CDP DEVELOPMENTS

Dallas/Fort Worth International Airport
Capital Development Program
September 2003

SkyLink & Terminal D Guideways Joined with Golden Spike Event

A crowd of 200 people watched the 5-foot by 12-foot metal grate soar 20 feet over head. Then the Austin Commercial crane lowered into place the section of walkway draped in red, white and blue bunting.

Members of the Hensel Phelps team used 12 gold-colored bolts to secure the walkway. The hot Texas sun didn't melt the crowd's enthusiasm as they burst into applause while trumpeters played.

After three years, the CDP achieved a major milestone by joining the SkyLink Guideway with the International Terminal D during a ceremony July 17.

The "golden spike" ceremony, reminiscent of turn-of-the-century celebrations held when the final spike of a railroad line was completed, took place on the SkyLink Guideway – some 50 feet in the air.

"The times have changed, and so have trains and tracks, but today's historic event is a major milestone in the history of DFW Airport that we are proud to share and celebrate with you," said DFW Airport CEO Jeff Fegan during the ceremony.

A similar event was held 127 years earlier when the cities of Fort Worth and Dallas were linked for the first time by rail. At 11:23 a.m. July 19, 1876 Texas & Pacific Engine No. 20 arrived in FW joining the cities. But it didn't just happen overnight.

"A lot of work went into that historic day," said Fort Worth Mayor and DFW Board Member Mike Moncrief, during his speech. "When time was running short and the Texas Legislature was threatening to end funding for the rail line the citizens of North Texas rallied. Farmers, businessmen, day laborers, the well-to-do and the common man, joined forces literally working on the railroad all the live long day, to complete the project.

"That symbol of cooperation was similar to today's historic event," Moncrief said.

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In This Issue

Do You Know...

KJM & Associates is a program and construction management firm specializing in the management and control of project time, cost and quality. Since 1986, KJM has been providing services throughout the United States. The firm's corporate office is in Bellevue, Wash., with nine branch offices located in Phoenix; Englewood, Colo.; Concord, Irvine, and San Diego, Calif.; New York; Portland, Ore.; Dallas, and Spokane, Wash.

KJM's mission is to be a leading, profitable, full-service program and construction management company by providing quality services, upholding standards of honesty and integrity with their clients, and providing an environment that will attract and retain outstanding employees.

KJM is providing on-call estimating and scheduling services for the Capital Development Program and is contracted directly through the Airport Board. Its services on the project include monthly project reporting, conceptual estimating, bid opening estimates, time impact analyses, value analyses, change order estimating and project close-out.

Information provided by KJM & Associates

SkyLink Team Reaches Milestone, Gains Accolades from Officials

Over the last 30 months the SkyLink Guideway Construction Team has accomplished a Herculean task in successfully completing their mission. Five miles of elevated, dual guideway structure was constructed on time and in budget. All guideway decks (outside of Terminal D) were turned over to Bombardier Transportation Inc. for systems installation one month ahead of schedule. To accomplish this daunting task, over 25,000 individual gate closures were required at DFW's active terminals to allow the construction crews to access the work area at night. This victory required the dedication, creativity, and hard work of hundreds of people. A very special thanks to the SkyLink Guideway Construction Team who provided their talents to make this a successful project.

Another key in the SkyLink Team's current success is the outstanding group of individuals who tackle the complex financial analyses and tracking needed to finalize Gross Maximum Price negotiations and stay in tune with where our budgets are at any given time. Thanks to the following staff: Monica Mayben, Dale Walker, Temira Freeney and Julie Olsen.

