Intro: This is "The Advancing Communities Show" hosted by OHM Advisors. Each week, we bring you ideas, information and inspiration to make our world a better place through architecture, engineering, planning, innovation and collaboration.

Tim Juidici (OHM Advisors): Well, good morning. Welcome to The Advancing Communities Show. My name is Tim Juidici. I'm a partner and a client rep with OHM Advisors here in our municipal services team. I'm joined here this morning with Stephanie Carroll from the City of Auburn Hills, the manager of business development for the City. Welcome.

Stephanie Carroll (City of Auburn Hills): Good morning. Thank you, Tim.

Tim: Good morning. Also joining us this morning, we have Ron Melchert, the director of public works for the City of Auburn Hills. Morning, Ron.

Ron Melchert (City of Auburn Hills): Good morning.

Tim: And also in our presence this morning, we have John Katers, one of our senior project managers in the Transportation group here at OHM.

John Katers (OHM Advisors): How's it going, Tim?

Tim: Good morning, John. How are you?

So we're here this morning to talk about a pretty exciting project. It's the first Diverging Diamond Interchange in the state of Michigan, built recently in the city of Auburn Hills. I thought maybe we'd take some time for those listeners that aren't as familiar as we all are with this project to kind of set the stage of where Auburn Hills is, where the project is, and how we got to the state of where it is today. So, John, do you want to give us a little bit of history of how the interchange came to be?

John: Sure, well first off, for those who don't know where Auburn Hills is, it's about 30 miles north of Detroit, right up by I-75, a major business center in Metro Detroit's Oakland County. It's also the home of and gateway to Oakland University. Chrysler's world headquarters happens to reside in the city, along with several high-tech research-based automotive facilities and other higher profile corporate headquarters.

The interchange itself at I-75 in University Drive happens to be a feeder for Oakland University and several of these businesses. Over the years, it's developed from a simple little country interchange to one that has to serve a lot of these businesses that are major economic forces in the community. It morphed over the years. It was a Parclo interchange – or a partial cloverleaf interchange – that really didn't operate very well in the '90s when the Chrysler world headquarters was built about a mile south of this interchange. That, of course, added demand for the area. Being so close to the University Drive interchange, it left a strange configuration, and part of that was a collector distributor road that is almost unfinished. You could see this from Google if you go back and review the history.

And what that resulted in was Chrysler Drive traffic that wanted to go northbound kind of actually having to cut through the University Drive interchange and stopping within University Drive. So with that, we had a really antiquated system at the interchange resulting in some really poor traffic flow, some safety problems and just general deterioration of the interchange over the years.

Tim: Well, that's very good. Now, Ron and Stephanie, there are several interchanges, I-75 obviously bisects the city, but there's University Drive as a key interchange. Can you expand a little on that, how it functions, where the flow of traffic is and how important that interchange is to that area?

Ron: Well, as John mentioned, it serves as a large corridor of manufacturing, research and technological type of businesses. A lot related to the auto field, especially where Chrysler is concerned, Fiat Chrysler now, and it's really in the heart of the city. Our city hall campus is just off of University Drive, which is right across the street from Oakland University. It also serves not only the auto industry, but it also serves a college town, with Oakland University home to over 20,000 students. And again, it's right at the heart of the city of Auburn Hills.

Tim: Would you say that the interchange also services some of your neighboring communities, and beyond Auburn Hills is the main gateway getting into Rochester, Rochester Hills and the City of Pontiac – is that a correct statement?

Ron: Yeah, very good that you brought that up, Tim. And yes, Pontiac is on the border to the west of the interchange, and then to the east is Rochester Hills. North is Orion Township, south is Springfield township and Bloomfield Hills, and also, the City of Rochester off to the east. So yes, that is a major intersection or interchange for those communities that surround it.

Tim: Very good. So, John, in the late '90s, MDOT [Michigan Department of Transportation] had planned a quarter improvement along that whole stretch of I-75 to finish the collector distributor, upgrade the interchanges – and then that got canceled, right?

John: Yes, it started in the late '90s, continuing through the early 2000s, maybe 2004. There were plans in place to essentially reconstruct University Drive to a four-lane boulevard over I-75 along with partial cloverleaf ramps, a partial cloverleaf interchange with ramps in the southeast and northwest quadrants up to their current standards. When the interchange was originally built, the ramps were built to a different standard. They were really tight. I think only about a 200-foot radius curve.

