

DECEMBER 2011

GEORGE R. BROWN CONVENTION CENTER

2025 MASTER PLAN



THE COMPETITION

How Does Houston Stack Up?

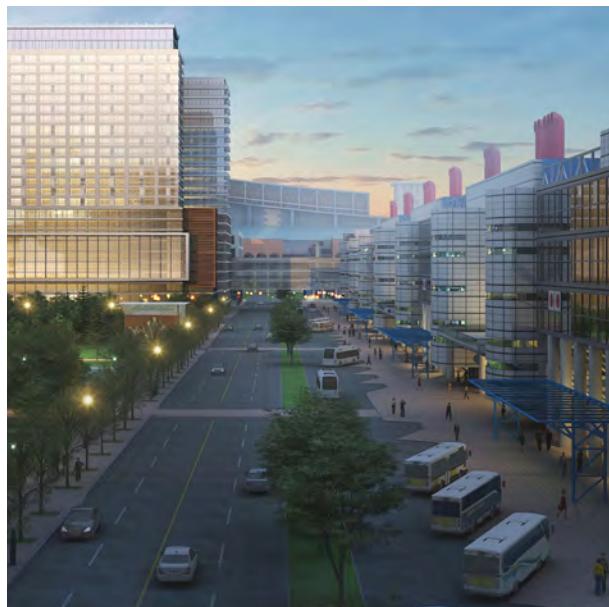
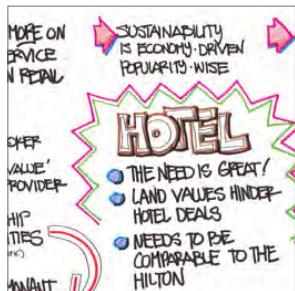
THE POSSIBILITIES

Visions of George R. Brown's Future

THE PLAN

For Moving Forward

GEORGE R. BROWN CONVENTION CENTER 2025 Master Plan



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FOR CENTRAL HOUSTON CIVIC IMPROVEMENT,
HOUSTON FIRST CORPORATION AND THE CITY OF HOUSTON

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The future development and success of the George R. Brown Convention Center cannot be fully realized without a broader commitment to the long-term success of the entire “convention district.”

EXECUTIVE SUMMARY **THE VISION...**

...for the future of the George R. Brown Convention Center (GRBCC) extends beyond the walls of the Convention Center and includes the businesses, residents, public agencies and other stakeholders of Houston's downtown east end. The future development and success of the Convention Center cannot be fully realized without a broader commitment to the long-term success of the entire “convention district.”

The 2025 Plan illustrates a best-case scenario for the public/private development of the convention district, improvements to existing infrastructure

including Avenida de las Americas (ADLA) and, eventually, the future expansion of the GRBCC.

Houston's Top Three Priorities

The GRBCC serves a wide variety of users throughout its annual events calendar including conventions, trade and consumer shows, and a variety of local public events. Professional organizations representing convention planners and meeting planners select locations based on the total package available within a community; cities compete on a “destination-basis” rather than a “facility-basis.”

Industry surveys have consistently identified the same top five factors in selecting a convention destination:

- Convention Facilities
- Hotel Package
- Attractions and Activities
- Transportation
- Safety & Security

In developing the 2025 Plan, analysis of the GRBCC's current package as well as that of its competitor cities identified three key areas in need of improvement for Houston to be competitive in today's market. In priority order, these include:

- Hotel Package
- Attractions and Activities
- Convention Facilities

Industry advisors and market analysis by consultants agree that Houston's convention district lacks the number of hotel rooms and hotel mix needed to compete with other cities. Exhibitors and industry experts in hospitality, meeting planning and tourism have repeatedly expressed concern about the lack of attractions (restaurants, bars/clubs, shopping, entertainment) within convenient walking distance to the GRBCC.

Hotels: The #1 Priority

Downtown Houston and the GRBCC lack what are considered positive draws for its competitor cities including attached and proximate hotel room supply.

The City of Houston and the GRBCC need 2,000 new hotel rooms in the convention district to remain competitive with the lodging capacity of other convention destination cities. There is an immediate need for at least 1,000 new rooms adjacent to or, preferably, attached to the Convention Center.

The 2025 Plan identifies proposed locations for future hotels nearby, adjacent and connected to the Convention Center. The undeveloped parcel between Rusk and Walker Streets (Block 99) is considered a prime hotel location due to its adjacency to Discovery Green and potential for connectivity via pedestrian bridge to the GRBCC. Others consider Block 99 to be ideally suited for a shared use

"You're under-hoteled..."

"The need for more hotel rooms is great..."

"Focus on hotels and amenities now!"

Quotes from Industry Advisory Group Vision Session
December 2010

residential tower and boutique hotel concept due to the marketability of Discovery Green to potential downtown residents. This, in turn, would make the parcel to its north (Block 100/120) the preferred site for a large convention center hotel. In either case, development of Blocks 99 and 100/120 as hotel sites supports the near- and long-term needs of the GRBCC and the convention district.



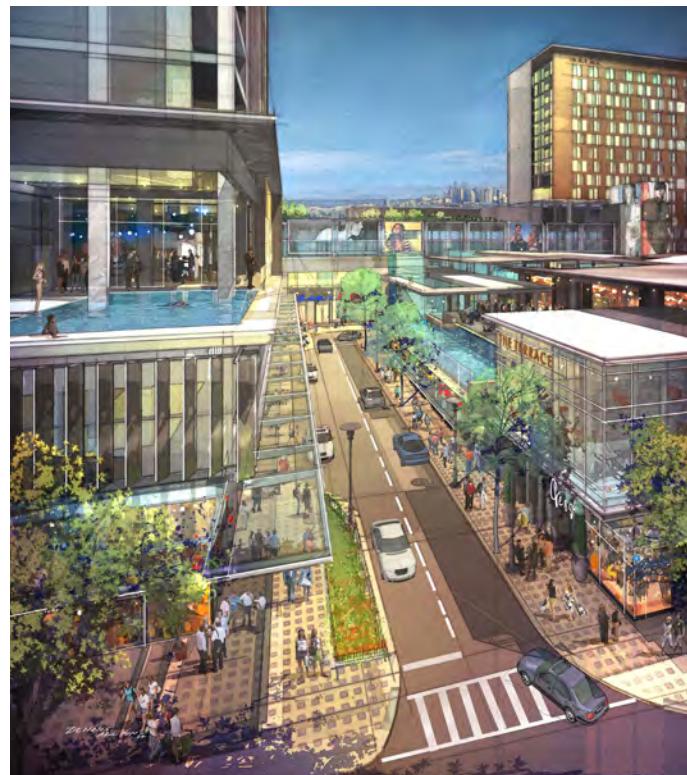
Industry Advisor Group Vision Session, December 2010



A hotel is planned for the corner of Polk Street and Chartres Avenue, one block southeast of the Convention Center. Final design and construction of this hotel is unknown at the time. To complete a 'four-corners' hotel concept desired by the GRBCC, the 2025 Plan includes a hotel on the corner of Rusk Street and Chartres Avenue, one block northeast of the Convention Center.

Destination: The Convention District

How a city is perceived by out-of-town visitors is influenced by the part of the city they experience. Many conventioneers and trade show attendees will only experience that part of Houston that exists between their hotel and the Convention Center. Currently, there are few opportunities for shopping, dining and entertainment near the GRBCC with the closest concentration of these activities located at the Houston Pavilions, 5-7 blocks away.



Examples of street-centric development



A primary consideration should be given to any and all future development in the vicinity of the GRBCC. Future hotels, residential buildings, office towers and parking garages should be designed to accommodate restaurants, bars and retail shops at the street level. This approach to the creation of a convention district should be aggressively encouraged by The City of Houston when negotiating with developers. Activating the streets with local residents, downtown workers, conventioneers and visitors attracted by the shops, restaurants and en-

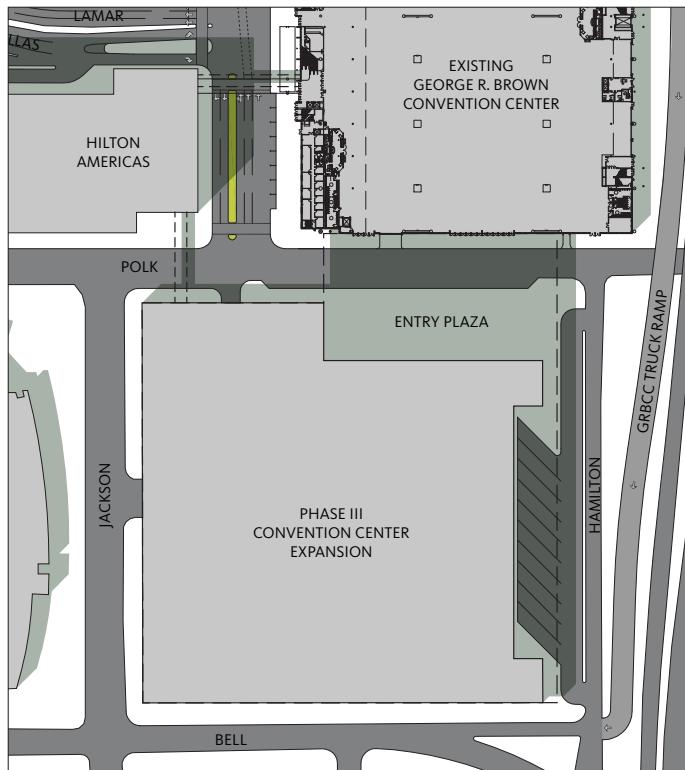
ertainment venues will create a vibrant, safe convention district that appeals to meeting planners and exhibitors.

Creating a destination that is anchored by Discovery Green will attract Houstonians and their entertainment dollars as well as provide a compelling story to convention and meeting planners for booking future events.

Convention Facilities: Phase III Expansion

Originally built in 1987 with Phase II expansion completed in 2003, the GRBCC is a well-managed, well-maintained facility. There are no plans for near term expansion of the Convention Center and there are a number of things that must happen first, including a significant increase in the convention center hotel room supply, before future expansion of the GRBCC facilities can be considered. However, now is the time to establish a general direction for future growth so that if and when the time comes to expand, the GRBCC is well-positioned to pursue a design solution that is best for both the Convention Center facility and the entire east downtown area.

After exploring a variety of options on both sides of US 59, future expansion is best accommodated on the four city blocks immediately south of the ex-



isting GRBCC. The location, wedged between the GRBCC, US 59, the Hilton Americas Garage and Toyota Center is a difficult space for other commercial uses but is ideal for the expansion of exhibition and meeting space. The proposed Phase III will be physically connected to the existing Convention Center at both the concourse and upper floor levels with no impact to east-west traffic on Polk Street.

Activating the streets with local residents, downtown workers, conventioneers and visitors attracted by shops, restaurants and entertainment venues will create a vibrant, safe convention district that appeals to meeting planners and exhibitors.

Conclusion

The lack of past development around the central business district's east end now presents itself as an incredible opportunity for the City of Houston to shape the policies and direction of an envisioned convention district.

The George R. Brown Convention Center 2025 Master Plan recognizes the need for the City of Houston to adopt a more aggressive, development-friendly strategy in the form of policy changes, private investment incentives and infrastructure improvements. Now is the time to leverage the momentum of recent projects like Discovery Green, One Park Place, HESS Tower and METRO's east-west light rail transit. Now is the time to promote the type of development that will enhance the character on the east side of downtown and support the long-term vision of the GRBCC. ■

CONTEXT: SITE

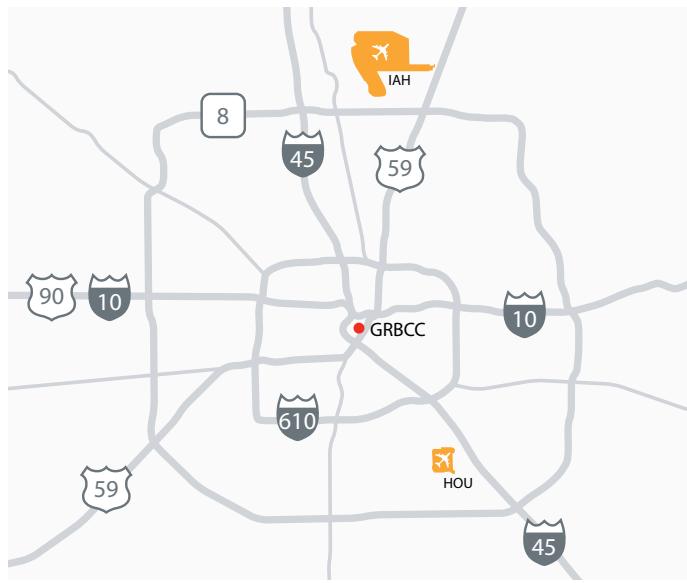
The George R. Brown Convention Center (GRBCC) opened in September 1987 on the east side of Downtown Houston. The center is owned and operated by the City of Houston and managed by Houston First Corporation.

Expansion of the Convention Center was completed in 2003, increasing its size from 1,150,000 square feet to 1,800,000 square feet. Exhibition space was increased for a total of 862,000 square feet and the addition of new meeting rooms increased the total to 101.

For over 20 years, the GRBCC has been an iconic fixture in Houston. In its first fifteen years, the Convention Center was surrounded by surface parking lots, undeveloped parcels and abandoned buildings. It has only been in the past decade that any substantive development has occurred in the surrounding area.

Regional

Access to Houston's Central Business District and the GRBCC is relatively convenient due to a well-developed system of state and federal highways. The Convention Center is located adjacent to US Highway 59 which intersects with Interstate 10 just



Regional Highway Network

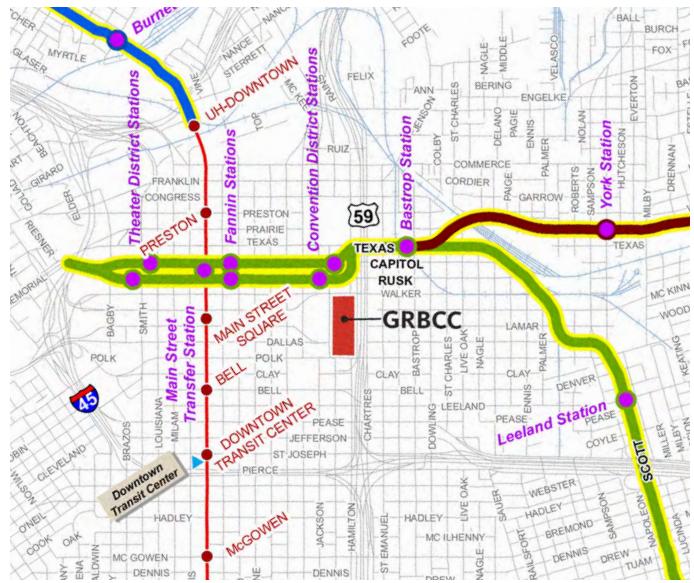
north of the center and intersects with Interstate 45 just south of the center.

The GRBCC is 22 miles from Bush Intercontinental Airport on Houston's north side and 10 miles from Hobby Airport on the south side of town.

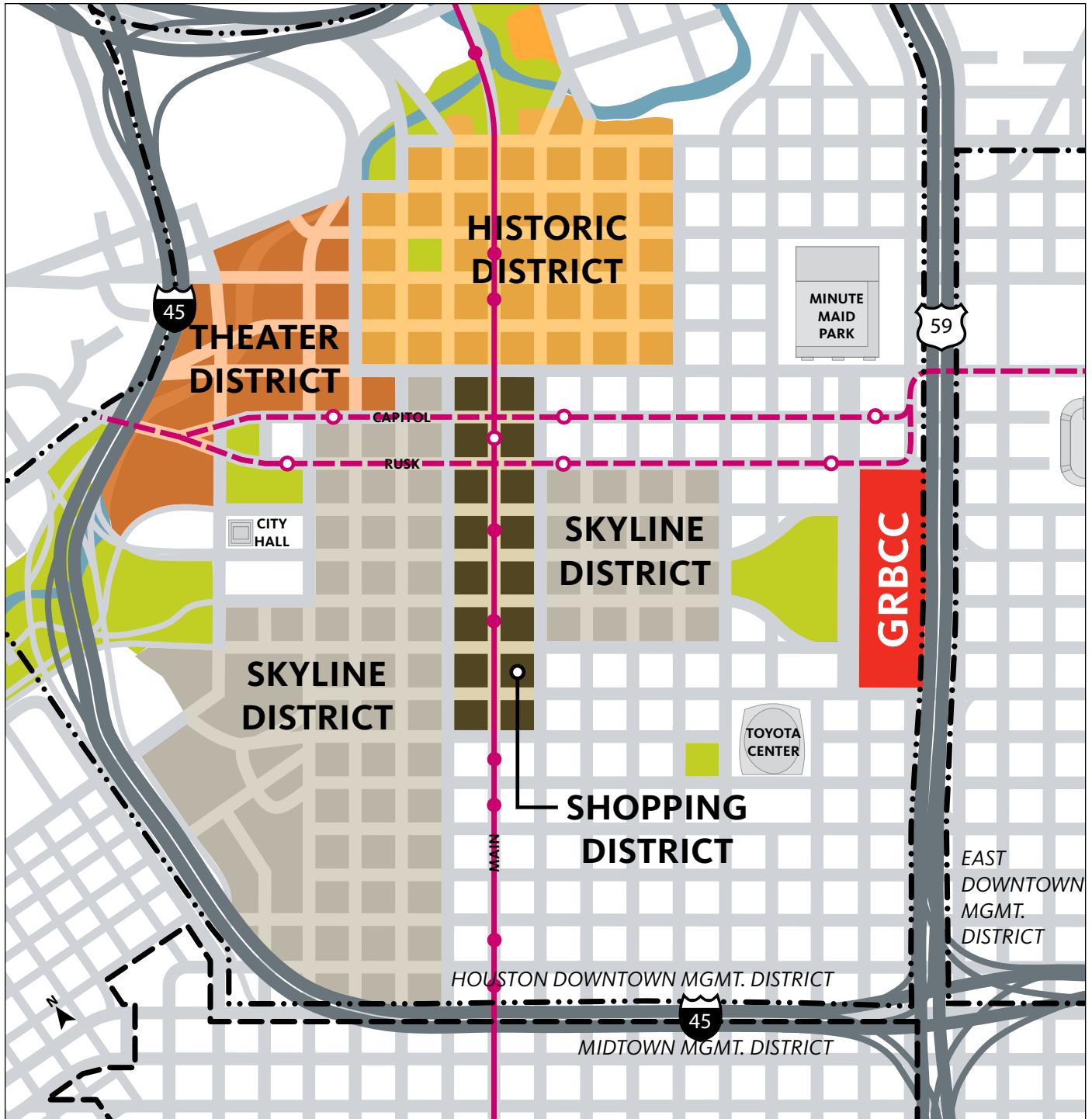
Local

Anchoring the eastern edge of the Houston Downtown Management District, the GRBCC is just north of the intersection that joins the Downtown Management District, the East Downtown Management District and the Midtown Management District.