Construction team members include:

JW Bostedt	Don Pool
Chuck Monninger	Ted Pritekel
Jerry Carmicle (retired)	Tommy Tietjen
Hershel Pearson	Paul O'Donnell
Tina Martin	Charlie Haas
Kenneth Jezisek	Rick Jordan
Johnny Graves	Corey Coley
Mark Flewelling	Alisha Schmitz
Scott Marble	Trey Pounds
Perfecto Solis	Scott Kutchins
Dwain Brown	Joe Dillard
Bob Pratt	Ray Lotten
Steve Hangley	Tommy McDonald
Robert Pratt	David Simmons
Ron Sheahan	Tami Spicer
Randie Frisinger	Larry Brandenburg
Bobby Rodriquez	David Nicholas
Ken Corey	Jerry Fleming
Roger Begham	Jim Johnson
John Dewar	Don Bouse
Scott Parma	Michael Luersen
Paul Kshetrapal	

Charles Terry

Perfecto Solis, Charles Terry, Andy Bell, Jack Norton

Terry Honored

Charles Terry, with Terry + Moore Inc., was recognized July 18, 2003 for his roll in the design of the SkyLink guideway. He was instrumental in the early stages of the program and visited with staff at a post-Golden Spike ceremony reception. He was presented with a photograph of the completed guideway. Jack Norton and Perfecto Solis made comments about Mr. Terry and their appreciation for his years of service to DFW and North Texas. CDP staff also celebrated the guideway completion with cake and punch.

Darla Moore, Dianna Hume

Golden Spike
continued from page 1

"The cities of Fort Worth, Dallas and surrounding communities have rallied around the growth of DFW International Airport. Literally hundreds of companies came together to make this project happen."

And while SkyLink's 4.81-mile stretch of track isn't as long as the rail line between Fort Worth and Dallas, the guideway has enough single track to stretch from Fort Worth's Sundance Square to the Fort Worth Stockyards or from DART's Mockingbird station to downtown Plano.

The SkyLink guideway is supported by 376 concrete columns, and the entire project used 132,097 cubic yards of concrete. The heated guideway will allow continuous operation during ice or snow.

During the ceremony, executives and workers representing SkyLink and International Terminal D teams carried flags and banners and approached the site from opposite directions. A ceremonial "grand opening" ribbon was cut.

Team leaders Andy Bell and Mark Skjervem led a ceremonial handshake along with Perfecto Solis, Scott Kutchins, J.W. Bostedt, Joe Dillard, Joe Gonzales and Tom Skinner. Project workers from the two teams walked past each other in single file over the newly joined section offering hand shakes and congratulations.

"This was a proud moment for the SkyLink team," said Bell, CDP managing executive. "We have the best people working on this project. I can't wait for North Texans and our many national and international visitors

to see and ride this train."

SkyLink, scheduled to open first quarter 2005, will unite DFW's existing Terminals A, B, C, E, the new International Terminal D, and future Terminal F. SkyLink will also enable DFW to meet its goal of a 30-minute or less passenger connection time.

"This is great news for the 65 percent of our 53 million-plus passengers who connect through DFW Airport every year," said Jeff Fegan, DFW CEO. "It is also good news for our local travelers, who will experience easier, quicker connections between terminals and their parking spot when coming home."

The bi-directional guideway traverses the airside of the terminals. When operational, DFW's SkyLink will be the longest airport people mover of its kind, and the SkyLink fleet of 114 will be the largest airport people mover fleet.

Do You Know...

Scott Kutchins

After working on DART's Light Rail System, Scott Kutchins shifted gears to DFW as a facilities project manager for Lea + Elliott on the new SkyLink automated people mover system.

"My family has a strong aviation background, and I felt that my transit experience could benefit working on this project," Kutchins said. "Perfecto Solis and his team were generous enough to give me a chance and the rest is history."

Kutchins was drawn to the project by its magnitude and public visibility.

"The general public doesn't get to see many projects until they are completed, but anyone who flies out of DFW sees the progress and wants to know what is going on," he said. "It is really rewarding when people that you may have just met at a party or on an airplane want to know more about the project from you. We are all marketers of our work and that is something that I enjoy a lot. The size of the project and being able to see what has been done in such a short amount of time is truly amazing."

Each morning, Kutchins eagerly arrives at work, curious about the overnight progress on SkyLink.

Kutchins received a B.S. in civil engineering from Texas A&M in 1991. During and immediately after college he worked for H.B. Zachry Co. Kutchins, his wife Nicole and Tahoe, the black lab, live in Plano.