And doing so, to get it to the new standards and to build the actual boulevard would have resulted in quite a significant right of way impact, cause impacts to the environment, etc. Due to the number of lanes they were trying to tie in on that northbound direction from Chrysler, it would have resulted in extending an additional lane along I-75 all the way up the Lapeer Road interchange, which is another couple of miles to the north. So it was an expensive project, which was why it got shelved by the governor right around 2005.

Tim: Certainly. So, Stephanie, when that project was shelved, the city obviously was hoping that this interchange would be upgraded. How did that impact the City's ability to attract and retain high-tech businesses to that quarter to meet your goals?

Stephanie: Well, when you talk about infrastructure, it's directly linked to economic development. And when companies are looking to locate their world headquarters to a community, one of the things they look at immediately is the infrastructure. Are the roads leading to their building in good condition? Can they move their goods and services in a timely manner? This was becoming a barrier for us to attract and maintain some of our businesses. We were getting calls from developers. "When can we expect some improvements in this area?" And the bridge just continued to decline. I know our Department of Public Works [DPW] staff was patching things as we went because there were potholes constantly. It was starting just to become much larger of a problem as the seasons passed. And so, we knew we had to get creative.

Tim: Yes, very good. Stephanie brings out a good point, Ron, I mean, from the DPW standpoint, you guys were spending a significant amount of time, effort, and money on trying to maintain that interchange so it was in a passable condition.

Ron: Yes, upwards of about $10,000 a year annually; keeping the potholes patched, keeping the surface safe for the traffic that moves through that interchange. And again, a significant amount of traffic – up to 22,000 vehicles a day – move through that interchange. We had to keep it in safe condition, keep it passable. We had the phone ringing off the hook several times, especially in the winter when you get the freeze thaws, and the patch that we put in would pop out. We'd be right back out there the next day patching again.

Tim: So with this all, this is the stage that is obviously impacting the City's ability from an economic development standpoint, the bridge is deteriorating. Obviously, the solution that was proposed by MDOT had been canceled because of funding and right of way and all those concerns. Tell me: where does the City step in and what was the timeframe on that to come up with a solution on your own?

Ron: Well, I believe it began with funding, and Stephanie can kick in if I miss anything here. With the TIGER grants, MDOT, of course, did not have the monetary resources to improve that intersection. And again, the bridge was degrading to a point where we were concerned and of

course, OHM, we had to take a look at that bridge and they thought that within five years, it may be shut down. Lo and behold, it was.

But in the beginning, we started looking at a TIGER grant with the City providing match money, that being our Tax Increment Finance Authority, which was $4 million, and at that time, that was about a 20 percent match. As the time went on, over five years, the project got a little bigger, a little more expensive, but the city maintained its $4 million commitment to this project. With that, finally came a time where the bridge was going to get shut down. There was emergency repair made to keep the bridge active for another year. There were support beams, I think 18, that were put under that bridge to support but it was good for just one year.

And with that, the City started some dialogue with MDOT. MDOT came to the table and we kept talking, trying to figure out how we could fund this Diverging Diamond Interchange, which really brought about good traffic flow, safety aspects, a state of the art type of interchange, environmentally friendly, those kinds of aspects. It made sense to do something like that. The issue was the funding. MDOT did have about $8 million to contribute right off. With our $4 million, we collectively had $12 million. We needed upwards of $25 million so we were trying to think of creative ways to get this funding going.

There's a Michigan transportation economic development fund that is part of MDOT, where, if businesses are coming into your community and they're bringing new jobs to Michigan or if you can sell those jobs and keep them from leaving Michigan, keeping their business in Michigan, MDOT would participate in helping with funding some of the transportation projects. So immediately we started making contacts. There are nine different businesses that were in the area that use that interchange that were recent newcomers to Auburn Hills or expanding, bringing significant amount of jobs to Michigan. We were able to secure another $4 million through that process. Those businesses jumped right on board and collaborated with us to help us with that funding.

There was some additional funding that came from the federal government as well. And then we also were looking to help this interchange, make it pedestrian friendly, so we were able to take advantage of a transportation alternatives program federal funding grant. That was about $500,000. And then on the other end, trying to get legislature to appropriate the rest of the money to get this project off the ground. Stephanie really got on board, and I'll let her tell that story as far as getting a legislature going to appropriate the additional funding, to get that project moving forward.