The GRBCC is adjacent to Discovery Green (a twelve-acre urban park) and the Hilton Americas Hotel. The Convention Center is flanked by two major sports venues, Minute Maid Park (Houston Astros) to the north and Toyota Center (Houston Rockets) to the south. Groundbreaking for the new soccer stadium (Houston Dynamo) took place in 2011 and will be located east of US 59 five blocks northeast of the Convention Center. The GRBCC is located eight blocks from the LRT Main Street Square Station, and will be only one block from the Convention District Stations on the new Southeast line now under construction.

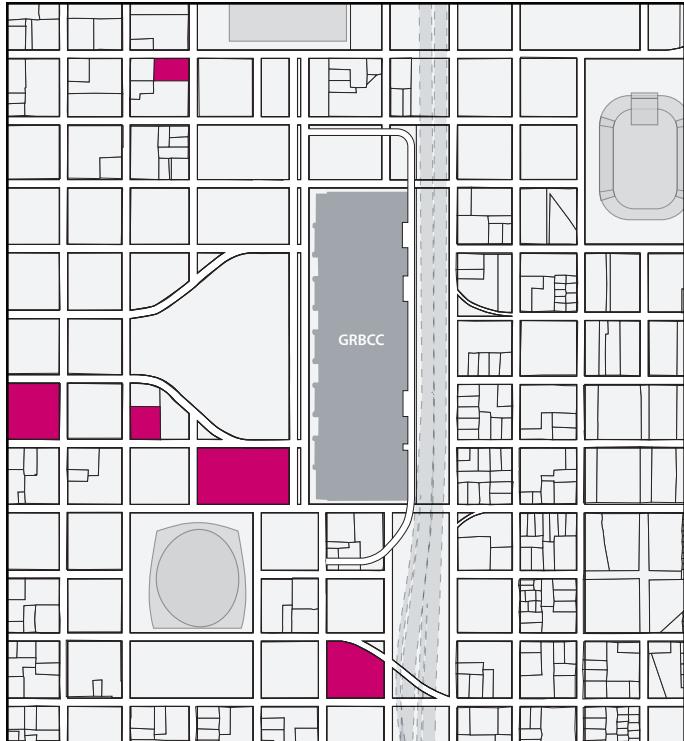


Houston METRO LRT Map

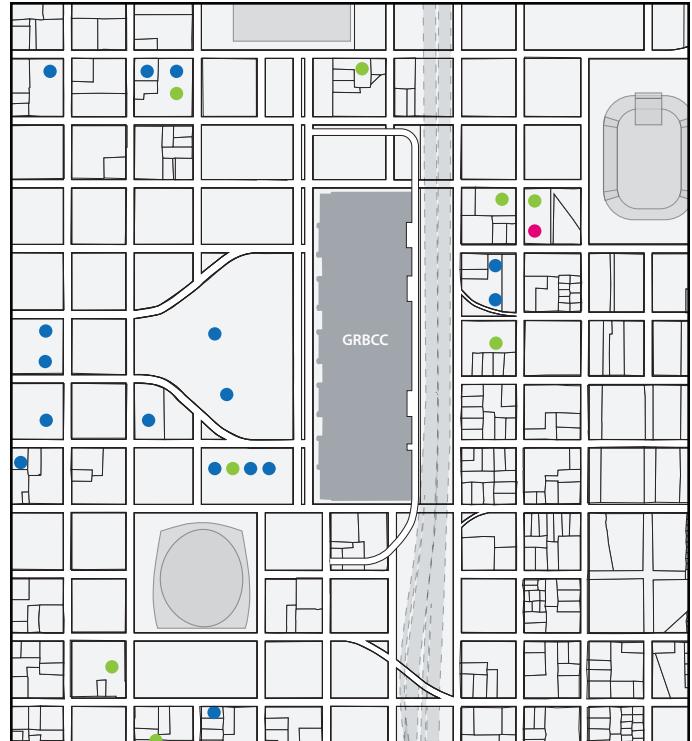


Local District Identities and Management Jurisdictions

CONTEXT: LAND USE



HOTELS



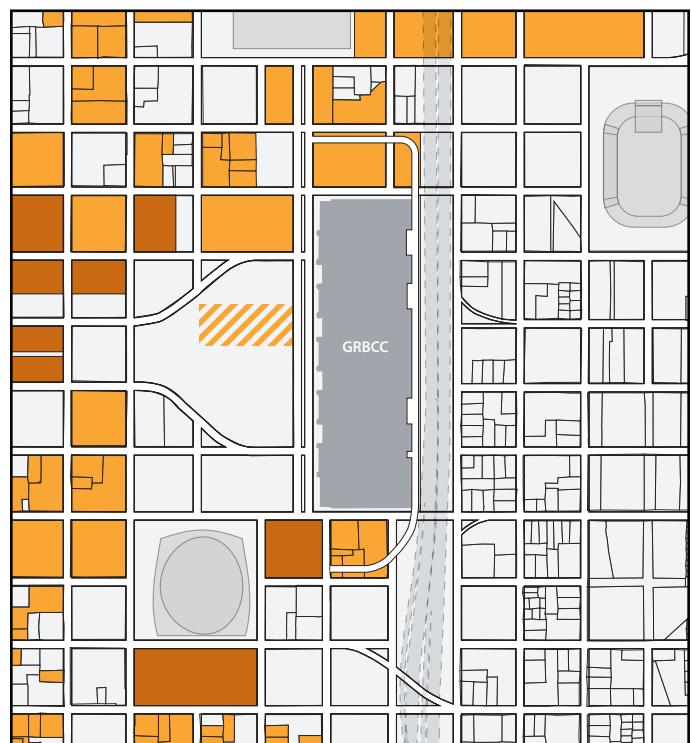
NIGHTLIFE

● Restaurant ● Bar/Club ● Music



ATTRACTI0NS

■ Park ■ Sports Arena



PARKING

■ Garage ■ Surface ■ Underground

Hotels & Attractions

The primary criticisms expressed by industry experts (hospitality; meeting planners; tourism; exhibitors) focus on the lack of sufficient hotel rooms and attractions (restaurants; bars/clubs; shopping; entertainment) within convenient walking distance to the Convention Center. There are over 2,900 rooms within a ten-minute walk of the GRBCC. Most options for nearby restaurants and bars are inside hotels like the Hilton Americas with little or no street presence.

There is no entertainment district in the immediate vicinity. The Houston Pavilions, five to seven blocks to the southwest of the GRBCC, provides the most concentrated group of shops, restaurants and entertainment venues. The Historic District, 10-13 blocks to the northwest, offers a variety of restaurants with the largest concentration occurring around Market Square. The Theater District, located just under a mile from the GRBCC on the west side of downtown, is home to nine world-class performing arts organizations and hosts a diverse range of touring shows.

East of the GRBCC, directly across US 59 is the East Downtown Management District, EaDo. While there are currently a handful of restaurants, bars and music venues that draw nighttime crowds to EaDo, this area currently lacks a cohesive identity, and therefore does not draw many out-of-town visitors. Plans for hotels and

retail development in this area have been discussed in recent years, but at this time the only major attraction with the power to draw visitors and conventioneers to this area is Dynamo Stadium (currently under construction). Although the GRBCC borders EaDo, the perceptual distance to this neighborhood is far greater because conventioneers enter and exit the Convention Center along the downtown-oriented front side of the building along Avenida de las Americas (ADLA).

Discovery Green represents the city's finest example of public open space and serves as the 'front door' to the GRBCC.

Residential

A significant increase in residents in close proximity would indirectly support the long range vision for the GRBCC. More residents equate to more amenities that, in turn, would be available to convention visitors. An increase in people living downtown would result in more pedestrians on downtown streets, 24-7, fostering a sense of urban vitality and safety for residents and visitors alike.

One Park Place, Herrin Lofts and the Lofts at the Ballpark represent the most recent residential developments in east downtown.

Public Parking

Parking near the GRBCC is designed for peak events. On most days, there is a surplus of parking, both surface and structured. The Hilton Americas Garage,

Tundra Garage and underground parking at Discovery Green are heavily used during major events at the GRBCC, Toyota Center and the Hilton Americas. The surface lots north of the GRBCC serve both the Convention Center and sporting events at Minute Maid Park. When the Houston Dynamo Stadium is completed, it is anticipated that these surface lots will supplement the parking lots east of US 59 to help accommodate parking needs.

MAIN POINTS

- Houston lacks a sufficient number of hotels within walking distance to the GRBCC.
- No entertainment district exists in the immediate vicinity of the GRBCC.
- An increase in residential development near the GRBCC would bring additional amenities and more vibrant street life.

CONTEXT: CIRCULATION



Avenida de las Americas

Vehicular

The construction of the GRBCC in 1987 and its expansion in 2003 had a major impact on east-west streets connecting the central business district to neighborhoods east of US 59. The Convention Center's footprint effectively shut down the continuous east-west traffic of Dallas, Lamar, McKinney and Walker Streets. Add to that the extra wide profile of Avenida de las Americas and the irregular configuration of the blocks that now comprise Discovery Green and one can understand the resultant disruption to the original street grid system immediately surrounding the Convention Center.

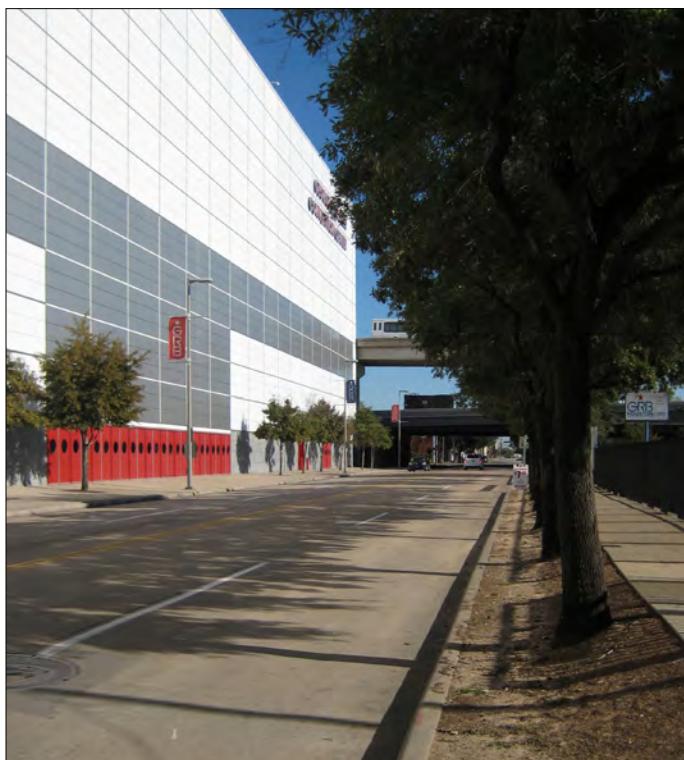
The addition of Minute Maid Park and Toyota Center, north and south of the GRBCC respectively, have placed increased importance on Texas and Polk Avenues as east-west connectors.

Less impactful to traffic flow was the closure of north-south streets, Chenevert and Hamilton. It does, unintentionally, cause Chartres Street to serve as a service lane for large tractor-trailer trucks backing into the Convention Center's loading docks.

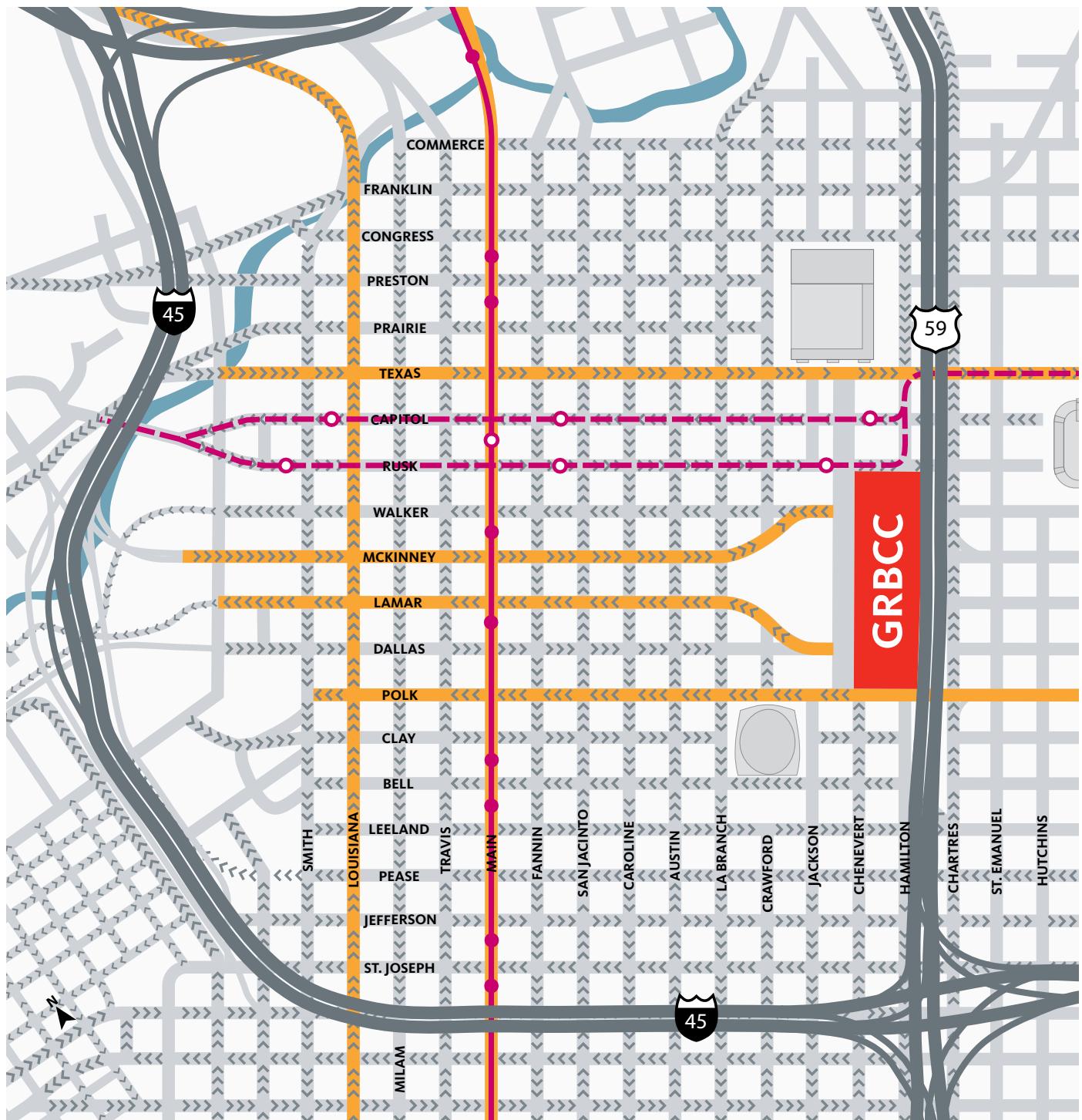
METRO Light Rail

The existing north-south light rail transit (LRT) line on Main Street is eight blocks west of the Convention Center and, as a result, plays a secondary role as a transportation link to the GRBCC. The new east-west lines on Rusk and Capitol Streets have great potential for serving the GRBCC, providing links to hotels and restaurants in the central business district and entertainment venues in the Theater District.

The GRBCC and METRO are coordinating their plans with regard to the LRT's alignment at Rusk Street and Hamilton Avenue in order to (1) ensure no disruption of LRT service when the north parcel is being developed and (2) minimize the premium for construction costs associated with development around and over an active rail line.



Polk Street at the GRBCC



→ ONE-WAY STREET
— MAJOR THOROUGHFARE

— LIGHT RAIL - EXISTING
- - - LIGHT RAIL - PLANNED

● LIGHT RAIL STOP - EXISTING
○ LIGHT RAIL STOP - PLANNED

Downtown Circulation

CONTEXT: COMPARATIVE ANALYSIS

A number of competing destinations were researched and assessed based on the top five destination selection criteria: Convention Facilities, Hotel Package, Transportation, Attractions & Activities, and Safety & Security. Although many of these destinations have multiple convention venues, only data from the primary convention center and its surrounding area was included.

The comparative destinations in the adjacent list primarily include cities in the southeast and south central region of the United States and the major convention destinations in Texas.

Each destination profile provides information on the size and status of the convention facility, the number of hotel rooms and location for the primary convention center hotels, an airport profile, interstate highway access and rail connections, and a listing of attractions and activities.

Comparative Destinations

Georgia World Congress Center
Atlanta, Georgia

Dallas Convention Center
Dallas, Texas

Colorado Convention Center
Denver, Colorado

Indiana Convention Center
Indianapolis, Indiana

Ernest N. Morial New Orleans Convention Center
New Orleans, Louisiana

Orange County Convention Center
Orlando, Florida

Phoenix Convention Center
Phoenix, Arizona

Henry B. Gonzales Convention Center
San Antonio, Texas

George R. Brown Convention Center
Houston, Texas



Georgia World Congress Center

Atlanta, Georgia



The Georgia World Congress Center (GWCC) opened in 1976 and included in its first phase 320,000 square feet (SF) of exhibition space; additional meeting space included a lecture hall for 1,200 people. The translation capabilities within the lecture hall gave the facility its “world congress center” designation, a credential required at the time to host international conferences. Only a handful of congress centers existed in North America. The facility has been expanded three times, is located adjacent to the Georgia Dome and Philips Arena, and was used as a venue during the 1996 Summer Olympic Games. The 1,070-room Omni Hotel is located adjacent to the GWCC in the CNN Center. Several other 1,000+ room hotels commonly used during conventions (Westin, Hyatt, Hilton and Marriott Marquis) are located roughly three-quarters of a mile from the GWCC.

Convention Facilities 1,366,000 SF Exhibition
33,000 SF Ballroom
259,979 SF Meeting
Theater

Hotels 2,402 rooms within ten-minute walking distance
1,070 rooms adjacent (Omni)
1,332 rooms proximate (within 1/2 mile)

Transportation ATL is major hub and ranks #1 worldwide in enplanements
Headquarters of Delta Airlines
I-20, I-75, I-85 pass through Atlanta
GWCC is served by MARTA (local heavy rail)

Attractions & Activities State Capitol, Centennial Olympic Park, Underground Atlanta, The Fox Theater, Georgia Aquarium, High Museum of Art, Jimmy Carter Presidential Library, CNN Studio Tour, Six Flags over Georgia, World of Coca-Cola, Zoo Atlanta
MLB Braves, NBA Hawks, NFL Falcons, NHL Thrashers
NASCAR - Atlanta Motor Speedway
PGA - The Masters, The Players Championship
Georgia Tech, Georgia State University

CONTEXT: COMPARATIVE ANALYSIS

Dallas Convention Center Dallas, Texas



In the late 1950s, the first phase of the Dallas Convention Center was opened and included exhibition space (Hall A) placed adjacent to an arena. This facility configuration was also used in Anaheim, Detroit and at the Astrodomain Complex. Four expansions and numerous improvement projects have taken place over the years. In 1999, a major master plan was developed that provided for some additional exhibition space and a vast increase in the amount of meeting and ballroom space. This plan, updated and validated in 2010, presents a series of “plug ‘n’ play” improvements priced between \$10 million and \$60 million that could be procured from regular capital improvement funds. One of those projects, the outfitting of a junior ballroom space, is currently under construction and is scheduled to open concurrently with the Omni: DCC’s new, attached headquarter hotel.