Farewell...

Joe Dillard

Joe Dillard, Airport Development Department's project manager, has left for Friendship West Baptist Church where he will be program and facilities manager. He will oversee a 60-acre development near Interstates 35 and 20 in Dallas. The four-phase development will consist of a worship center, family life center, African American church museum, school, mixed-use office/retail complex and other on-site features.

While with CDP he was responsible for planning, programming and implementing the development of airport facilities projects usually above $3 million in cost, to support the airport's strategic growth and business plan. He manages the Terminal D APM, Terminal D airside equipment, Terminal D baggage handling systems and Terminal D skybridges and pedestrian bridges. He was also the project liaison for coordination of APM team system requirements with the Terminal D design team.

Dillard received his bachelors of architecture from Prairie View A&M University and participated in graduate studies at the University of Texas at Arlington City & Regional Planning Department.

Joe is married to Tanya and they have a daughter Indigo and son Joey. He is a board member for the City of DeSoto's – Planning & Zoning Committee. Joe coaches his daughter's basketball team and is chairman of the Wildwood Home Owner's Association. Joe volunteers in program management and design consulting for the Greater Ideal BC Development Project where the administrative wing will be named in memory of father, Joe Dillard, Jr.

DFW Completes Largest Airport Bond Sale in Country's History

The world's third-busiest airport completed the largest single day bond sale of any airport in U.S. history April 30, 2003, selling $1.46 billion in bonds. At 10:30 a.m. EDT, DFW International Airport entered the bond market to sell $1.46 billion in bond debt instruments to complete the Airport's $2.6 billion Capital Development Program (CDP). Just three hours later, the bond sale was oversubscribed by two and one-half times the issuance amount. As a result, DFW successfully concluded its sale and completed its $1.46 billion debt issuance.

The new International Terminal D and SkyLink, the new automated people mover system, highlight DFW's Capital Development Program. Both projects are on budget and on schedule to open in early 2005.

"This was a great day for DFW, the North Texas economy and our current and future passengers," said Jeff Fegan, DFW CEO. "The new terminal and train are not only critical to the future growth and success of DFW, but for our entire region. We were quite pleased by the strong response from the investment community. They recognized the strength of DFW in the global marketplace and its continued growth with these two vital projects."

DFW originally estimated an interest rate of 6.50 percent when the CDP was established approximately 2 ½ years ago. More recently, DFW estimated an interest rate of 5.75 percent, which would have netted the Airport's combined interest cost savings of almost $480 million over the next 20 years. DFW decided to consolidate the two series bond sale into one large sale designed to capitalize on the favorable interest rate environment and the insurance commitments by three separate insurance companies which combined to insure the full amount of the bonds.

The result: DFW achieved a true interest cost of 5.52 percent, substantially under the Airport's latest estimate, which netted the Airport even more interest rate savings than previously projected over the life of the bonds. The Airport's warm reception from institutional investors was not surprising to DFW executives, who continued to move forward with the bond sale despite the war in Iraq and issues at American Airlines.

"Investors are looking at the long-term future of DFW, not short-term events," said Kevin Cox, DFW senior executive vice president. "DFW is one of the top travel markets in the world. One out of every 10 passengers in the U.S. connects through our Airport. The basic economic fundamentals that built our Airport nearly 30 years ago remain true today: our extremely competitive cost structure and some of the lowest fees for airlines in the industry for a facility of our size will keep DFW strong for decades."

DFW Board Chairman Max Wells said "It's clear the bond market understood the underlying strengths of DFW."

Grand Hyatt Topping Out Finished

Austin Commercial completed the topping out of the Grand Hyatt Hotel with a rooftop concrete pour July 25,2003. The pour consisted of a 10-yard concrete pour in a 60- x 7-foot section and 9,000 yards were used on the entire hotel.

"This hotel will be unlike any airport hotel you've ever visited," said Clay Paslay, DFW executive vice president of airport development. The DFW Grand Hyatt Hotel is the only Grand Hyatt located at an airport and will be one of the most upscale hotels at any airport in the world.

