a design exception. The IMS for these recommendations was approved on June 22, 2015.

The second geometric concern that exists is the location of a noise wall that will be constructed soon along the east side of I-271 by ODOT District 12. An existing culvert structure is located near Sta. 568+00 which causes this future noise wall to transition to a 7' minimum offset from the edge of the I-271 mainline between Sta. 567+00 and 572+00. The proposed improvement of lengthening the existing exit lane in addition to adding a second exit lane would create a situation where the minimum offset is not provided between the edge of the traveled way for I-271 NB and the noise wall. To remedy this situation, the plan is to introduce a 10' lane shift for I-271 NB traffic. This 10' lane shift would move the I-271 NB local lanes the west away from the noise wall, creating a proper offset between the noise wall and edge of the traveled way.

One additional option to address the noise wall offset issue would be to modify the location in which the first exit lane to Brainard Road / Cedar Road is created. The lane is currently proposed to open at Sta. 562+00 before the noise wall makes the transition closer to I-271. If the opening point of this exit lane would be modified to Sta. 572+00, the offset to the noise wall would no longer be deficient and the lane shift currently shown would not be necessary.

The opinion of probable cost for the ramp improvements is estimated to be \$2,822,000. The detailed opinion of probable cost can be found in **Attachment C**.

### ***Conclusions***

When considering these improvements, ideally they would be performed at the same time in order to obtain the greatest benefit for this area of I-271. However, if the District pursued the project with a phased approach with the ramp work and the express lane crossover work performed separately, the crossover work should be completed first. Lengthening the Cedar / Brainard ramps prior to completing the crossover work will only make the weave area between these facilities shorter and worsen the safety and capacity issue.

The opinion of probable cost for the combined project is estimated to be \$4,594,000. The detailed opinion of probable cost can be found in **Attachment D**.

If you have any questions, please feel free to contact me at (216) 927-8688 or via e-mail at [kwestbrooks@gpdgroup.com](mailto:kwestbrooks@gpdgroup.com). Thank you for your assistance with this project.

Sincerely,  
GPD Group



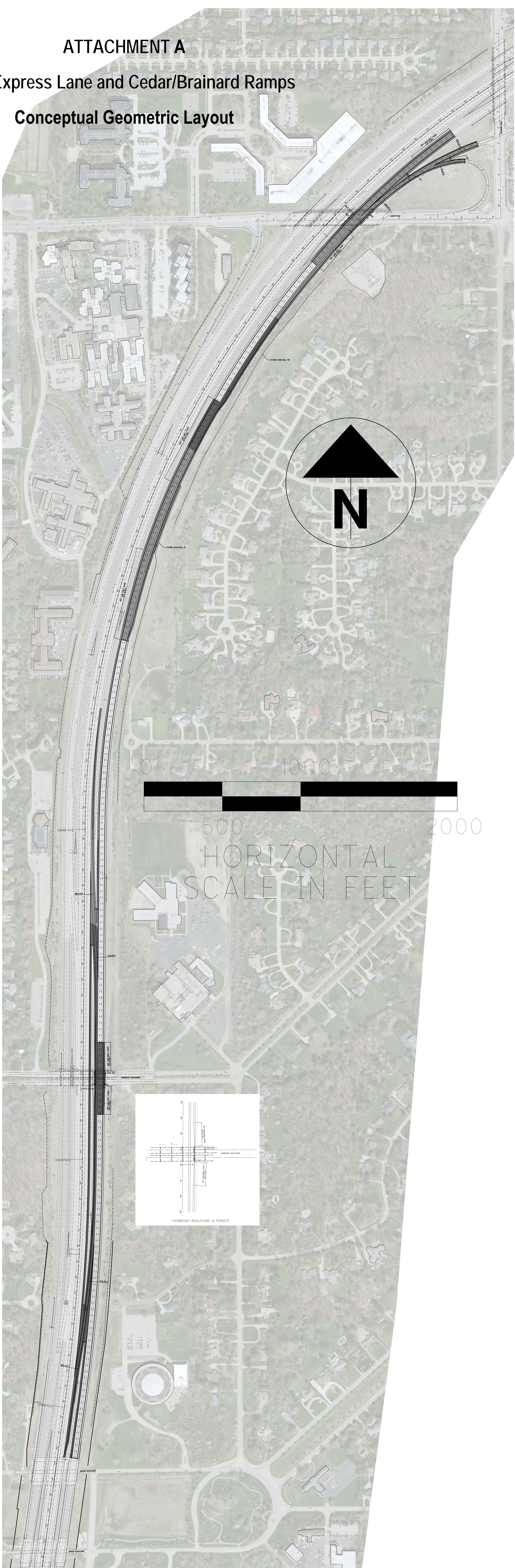
Kevin P. Westbrooks, P.E., PTOE  
Project Manager / Traffic Engineer