Convention Facilities 776,646 SF Exhibition
26,992 SF Ballroom
82,049 SF Meeting
Arena

Hotels 3,479 rooms within ten-minute walking distance
1,000 rooms attached (Omni) under construction
2,479 rooms proximate (within 1/2 mile)

Transportation DFW is major hub and ranks #4 in enplanements
Headquarters of American Airlines
DAL is a hub and headquarters for Southwest Airlines
I-20, I-35, I-45 pass through Dallas
DCC is served by local commuter rail

Attractions & Activities Six Flags Arlington, Dallas World Aquarium, Dallas Arboretum, Sixth Floor Museum, Dallas Heritage Village, Dallas Zoo, Public ArtWalk Dallas!
MLB Rangers, NBA Mavericks, NFL Cowboys, NHL Stars, MLS FC Dallas
NASCAR - Texas Motor Speedway
PGA – Byron Nelson Classic, The Colonial
Southern Methodist University, Texas Christian University, UT Arlington

Colorado Convention Center

Denver, Colorado



The first phase of the state-owned Colorado Convention Center opened in 1990, essentially replacing Denver's outdated Currigan Exhibition Hall. The initial phase offered 300,000 SF of exhibition space, 65,000 SF of meeting space and a 35,000 SF ballroom. The latest expansion essentially doubled the size of the facility, bringing the totals to those shown in the table below. A 1,000-car parking structure and the Wells Fargo Theater were also included in the expansion project.

Convention Facilities	580,000 SF Exhibition (2) Ballrooms - 47,700 SF and 34,800 SF 96,700 SF Meeting
Hotels	6,852 rooms within ten-minute walking distance 1,724 rooms adjacent (Hyatt Regency, Embassy Suites, Hilton Garden Inn) 5,128 rooms proximate (within 1/2 mile)
Transportation	DEN is a hub for United Airlines and ranks #5 in enplanements I-25 and I-70 pass through Denver
Attractions & Activities	Colorado State Capitol, Denver Art Museum, U.S. Mint, 16th Street Mall - Pedestrian Mall, Larimer Square, LoDo Historic District, Confluence Park, Cherry Creek Shopping District, Denver Botanic Gardens, Red Rocks Amphitheatre, Coors Brewery Tour, Buffalo Bill Museum & Grave MLB Rockies, NBA Nuggets, NFL Broncos, NHL Avalanche, MLS Rapids University of Denver, University of Colorado

CONTEXT: COMPARATIVE ANALYSIS

Indiana Convention Center Indianapolis, Indiana



The Indiana Convention Center was opened in 1972 with 120,000 SF of column-free exhibition space and completed its fourth expansion in January 2011 with the addition of exhibition, meeting and ballroom space on the site of the demolished RCA Dome. The recently opened expansion follows the completion of the Lucas Oil Stadium, home to the Indianapolis Colts, which is connected to the ICC via a climate-controlled walkway. The floor of the stadium is designed to accommodate exhibition use as well as provide large plenary space for the complex. An additional hotel is under development at the southeast corner of the facility across from the most-recent expansion.

Convention Facilities 588,000 SF Exhibition
33,335 SF Ballroom
113,302 SF Meeting
Stadium

Hotels 6,481 rooms within ten-minute walking distance
1,694 rooms attached (Marriott, Westin and Hyatt)
1,278 rooms adjacent (JW Marriott, Crowne Plaza)
3,509 rooms proximate (within 1/2 mile)

Transportation IND is an origination/departure airport and ranks #49 in enplanements
I-65, I-69, I-70, I-74 pass through Indianapolis

Attractions & Activities State Capitol, Fairbanks Art & Nature Park, Benjamin Harrison Presidential Site, State Fairground, State Museum, State Library, IMS Hall of Fame Museum, Indianapolis Art Museum
NBA Pacers, NFL Colts
NASCAR, IRL - Indianapolis Motor Speedway
Butler University, Indiana University/Purdue University at Indianapolis

Ernest N. Morial New Orleans Convention Center

New Orleans, Louisiana



The Ernest N. Morial New Orleans Convention Center opened as part of the World's Fair New Orleans in 1984. The facility was completed after the Fair and offered initially 350,000 SF of exhibition space. The facility has been expanded three times since then; a major multi-function ballroom is being added to the facility at this time. For years, the only significant hotel property near the center was the Hilton Riverfront which could be accessed from the NOCC by passing through a shopping mall. Since then, a number of smaller hotels have been developed adjacent to the facility. Safety and security are still a major issue within the convention district.

Convention Facilities 1,069,237 SF Exhibition
 36,448 SF Ballroom
 197,788 SF Meeting
 Theater

Hotels 6,571 rooms within ten-minute walking distance
 1,622 rooms attached (Hilton Riverfront)
 690 adjacent (Marriott, Embassy Suites)
 4,259 rooms proximate (within 1/2 mile)

Transportation MSY is an origination/departure airport and ranks #46 in enplanements
I-10, I-12, I-55 pass near New Orleans

Attractions & Activities French Quarter, Mardi Gras, Jazz Festivals, Casinos, Riverboats
NBA Hornets, NFL Saints
PGA – Zurich Classic of New Orleans
Tulane University

CONTEXT: COMPARATIVE ANALYSIS

Orange County Convention Center Orlando, Florida



The Orange County Convention/Civic Center first opened in 1983 with a modest 150,000 SF of column-free exhibition space that could double as a 13,500-seat arena. The original master plan called for two additional phases consisting of a performing arts center and an arena. In 1990, the new master plan changed all plans for future expansions. The original 125-acre site on International Drive was located in a private 700-acre development, 12 miles from downtown Orlando, but only a mile away from Sea World. Three parcels adjacent to the OCCC were reserved for 800-room headquarter hotels. OCCC's Phase IV was completed in 1997; Phase V (OCCC North) was completed in 2003 and added another 1 million SF of exhibition space to the campus.

Convention Facilities 1,104,858 SF Exhibition
62,182 SF Ballroom
245,981 SF Meeting
Theater

Hotels 5,454 rooms within ten-minute walking distance
4,690 rooms adjacent (Peabody, Hilton, Rosen Centre, Westin Imagine)
764 rooms proximate (within 1/2 mile)
Orlando has the second largest supply of hotel rooms (120,000+) in the US behind Las Vegas

Transportation MCO is an origination/departure airport and ranks #13 in enplanements due to Orlando's position as the top tourist destination in the world
I-4, Florida Turnpike pass through Orlando

Attractions & Activities Walt Disney World, Universal Studios Florida, Sea World Florida, Kennedy Space Center, Port Canaveral
NBA Magic
NASCAR – Daytona International Speedway
PGA – Bay Hill Invitational, Disney Classic
University of Central Florida

Phoenix Convention Center

Phoenix, Arizona



The Phoenix Civic Plaza opened in the early 1970s and included 125,000 SF of exhibition space, 28,000 SF of meeting space and the 2,800-seat Symphony Hall. The facility was expanded with the addition of the South Building in the 1980, bringing the total amount of exhibition and meeting space to 240,000 SF and 58,000 SF, respectively. In 2002, an expansion plan was developed to enable the facility to triple its development density on its existing site while remaining operational through a series of carefully orchestrated construction phases. The West Building, built on the site of an outdoor plaza, opened in 2006 and allowed the demolition and reconstruction of the original North Building. Completion of the North Building in 2008 allowed the renovation of the South Building to be undertaken. The South Building will ultimately be replaced to bring the complex up to 1,000,000 SF of exhibition space.

Convention Facilities 584,500 SF Exhibition
(3) Ballrooms - 45,600 SF, 45,200 SF, and 28,000 SF
167,200 SF Meeting

Hotels 2,896 rooms within ten-minute walking distance
693 rooms adjacent (Hyatt)
2,203 rooms proximate (within 1/2 mile)

Transportation PHX is a hub airport for US Air and Southwest Airlines, ranking #9 in enplanements
I-10 and I-17 pass through Phoenix
A new light rail system has a station at the PCC complex

Attractions & Activities State Capitol, Desert Botanical Gardens, Heard Museum, Phoenix Museum of Art, Arizona Science Center, Old Scottsdale, Camelback and South Mountain Parks, resorts, spas and golf courses
MLB Diamondbacks, NBA Suns, NFL Cardinals, NHL Coyotes
BCS Fiesta Bowl, Cactus League MLB Spring Training
NASCAR, IRL - Phoenix International Raceway
PGA – Phoenix Open
Arizona State University

CONTEXT: COMPARATIVE ANALYSIS

Henry B. Gonzalez Convention Center San Antonio, Texas



The Henry B. Gonzalez Convention Center opened in 1968 with 173,000 SF of exhibition space. The facility was expanded twice and achieved its present size in 2001. Last year, a comprehensive master plan was developed to determine the direction for future expansion and renovation of the adjacent HemisFair Park, which was part of the 1968 World's Fair in San Antonio. The Riverwalk and River Center Mall provide exceptional dining opportunities and tie the HBGCC to a good portion of the downtown hotel inventory.

Convention Facilities 431,424 SF Exhibition
39,576 SF Ballroom
92,627 SF Meeting
Theater

Hotels 8,067 rooms within ten-minute walking distance
1,003 rooms attached (Grand Hyatt)
1,478 rooms adjacent (Hilton, Marriott River Center)
5,586 proximate (within 1/2 mile)

Transportation SAT is an origination/departure airport and ranks #48 in enplanements
I-10, I-35, I-37 pass through San Antonio

Attractions & Activities Sea World Texas, Six Flags San Antonio, River Walk, The Alamo
NBA Spurs
PGA – Valero Texas Open
University of Texas San Antonio, Trinity University

George R. Brown Convention Center

Houston, Texas



The George R. Brown Convention Center opened in September 1987 on the east side of Downtown Houston. Expansion of the Convention Center was completed in 2003, increasing its size from 1,150,000 square feet to 1,800,000 square feet. Exhibition space was increased for a total of 862,000 square feet and the addition of new meeting rooms increased the total to 101. The GRBCC is located adjacent to the Hilton Americas, and is served by a number of other hotels within two to ten blocks. The recent completion of Discovery Green, located directly in front of the facility, has introduced new dining, recreation and entertainment opportunities in the immediate vicinity of the GRBCC.

Convention Facilities 862,000 SF Exhibition
 31,590 SF Ballroom
 101,943 SF Meeting
 Theater

Hotels 2,955 rooms within ten-minute walking distance
 1,200 rooms attached (Hilton Americas)
 1,795 rooms proximate (within 1/2 mile)

Transportation IAH is a major hub and ranks #8 in enplanements
 Largest Hub for United Airlines
 Hub for Southwest Airlines
 HOU is an origination/departure airport and ranks #43 in enplanements
 I-10, I-45 pass through Houston

Attractions & Activities NASA Johnson Space Center, Galveston Island, Texas Medical Center,
 Houston Zoo, Houston Theater District, Houston Museum District, The
 Galleria, St. Arnold's Brewery, Hermann Park
 MLB Astros, NBA Rockets, NFL Texans, MLS Dynamo
 PGA – Shell Houston Open
 University of Houston, Rice University

CONTEXT: COMPARATIVE ANALYSIS

Quantitative Analysis

The two most important factors in assessing a convention destination are 1) the physical capacities and amenities within the Convention Center and 2) the makeup of the hotel inventory. For meeting planners, these two key areas must be met satisfactorily or an alternate destination is likely to be selected.

The charts herein display the relative size of exhibition, meeting and ballroom space for each respective facility; an average of the values for the eight competitive destinations (excluding the GRBCC) is also shown as a point of reference.

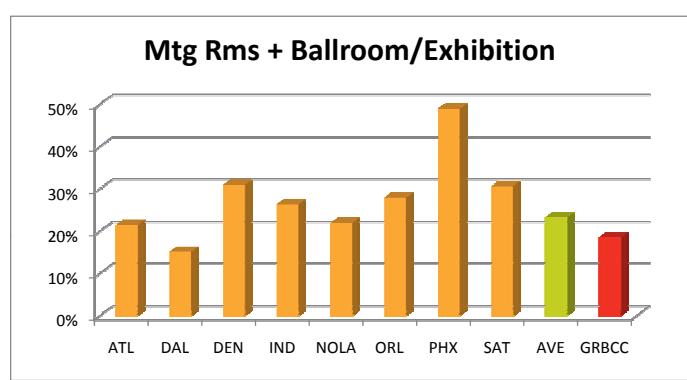
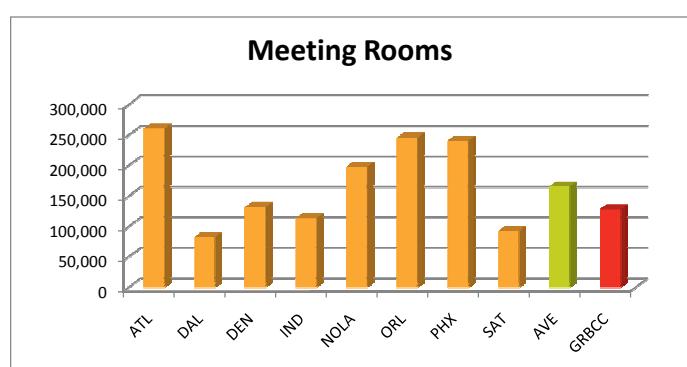
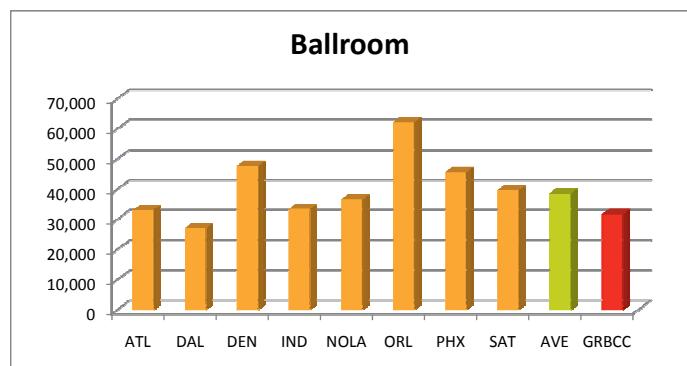
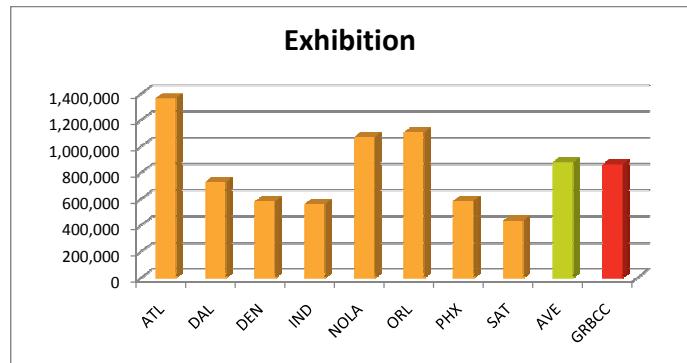
Exhibition Space

The amount of exhibition space provided at the GRBCC almost matches that of the average of the other eight facilities. This provides a basis for comparison of the other facility elements. At this point in the review, the balance of the rest of the program spaces will be assessed against the industry competitors. Any increase in the amount of exhibition space must be accompanied by a corresponding increase in meeting space.

Ballroom, Meeting Rooms, Breaks and Ratios

The amount of ballroom space provided at the GRBCC appears to be slightly less than that provided by the competitive set average; however, that metric is changing. The new master plan adopted in San Antonio will add a 50,000+ SF multi-function ballroom in its next expansion; New Orleans has a 50,000+ SF ballroom under design; and Dallas' amended master plan includes two ballrooms (60,000 SF and 40,000 SF) in future phases.

Although the number of break out rooms provided within the inventory of meeting space matches the competitive average, the overall quantity of meeting space at the GRBCC is below the competitive set average. This combination indicates that the size of the breakout rooms are small in comparison to those of competing venues. The GRBCC uses the



Ratios of meeting space, ballroom space and hotel rooms to exhibition space demonstrate areas where the GRBCC falls short against competing convention facilities.

halls on Level 3 to supplement the supply of meeting space for large assemblies and other gatherings, can also take advantage of additional meeting and ballroom space in the adjacent Hilton Americas.

When the total amount of meeting and ballroom space is placed in context against the amount of exhibition space provided, the GRBCC falls short against its competitors. Dallas is engaged in a program to double the amount of meeting space in their next capital improvement cycle which will further exacerbate the shortfall at the GRBCC. Reprogramming of existing spaces may be able to correct some of these deficiencies in the near term. Any expansion outside of the existing footprint provides the opportunity to complete a rebalancing of the programmatic elements.

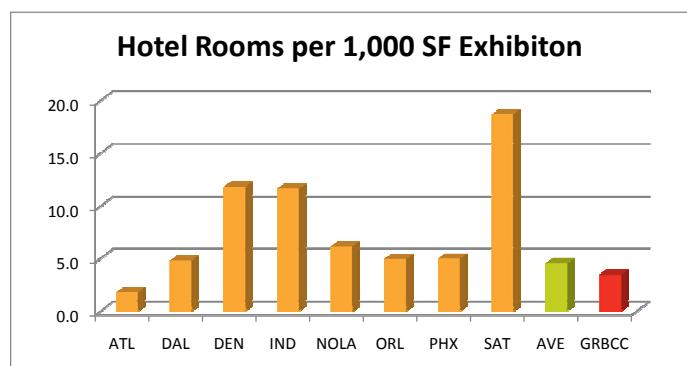
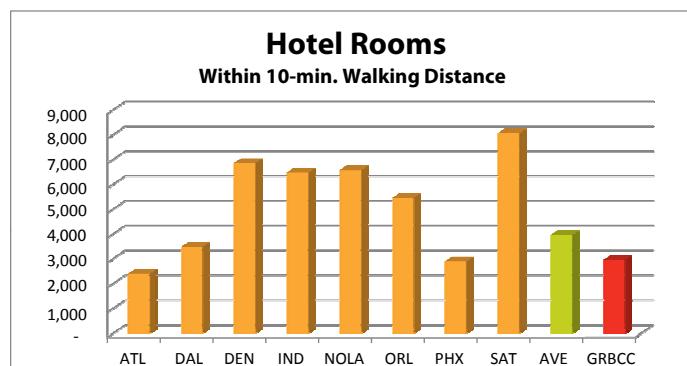
Proximate Hotel Inventory

The number of hotel rooms within a ten-minute (1/2 mile) walking distance of each respective convention venue is shown on the top chart to the right. The amount of available inventory in Houston is well below the average of the competitive set.

The GRBCC's lack of nearby downtown hotel room inventory is clearly shown in the top chart. Atlanta, New Orleans and Dallas also suffer from having the bulk of their convention-quality inventory located outside of walking distance from to their respective facilities. Shuttle bussing is often used to shorten travel times.