Workers Praised for Safe Record, 1 Wins Pickup, 9 Nab Power Tools

Early morning traffic slowly crept along, keeping Charles Penny from his moment in the spotlight. When he was picked as the winner of a new truck out of 4,250 eligible CDP workers, Penny was still trying to get to the Safety Incentive Breakfast. But he still won the truck.

A few moments after the drawing was held, Penny ambled under the tent next to the Austin Commercial lunchroom. He was immediately congratulated by event coordinators Yolanda Black and Judy Pratt. Brenda Jones, PCIP Insurance Manager and Terry Cassidy, DFW assistant vice president, were there to congratulate Penny and nine runners-up.

DFW Airport honored construction team members who had worked a year without a recordable accident at the Capital Development Program's (CDP) annual Safety Incentive Breakfast July 23, 2003.

CDP construction workers worked more than 12 million man-hours as of June 3. Since the project began in 2000, only 272 recorded accident cases and 29 lost-time cases have occurred. DFW Airport's CDP has a 4.6 percent recordable incident rate, well below the national average of 7.6 percent. A recordable incident rate is the annual number of work-related injuries and/or illness per 100 full-time workers. The safety record was logged during a year that saw the completion of the SkyLink automated people mover guideway, 45 percent completion of International Terminal D, completion of the Runway 18L extension and the beginning of Runway 18R extension, 10,000 linear feet of stormdrain tunneling and the opening of the North and South-bound Service Roads. That safety record also includes construction of a new maintenance storage facility for SkyLink that will be used to warehouse parts, test and maintain train cars and house train system control rooms.

During the safety incentive breakfast Penny, an employee at Robinson Industries, won a drawing for a new 2003 Ford F-150 pickup truck. Penny was recognized as one of the workers who has worked accident free for the last year. Robinson Industries is a subcontractor to Austin Commercial, the prime contractor for the International Terminal D project.

Penny, 62, is a DeSoto resident and has worked on the Central Utilities Plant and service road lighting projects at DFW for about a year. "I've been in the construction industry for most of my life," Penny said. "I was surprised to win."

Nine workers were given a five-piece cordless tool kit. They were Antonio Az-Chay, Dynamic Systems; Jaime Hernandez, Mills Electric; Marco Luna, McCarthy Building Co.; Ramiro Palacio, Austin Commercial Inc.; Juan Rodarte, Integrated Interiors; Hector Sandoval, Austin Commercial Inc.; William Smith, System Electric Co. Inc.; Angel Vasquez, McCarthy Building Co.; and Alejandro Zepeda, Facility Construction Services.

Annual Safety Incentive Event

Terry Cassidy, Brenda Jones, Charles Penny

Charles Penny checks out the engine on his new truck

Ramiro Palacio

Safety Incentive Breakfast

SkyLink Power Distribution System

SkyLink Station - Platform level interior

SkyLink Station - Platform level boarding doors

SkyLink Station - Platform level

SkyLink Station - Concourse level

People often ask what makes the SkyLink train system work. The new system is electrically driven and separate from the electrical resources used by DFW.

The amount of power available at the existing stations was inadequate to supply enough energy to satisfy the demand of the new facilities of the SkyLink system. The biggest demand comes from the HVAC and other mechanical equipment (elevators, escalators) at the SkyLink stations, the hydronic guideway heating system which will de-ice the running surfaces in icy conditions, and the traction power for the trains also demands a significant amount of electrical resources.

The SkyLink team began work on the primary distribution system design in mid 1999 with TXU (now Oncor). The SkyLink Power Distribution System (PDS) is made of two main parts, primary and secondary. Design of the secondary PDS was conducted simultaneously to the primary PDS. Coordination with Oncor on the design began in August 2000. Halliburton KBR began work on the secondary design in May 2000. BTTS began power system design in November 2000.