Stephanie: I want to just step back. When we started with the TIGER grants, we knew this was a really great opportunity that the federal government offered to perhaps provide some funding for this project. It needed to be innovative, collaborative and we knew that the project that we would be bringing forward really fit this TIGER grant very, very well. And so, as Ron mentioned, we did go through five rounds and we were unsuccessful, but through that whole time, I think it's important to mention that we started working with our state legislators, our federal representatives and the businesses. They were all very supportive. They wrote letters in support of the project.

Our partners here at OHM Advisors really were key in helping us through that TIGER process. There was a lot of paperwork that needed to be included with the grant. And we knew that after the fifth round, we weren't sure if there were going to be additional TIGER opportunities in the future so we knew we had to change our game. Ron did a great job outlining how that went. And so we, after some time, really partnered with MDOT in order to make this project a reality. I still sit back and think, it's almost surreal, like, "Did it really happen?" I drive under it [the finished interchanged] and it's still just like, "Wow, it actually happened," because we did have to get sort of creative with the funding.

I think the DDI is so innovative and it's really the future of transportation. I think it was the chairman of our Tax Increment Finance Authority who said the former bridge was something of the past, and our tagline is, "Honoring the past, building the future." And I think this project really captures that, the future in transportation.

Tim: That's a very good story. It sounds like you guys had certainly taken a lead role in pursuing all this funding. I think that's a very unique position for a local municipality to take that level of initiative in pursuing a bridge project that's really an asset that you don't own. So kudos; kudos to you guys for really getting this moving forward.

You referenced the innovation and the design and coming up with a solution. John, can you expand upon how we got to a DDI and how does it function and what is it?

John: Sure, great question. What is the DDI? That's a valid question. Right, let's go back in time. Let's go back to 2008'ish. That's about when Auburn Hills approached us [OHM Advisors] to look at solutions here. The Parclo project had been shelved and that's when the interchange

was really starting to look ugly, and really starting to have an effect on the economics of the City. So that's when we studied alternative creative solutions and one of those happened to be a DDI. Now, at this time, there hadn't been any in the country that had been built. The first one in Springfield, Missouri was under design and didn't get built until 2009. So this was really early. Now, to answer your question, what is the DDI?

DDI is a Diverging Diamond Interchange. The defining feature of a DDI is the fact that you're crossing traffic on the arterial road from one side of the road to the other through the use of two signalized intersections on either side of the freeway bridge. The great thing about that is you're not introducing any opposing left turns, which can lead to safety issues, or any loop ramps, which can lead to expensive right of way or just large impacts or costs to the project.

So, the DDI operates both of these crossover intersections, we'll call them, where the traffic crosses from one side to the other, operates on a two-phase signal, meaning you get reds and you get greens. Of course, you get the yellow phase in between but there are no lefts. There's no left-turn phases. There's no right-turn phases. You're moving, and that allows the opportunity for more free flow ramps, which gets traffic from the arterial on to the freeway in a more efficient manner.

Tim: Very good. Sounds very innovative and very creative. So, from the interchange, like you said, it functions a lot better. What was the traffic condition? I remember being up there in the days during the afternoon peak, there'd be a mile of backup waiting for people to get on the interchange. What's it been like since the interchange was built? How long has it been opened?

Stephanie: I would, a lot of times, have to go to University Drive to go southbound on I-75. And in between dodging all the potholes, it could take me, from city hall to get on southbound 75, anywhere from 20 to 30 minutes in rush hour. Prior to the redesign of the interchange, I mean the bottleneck traffic, it was terrible and that was one of the major complaints we would get from motorists because Auburn Hills is about 70 percent commercial/industrial, and 30 percent residential. A lot of the people who come to work in our community live in Pontiac or Rochester Hills, and you couldn't get out.

And so you think about safety issues. You think about environmental issues with cars just sitting and idling in areas because traffic can't move; a lot of these problems have been solved with

the DDI. But prior to that, I'd get two, three calls a day from either a motorist sitting on the ramp or from one of our businesses who couldn't move their goods and services. We knew there needed to be a change.

John: That movement that Stephanie is describing, that's the westbound, southbound movement. It's kind of the left turn movement and that's the sweet spot for what a Diverging Diamond can fix because … think about that movement that Stephanie is now making. Under the DDI, that would have taken a signal that was already in their capacity and then a larger loop ramp to get back on the freeway.

Now, it's a signal that operates under capacity and in a free flow ramp directly on to the southbound I-75. So it's those left turn movements that a DDI really helps solve, in situations where you have a very large percentage of the traffic coming to and from the interchange not necessarily passing through on the arterial road, in this case, University Drive. At this particular interchange, anywhere from 50 percent to 60 percent of the traffic just goes to and from the interchange. They don't pass through on University Drive. That's why this was really a good solution for this interchange.