Both Orlando and San Antonio have a significant amount of inventory available adjacent to their facilities; all of Indianapolis' major hotels are attached to the facility by elevated walkways that are mostly climate controlled.

The number of hotel rooms provided per 1,000 SF of exhibition space further demonstrates graphically the shortage of inventory for the GRBCC against the competitive set. Compounding the significance of this disparity is the exemplary number of rooms available at the closest competitive destination geographically, San Antonio. ■



PLANNING PROCESS

Developing a long range master plan for a major civic asset like the GRBCC demands a highly collaborative process, requiring a significant time commitment and input from a variety of constituent groups. Allowing each stakeholder to discuss and define their needs, anticipate market demand and growth, and reach a consensus is the only way to ensure the master plan achieves a balance of interests for all parties.

Establishing Key Objectives

The GRBCC began its planning process with Gensler in mid-September 2010 with a goal-setting session that included key representatives of the GRBCC and Central Houston Civic Improvement. At that time, the assembled group identified key objectives for the planning report and a strategy for engaging industry leaders to supplement the expertise of the Gensler consultant team.

Hotel Advisory Panel

On November 29, 2010, the GRBCC hosted a panel discussion focused on the topic of convention center hotels and, more specifically, considerations for Houston First Corporation and the GRBCC regarding the need and potential strategies for future hotels adjacent to and serving the Convention Center. The panelists' comments and insights can be found elsewhere in this report as it relates to the GRBCC strategy and timeline for development.

Hotel Advisory Panelists

Mary L. Carolan *Senior Managing Director*
Allied Advisors

Michael Bartolotta *Vice Chair*
First Southwest Company

Clayton Elliott
Private Investor

Frank Calaguire *Principal*
SCS Advisors, Inc.

Stephen C. Jacobs *Partner*
Locke Lord Bissell & Liddell

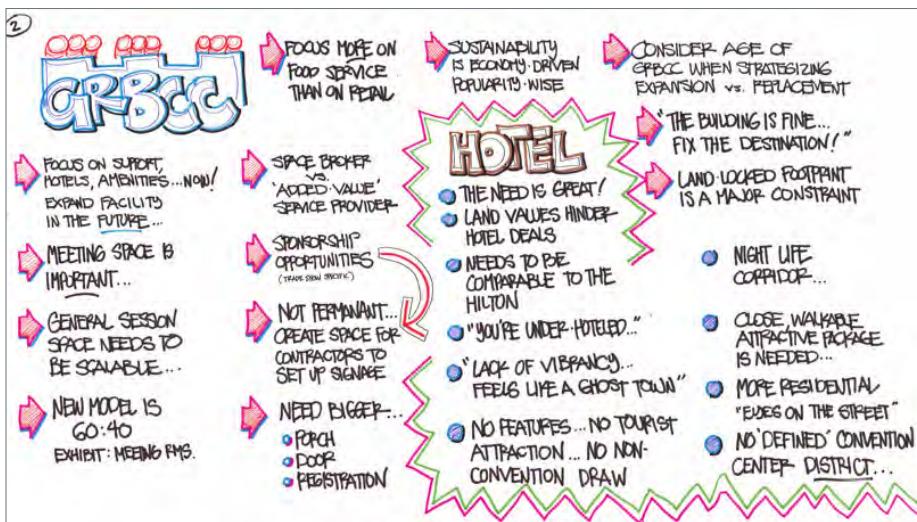
Industry Advisory Group - Vision Session

Two weeks later, on December 14, 2010 the GRBCC hosted an all-day vision session facilitated by Gensler with industry leaders including event specialists, meeting planners and exhibitors from across the nation.

During the session, the Advisory Group shared their knowledge of industry trends related to Show Demands, Facilities and Space Needs; Show Types; Attendee Demographics; Entertainment and Technology. Following tours of the GRBCC facilities and surrounding neighborhood, the group shared their observations and made recommendations for future expansion and/or upgrades to the GRBCC; and for continued development and improvements



Industry Advisor Group Vision Session, December 2010



Vision Session - Brainstorm

to the surrounding neighborhood related to amenities and attractions, hotel room supply, retail, entertainment, image and character.

Given the Advisory Group's first hand experience with convention center facilities nationwide, their observations and recommendations were extremely important to meeting the GRBCC's objec-

tive of enhancing its competitiveness and increasing its market share of exhibitions, trade shows and other events.

Planning Charrette

On January 4-5, 2011 a two-day planning charrette was conducted on-site in a meeting room at the GRBCC. Participants included key representatives of

KEY CONCLUSIONS from the Vision Session

- The Number One priority need is for additional hotel rooms adjacent to the GRBCC
- The lack of nearby amenities, night life and convenient, walkable attractions hurts the GRBCC's competitiveness
- There is a need for more meeting space, either at the GRBCC or at adjacent facilities

PLANNING PROCESS

Industry Advisory Group

Larry Arnaudet *Executive Director*
Exhibition Services & Contractors Assn.

Aaron Bludworth *Chief Operating Officer*
Fern Exposition & Event Services

Terence Donnelly *Vice President*
Experient

Doug Ducate *President & CEO*
Center for Exhibition Industry Research

Stephen Emery *Sr. Manager Meetings & Expositions*
Society of Exploration Geophysicists

Steven Hacker *President*
International Assn. of Exhibitions & Events

Richard Lewis *Vice President*
Freeman Company

Greg Ortale *President & CEO*
Greater Houston Convention & Visitors Bureau

Gene Sanders *Vice President*
Society of the Plastics Industry

Heidi Voorhees *Vice President*
Institute of Food Technologists



Planning Charrette, January 2011

ties and constraints for each identified and documented. As feedback was received, some options were eliminated and others retained for further refinement and consideration.

On Day Two, the planning team continued to refine the expansion options, incorporating the client team's comments and direction from the previous day. Additionally, a timeline diagram of required actions and decisions was developed to support the multi-scenario strategy and provide a strategic rationale for future decisions regarding expansion.

the GRBCC, Central Houston Civic Improvement, Gensler and its consultant team.

The charrette began with participants identifying their objectives and desired outcomes for the two-day session followed by an analysis of the Convention Center and site elements (adjacent land use; road systems; open space; etc.) that influence the operations and competitiveness of the GRBCC. For the remainder of the day, the Gensler team developed a wide range of expansion options for the Convention Center as well as concepts for adjacent private sector development that would enhance the GRBCC and the vitality of downtown Houston's east side.

At the end of Day One, a mid-point progress review with the client team was conducted. Each expansion option was discussed in detail, the opportuni-

ties and constraints for each identified and documented. As feedback was received, some options were eliminated and others retained for further refinement and consideration.

Stakeholder Meetings

Following the charrette as the planning team continued to refine the expansion options, meetings were held with local stakeholders, public agencies and private developers to elicit their ideas and feedback to the options under consideration. Over the course of several weeks, meetings with representatives of Incarnate Word Academy, the proposed Regional Tourism Center, the Mayor's office and private sector developers with interests in East Downtown focused on the opportunities



Planning Charrette, January 2011

and impacts that future development in and around the GRBCC would have on their respective long term plans. The Stakeholder feedback provided fresh perspectives for the planning team as the options continued to evolve.



Livable Centers map highlighting three pedestrian corridors

Concurrent with the GRBCC study, the HGAC Livable Centers planning effort was also in progress. The area parameters of the HGAC study encompasses the Convention Center and surrounding area. It is important, therefore, that the two planning efforts be coordinated with respect to land use strategies and vehicular and pedestrian circulation systems. The two planning teams met on several occasions to update each other on direction and progress and to foster alignment of key initiatives. ■

KEY CONCLUSIONS *from the* **Planning Charrette**

- Consider the importance of having a rich mix of land uses within the convention district
- Consider the opportunities for development around the METRO LRT
- The Plan should foster proactive public and private sector development
- The Plan should focus on the interdependence of the Convention Center and surrounding neighborhood

KEY DRIVERS: OVERVIEW

Convention facilities serve a wide variety of users throughout their annual events calendar. A well balanced facility meets the program needs of conventions, trade and consumer shows, and a variety of local public events. In many cases, however, the stated mission for convention centers is to provide local economic impact and employment through expenditures by visitors from outside of the community.

Cities compete on a “destination-basis” rather than a “facility-basis”.

Provide “geographic fairness” to their membership. For this group of users, convention and exhibition sites are selected on the basis of the total package available within a community; cities compete on a “destination-basis” rather than a “facility-basis.”

Communities generally assess these elements and try to improve upon them in a continual process of “fixing the weakest link.” For convention destinations, the local government can provide solutions for facilities and transportation; it can become a partner in delivering accommodation and support policies that encourage the private sector to develop the balance of hospitality infrastructure.

A decade ago, the City of Houston recognized the need for, and played a major role in, the development of the highly successful Hilton Americas Hotel. Since then, cities competing with Houston for convention and trade show business have increased their convention center hotel offerings. Industry advisors and market analysis by consultants agree that Houston’s convention district lacks the number of hotel rooms and hotel mix required to be competitive in today’s market.

A large number of professional meetings and trade shows are not tied to a single city, and rotate the site of their convention around the country to pro-

Destination Selection Criteria

A number of professional organizations include, as members, the persons responsible for selecting meeting and convention destinations. The American Society of Association Executives (ASAE) represents primarily convention planners for associations, Professional Convention Management Association (PCMA) medical meeting planners, International Association of Expositions and Events (IAEE) exhibition management and Meeting Planner International (MPI) smaller meetings that have minimal exhibition needs.

For almost three decades, ASAE has surveyed their membership to determine the most important factors in selecting a convention destination. Throughout the history of this effort, the top five criteria have remained unchanged for the most part. In priority order, these include:

- Convention Facilities
- Hotel Package
- Transportation
- Attractions & Activities
- Safety & Security

Convention center capacity and number of hotel rooms establish the first threshold for selection; if a destination is lacking in either of these, no further consideration can be given to the city by the planner.



GRBCC Entrance

KEY DRIVERS: CONVENTION FACILITIES

The reality is that large audiences arrive on the street level to a congested sidewalk leading to small interior vestibules.

Convention facilities are reviewed for the amount of prime exhibition space, meeting rooms, multi-function ballrooms, theaters and specialty spaces available. Exhibition space is checked for ceiling height, loading access, registration space, show office, and storage areas. The number and seating capacity of meeting rooms and subdivisions is checked against the prospectus. Multi-function ballrooms, theaters and lecture halls may provide additional space for meetings and food service needs.

The following examines the main components of the GRBCC's ability to support the needs of current shows and events with a comparison to facilities in competitor cities.

Entry Concourse

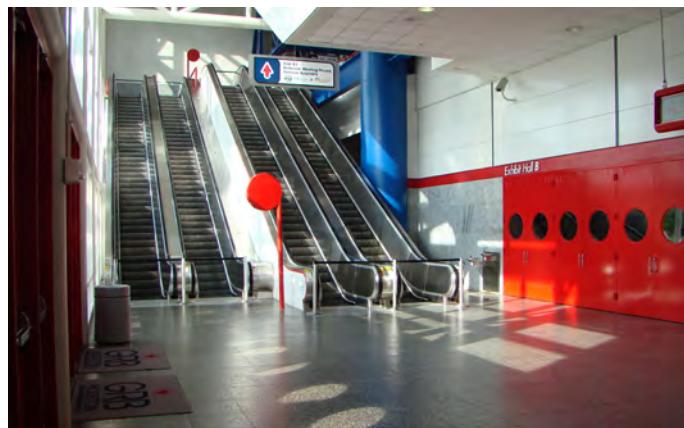
The arrival sequence at the GRBCC is constrained from multiple aspects. The original design concept was based on creating an arrival and registration zone at the pre-function space on Level 2 that would be directly linked to multiple convention hotels on adjacent blocks. The reality is that larger audiences arrive on the street level via the Avenida de las

Americas to a congested sidewalk leading to small interior vestibules, offering constrained ability for event ticketing, registration, queuing or crowd management.

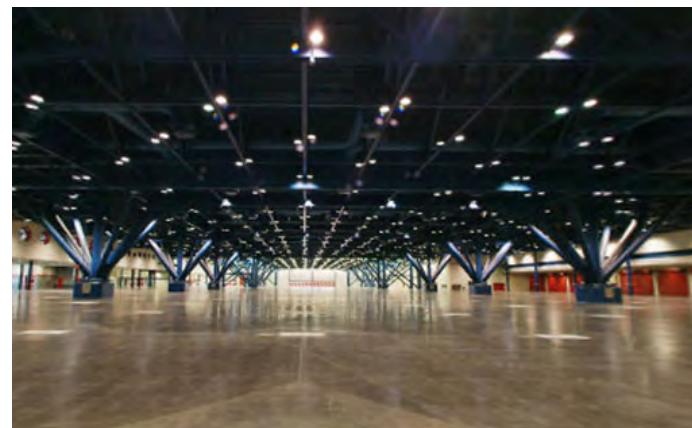
Consideration should be given to recapturing a portion of the boulevard and creating a proper arrival zone with vehicle drop-off, ticketing or registration and a method for controlling secure access by attendees to the rest of the facility. Options might include extending the street level to create lateral concourses and portals into the existing halls and escalator lobbies. Another approach would be to convert the existing mezzanine on Level 2 to a public thoroughfare and to isolate and/or secure it from the rest of the building. Because of the complexity of the existing structure, substantial modifications involving the building façade would require careful planning and phased implementation to minimize any disruption to ongoing events and operations.

Exhibit Space

The GRBCC currently has 853,000 square feet of Exhibit Hall space. 629,000 square feet of contiguous exhibit space occurs on Level 1 which, if need-



GRBCC Entry Concourse



GRBCC Exhibition Space

KEY DRIVERS: CONVENTION FACILITIES

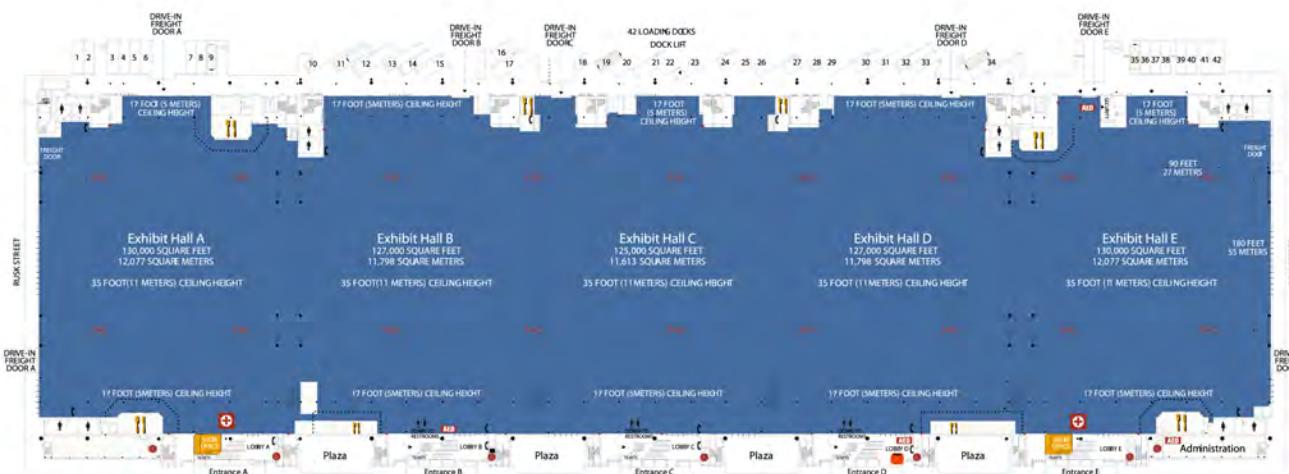
LEVEL 3 (+51')



LEVEL 2 (+25')



LEVEL 1 (+0')



GRBCC Building Plans

ed, can be divided into five separate exhibit halls. The main exhibit space has 35' ceiling heights and is serviced by loading docks on the building's east façade as well as drive-in freight doors on both Rusk and Polk Streets.

Two exhibit halls are located on Level 3 and serviced by a drive-in freight doors via a ramp on the building's east side. Exhibit Hall A3 is 124,000 square feet and Exhibit Hall B3 is 99,000 square feet.

Contiguous expansion of the exhibition halls would be extremely challenging given the urban site and limitations imposed by the LRT along Rusk Street to the north and the critical need to maintain east-west connectivity via Polk Street to the south. From a market perspective, additional convention space must create a physically-linked but self-contained module that includes an appropriate amount of exhibition, meeting and banquet/multipurpose space to satisfy the most common aspects of conventions and association meetings.

The GRBCC exhibition space matches the average size of competitor cities. The convention centers in Atlanta, Orlando and New Orleans have considerably more exhibition space, while those in Dallas, San Antonio and Indianapolis have less. Based on analysis of the existing clientele and industry averages for large convention centers, a future expansion should include from 300,000 to 400,000 SF of exhibition space.

Meeting Space

The meeting room configuration at the GRBCC allows for a high degree of flexibility in terms of accommodating different group sizes and spatial

needs. The rooms are typically stand alone pods connected by public concourses and divisible into four to six rooms in a cross-shape using operable walls. This arrangement poses challenges with respect to service access because it does not allow for a designated service entry into each room. When fully subdivided, each meeting room has only one door used by both visitors and staff. All furniture and equipment are stored remotely from function space; food service and technical support are provided through high-finish and high-visibility public areas.

Newer convention and conference facilities commonly have a more linear layout with function space

Additional convention space must create a physically-linked but self-contained module that includes an appropriate amount of exhibition, meeting and multipurpose space.

sandwiched between a public concourse and service corridor. Large rooms divide into medium-sized breakouts; the smallest rooms combine into medium-sized rooms, all to maintain proportions, aesthetics and acoustical properties appropriate to the audience size.

The distribution of meeting space within the GRBCC is also of concern since the majority of it is grouped together at the south end of Level 3 and is therefore only proximate to a portion of the exhibit space below. Additional meeting rooms should be provided near the north end of the facility to improve marketability to multiple conventions being held concurrently in the facility. A more even redistribution of meeting rooms on Level 3 would decrease walking times by creating convenient access to meeting space from any location on Level 1. Compared to its counterparts in other cities, the GRBCC currently lacks a sufficient amount of

KEY DRIVERS: CONVENTION FACILITIES

meeting space. At approximately half the competitive average, Houston exceeds only Dallas and San Antonio in meeting room space and their updated master plans include expansion of meeting rooms that will put Houston at the bottom. Future expansion should include 60,000-70,000 square feet of divisible meeting rooms.

smaller ballrooms. Based on the comparative analysis of the Convention Center's main competitors, it is recommended that future expansion plans include the addition of a 60,000 square foot multipurpose ballroom. Compared to its counterparts in other cities, the GRBCC is well below the average for ballroom space and only Dallas offers less than Houston.

The multipurpose room combines the aesthetic quality of a ballroom with the utility services of an exhibition hall and the seating capacity of a small arena.

In keeping with the GRBCC's LEED Silver certification, reconstruction of the meeting areas should incorporate the latest trends in energy efficiency and sustainability in building materials and systems. Cost reductions should accrue from improved staff efficiency via reconfiguration and lower utility consumption from improved lighting, mechanical equipment and controls.