The primary PDS, is supplied by DFW and installed by Oncor for use by Bombardier, the SkyLink train supplier. The primary PDS consists of transformers, switchgears and conductors that carry 25kV, 3 phase, AC power to the primary side of the secondary transformers. The last station in Terminal D will be energized in October 2003, completing the primary distribution.

The secondary PDS is supplied by Bombardier and Hensel Phelps Construction Co. and converts primary power to voltages and current that can be used by the SkyLink system. The system powers the devices and equipment used by passengers and employees. It impacts all patrons of the airport using the SkyLink system. The power system depends on efficient energy distribution to operate trains between the terminals. The secondary PDS system will be complete in mid 2004.

The SkyLink PDS is entirely self-contained. The guideway also serves as the distribution system for the 25kV primary power. Entirely new PDS substations were constructed at the stations to support the energy use of the system; therefore the need to retrofit the existing terminals was unnecessary, from a power standpoint.

SkyLink uses two types of power. The traction power supplied to the vehicles is 750 volts of DC power. Nearly all of the other power used by SkyLink is AC. AC power is supplied to the boilers for the hydronic heating system, and for housekeeping power at the stations for HVAC, door operators, elevators, escalators, lighting and other equipment.

There are 13 PDS substations located in the SkyLink system. Fourteen megawatts of power will be necessary to power the SkyLink System at peak demand in Phase 2. This includes train operations and the operation of the hydronic heating system.

Lea+Elliott is coordinating with Bombardier, Halliburton KBR, Hensel Phelps, Austin Commercial and Oncor on all interface issues for the SkyLink trains and Bombardier equipment.

Terminal C South SkyLink Station

SkyLink Guideway

Mitten, Paperclip Roadways Run Through DFW Construction Site

Roadway improvements are required to meet project objectives for the overall Capital Development Program. The project includes 12,230 LF of elevated roadway and 6,950 LF of on-grade roadway, 3,760 LF of retaining walls up to 30 feet high, four temporary diversion roads, and security and blast protection improvements for FAA TRACON facility.

Thirteen roadway construction/traffic control phases are under way to facilitate Terminal D and SkyLink construction and are coordinated with DFW Traffic Control, DPS, OPS, Air Trans, FAA TRACON and airlines operations. Coordination of roughly 12 detour roads/phases to facilitate traffic flows that average 60,000 vehicles per day is required.

Unusual features of the project are the Mitten and Paperclip roadways. The Mitten is a large bridge structure which runs east/west across southbound International Parkway and southbound Service Roads. It provides four accesses into Terminal D – two into the parking garage and one each into arrivals and departures level roadways. Paperclip is a series of ramps and bridges. Starting from southbound International Parkway at C-D Cross Under, Paperclip runs south to the southwest corner of FAA TRACON, then curves 180 degrees around the south end of the FAA TRACON and ties into a new northbound ramp and bridge on north International Parkway and climbing to 60 feet above grade at the northeast corner of FAA TRACON where it turns 90 degrees to the west and ties into the east end of the Mitten bridge structure.

The first of three projects under construction as part of the Terminal D Roadways project is the Terminal D Access Roads. This project provides passenger access to the new Terminal D from the central International Parkway corridor and is divided into two components. The first component is a two-level curbside roadway that enables passengers exiting from International Parkway onto the Terminal D roadway to access the parking garage directly and to enter arrivals or departures curbsides. The second component is new access from the service roads to the service level for deliveries to Terminal D and the hotel and will also provide access for service vehicles and federal vehicles servicing the Federal Inspections Services (FIS) facility.

Paperclip encompasses the second project in the Terminal D – International Parkway Modifications. This project provides passenger access to the new Terminal D from International Parkway and consists of a connection roadway system from northbound and southbound International Parkway to the Terminal D Roadway Access. Paperclip includes construction of 520 feet of three-lane elevated roadway, 390 feet of two-lane elevated roadway, and 350 feet of two-lane on-grade roadway. Improvements to the FAA TRACON facility are also encompassed in this project including an 8-foot high blast wall to the roadway along the east side of the three FAA TRACON structures, a 5.5-foot high concrete screen wall along the west, south and east sides of FAA TRACON property limits, blast film for all TRACON facility windows and doors with glass, replacement of existing third-level TRACON facility window glazing with shatter-resistant glazing, a new guard house and site improvements on the south end of TRACON. A closed circuit TV camera system, which provides 360-degree coverage of the International Parkway roadway around the FAA TRACON facility, will also be installed.