KPW/cjd

# ATTACHMENT A

## I-271 Express Lane and Cedar/Brainard Ramps

### Conceptual Geometric Layout



**Attachment B  
I-271 Express Lane Ramps Improvements  
Opinion of Probable Cost**

ITEM	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
	<b>ROADWAY</b>				
201	CLEARING AND GRUBBING	1	LS	\$30,000.00	\$30,000.00
202	PAVEMENT REMOVED	12,500	SY	\$8.00	\$100,000.00
202	GUARDRAIL REMOVED	900	FT	\$6.00	\$5,400.00
202	ANCHOR ASSEMBLY REMOVED	9	EACH	\$200.00	\$1,800.00
202	CONCRETE BARRIER REMOVED	110	FT	\$30.00	\$3,300.00
202	IMPACT ACTENUATOR REMOVED	3	EACH	\$350.00	\$1,050.00
202	BRIDGE TERMINAL ASSEMBLY REMOVED	2	EACH	\$150.00	\$300.00
203	EXCAVATION / EMBANKMENT	1,900	CY	\$15.00	\$28,500.00
252	FULL DEPTH PAVEMENT SAWING	10,300	FT	\$2.00	\$20,600.00
606	ANCHOR ASSEMBLY, MGS TYPE E	2	EACH	\$2,000.00	\$4,000.00
606	ANCHOR ASSEMBLY, MGS TYPE T	7	EACH	\$900.00	\$6,300.00
606	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	2	EACH	\$2,000.00	\$4,000.00
606	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 2	2	EACH	\$1,000.00	\$2,000.00
606	IMPACT ACTENUATOR, TYPE 1 (BIDIRECTIONAL)	3	EACH	\$4,000.00	\$12,000.00
606	GUARDRAIL, TYPE MGS	900	FT	\$16.00	\$14,400.00
622	CONCRETE BARRIER, SINGLE SLOPE, TYPE D	250	FT	\$100.00	\$25,000.00
659	SEEDING AND MULCHING	9,300	SY	\$3.00	\$27,900.00
832	EROSION CONTROL	1	LS	\$35,000.00	\$35,000.00
832	EROSION CONTROL PLAN	1	LS	\$8,000.00	\$8,000.00
	<b>ROADWAY SUBTOTAL:</b>				<b>\$329,550.00</b>
	<b>DRAINAGE</b>				
202	CATCH BASIN REMOVED	16	EACH	\$500.00	\$8,000.00
202	PIPE REMOVED, 24" & UNDER	400	FT	\$25.00	\$10,000.00
605	UNDERDRAINS	11,000	FT	\$12.00	\$132,000.00
611	12" TO 24" CONDUIT	700	FT	\$125.00	\$87,500.00
611	CATCH BASIN, NO. 5	20	EACH	\$3,500.00	\$70,000.00
	<b>DRAINAGE SUBTOTAL:</b>				<b>\$307,500.00</b>
	<b>PAVEMENT</b>				
302	6" ASPHALT CONCRETE BASE, PG64-22	850	CY	\$115.00	\$97,750.00
304	6" AGGREGATE BASE	850	CY	\$65.00	\$55,250.00
407	NON-TRACKING TACK COAT	760	GAL	\$3.00	\$2,280.00
442	1-3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE B (446)	250	CY	\$145.00	\$36,250.00
806	1-1/4" ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A	180	CY	\$165.00	\$29,700.00
	<b>PAVEMENT SUBTOTAL:</b>				<b>\$221,230.00</b>
	<b>TRAFFIC CONTROL</b>				
	SIGNING	1	LS	\$300,000.00	\$300,000.00
	STRIPING	1	LS	\$35,000.00	\$35,000.00
	<b>TRAFFIC CONTROL SUBTOTAL:</b>				<b>\$335,000.00</b>
	<b>MAINTENANCE OF TRAFFIC</b>				
	MAINTENANCE OF TRAFFIC	1	LS	\$66,000.00	\$66,000.00
	<b>MAINTENANCE OF TRAFFIC SUBTOTAL:</b>				<b>\$66,000.00</b>