The Balanced Facility Analysis (see Appendix) indicates that the greatest single improvement to guest experience, marketability and operating revenues for the GRBCC would be the addition of a large multipurpose room with banquet capacity for 3,000 to 4,000 people

and electrical, lighting and technical support for keynote speeches, multimedia presentations and related large assemblies for up to 7,000 guests.

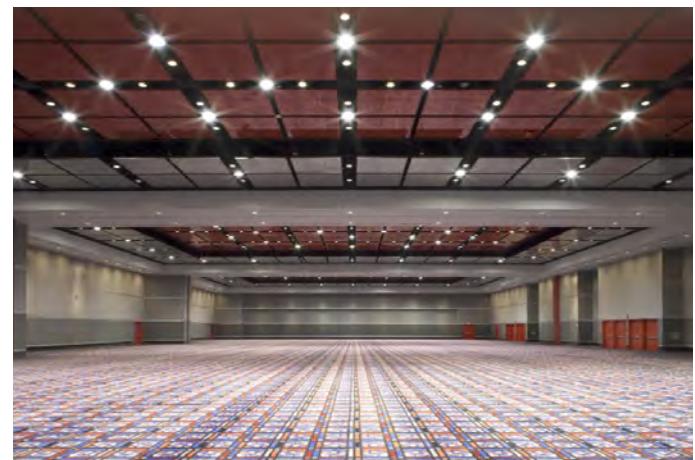
The multipurpose room combines the aesthetic quality of a ballroom with the utility services of an exhibition hall and the seating capacity of a small arena. Balancing these diverse needs requires an artful design that carefully integrates event support services into an appealing yet durable space.

Ballroom & Multipurpose Space

The GRBCC currently has a 31,500 square feet Ballroom on Level 3 that can be divided into three



GRBCC Meeting Space



GRBCC George Bush Grand Ballroom

Retail, Food & Beverage

Retail, food and beverage outlets are differentiated between those offered within the GRBCC and those that are external to the Convention Center and located within walking distance of the building. Internal functions are run by the GRBCC as an extension and in support of event activities; external functions are assumed to be privately-owned, or operated and serve a broader market.

The GRBCC offers a limited number of retail and food outlets on Level 2. Operating hours for these stands are variable to coincide with conventions, trade shows and special events. Functions include a business center offering copy, scan, package-handling and computer services; a Starbucks and unbranded food outlets offering coffee and other drinks, snacks, fruit, pre-packaged sandwiches and hot meals for take-out service. Café tables are placed proximate to the outlets, but table service is not provided.

Food concession stands are located within the exhibition halls to provide additional points-of-sale, improve customer service and act as pantries for staging buffets or banquets that are held in the halls.

Competing facilities offer similar food and beverage conveniences; however, recent trends in new construction have included permanent food courts and two-sid-

ed concession stands which can be opened into both concourses and exhibition halls. Recent designs that place food outlets opening to the street as well as internal concourses have been well received, but the measure of success is still being evaluated.

Facilities in downtown locations such as Phoenix and Nashville include commercial retail F&B outlets that are not related exclusively to the convention business. The intent is to better integrate convention centers into the urban fabric by minimizing large blank building faces and enhancing foot traffic on city streets. While these efforts can become opportunities to improve the overall financial performance of convention centers, political and regulatory hurdles have somewhat limited the ability of cities to successfully market some of the spaces as the outlets are perceived as unfairly competing with the private sector.

Servicing the customers must be the primary motivation in establishing retail and F&B outlets. Adjacency to the facility's major activity zones is a key to success. Show management does not want to lose attendees from the venue during the daytime; adequate, dynamic and flexible food service outlets must be made available to the population within the building. ■

PRIMARY CONSIDERATIONS

Facilities

- Adequate convention facilities and hotel capacity are the most critical factors when event planners are selecting a venue.
- Consideration should be given to recapturing a portion of ADLA to create a proper arrival zone.
- The greatest single improvement to guest experience, marketability and operating revenues for the GRBCC would be the addition of a large multipurpose room with banquet capacity for 3,000 to 4,000 people
- Servicing the customers must be the primary motivation in establishing retail and F&B outlets.

KEY DRIVERS: HOTELS PACKAGE

Conventions and large trade shows draw thousands of attendees from out of town. Cities compete to host these events and, in turn, benefit from the large number of visitors and the dollars they spend in local restaurants, shops and entertainment venues. Hotels adjacent to, or near, the convention center are the primary beneficiaries of big shows. The availability and quality of hotels near the convention center and the amenities available to visitors are key considerations for those responsible for selecting the city to host their event.

Planners will check the size of available room blocks and proximity of the convention center hotel(s) to the convention center. Larger events prefer to secure in excess of 1,000 rooms in the headquarter property and wish to avoid the expense of shuttle bussing from remote hotels. An “attached” convention center hotel with a climate controlled connection is preferred over “adjacent” locations (across a street, not climate controlled) or “proximate” locations (a short walk). Planners prefer dealing with fewer hotels that are located nearby to meet their room inventory requirements.

Downtown Houston and the GRBCC lack several things that are considered positive draws for its competitor cities including attached and proximate hotel room supply. Since the opening of the GRBCC

“You’re under-hoteled...”

“The need for more hotel rooms is great...”

“Focus on hotels and amenities now!”

*Quotes from the
Industry Advisory Group Vision Session
December 2010*

in 1987, the surrounding area has been slow to develop including the development of hotels to serve the Convention Center.

Current Accommodations

The Four Seasons Hotel is four blocks away from the GRBCC and for years was the nearest hotel to the Convention Center. Today, with the development of Discovery Green, the walk to the GRBCC is more pleasurable and feels safer to the pedestrian.



Hilton Americas



Four Seasons

The Hilton Americas opened in 2003 with pedestrian bridges connecting it to the GRBCC. It has served the Convention Center well in the past eight years. Inside the hotel are a couple of dining options and lounge/bars. Unfortunately, they are internal to the hotel with no street presence or visible draw to pedestrians.

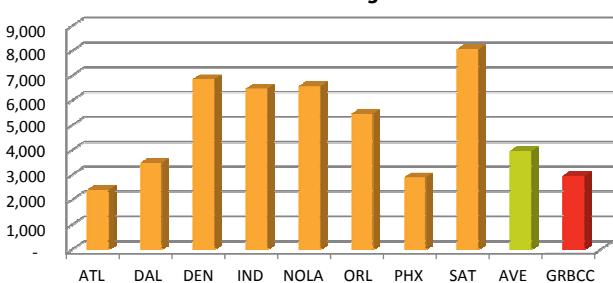
In March 2011, the Embassy Suites opened on Dallas Street adjacent to the Hilton Americas. The addition of this 262-suite hotel provides another convenient lodging option for convention-goers, but like other nearby hotels, its dining and lounge facilities do not engage the street and pedestrians. It is hoped that, in the future, the convention district has a substantially larger mix of hotel offerings connected, adjacent or proximate to the GRBCC.

Room Occupancy Sources

Hotels near a convention center are dependent on non-convention business to fill rooms between events. Proximity to business centers, sports and entertainment venues draw out-of-town guests. Ballrooms and meeting room packages promote opportunities for both local and out-of-town groups. It is the combination of business, leisure, meeting and convention activities that provide a balanced economic model for convention center hotels.

Atlanta's Omni hotel is located in the CNN Center and does a considerable amount of business and leisure occupancy in addition to its adjacent location to the Georgia World Congress Center. The

Hotel Rooms
Within 10-min. Walking Distance



Total number of hotel rooms by city within a 10-min. walk

TOP 5 HOTELS BY CAPACITY WITHIN 10-MINUTE WALKING DISTANCE

	# of Rooms	Distance to Convention Center (in miles)
ATLANTA		
Omni	1,070	0.2
Embassy Suites	321	0.3
Marriott Downtown	312	0.4
Holiday Inn Express	260	0.5
Centennial Inn	135	0.4
DALLAS		
Omni	1,001	0.1*
Hyatt Regency	1,120	0.5
Adolphus	422	0.4
Magnolia	329	0.5
Crowne Plaza	296	0.4
DENVER		
Hyatt Regency Denver	1,100	0.1
Sheraton Denver	1,231	0.3
Denver Marriott City Center	601	0.3
Grand Hyatt San Antonio	516	0.3
Westin Denver Downtown	430	0.5
INDIANAPOLIS		
JW Marriott	1,005	0.1*
Marriott	622	0.1*
Westin	573	0.1
Hyatt	499	0.1*
Omni Severin	424	0.2
NEW ORLEANS		
Hilton Riverside	1,622	0.3
Harrah's	450	0.4
W Hotel	410	0.4
Embassy Suites	370	0.1
Doubletree	367	0.5
ORLANDO		
Peabody Orlando	1,641	0.5
Hilton Orlando	1,400	0.4
Rosen Centre	1,334	0.2
Westin Imagine	315	0.2
Clarion Inn & Suites	221	0.3
PHOENIX		
Sheraton	1,000	0.2
Hyatt Regency	693	0.1
Wyndham	520	0.1
Westin	242	0.4
Hotel San Carlos	128	0.2
SAN ANTONIO		
Grand Hyatt San Antonio	1,003	0.1*
Marriott River Center	997	0.1
Hilton Palacio del Rio	481	0.1
Westin Riverwalk	473	0.3
Drury Plaza	380	0.4
HOUSTON		
Hilton Americas	1,200	0.1*
Four Seasons	404	0.3
Magnolia Hotel	314	0.5
Embassy Suites	262	0.2
Club Quarters	255	0.5

*Attached

KEY DRIVERS: HOTELS PACKAGE

Hilton and Marriott offer considerable internal meeting packages.

With the opening of the attached Omni Hotel, the first hurdle in Dallas' lack of convention hotel space is cleared.

The Hyatt Regency, although geographically close, is viewed as somewhat remote due to multiple rail lines that create a barrier across the front of the property; the pedestrian

pathway to the Center from this hotel is "unfriendly." Bussing is required to assemble a significant hotel room block for larger groups.

Denver has a concentration of convention, business and leisure activities in its city center, bolstered by the downtown location of its government center, professional sports stadiums and robust shopping areas. Several other large hotels (Westin, Ritz Carlton) are located in this core area slightly farther from the Convention Center.

Indianapolis' convention hotels are adjacent to the State Capitol building and near Lucas Oil Stadium, providing a large amount of business and some leisure occupancy. Also, there are many small hotel properties located throughout the downtown area.

The convention district needs almost 2,000 new hotel rooms in order to remain competitive with the lodging capacity of other convention destination cities.

New Orleans' Hilton Riverfront is adjacent to Harrah's Casino; the New Orleans Marriott and Sheraton New Orleans market themselves as a joint meetings venue and are adjacent to the French Quarter. With over 20,000 rooms available in and around the Vieux Carre, many are used during large meetings and conventions.

Orlando's convention hotels are located 12 miles from the central business district and have minimal business travel occupancy. Due to their proximate location to Sea World Florida, Universal Studios and



Holiday Inn Express



Embassy Suites

the shopping/dining opportunities along International Drive, the convention hotels generate sufficient leisure occupancy during non-convention peak seasons.

Even with the recent opening of the city-supported Sheraton Hotel, Phoenix remains deficient in its downtown hotel supply. Demand from business travelers is not particularly large in downtown and downtown hotels garner almost no occupancy from leisure travelers other than the transient occupancy achieved by the Holiday Inn Express.

Similar to Orlando, San Antonio's main convention hotels also rely upon leisure travel to supplement their meetings-related occupancy. Many smaller hotel properties are located near the Riverwalk and the Alamo.

The Hilton Americas Hotel, connected to the GRBCC by a pedestrian bridge, is the primary hotel for convention business. Additionally, it serves local business and civic organizations for large meetings. Other nearby hotels include the Four Seasons (4 blocks away), Holiday Inn Express (3 blocks away) and the new Embassy Suites (2 blocks away). While the variety of downtown hotels provide a mix of price points attractive to a diverse convention crowd, the inconvenience of distance and lack of amenities along the pedestrian route detract from the overall experience.

Recommendations

The GRBCC needs to immediately add a minimum of 1,000 rooms to the proximate downtown inventory to reach the threshold provided in most competitive cities. Almost 2,000 additional rooms would be needed to match the average number of rooms per exhibition space in the competitive set. Two new hotels of 1,000+ rooms each could meet this need successfully.

Due to the time required between shows for set-up and tear-down, peak event activity constitutes only about one-third of the total duration of convention facility use. The new convention center hotel can therefore anticipate that roughly 35% of its occupancy would be generated directly from the GRBCC. The balance of room occupancy needed for the operation to break-even must come from in-house meetings/conferences, business travelers and/or leisure travelers. Because of this, the new hotel will need a large compliment of dedicated meeting and ballroom space in order to be economically viable. A property located near Minute Maid Park or the Toyota Center may pick up some leisure occupancy, but most internally-generated occupancy will come from in-house meetings and business travelers. ■

PRIMARY CONSIDERATIONS

Hotels

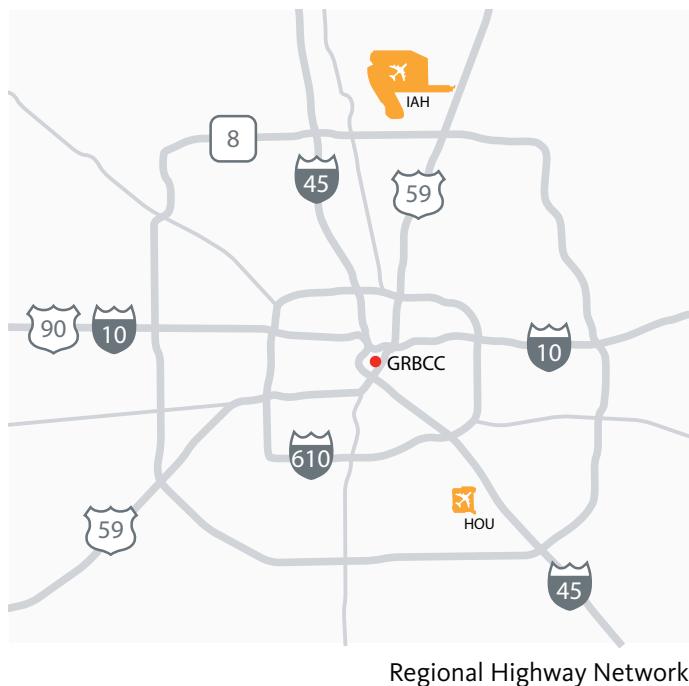
- The GRBCC needs to immediately add a minimum of 1,000 rooms to the proximate downtown inventory to reach the threshold provided in most competitive cities.
- An “attached” convention center hotel is preferred to “adjacent” locations or “proximate” locations.
- Meeting Planners prefer dealing with fewer (and larger) hotels that are located nearby to meet their inventory needs
- Meeting Planners prefer avoiding the expense of shuttle bussing from remote hotels

KEY DRIVERS: TRANSPORTATION

Transportation needs fall into two categories, macro and micro, and depend on the profile of the attendees. On the macro-level, air lift capacity is critical for events with a large national or international audience. Dense urban settings or coastal cities better support fly-in attendance; commuter rail is practical in the Northeast corridor. For regional events, drive-in access becomes a more prominent concern for the meeting planner. Most Midwestern cities are served by multiple interstate highways and most regional attendees are accustomed to driving to these destinations. On the micro-level, local transportation infrastructure is considered in moving crowds between the hotels, convention center and area attractions and activities. Taxis, shuttles, busses, trams and subways are all considered by planners.

Regional Context

Airports Visitors arriving by scheduled air service have two airport options: Bush Intercontinental Airport, 22 miles to the north; and Hobby Airport, 10 miles to the south. Travel times between the airports and the GRBCC are 33 minutes and 21 minutes respectively.



Highway System Major highways connecting the GRBCC to important origins of visitors include Interstate Highway 45 (Dallas and Galveston), Interstate 10 (East and west coasts and points between), US Highway 59 (Northeast Texas, northeast United States, southwest Texas, and Mexico), and US Highway 290 (Austin and the northwest United States). These are all high-volume, high-speed freeways built to high standards. Essentially all truck traffic and most passenger car traffic to and from the GRBCC uses at least one of these freeways.

Local Context

The GRBCC is strategically located on the east edge of Downtown Houston, bounded by Rusk Street, Polk Street, US Highway 59, and Avenida de las Americas (ADLA) on the north, south, east, and west respectively. It is served by the downtown street grid and has access to US Highway 59 (US 59) which in turn has nearby connections to IH 45 and IH 10. Surface streets with direct service to the GRBCC include Avenida de las Americas (ADLA), Hamilton, Chartres, Rusk, Walker, McKinney, Dallas, Lamar, and Polk.



The downtown segment of the Southeast Line of the LRT, currently under construction, will serve the north end of the building. The eastbound track will be on Rusk Street, curving to the north beginning at ADLA and passing under US 59 at the Texas Avenue underpass. The westbound track will cross under US 59 at Texas Avenue, then curve to the south to join Capitol Street at ADLA. The Convention District Stations, with platforms located where Capitol and Rusk intersect ADLA, are the nearest stations to the GRBCC.

The redevelopment underway on both sides of US 59 make it important to preserve capacity on east-west streets in this area.

Surrounding Road Capacity The one-way street grid serving downtown and the area east of US 59 is interrupted by US 59, the GRBCC, and other developments in the eastern part of downtown. As a result, Polk Street is the only remaining east-west street serving both sides of US 59 between Rusk and Bell, a distance of 2,300 feet.

The east side of downtown bounded by Texas, Bell, US 59, and Austin presently has approximately ten full undeveloped blocks which are presently used, for the most part, for surface parking. All these blocks are subject to development, which could generate significant additional pedestrian and vehicle traffic.

The land east of US 59 is largely industrial, and redevelopment in this area will result in higher trip generation rates than existing land use. Therefore, more of the trips generated by the future land use will be downtown-oriented than present traffic patterns. These facts and the redevelopment underway on both sides of US 59 make it important to preserve capacity on east-west streets in this area.

Services Access to the GRBCC Service to the site is mostly on the east side of the building by way of one-way northbound Chartres Street. Most large trucks and smaller service vehicles reach the back of the building this way. Large trucks access the upper level via a ramp accessible from the intersection of Rusk at Chenevert near the northwest corner of the building. This one-way ramp takes trucks to the upper level where they load and unload, then depart to the south. After they depart, these trucks re-enter the street system at a driveway just north of the intersection of Clay at Chenevert.