The final project is the Terminal D-Elevated Service Roads that will provide for the elevating and realignment of the northbound and southbound public use service roads between Terminals C and D. AOA ramp-level connectivity between Terminal D and the East Terminal Complex and service and delivery vehicle access to the Terminal D south AOA ramp will be improved. The project includes construction of 1,780 feet of two-lane elevated roadway, 190 feet of two-lane elevated roadway, 785 feet of two-lane on-grade roadway, and 6,740 feet of one-lane on-grade roadway. 80,000 square feet of retaining wall and six new bridges will be utilized in the project.

Terminal D - North side ticketing hall and arrivals roadway

Terminal D Garage

Terminal D Roadways - arrivals and departure levels

Grand Hyatt Hotel

DFW Receives Design Award

DFW Airport is one of nine projects in North Central Texas that were honored with Leadership Awards in the first Celebrating Leadership in Development Excellence (CLIDE) Awards Program June 6, 2003. Leadership Awards were given to projects that exemplify one or more of the "10 Principles of Development Excellence" and serve as examples of quality development practices in North Central Texas.

DFW's commitment to achieving development excellence throughout the Airport has resulted in an assortment of projects that exemplify the principles of development excellence that included environmental stewardship, quality places, and resource efficiency. NTCOG honored five projects at DFW. Three of the projects included in the award are part of the $2.6 billion Capital Development Program. The new International Terminal D, construction and redevelopment of the DFW Airport Central Utilities Plant; and the quality place and pedestrian-friendly plan of the International Terminal D Public Arts program.

"We appreciate the recognition in these critical areas for our Airport and community," said Jeff Fegan, CEO of DFW. "We want to be industry leaders in all aspects of environmental stewardship and construction of our new terminal, and we are honored to receive NTCOG's awards for these items. Literally, you can see this recognition every day, at work, at DFW."

CDP Celebrates 10,000th Safety Training Graduate With Balloons

Dennis Walker was named the 10,000th graduate from DFW International Airport's innovative Safety Training Program in a shower of balloons and confetti.

Walker, president of Dallas-based WBC Holdings, was surprised by the announcement, but handled the crush of media questions and camera lights like a pro. Walker told the assembled group and media he was glad to be the 10,000th graduate and said the training he and his fellow workers received is responsible for the superb safety record at the Airport.

Walker and a dozen trainees were recognized June 17 in the CEF Safety Lab at DFW International Airport.

"The Safety Training Program was created to ensure that all workers on the CDP have access to the most up-to-date, highest-quality safety training, regardless of whether they are employed by a major corporation, small company or a minority/ woman-owned business," said Clay Paslay, DFW Executive Vice President Airport Development. "This week we graduated our 10,000th student. This is a major milestone, and our safety record is indicative of the program's success."

Classes are taught in English and Spanish. Forty-six percent of program graduates take the class in Spanish. As of June 17, 4,644 students participated in the Spanish-language safety classes. It is estimated that at least 4 percent of those taking the English classes also speak Spanish. All together 294 classes have been offered in Spanish.

Ninety percent of the program's instructional staff is bilingual. CEF has long recognized the need for craft training to the North Texas Spanish-speaking population. CEF offers craft apprenticeship classes in Spanish or with a bilingual assistant in many of the classes.

Field salaried and hourly CDP workers are required to participate in the Capital Development Program's safety training program held at the DFW Education Center. The education foundation is affiliated with both North Lake College and Texas A&M University. Classes are conducted in English and Spanish using both traditional classroom methods and hands-on training.