**Attachment B  
I-271 Express Lane Ramps Improvements  
Opinion of Probable Cost**

ITEM	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
	<b>MISCELLANEOUS</b>				
614	MAINTAINING TRAFFIC	1	LS	\$38,000.00	\$38,000.00
619	FIELD OFFICE	3	MON	\$2,500.00	\$7,500.00
623	CONSTRUCTION LAYOUT STAKES	1	LS	\$6,000.00	\$6,000.00
624	MOBILIZATION	1	LS	\$40,000.00	\$40,000.00
SPEC	PERFORMANCE BOND	1	LS	\$6,000.00	\$6,000.00
	<b>MISCELLANEOUS SUBTOTAL:</b>				<b>\$97,500.00</b>
	<b>RIGHT OF WAY</b>				
	TEMPORARY R/W TAKE - COMMERCIAL	0	EACH	\$5,000.00	\$0.00
	PERMANENT R/W TAKE - COMMERCIAL	0	EACH	\$50,000.00	\$0.00
	ACQUISITION SERVICES	0	EACH	\$6,000.00	\$0.00
	APPRAISAL REVIEW SERVICES	0	EACH	\$600.00	\$0.00
	<b>RIGHT OF WAY SUBTOTAL:</b>				<b>\$0.00</b>
	<b>TOTAL CONSTRUCTION AND RIGHT OF WAY COST:</b>				<b>\$1,356,780.00</b>
	DESIGN ENGINEERING COST: (15% OF CONSTR. & R/W COST)				\$204,000.00
	GEOTECHNICAL ENGINEERING COST: (1% OF CONSTR. & R/W COST)				\$14,000.00
	ENVIRONMENTAL COST: (1% OF CONSTR. & R/W COST)				\$14,000.00
	SUBSURFACE UTILITY ENGINEERING (SUE): (3% OF CONSTR. & R/W COST)				\$41,000.00
	<b>PROJECT SUBTOTAL:</b>				<b>\$1,629,780.00</b>
	INFLATION CONTINGENCY FOR FY2024 (9.2%):				\$150,000.00
	<b>TOTAL:</b>				<b>\$1,779,780.00</b>

Attachment C  
I-271 Cedar / Brainard Ramp Improvements  
Opinion of Probable Cost

ITEM	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
<b>ROADWAY</b>					
201	CLEARING AND GRUBBING	1	LS	\$45,000.00	\$45,000.00
202	PAVEMENT REMOVED	34,400	SY	\$8.00	\$275,200.00
202	GUARDRAIL REMOVED	700	FT	\$6.00	\$4,200.00
202	ANCHOR ASSEMBLY REMOVED	7	EACH	\$200.00	\$1,400.00
202	CONCRETE BARRIER REMOVED	115	FT	\$30.00	\$3,450.00
202	IMPACT ACTENUATOR REMOVED	1	EACH	\$350.00	\$350.00
202	BRIDGE TERMINAL ASSEMBLY REMOVED	0	EACH	\$150.00	\$0.00
203	EXCAVATION / EMBANKMENT	7,500	CY	\$15.00	\$112,500.00
252	FULL DEPTH PAVEMENT SAWING	1,200	FT	\$2.00	\$2,400.00
606	ANCHOR ASSEMBLY, MGS TYPE E	2	EACH	\$2,000.00	\$4,000.00
606	ANCHOR ASSEMBLY, MGS TYPE T	1	EACH	\$900.00	\$900.00
606	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	3	EACH	\$2,000.00	\$6,000.00
606	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 2	0	EACH	\$1,000.00	\$0.00
606	IMPACT ACTENUATOR, TYPE 1 (BIDIRECTIONAL)	1	EACH	\$4,000.00	\$4,000.00
606	GUARDRAIL, TYPE MGS	700	FT	\$16.00	\$11,200.00
622	CONCRETE BARRIER, SINGLE SLOPE, TYPE D	250	FT	\$100.00	\$25,000.00
659	SEEDING AND MULCHING	28,000	SY	\$3.00	\$84,000.00
832	EROSION CONTROL	1	LS	\$55,000.00	\$55,000.00
832	EROSION CONTROL PLAN	1	LS	\$12,500.00	\$12,500.00
<b>ROADWAY SUBTOTAL:</b>					<b>\$647,100.00</b>
<b>DRAINAGE</b>					
202	CATCH BASIN REMOVED	12	EACH	\$500.00	\$6,000.00
202	PIPE REMOVED, 24" & UNDER	300	FT	\$25.00	\$7,500.00
605	UNDERDRAINS	9,000	FT	\$12.00	\$108,000.00
611	12" TO 24" CONDUIT	500	FT	\$125.00	\$62,500.00
611	CATCH BASIN, NO. 5	16	EACH	\$3,500.00	\$56,000.00
<b>DRAINAGE SUBTOTAL:</b>					<b>\$240,000.00</b>
<b>PAVEMENT</b>					
302	6" ASPHALT CONCRETE BASE, PG64-22	2,350	CY	\$115.00	\$270,250.00
304	6" AGGREGATE BASE	2,350	CY	\$65.00	\$152,750.00
407	NON-TRACKING TACK COAT	2,120	GAL	\$3.00	\$6,360.00
442	1-3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE B (446)	690	CY	\$145.00	\$100,050.00
806	1-1/4" ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A	490	CY	\$165.00	\$80,850.00
<b>PAVEMENT SUBTOTAL:</b>					<b>\$610,260.00</b>
<b>TRAFFIC CONTROL</b>					
	SIGNING	1	LS	\$200,000.00	\$200,000.00
	STRIPING	1	LS	\$70,000.00	\$70,000.00
<b>TRAFFIC CONTROL SUBTOTAL:</b>					<b>\$270,000.00</b>
<b>MAINTENANCE OF TRAFFIC</b>					
	MAINTENANCE OF TRAFFIC	1	LS	\$183,000.00	\$183,000.00
<b>MAINTENANCE OF TRAFFIC SUBTOTAL:</b>					<b>\$183,000.00</b>