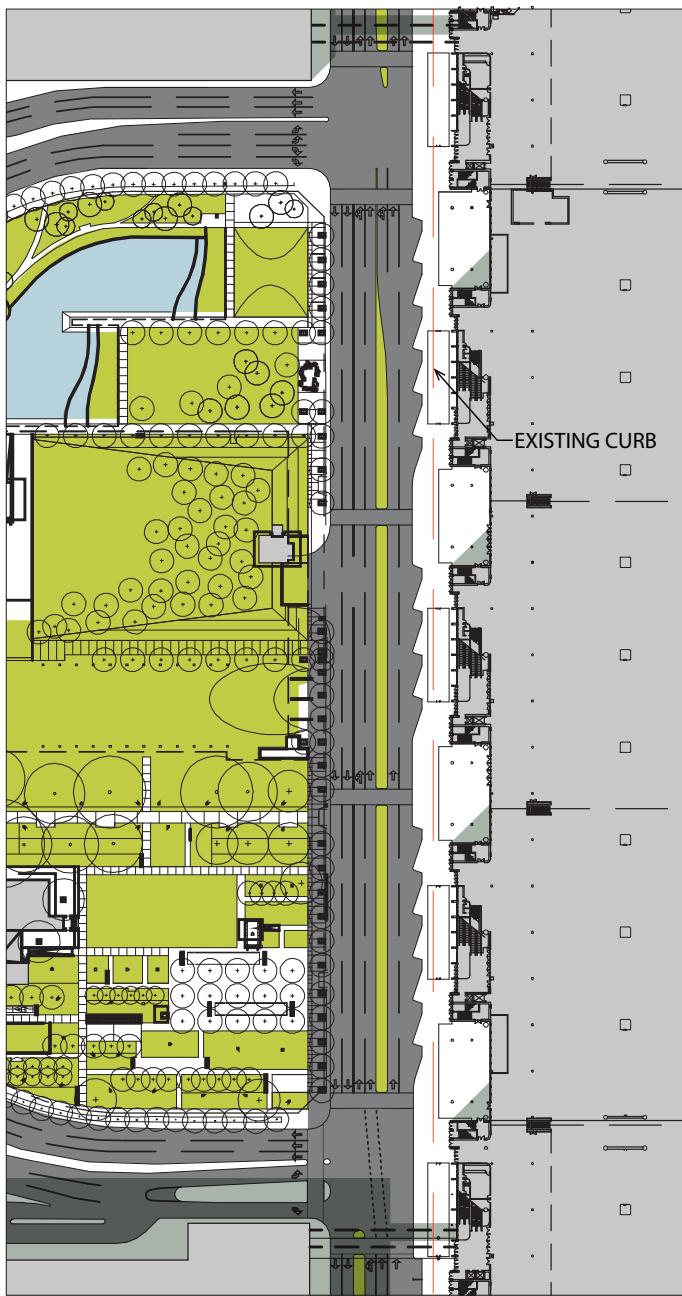
Wayfinding The GRBCC website (<http://www.houstonconventionctr.com/Home/MapsParking.aspx>) has detailed information for visitors arriving from all directions. The Downtown Management District has installed a wayfinding system with cantilever mounted signs throughout downtown. The Convention Center is included as one of the destinations on this system.

Pedestrians Existing and future pedestrian use in the area will consist of a number of different types of pedestrians. The safety and welfare of these diverse user types will need to be considered as expansion and infrastructure decisions are made. Different types of pedestrians include:

- Workers in downtown and east of downtown
- GRBCC visitors from nearby hotels
- GRBCC visitors exploring the area on foot
- Residents who live in the area
- Nighttime visitors to area entertainment venues
- Families and other visitors to Discovery Green park
- People attending sports venues including Minute Maid Park, the Dynamo Stadium, and Toyota Center

KEY DRIVERS: TRANSPORTATION

In order to accommodate peak traffic conditions and also improve the pedestrian experience at the GRBCC, serious consideration should be given to reconfiguring ADLA.

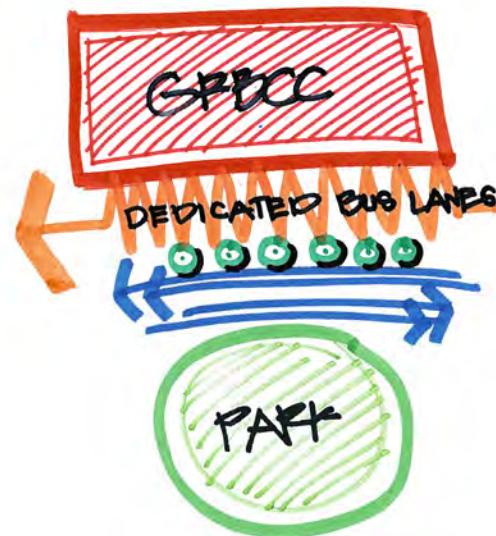


Proposed ADLA Reconfiguration

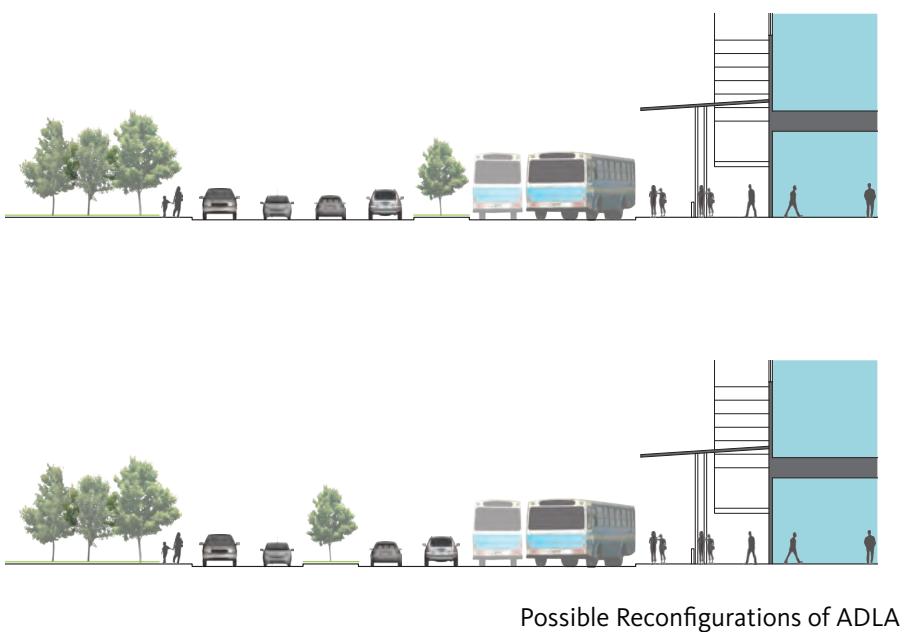
Avenida De Las Americas (ADLA)

ADLA presently has an eight-lane boulevard cross section. Typically, each roadway is approximately 44' wide with added width at turning lanes at intersections. Because the street is only 2,300 feet long with 'T' intersections at each end, its capacity is essentially never needed for moving traffic. This street width is used for angle parking of buses at large events.

The GRBCC attracts large numbers of visitors to its events, often requiring buses from remote parking sites and hotels. It is at these events that ADLA is used to load, unload, and stage buses. While it is tempting to consider options of reducing the width of ADLA to make it more pedestrian-friendly, any consideration of narrowing the street needs to keep the "big event" function of the street in mind.



ADLA Reconfiguration Concept Diagram



Recommendations

Polk Street will serve as the only connection between downtown and the area east of US 59 from Rusk to Bell. It is important that the traffic-moving function of Polk be preserved and enhanced. All GRBCC expansion options should provide for a four-lane cross section on Polk, with added turning lanes at important intersections as dictated by local conditions. The street will also serve east-west pedestrian traffic and should have sidewalks consistent with the large crowds that will be present at major GRBCC events and events at surrounding venues in the area.

The overall width of ADLA is wider than warranted by traffic volumes; however, its width is

utilized by bus loading and unloading at major events. In order to balance the need to accommodate peak traffic conditions and also improve the pedestrian arrival/registration experience during large events at the GRBCC, serious consideration should be given to the reconfiguration of ADLA. This could include a reduction of lanes and relocation of the traffic island to allow for a wider sidewalk in front of the Convention Center, expansion of the western facade to increase ground level interior spaces, and/or designated pick-up/drop-off zones for buses and passenger vehicles. ■

PRIMARY CONSIDERATIONS

Transportation

- Future development around the GRBCC will generate significant increases in pedestrian and vehicle traffic.
- It is important that the traffic-moving function of Polk be preserved and enhanced with sidewalks to accommodate event crowds.
- The configuration of ADLA should be reconsidered to reconcile low day-to-day traffic volume with the need to accommodate peak traffic volume during large events.

KEY DRIVERS: ATTRACTIONS & ACTIVITIES

Attendees and their guests look for shopping, dining, entertainment and other activities at some point during their stay for a convention. Many destinations have branded themselves as “family friendly” and attracted visitors who stay longer (either pre- or post-convention). Boston, Nashville, Orlando, San Antonio, and San Diego have excelled in this approach. A similar cultural or adult offering is provided in Las Vegas, New York, New Orleans, and San Francisco by combining the business aspects of the meeting with a personal get-away.

A key observation about Houston expressed by exhibitors and industry experts in hospitality, meeting planning, and tourism concerned the lack of attractions (restaurants, bars/clubs, shopping, entertainment) within convenient walking distance to the Convention Center. Although a variety of dining options are available downtown, many are located in the underground tunnel system or at upper-level food courts. These restaurants are not visible from the street and are often overlooked by out-of-town visitors.

The Houston Pavilions, located 5-7 blocks to the southwest of the Convention Center, provides the most concentrated group of shops, restaurants and entertainment venues. The Historic District, 10-13 blocks to the northwest of the GRBCC, offers a vari-



Proximity to Entertainment/Shopping Nodes and Restaurants

ety of restaurants with the largest concentration occurring around and near Market Square Park. On the far west side of downtown, the Theater District features a diverse array of music and theater shows.

East of the Convention Center, directly across US 59 is the East Downtown Management District, EaDo. Plans for hotels and retail development in this area have been discussed in recent years, but at this time there are limited options in EaDo to attract visitors and conventioneers, and pedestrian



Houston Pavilions



Minute Maid Park

access from the GRBCC is not attractive or well-defined.

The GRBCC is flanked by two major sports venues, Minute Maid Park (Houston Astros) and Toyota Center (Houston Rockets). Groundbreaking for the new MLS stadium (Houston Dynamo) took place in 2011 and is located east of US 59, five blocks northeast of the Convention Center. These venues, however, are driven by their respective sport's schedules and any alignment with convention events is coincidental.

Discovery Green, across the street from the Convention Center, represents the city's finest example of public open space and serves as the 'front door' to the GRBCC.

Recommendations

Primary consideration should be given to any and all future development in the vicinity of

the GRBCC. Future hotels, residential buildings, office towers and parking garages should be designed to accommodate restaurants, bars and retail shops at the street level. This approach to the creation of a convention district should be aggressively encouraged by the City of Houston when negotiating with developers. Activating the streets with local residents, downtown workers, conventioneers and visitors attracted by the shops, restaurants and entertainment venues will create a vibrant, safe convention district that appeals to meeting planners and exhibitors.

Consideration should also be given to enhancing the pedestrian corridor that links the GRBCC to established developments like the Houston Pavilions. The City can foster connectivity between venues by making the street-level pedestrian experience interesting, comfortable and safe. ■



Discovery Green

PRIMARY CONSIDERATIONS

Attractions

- There is a lack of attractions and amenities within convenient walking distance to the GRBCC.
- All future development in the vicinity should accommodate restaurants, bars and retail shops at the street level.
- Enhancement of pedestrian corridors that link the GRBCC to established entertainment districts like the Houston Pavilions should be a priority.

KEY DRIVERS: SAFETY & SECURITY

Throughout the history of the American Society of Association Executives' survey, safety and security was a prime consideration for meeting planners. Since 9/11, this factor has been enshrined in the top five selection criteria. Many destinations (Atlanta, New Orleans, New York, and Phoenix) have addressed security by adding host ambassador personnel within defined tourist zones. Protecting visitors must be a prime directive for a successful convention destination and, in many places, perception differs from statistical reality. Some convention destinations are perceived as safe, but score comparatively high in property and other crimes.

Compared to its competitor cities, Houston is a safe destination for local residents, conventioneers and tourists. The reality of a safe environment



Underpass below US 59

around the Convention Center is best illustrated by the daily influx of visitors, families and downtown workers to Discovery Green across the street from the GRBCC.

However, the reality can be overshadowed by the public's perception of personal safety when in the immediate vicinity of the GRBCC due to several factors, including:

- Minimal non-convention pedestrian traffic in the area except for activities in Discovery Green
- A considerable number of undeveloped parcels and surface parking lots adjacent to the GRBCC
- The pedestrian corridor under Highway 59 is dark and unattractive
- The EaDo District, immediately east of the GRBCC, is a mix of warehouses, abandoned buildings, vacant lots and small commercial businesses



Surface parking west of the GRBCC



Undeveloped lots south of the GRBCC

Human nature and the demographics (where they live; age; etc.) of conventioneers are key considerations for understanding their perceptions of a place. Out of town visitors unfamiliar with the area will be hesitant to venture far in search of food, shopping and entertainment. Clearly articulated pedestrian corridors and wayfinding tools (signage, kiosks, iconic street elements) will promote exploration and discovery by visitors.



East Downtown at Chartres St.

Elderly visitors are unlikely to walk great distances and will generally return to their off-site hotel in a car or bus rather than seek dining and shopping opportunities several blocks away from the GRBCC. Shuttles and downtown trolleys can provide access to a variety of Houston's downtown districts and ameni-

ties for both visitors and residents and, as a result, supports downtown businesses.

Protecting visitors must be a prime directive for a successful convention destination and, in many places, perception differs from statistical reality.

ties for both visitors and residents and, as a result, supports downtown businesses.

As more opportunities are developed for visitors to stay and play in the immediate area around the GRBCC, the potential for more

Recommendations

Primary consideration should be given to city policies and public support for the aggressive development of a second convention center hotel, residential buildings and retail/restaurant/entertainment venues. Activating the streets with local residents, downtown workers and visitors attracted by the shops, restaurants and entertainment venues will create a vibrant, safe convention district that appeals to meeting planners and exhibitors. ■

PRIMARY CONSIDERATIONS

Safety & Security

- City policies and public support for development of a second convention center hotel, residential buildings and entertainment venues are needed.
- Activating the streets with local residents, conventioneers and visitors will create a vibrant, safe convention district that appeals to meeting planners and exhibitors.

LONG RANGE STRATEGY: METHODOLOGY

Planning for urban civic projects differs from the long range strategies for universities and corporations who are generally less dependent on the decisions, actions and timelines of others outside of their control. Universities and civic entities may share similar challenges related to funding and the allocation of resources, but the university controls the streets, infrastructure, building adjacencies and project timelines for the entire campus. Corporations and civic entities may share similarities in the complexity of their organizational structure, but corporations are self-funding and less reliant on the actions of off-campus stakeholders.

During the development of the George R. Brown Convention Center 2025 Master Plan, it became apparent that the future success of the Convention Center is heavily reliant upon the investments and actions of others outside of the GRBCC's control.

Any future expansion of the Convention Center facilities or realization of a long range strategy is dependent on considerable private sector development around the GRBCC and meaningful support by the City of Houston in the guise of policy changes, private investment incentives and infrastructure improvements.

Planning Methodology

The 2025 Master Plan takes a 15-year outlook on the opportunities for transforming the Central Business District's east end. While the Master Plan is written from the GRBCC's perspective and the focus, in many regards, is on the various options for expansion of the Convention Center's facilities, many of the key drivers influencing the future of the GRBCC exist outside its walls and authority.

Gensler and its consultants, working closely with the GRBCC and Central Houston Civic Improvement leadership, explored a wide range of possible

scenarios for future development in and around the Convention Center. Each scenario takes a holistic district-wide approach to solutions, acknowledging the interdependence between the Convention Center and neighborhood.

Planning Scenarios The five scenarios in this report represent a distillation of ideas from multiple concepts developed in the early stages of the project and fall into one of four categories:

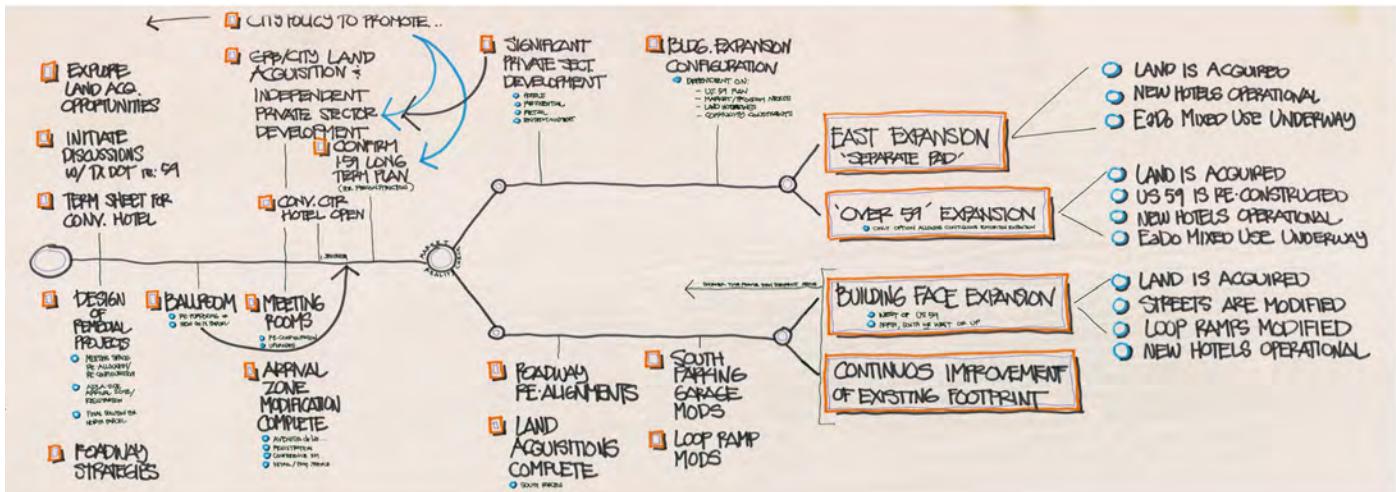
- Expansion East of US 59
- Expansion Over US 59
- Expansion West of US 59
- No Expansion/Continuous Upgrades

It was important to the planning process that every possible option be explored regardless of the practicality or number of obstacles in its path. In order

**... a holistic district-wide approach...
acknowledging the interdependence between
convention center and neighborhood.**

for the GRBCC and the City of Houston to commit themselves and their resources to promote future growth in the convention district, assurance was needed that all ideas had been considered and that a balance of interests of all stakeholders was a priority when evaluating the viability of each option. Ideas that were explored and eventually dropped for various reasons included:

- Expanding the GRBCC vertically and making the current roof the next level for needed spaces
- Parking on the roof of the GRBCC
- Building expansion and/or pedestrian bridges on top of US 59
- Closure of Polk Street to allow for contiguous expansion southward



Planning Charrette - Decision/Action Timeline Path

Each option shown has its merits with varying degrees of opportunities and constraints. Some options were found to have more champions than others after meeting with various stakeholders and interested parties over a three-month period. Information/coordination meetings engaged:

- Local stakeholders including Incarnate Word Academy, hotel operators and area businesses
- Local developers with planned projects in the pipeline
- City agencies with adjacent projects like the Texas Heritage Discovery Center
- Representatives of the Mayor's Office
- Consultant team working on a parallel planning project for Livable Centers

Coordination with concurrent building and planning projects by others, together with the input from stakeholders, were key considerations in the development of the long-range scenarios found in this report.