Tim: You mentioned before that obviously, in the existing condition prior to the project, the interchange from Chrysler basically interjected right into and had to drive up and over through the existing interchange. How has that been solved with the new DDI design and how's that functioning?

John: Well, previously, in that southeast quadrant, if you can picture it, Chrysler interchange is about a mile south of University Drive. What traffic used to have to do [on Chrysler interchange] is get on this high speed ramp and then merge with the traffic, trying to get off I-75, trying to get to University Drive, and then they'd physically stop at a traffic signal at University Drive, then get back on the northbound University Drive onramp to get onto I-75.

There was also the loop ramp in that quadrant, in that southeast quadrant, which would be the eastbound to northbound University Drive loop ramp. So that's the key right there; getting rid of that eastbound to northbound loop ramp, and that quadrant, allows us to directly connect that collector distributor road from Chrysler Drive on to the freeway. Northbound Chrysler

traffic no longer has to travel through the University Drive interchange itself. It just goes directly on to the freeway, and not only does that make it great for the Chrysler traffic but it keeps cars out of the University Drive interchange, and that means less vehicles you have to account for at the signals.

Tim: Have you received any feedback from the folks over at Fiat Chrysler since the interchange has been opened and that is functioning, and they see an improvement, I assume?

Stephanie: Oh, absolutely. They have been supportive of the project since we started. They were a great resource for us and FCA, we have a great relationship with them. And every now and then, when we meet with them, they talk about how their employees aren't waiting and waiting, and there's no backups now into their area. I know they really like it. I know that the people coming in and out of the area also really like it. It's been a great improvement.

Tim: Good. Now I know we talked earlier about how this interchange basically functions as one of the primary gateways to Auburn Hills and the surrounding communities. And early on, when we were engaged and worked with you guys, as part of the goals of the project, making that gateway a feature, and aesthetics, really came to be a priority as far as the City was concerned. I don't know if you want to elaborate on how that came to be and why that was a priority to the city.

Ron: Well, when we were first meeting with MDOT, considering the significant investment that the city was putting in, we wanted some aesthetic value so when people came to Auburn Hills, they'd knew they were in Auburn Hills. And so, it's more way-finding than branding, that's the way we were communicating that to MDOT. We were looking for something that was being a unique DDI, the first Diverging Diamond Interchange in Michigan. We wanted it to look like the first and the best Diverging Diamond Interchange in the state.

We wanted to add aesthetic value by adding decorative railing and lighting along the bridge. We also added a pedestrian pathway between the east and westbound portion of the bridge to allow pedestrians and bikers to pass through. So there's those aesthetic treatments that make

it welcoming, make it look nice and make it look safe. And it is safe. With that, we also wanted to add turf. We'll be maintaining those aesthetic improvements on the bridge that the City is responsible for, as well as the turf maintenance, to keep that interchange looking as well as it does.

We have also partnered with Oakland University for a project called the University Drive Streetscape, where we've added some monuments, granite features, stone features, tree features and banners, to make it look a long driveway going in to Oakland University and to the City campus. It's a partnership which really links Oakland University with the City of Auburn Hills. We initially attempted to get some signage on the bridge highlighting Oakland University as way-finding. It was termed as branding.

Being the first approach at this in the state and using federal dollars, there really needed to be a good, solid policy developed in order to allow that type of branding. Ultimately, they did not allow Oakland University to be on that sign. However, the City of Auburn Hills, right at the center of the [University Drive bridge] sign promotes the City of Auburn Hills, when it was established, with lighting on it at night. It's really a beautiful sight as you're driving through and under the bridge and through the interchange. It really does set forth a nice tone for the City of Auburn Hills.

Stephanie: We are very proud of this project. I know that I worked with the team at OHM for a number of years, and Ron and I spent a lot of time on the phone. Our city manager made a lot of phone calls, and we all tried to just pull our resources together. As Ron said, having the first DDI in Auburn Hills is really just a fantastic thing for our community. And driving under that at night, we're getting a lot of calls from people who are driving through the area and saying how beautiful it is. Because the reality was, it was just ugly before and the alternative for the replacement was a Parclo interchange.

And so when you're planning, when OHM presented the DDI design to us, there were many features that were much more positive than the old traditional interchange, including pavement, maintenance and timing. It's still really hard to believe that this project was completed so quickly and efficiently. I think that the entire process was really fantastic and the finished product is quite outstanding.

