= High Five Interchange =

The High Five Interchange is one of the first five @-@ level stack interchanges built in Dallas , Texas . Located at the junction of the Lyndon B. Johnson Freeway (Interstate 635 , I @-@ 635) and the Central Expressway (US Highway 75 , US 75) , it replaces an antiquated partial cloverleaf interchange constructed in the 1960s .

The $ 261 million project was started in 2002 and completed in December 2005 . It was designed by the HNTB Corporation and built by Zachry Construction Corporation .

The interchange is considered by Popular Mechanics to be one of " The World 's 18 Strangest Roadways " because of its height (as high as a 12 @-@ story building) , its 43 permanent bridges and other unusual design and construction features . In 2006 , the American Public Works Association named the High Five Interchange as " Public Works Projects of the Year " .

= = Description = =

The High Five Interchange , north of downtown in Dallas , Texas , is a massive five @-@ level freeway interchange . It is the junction of two major highways carrying heavy rush hour traffic , the Lyndon B. Johnson Freeway (Interstate 635) and the Central Expressway (US 75) , and is the first five @-@ level stack interchange to be built in the city .

It replaces the antiquated three @-@ level , modified cloverleaf interchange built in the 1960s that caused a severe bottleneck by narrowing US 75 down to two lanes at the junction of the two highways . The looped ramps of the cloverleaf forced motorists to slow down drastically , backing up traffic . Left @-@ hand exits contributed to the congestion . Further , its two frontage roads were not directly connected to each other , making local access difficult .

Alluding to the celebratory gesture , the " High Five " name refers to the five flyover ramps handling the left @-@ turn movements that tower over the landscape . The interchange is as high as a 12 @-@ story building , and includes 43 bridges spread across five levels (the " High Five ") , 710 support tiers , and 60 miles of additional highway . The highest ramps are 120 feet (37 m) above ground . The lanes of US 75 , which are on the bottom level , are 20 feet (6 m) below ground level , giving the structure a total height of 140 feet from bottom to top As part of the project , I @-@ 635 was widened to include four dedicated high @-@ occupancy vehicle lanes (HOV lanes) that are barrier @-@ separated and reversible .

The roads on the five levels are :

Level I : US 75 , an eight lane highway , four lanes going each way

Level II : The junction of the two six @-@ lane frontage roads , each having three through lanes in each direction , left @-@ turn lanes and turnarounds , and easy access to US 75 and I @-@ 635

Level III : I @-@ 635 , ten regular lanes , five going each way , and four HOV lanes (two going each way) separated by barriers

Level IV and V : Direct connection ramps (two levels) , eliminating the left exits of the modified cloverleaf

The interchange , with its decorative etchings on precast concrete elements , along with the visually appealing coloration specified by the Texas Department of Transportation (TxDOT) , can be regarded as an enormous work of public art . The High Five also incorporates a hiking and bike trail , named the Cottonwood Trail , which runs under all levels of the interchange . The section of the trail passing beneath the interchange was constructed as part of the High Five project by TxDOT .

The interchange is considered by Popular Mechanics as one of " The World 's 18 Strangest Roadways " , calling it a " labyrinth of lanes " and a " five @-@ level marvel of engineering " because of its height , the number of its bridges and other unusual design and construction features .

= = History = =

The High Five Interchange project was planned as a replacement for the existing , antiquated

interchange that accommodated 500 @,@ 000 vehicles daily and was located in one of the most intensely developed commercial zones in Dallas . It was a collaborative project between the TxDOT , affected motorists and property owners , and the primary contractor , Zachry Construction . An essential consideration was to complete the project with as little disruption to the traffic flow as possible .

Reasons for upgrading the interchange , in addition to the need to increase traffic flow and reduce congestion , were to improve air quality , safety , and local access .

Zachry Construction Corporation submitted the lowest bid and was awarded the $ 261 million contract by TxDOT , the largest ever by that agency . The construction contract for the High Five Interchange was unique in that it contained elements not found in other construction project contracts . For example , it specified the concrete maturity method to be used to ensure the concrete 's strength (the first time TxDOT had ever done so) , and contained an early completion bonus , a sliding scale of up to $ 11 million if the company completed the contract within four years . Also built into the construction contract was a provision that Zachry was charged for " lane rentals " by TxDOT for time they closed down traffic lanes ? fees based on hourly assessments and the time of day the lane was closed . The fees ranged from $ 50 to a high of $ 110 @,@ 000 for rush hours . In order not to interfere with traffic flow during construction , the new interchange was designed largely as elevated flyover ramps and viaducts so they could be built high over the existing junction lanes ; once traffic was transferred to the new structures the old lanes could simply be closed off and removed . Little of the original interchange remained when the project was finished .

To save time and money , innovative construction methods were employed : The original plans called for the segments of the long ramps and spans (used to direct @-@ connect roads) to be made of steel , but because building with steel would interfere with heavy traffic flow during construction , cast @-@ in @-@ place segmental concrete was substituted in the plans . However , Zachry decided to use precast concrete segmental bridges , rather than casting the bridge elements in place , and used a unique machine , designed and constructed by Deal S.R.L. of Italy and costing about $ 1 million , to move the pieces into place .

During the construction , 2 @.@ 2 million cubic yards of earthwork was used , 350 @,@ 000 cubic yards of concrete was mixed on site , and 300 @,@ 000 square feet of retaining walls were built . Additionally , 40 @,@ 000 feet of drilled shafts and 75 @,@ 000 linear feet of drainage pipe were completed . In addition to the construction of 43 permanent bridges , six temporary bridges were built , resulting in 2 @.@ 3 million square feet of bridge deck .

The project was designed by the HNTB Corporation who provided professional engineering consultation throughout the construction , which had begun in 2002 and was completed in December 2005 , more than 13 months sooner than planned .

= = Awards = =

In 2006 , the American Public Works Association named the High Five " Public Works Project of the Year " for its massive size , its innovative design , the complexity and rapidity of its construction and the need it fulfilled for the community . TxDOT as the managing agency , Zachry Construction Corporation as the primary contractor , and HNTB Corporation as the primary consultant received the award in recognition of their cooperative alliance in completing the project .