**Attachment C  
I-271 Cedar / Brainard Ramp Improvements  
Opinion of Probable Cost**

ITEM	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
	<b>MISCELLANEOUS</b>				
614	MAINTAINING TRAFFIC	1	LS	\$59,000.00	\$59,000.00
619	FIELD OFFICE	9	MON	\$2,500.00	\$22,500.00
623	CONSTRUCTION LAYOUT STAKES	1	LS	\$10,000.00	\$10,000.00
624	MOBILIZATION	1	LS	\$100,000.00	\$100,000.00
SPEC	PERFORMANCE BOND	1	LS	\$10,000.00	\$10,000.00
	<b>MISCELLANEOUS SUBTOTAL:</b>				<b>\$201,500.00</b>
	<b>RIGHT OF WAY</b>				
	TEMPORARY R/W TAKE - COMMERCIAL	0	EACH	\$5,000.00	\$0.00
	PERMANENT R/W TAKE - COMMERCIAL	0	EACH	\$50,000.00	\$0.00
	ACQUISITION SERVICES	0	EACH	\$6,000.00	\$0.00
	APPRAISAL REVIEW SERVICES	0	EACH	\$600.00	\$0.00
	<b>RIGHT OF WAY SUBTOTAL:</b>				<b>\$0.00</b>
	<b>TOTAL CONSTRUCTION AND RIGHT OF WAY COST:</b>				<b>\$2,151,860.00</b>
	DESIGN ENGINEERING COST: (15% OF CONSTR. & R/W COST)				\$323,000.00
	GEOTECHNICAL ENGINEERING COST: (1% OF CONSTR. & R/W COST)				\$22,000.00
	ENVIRONMENTAL COST: (1% OF CONSTR. & R/W COST)				\$22,000.00
	SUBSURFACE UTILITY ENGINEERING (SUE): (3% OF CONSTR. & R/W COST)				\$65,000.00
	<b>PROJECT SUBTOTAL:</b>				<b>\$2,583,860.00</b>
	INFLATION CONTINGENCY FOR FY2024 (9.2%):				\$238,000.00
	<b>TOTAL:</b>				<b>\$2,821,860.00</b>