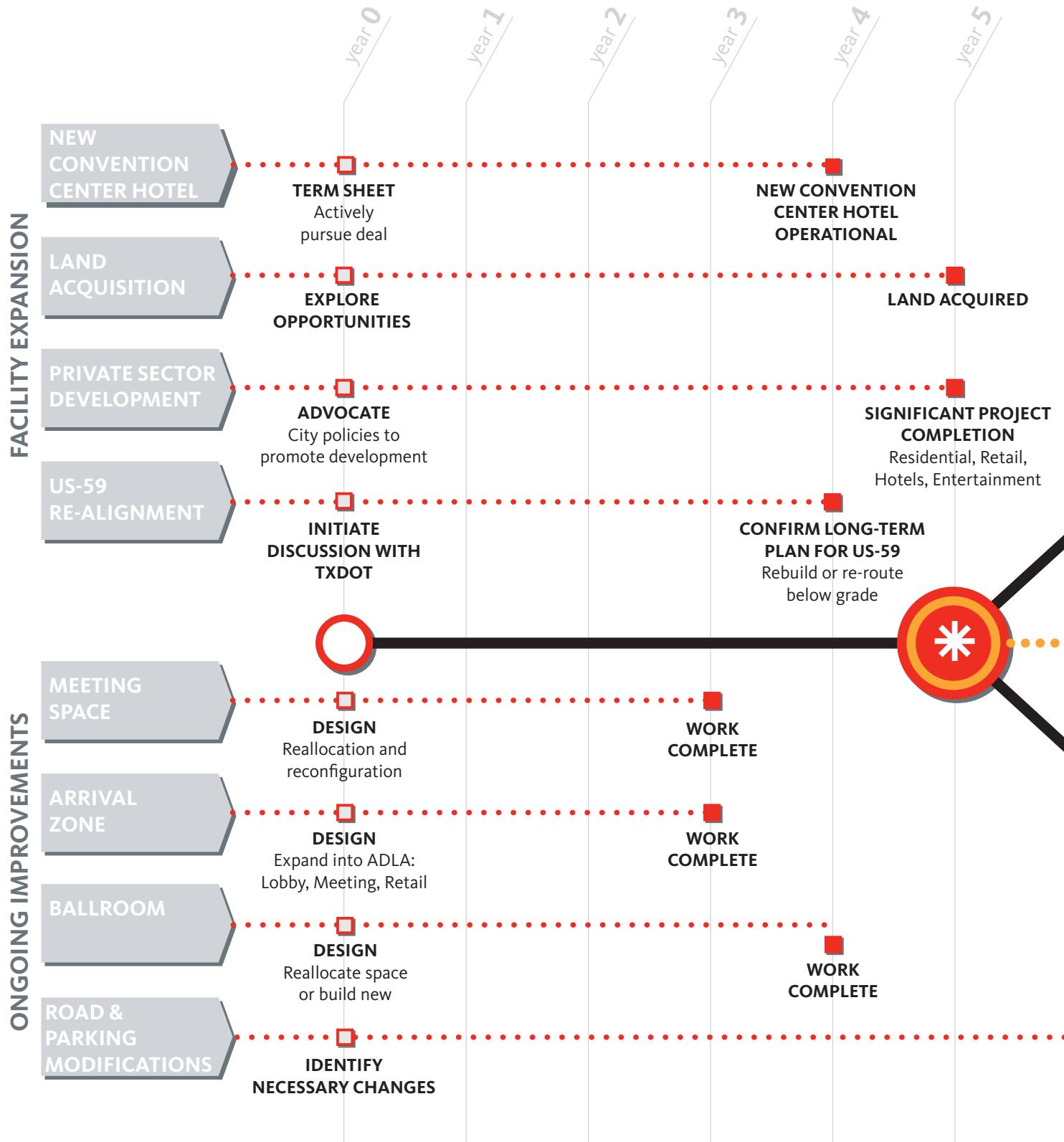
Decision/Action Timeline During the planning charrette conducted in January 2011, attendees developed a timeline of actions and decision points that would guide the GRBCC on its path to one of several possible end-states for expansion. In simple terms, the timeline on the following page illustrates:

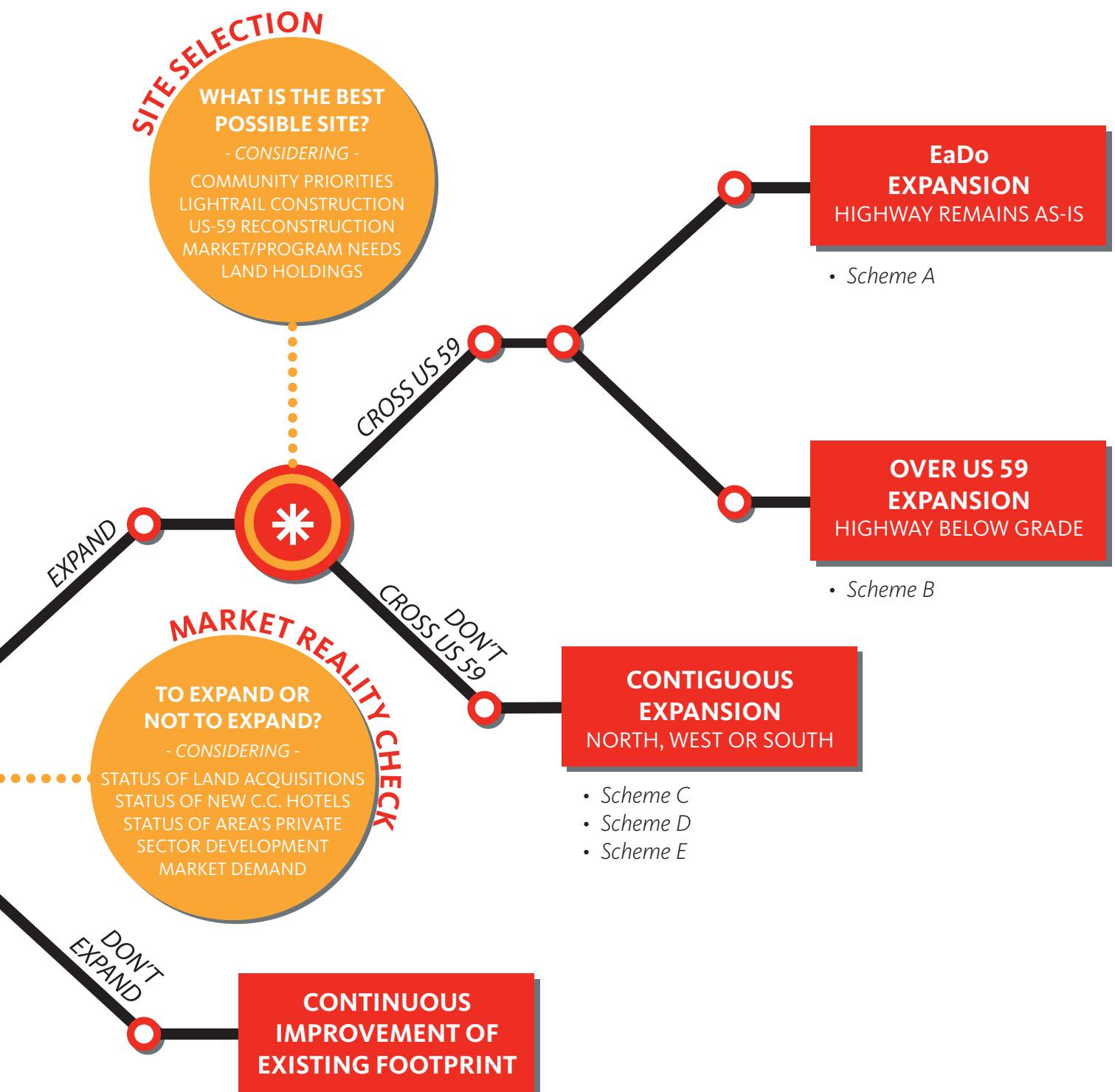
- If certain actions are completed and objectives achieved, the following end-states are possible, or...
- If certain actions are not completed nor objectives achieved, the following end-states are possible.

In this timeline, although somewhat arbitrary, the first key decision point comes at the five-year mark. In the first five years of the timeline, two parallel tracks of activities occur: (1) business-as-usual with ongoing improvements of the GRBCC; and (2) strategic positioning for facility expansion. The extent to which those activities and initiatives are accomplished will be assessed at the five-year decision point when a "Market Reality Check" is conducted to determine the GRBCC's strategic options for going forward. For example, in most of the expansion options for the GRBCC, land acquisition is required. In the draft timeline above developed during the charrette as well as the timeline on the following page, land acquisition is shown as a strategic action. Whether or not the City of Houston acquires the needed land in the near term will influence the decisions made and the direction taken by the GRBCC regarding future expansion. Depending on shifts in the economy and market demand, the actual time frame for these actions and decisions could be accelerated or delayed. ■

DECISION/ACTION TIMELINE

LONG RANGE STRATEGY





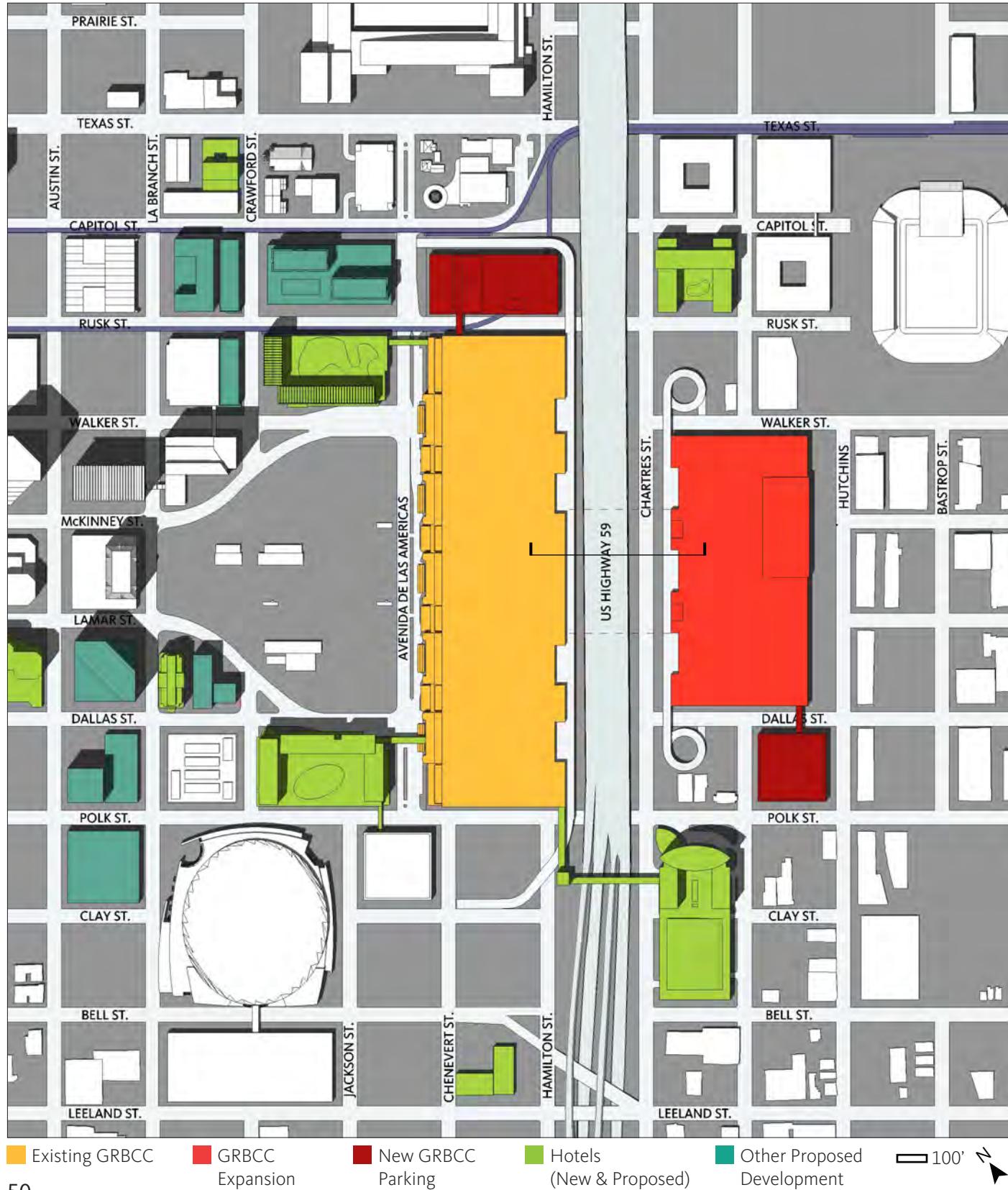
• Scheme A

• Scheme B

- Scheme C
- Scheme D
- Scheme E

FUTURE DEVELOPMENT SCENARIOS

LONG RANGE STRATEGY: SCHEME A



EaDo Expansion With Sub-grade Connection

The Big Idea behind Scheme A is the expansion of the GRBCC taking place east of US 59. The expansion, a 795,000 sf stand-alone building, is connected to the GRBCC via an underground pedestrian mall that runs east-west beneath US 59 and Chartres Street. While locating an expansion of the GRBCC here can be seen as a potential catalyst for private sector development in EaDo, the current character and state of the neighborhood is seen as a major negative from the perspective of meeting planners that schedule conventions and trade shows at the GRBCC.

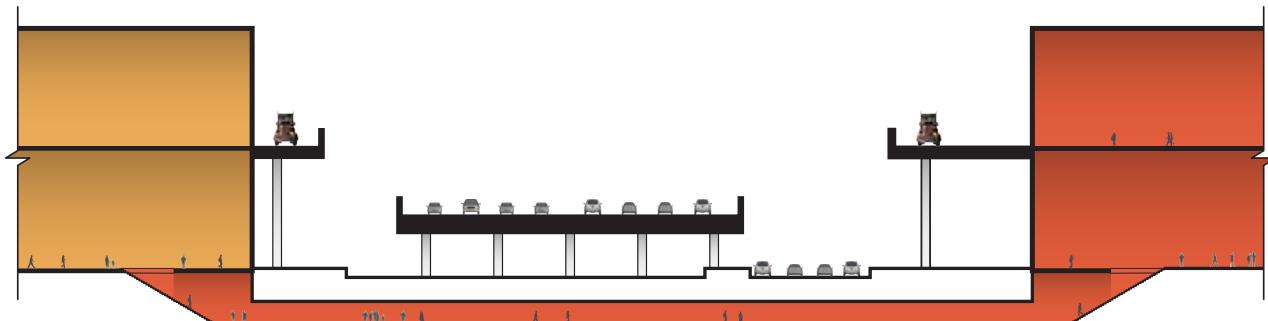
The scheme encompasses the blocks bounded by Chartres, Hutchins, Dallas and Walker Streets. The front door to the east expansion building would be on Hutchins. Service access and loading docks face Chartres. Upper level service is accessed by helical ramps at its northwest and southwest corners. A parking garage to serve the east building would be located at the southeast corner and connected via a pedestrian bridge over Dallas Street.

In Scheme A, the block adjacent to Discovery Green includes two residential towers sharing a multi-level podium of parking and street-level retail and dining. The parcel to its north shows the proposed convention center hotel connected to the GRBCC via pedestrian bridges. Additionally, a new garage is proposed for the surface lot north of the GRBCC that will serve the parking needs of the new hotel as well as make up the spaces lost when the surface lots on these parcels are developed.

Key considerations for Scheme A include the required closure of St. Emanuel Street, substantial land acquisition east of US 59, and the prerequisite of in-place, successful mixed-use development that transforms the current character of EaDo.

KEY CONSIDERATIONS *Scheme A*

- Anchor attraction on the East Side
- Catalyst for private development on East Side
- Chartres Street is not impacted
- Closure of St. Emanuel
- Parking facilities east of US 59 are needed
- Pedestrian Connection (tunnel under US 59)
- Land Acquisition east of US 59
- Requires transformation of current character of EaDo



Schematic Section Looking North
1" = 80'

FUTURE DEVELOPMENT SCENARIOS

LONG RANGE STRATEGY: SCHEME B



Contiguous East Expansion/Depress US 59

Scheme B represents the most radical option for expansion due to the need to depress US 59 below grade to allow the Convention Center to expand its current footprint eastward. Instead of making the Convention Center longer as illustrated in Scheme C, this option provides 471,000 sf of additional exhibit hall and meeting room space by making the current space wider. With the need to develop a new upper level service ramp, this option employs one-way helical ramps located on open parcels once encumbered by the elevated freeway.

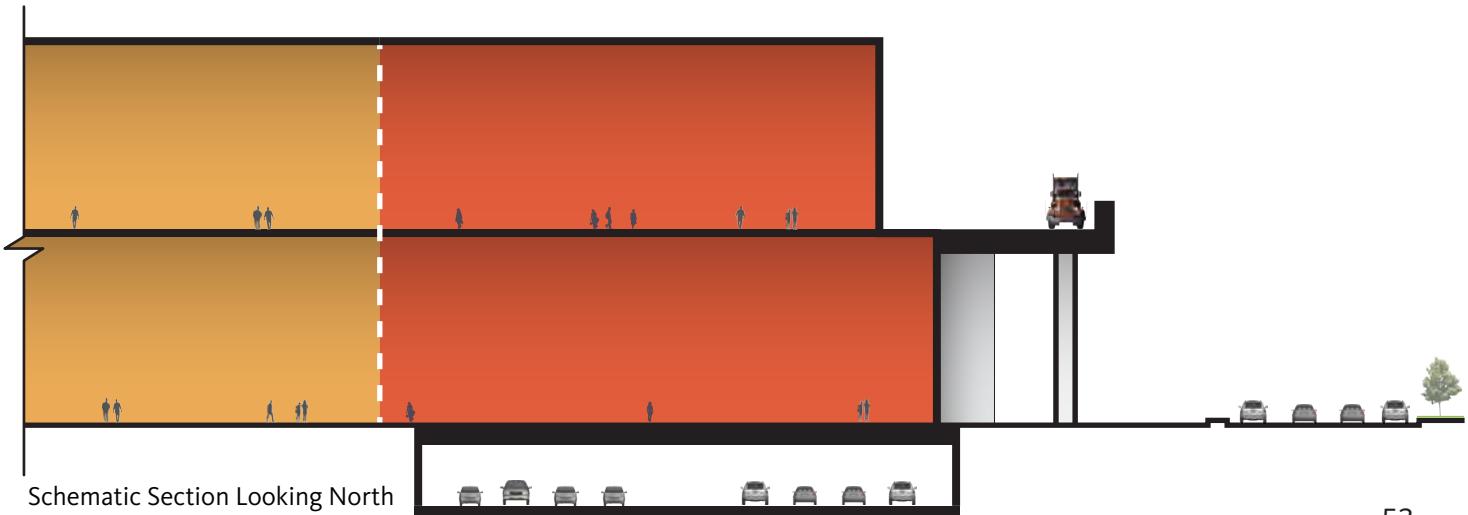
By depressing the freeway below grade, the visual (and psychological) barrier separating downtown from EaDo is removed and new blocks of developable land are created. The parking zone reserved for vendor vehicles during trade shows behind the GRBCC under the freeway would need to be relocated off-site.