Ron: And I think to get the best picture in your head for the listeners is to get online and take a look at what this interchange actually looks like. We can talk and describe, but a picture speaks a thousand words. You really need to see what it looks like. Beautiful.

Tim: That's a very good point, Ron. So from a standpoint of economic development, Stephanie, I know you said previously that obviously, the existing interchange was a barrier and we weren't getting the development that the City was hoping to see. Have you had any success since the interchange has been done? Is there a wheel starting to move on that front?

Stephanie: Yeah, absolutely, Tim. We're seeing a lot more interest in the Oakland Technology Park area. In fact, there's only two, maybe three, more developable sites in that area. And so companies like Faurecia and Atlas Copco moved their headquarters into the Oakland Technology Park area. When we do our retention visits and we sit down and meet with the businesses to talk about how things are going, they're loving it. They're loving the ease of travel for their employees; they're on time now because they don't have to go through detours and everything else to get to the office.

But we're talking about roads a lot and I think this project really solidified Auburn Hills' reputation in that we've always put our roads first. We always try to maintain our roads because we understand that maintenance in the short term is a lot less expensive than in the long term. So we really try to keep that in mind when we're talking about economic development and looking at our roads. I know our guys at DPW, they try to go out and check on the roads to see how things are going, and so our businesses will also chime in every now and then to say, "Hey, this road over here really needs some TLC. Can you send someone out?" So I think that this replacement has really generated a lot of excitement in the area.

Tim: Very good, very good. Well, it's certainly been a very exciting project, very dynamic, a lot of different moving parts. Looking back on it, any lessons learned that you could share with the listeners as part of the process or the project in general?

John: I look back at how the study started in 2008, and we really didn't take action on the job until 2014 when the beams cracked on the bridge from the polar vortex of 2014. But I look back at those years between 2008 to 2014 and the legwork that was done on the community relations side. I know that Stephanie and Ron and their team did just a ton of work in reaching out to businesses leaders, political leaders and to MDOT. Between that and the engineering side, just looking at solutions and not giving up, that really pays off and it paid off when this act of God, we like to call it, in 2014 happened. When that happened, we had all the players in place. MDOT was ready to go. We were moving with this design-build contract a month later. And the thing got built and it was open by November 2015. So my lesson is: do your legwork and stick with it, don't give up and it will pay off.

Ron: Lessons learned. Well, I think the communication aspect that John was speaking of is huge. And going into it with an open mind and putting all the bureaucracy, government and bureaucracy aside, opening up your mind in coming together and brainstorming and coming up with solutions rather than dwelling on barriers and what's getting in your way. Keep moving it forward, keep everybody informed. Kudos to MDOT for working with us so closely and so well with the City and the businesses.

We had public meetings. Everybody was well-informed. We met with MDOT weekly on this particular job. My roads manager Dan Brisson was involved with the project every day, and always present on the job. And any obstacle that got in our way, we overcame it. We worked through it. But just that collaboration; that we put everything aside and we knew this job had to get done in 2015, and it did get done. It was a huge project but every day, we had a great contractor and great engineers. Things just worked out so well. And again, it's the getting together, the collaboration, that was key.

Stephanie: I really think I wouldn't change anything. I think we did all the right things over the number of years, and I don't think we left any stone unturned. Every time we were in Lansing, we were talking to our legislators about it. Every time we attended an event in Lansing, we would get to the key people and talk about the project, and we just talked about the project constantly so that people knew how important it was not just to Auburn Hills but to Oakland County.

So I think that starting the conversation when we did in 2008 was really key. I know it feels like it took forever because there were a lot of blood, sweat and tears throughout the process. And there were times when it was so frustrating, and it really felt like DOT [Department of Transportation] on the federal level just didn't understand the urgency. We understood the urgency locally because we were the ones who felt all the heat. It was very frustrating along the way, but I think that it was so important that we didn't give up even though we were told "no" five times. Do you start second-guessing yourself? No, not really. We knew it was a great project. We just had to find a way to fund it.

Tim: Yeah, very good. Well, certainly it's an exciting project. It's certainly a gem of a project, no pun intended, with the diverging diamond. But it's one that I think is a great success story, and kudos to the city and MDOT and all the partners that have really pulled this together. It's really something that shows and highlights the relationship between infrastructure, community identity and regional development economic development for that. It's a great success story.

Thank you guys for your time in joining us this morning, and we'll look forward to the next exciting project.

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