I-271 Cedar / Brainard Combined Improvements  
Opinion of Probable Cost

ITEM	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
<b>ROADWAY</b>					
201	CLEARING AND GRUBBING	1	LS	\$75,000.00	\$75,000.00
202	PAVEMENT REMOVED	46,900	SY	\$8.00	\$375,200.00
202	GUARDRAIL REMOVED	1,600	FT	\$6.00	\$9,600.00
202	ANCHOR ASSEMBLY REMOVED	16	EACH	\$200.00	\$3,200.00
202	CONCRETE BARRIER REMOVED	225	FT	\$30.00	\$6,750.00
202	IMPACT ACTENUATOR REMOVED	4	EACH	\$350.00	\$1,400.00
202	BRIDGE TERMINAL ASSEMBLY REMOVED	2	EACH	\$150.00	\$300.00
203	EXCAVATION / EMBANKMENT	9,400	CY	\$15.00	\$141,000.00
252	FULL DEPTH PAVEMENT SAWING	11,500	FT	\$2.00	\$23,000.00
606	ANCHOR ASSEMBLY, MGS TYPE E	4	EACH	\$2,000.00	\$8,000.00
606	ANCHOR ASSEMBLY, MGS TYPE T	8	EACH	\$900.00	\$7,200.00
606	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	5	EACH	\$2,000.00	\$10,000.00
606	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 2	2	EACH	\$1,000.00	\$2,000.00
606	IMPACT ACTENUATOR, TYPE 1 (BIDIRECTIONAL)	4	EACH	\$4,000.00	\$16,000.00
606	GUARDRAIL, TYPE MGS	1,600	FT	\$16.00	\$25,600.00
622	CONCRETE BARRIER, SINGLE SLOPE, TYPE D	500	FT	\$100.00	\$50,000.00
659	SEEDING AND MULCHING	37,300	SY	\$3.00	\$111,900.00
832	EROSION CONTROL	1	LS	\$85,000.00	\$85,000.00
832	EROSION CONTROL PLAN	1	LS	\$20,500.00	\$20,500.00
<b>ROADWAY SUBTOTAL:</b>					<b>\$971,650.00</b>
<b>DRAINAGE</b>					
202	CATCH BASIN REMOVED	28	EACH	\$500.00	\$14,000.00
202	PIPE REMOVED, 24" & UNDER	700	FT	\$25.00	\$17,500.00
605	UNDERDRAINS	20,000	FT	\$12.00	\$240,000.00
611	12" TO 24" CONDUIT	1,200	FT	\$125.00	\$150,000.00
611	CATCH BASIN, NO. 5	36	EACH	\$3,500.00	\$126,000.00
<b>DRAINAGE SUBTOTAL:</b>					<b>\$547,500.00</b>
<b>PAVEMENT</b>					
302	6" ASPHALT CONCRETE BASE, PG64-22	3,200	CY	\$115.00	\$368,000.00
304	6" AGGREGATE BASE	3,200	CY	\$65.00	\$208,000.00
407	NON-TRACKING TACK COAT	2,880	GAL	\$3.00	\$8,640.00
442	1-3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE B (446)	940	CY	\$145.00	\$136,300.00
806	1-1/4" ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A	670	CY	\$165.00	\$110,550.00
<b>PAVEMENT SUBTOTAL:</b>					<b>\$831,490.00</b>
<b>TRAFFIC CONTROL</b>					
	SIGNING	1	LS	\$500,000.00	\$500,000.00
	STRIPING	1	LS	\$105,000.00	\$105,000.00
<b>TRAFFIC CONTROL SUBTOTAL:</b>					<b>\$605,000.00</b>
<b>MAINTENANCE OF TRAFFIC</b>					
	MAINTENANCE OF TRAFFIC	1	LS	\$249,000.00	\$249,000.00
<b>MAINTENANCE OF TRAFFIC SUBTOTAL:</b>					<b>\$249,000.00</b>

I-271 Cedar / Brainard Combined Improvements  
Opinion of Probable Cost

ITEM	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
	<b>MISCELLANEOUS</b>				
614	MAINTAINING TRAFFIC	1	LS	\$96,000.00	\$96,000.00
619	FIELD OFFICE	12	MON	\$2,500.00	\$30,000.00
623	CONSTRUCTION LAYOUT STAKES	1	LS	\$16,000.00	\$16,000.00
624	MOBILIZATION	1	LS	\$140,000.00	\$140,000.00
SPEC	PERFORMANCE BOND	1	LS	\$16,000.00	\$16,000.00
	<b>MISCELLANEOUS SUBTOTAL:</b>				<b>\$298,000.00</b>
	<b>RIGHT OF WAY</b>				
	TEMPORARY R/W TAKE - COMMERCIAL	0	EACH	\$5,000.00	\$0.00
	PERMANENT R/W TAKE - COMMERCIAL	0	EACH	\$50,000.00	\$0.00
	ACQUISITION SERVICES	0	EACH	\$6,000.00	\$0.00
	APPRAISAL REVIEW SERVICES	0	EACH	\$600.00	\$0.00
	<b>RIGHT OF WAY SUBTOTAL:</b>				<b>\$0.00</b>
	<b>TOTAL CONSTRUCTION AND RIGHT OF WAY COST:</b>				<b>\$3,502,640.00</b>
	DESIGN ENGINEERING COST: (15% OF CONSTR. & R/W COST)				\$526,000.00
	GEOTECHNICAL ENGINEERING COST: (1% OF CONSTR. & R/W COST)				\$36,000.00
	ENVIRONMENTAL COST: (1% OF CONSTR. & R/W COST)				\$36,000.00
	SUBSURFACE UTILITY ENGINEERING (SUE): (3% OF CONSTR. & R/W COST)				\$106,000.00
	<b>PROJECT SUBTOTAL:</b>				<b>\$4,206,640.00</b>
	INFLATION CONTINGENCY FOR FY2024 (9.2%):				\$387,000.00
	<b>TOTAL:</b>				<b>\$4,593,640.00</b>