Upon completion of the five-day training program, graduates receive certification for OSHA 10-hour training, CPR and first aid. Additionally, English speakers are required to learn basic Spanish construction terminology, and Spanish speakers are required to learn basic English construction terminology.

In 2002, the Hispanic Contractors Association of DFW (HCA) recognized the safety program for its impact on improving safety standards and the ripple effect the program has created across North Texas. HCA Executive Director Javier Arias attended the graduation in a show of support for the program.

The incident rate on the CDP is one of the lowest in the nation and nine times better than the national average. The DFW CDP incident average is 0.5 percent, while the national average is 3.5 percent.

In a congratulatory letter to DFW Airport and graduates of the safety training program, OSHA Deputy Regional Administrator Joe Reina said, "DFW's efforts to ensure that safety is a priority have been exceptional."

Balloons drop on Dennis Walker of Dallas-based WBC Holdings during a celebration of the 10,000th graduate from the CDP Safety Training. (Photo: Peter J. Bernard)

DFW Reverse Osmosis Treatment Facility will be World's Largest

To lower treatment process for spent aircraft deicing fluid, ease environmental concerns over SADF being released into the waste treatment system and reduce the cost via treatment vs. hauling the less concentrated solution off site for treatment and disposal, the CDP has designed and constructed a Reverse Osmosis Storm Water Treatment Facility (ROTF).

On average, DFW uses 300,000-350,000 gallons of glycol per year. During precipitation events, the storm water on the deicing pads becomes mixed with the glycol and therefore also requires treatment. DFW estimates that during an average year, approximately 16 million to 20 million gallons of spent deicing fluid contaminated storm water will be collected and disposed of.

Transporting collected storm water and spent deicing fluid averages 19 cents per gallon. This cost does not include treating collected storm water. Therefore, during an average year, DFW spends roughly $3.8 million on transportation alone for the storm water. Moving spent deicing fluid via trucks is a spillage risk. By completing the ROTF along with several other projects, the airport will reduce its cost of treatment and will ease the environmental concerns.

The deicing fluid is typically formulated from a combination of propylene glycol and water with additional additives. The waste stream contains high levels of chemical oxygen demand (COD).

Where action has been taken, chemical/ physical treatment and evaporation have been the main treatment methods. However, DFW has chosen to utilize reverse osmosis to treat the water.

Reverse osmosis uses carbon filters and microporous membranes to flush dissolved impurities using an absorption process. The membrane system provides the Airport with many benefits including high-quality purified water to meet stringent municipal sewer authority discharge limits, a concentration of propylene glycol in the concentrated waste for reuse in other applications and the elimination of hazardous treatment chemicals. It also provides the ability to treat the ever-changing waste concentration without changes to the system operation.

To understand reverse osmosis, it's good to start with normal osmosis. According to Merriam-Webster's Collegiate Dictionary, osmosis is the "movement of a solvent through a semipermeable membrane (as of a living cell) into a solution of higher solute concentration that tends to equalize the concentrations of solute on the two sides of the membrane." That's a mouthful.

To illustrate that, you need to imagine a beaker filled with water, the end of a tube has been sealed with a "semipermeable membrane" and the tube has been half-filled with a salty solution and submerged. Initially, the level of the salt solution in the tube and the water in the beaker are equal, but over time, something unexpected happens — the water in the tube actually rises. The rise is attributed to osmotic pressure. The water pressure rises as the height of the column of salty water rises, until it is equal to the osmotic pressure. At that point, osmosis will stop.

A semipermeable membrane is a membrane that will pass some atoms or molecules but not others.

In reverse osmosis, the idea is to use the membrane to act like an extremely fine filter to create potable water from salty or contaminated water. The salty water is put on one side of the membrane and pressure is applied to stop, and then reverse, the osmotic process. It takes a lot of pressure and is a fairly slow process, but it works. In the case of the DFW ROTF potable water is not created from salty water, but rather the storm water that contains deicing fluid is separated and returned to the Trinity River Authority.

This facility will be the world's largest airport ROTF, treating 210 gallons per minute of 3 percent glycol solution -- the standard for a wet deicing event.

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