The proposed revisions to US 59 would likely cost hundreds of millions of dollars. However, this segment of US 59 is over 40 years old and will eventually require replacement or major rehabilitation which would absorb some of the cost for depressing the highway. Project funding, timelines and coordination with TXDOT are seen as major obstacles to advancing this option.

In Scheme B, the block adjacent to Discovery Green includes two residential towers sharing a multi-level podium of parking and street-level retail and dining. The parcel to its north shows the proposed convention center hotel connected to the GRBCC via pedestrian bridges. Additionally, a new garage is proposed for the surface lot north of the GRBCC that will serve the parking needs of the new hotel as well as make up the spaces lost when the surface lots on these parcels are developed.

KEY CONSIDERATIONS *Scheme B*

- Provides contiguous expansion of existing footprint
- Creates new blocks of developable land
- No highway barrier between EaDo & Downtown
- Approval & funding to depress US 59 below grade is needed
- Relocation of off-site parking for vendors' vehicles



Schematic Section Looking North
1" = 50'

FUTURE DEVELOPMENT SCENARIOS

LONG RANGE STRATEGY: SCHEME C



Contiguous North Expansion

The Big Idea behind Scheme C is the contiguous expansion of the existing GRBCC footprint, similar to the expansion approach completed in 2003. The expansion in this scenario occurs on City-owned property and provides 255,000 sf of new space. The additional space gained in this scenario is not enough to accommodate the combined needs for new exhibit, meeting and ballroom space identified in analysis by industry leaders and consultants.

Scheme C shows a new convention center hotel on the (currently) undeveloped block between Walker and Rusk Streets with a pedestrian bridge providing connectivity with the Convention Center. To its north is a proposed parking garage on the parcel between Rusk and Capitol. In addition to serving the parking needs of the new hotel, the garage will make up the spaces lost when the surface lots on these parcels are developed. The garage, however, would be located on privately-owned land.

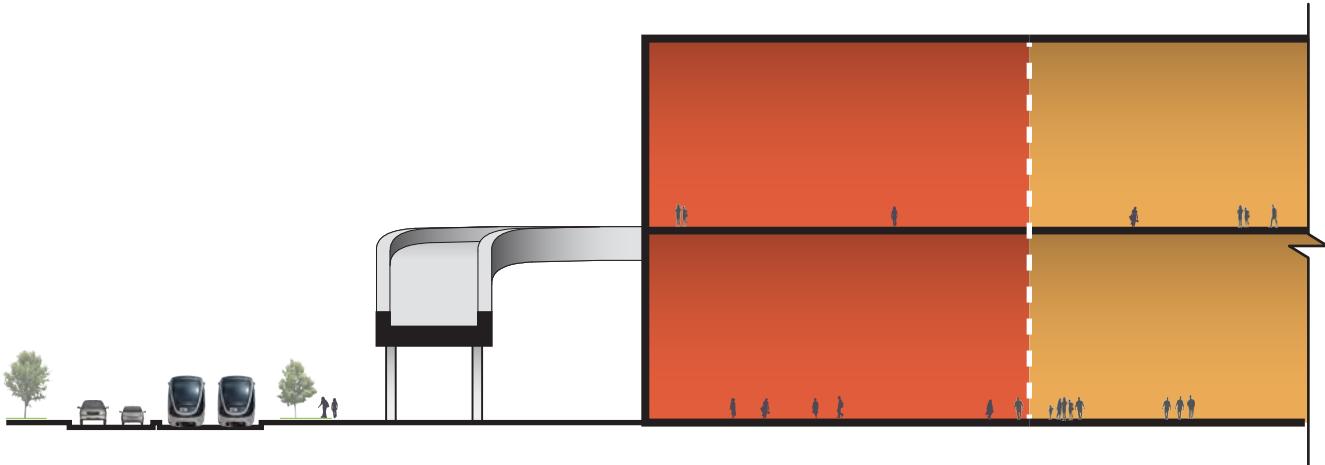
This scheme requires the closure of Rusk Street at ADLA. While Rusk has already been closed at Hutchins for the Dynamo Stadium, it still provides east-west continuity between the east side of US 59 and downtown. This is especially important due to the diminished traffic-carrying capacity of Texas Avenue due to the METRO LRT line now under construction.

Abandonment of Rusk between ADLA and Hamilton would require all utilities within this segment to be relocated. Additionally, it would require the redesign and realignment of the east-bound LRT line.

KEY CONSIDERATIONS

Scheme C

- Provides contiguous expansion of existing footprint
- Expansion on city-owned property
- Realignment of east-bound METRO LRT line
- Closure of Rusk Street between ADLA & Chartres
- Converting Capitol Street to two-way between Crawford & Hamilton



Schematic Section Looking East
1" = 50'

FUTURE DEVELOPMENT SCENARIOS

LONG RANGE STRATEGY: SCHEME D



Meeting and Retail Expansion Over ADLA

The Big Idea behind Scheme D is the extension of the west façade at Level 3 over Avenida de las Americas to address the need for additional meeting space and desire for more on-site retail. This concept physically impacts the surrounding neighborhood and traffic less than the other options and suggests that no major expansion of exhibit halls and ballroom is anticipated.

The expansion spanning ADLA provides an additional 117,000 sf of space and creates a shaded all-weather front door for conventioners and pedestrians. The overhang does have openings allowing sunlight to penetrate and prevent the Level 2 concourse from being too dark. The proposed expansion would radically change the iconic, well-recognized façade of the GRBCC.

Scheme D requires the reconfiguration of ADLA to accommodate the structural support of the overhang and allow for the widening of the sidewalk outside the GRBCC. Except for peak loads during major events, ADLA is overdesigned and underutilized. Re-thinking north-south passenger vehicle traffic and northbound bus drop-off/pick-up on is key to improving traffic efficiency and pedestrian safety on ADLA.

In Scheme D, the block adjacent to Discovery Green includes two residential towers sharing a multi-level podium of parking and street-level retail and dining. The parcel to its north shows the proposed convention center hotel connected to the GRBCC via pedestrian bridges. Additionally, a new garage is proposed for the surface lot north of the GRBCC that will serve the parking needs of the new hotel as well as make up the spaces lost when the surface lots on these parcels are developed.

KEY CONSIDERATIONS *Scheme D*

- Provides additional meeting & retail space on Level 3
- Strengthens connection with Discovery Green
- Creates all-weather front door for conventioners
- Narrowing & reconfiguration of Avenida de las Americas
- Alters iconic facade of the GRBCC



Schematic Section Looking North
1" = 50'

FUTURE DEVELOPMENT SCENARIOS

LONG RANGE STRATEGY: SCHEME E



Contiguous Superblock

The Big Idea behind Scheme E is the significant expansion of the GRBCC to the south on a new ‘superblock’ comprised of four city blocks. The existing facility and proposed expansion are connected over Polk Street at Levels 2 and 3. The expansion satisfies anticipated future needs for additional exhibit hall, meeting room and ballroom space with 565,000 sf of new space.

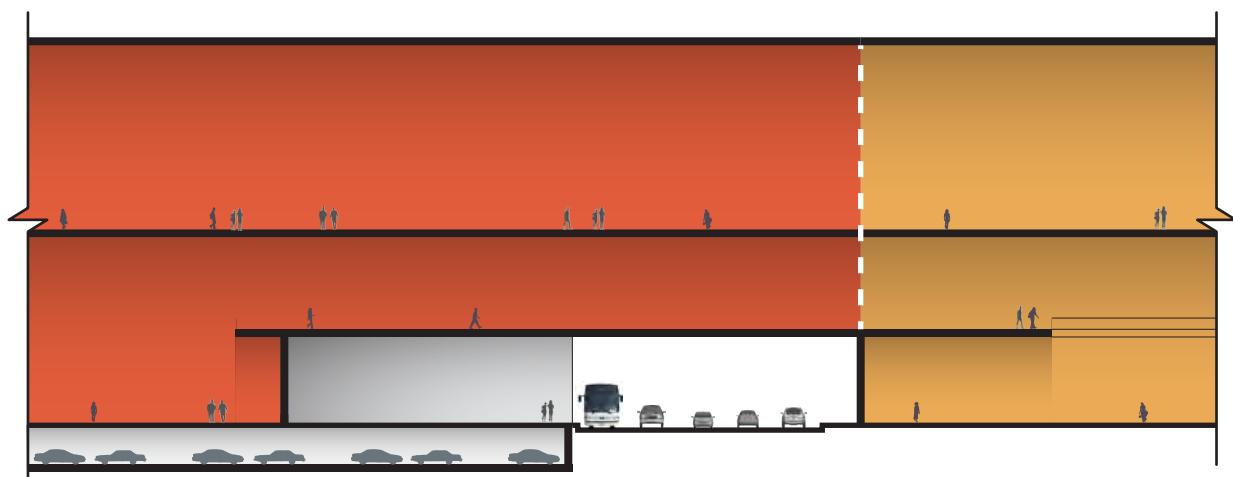
Scheme E represents the highest and best use of low profile land parcels between US 59 and the backsides of Toyota Center and the GRBCC. The relationship between the Convention Center and Toyota Center (already used to serve some convention events) are reinforced in this scheme. The expansion building creates a new ‘front door’ to the GRBCC along Polk Street that will help strengthen the connection to future development across US 59 in EaDo.

East-west traffic is not impacted by creation of the superblock. The closure of Chenevert simplifies the 3-stoplight congestion on Polk Street that currently exists between Chenevert, ADLA and Jackson. The closure of Clay Street between Jackson and Hamilton is inconsequential to traffic flow. The existing Hilton Americas Garage would be replaced with underground parking beneath the new expansion building and supplemented by use of the existing Tundra Garage.

In Scheme E, the block adjacent to Discovery Green includes two residential towers sharing a multi-level podium of parking and street-level retail and dining. The parcel to its north shows the proposed convention center hotel connected to the GRBCC via pedestrian bridges. Additionally, a new garage is proposed for the surface lot north of the GRBCC that will serve the parking needs of the new hotel and also make up the spaces lost when the surface lots on these parcels are developed.

KEY CONSIDERATIONS *Scheme E*

- Highest & best use of low-profile land parcels
- Simplifies traffic at Polk & ADLA intersection
- Strengthens connectivity between the GRBCC & Toyota Center
- Creates new ‘front door’ to future EaDo development
- Capitalizes on under-utilized Tundra garage
- Minor street closures of Chenevert and Clay Streets
- Demolition of existing Hilton Americas garage



Schematic Section Looking West

1" = 50'

GRBCC 2025 PLAN



Aerial view of proposed development in the Convention District

The vision for the future of the GRBCC extends beyond the walls of the Convention Center and includes the businesses, residents, public agencies and other stakeholders of Houston's downtown east end. The future development and success of the GRBCC cannot be fully realized without the future development and success of the 'convention district.'

The plan does not infer a one-time all-in development project. It is envisioned and understood that the proposed development, enhancements and expansion will occur in phases over an extended period of time.

As discussed earlier in this report, the timeline for development is fluid and heavily influenced by certain decisions and actions by the City of Houston and private sector. For example, future expansion of the Convention Center is not a viable consideration until (1) new hotel development providing the needed rooms and amenities is in place; and (2) the City of Houston acquires the land where the proposed expansion is planned.

2025 Plan

The 2025 Plan illustrates a best-case scenario for the future expansion of the GRBCC, improvements to existing infrastructure including Avenida de las

Americas and proposed public/private development of the surrounding area. The plan's primary focus area is bounded by U.S. 59, Texas Avenue, Crawford and Bell Streets. The plan, however, recognizes the importance of areas outside the focus area like EaDo and the downtown entertainment/shopping district and addresses the need for connectivity.

In order to address the anticipated need for expanded exhibition and meeting space in a meaningful way, the preferred option places GRBCC Phase III on four city blocks south of Polk Street, connected to the existing Convention Center via a pedestrian bridge at both the concourse and upper levels.

Improvements to Avenida de las Americas (ADLA) and Polk Street are planned with the most significant changes anticipated with the reconfiguration of ADLA. Improved traffic flow, peak-event bus operations and enhanced pedestrian mobility are key drivers in the proposed modifications to ADLA.

In the multi-block zone north of the GRBCC, between the Convention Center, Minute Maid Park and Incarnate Word Academy, the plan reflects the desired mix of land uses – Residential, Hospitality, Retail, Entertainment – that will foster the notion of a thriving, active, sustainable downtown community and create a desirable destination for Houstonians, out-of-town visitors and conventioneers.

On the following pages, key aspects of the 2025 Plan will be described in greater detail, including:

- Hotels
- District Amenities
- Street Improvements
- Pedestrian Connectivity
- GRBCC Phase III

Hotels

The need for hotel rooms nearby, adjacent and connected to the Convention Center has been recognized and stated many times during the course

of this study. In November 2010, a Hotel Advisory Panel met to discuss considerations for the City of Houston and the GRBCC regarding the need and potential strategies for a future hotel adjacent to and serving the Convention Center.

In December 2010, an Industry Advisory Group comprised of event specialists, meeting planners and exhibitors from across the nation participated in an all-day vision session to share their observations and make recommendations for the future expansion of the GRBCC and development of the surrounding area related to amenities, character and hotel room supply.

The main conclusion from both groups is that the GRBCC is severely lacking the hotel room supply to be competitive with peer cities for drawing major shows.



GRBCC 2025 PLAN

The 2025 Plan identifies proposed locations for future hotels nearby, adjacent and connected to the Convention Center. Key factors influencing the proposed locations include site opportunity, access and proximity to the GRBCC and other major venues/districts.

Block 99 is considered a prime hotel location due to its adjacency to Discovery Green and potential for connectivity via pedestrian bridge to the GRBCC. Many see this site as ideal for developing a ‘mirror-image’ of the Hilton Americas Hotel located immediately south of the park. A new parking structure is proposed on Block 160, immediately north of the GRBCC, serving both the new hotel and Convention Center.

Others consider Block 99 to be ideally suited for a shared use residential tower and boutique hotel concept due to the marketability of Discovery

Green to potential downtown residents. This, in turn, would make Block 100/120 the preferred site for a large, convention center hotel. In either case, development of Blocks 99 and 100/120 as hotel sites supports the near- and long term needs of the GRBCC and the convention district.

A hotel is planned for the corner of Polk Street and Chartres Avenue, one block southeast of the Convention Center across US 59. Final design and construction of this hotel is unknown at the time of this report. To complete a ‘four-corners’ hotel concept desired by the GRBCC, the plan includes a hotel on the corner of Rusk Street and Chartres Avenue, one block northeast of the Convention Center.

Street Improvements

Operationally, the success of the Convention Center is impacted by the streets that provide access



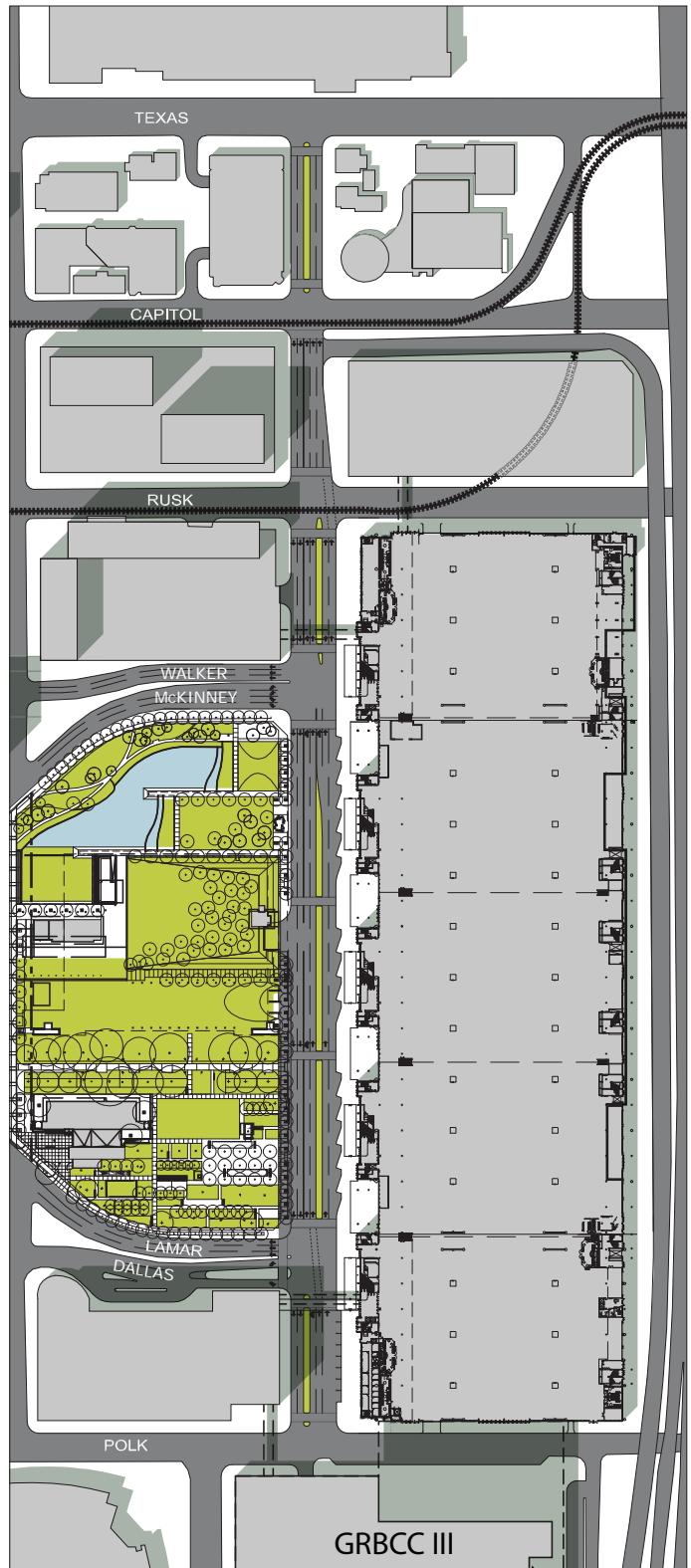
View of proposed hotel and realignment of Avenida de las Americas

to the facility. Logical, easy-to-understand routes are important to visitors unfamiliar with the area. Dedicated pick-up/drop-off zones for bus operators during peak-load events foster a safe, efficient process for accommodating off-site visitors. Separation of service zones from high-volume vehicle and pedestrian traffic areas is preferred for both safety and aesthetic reasons.

The plan's game-changer regarding street improvements is the proposed reconfiguration of Avenida de las Americas (ADLA). Both vehicular and pedestrian flows will be improved following its completion and it is recommended that the modifications be implemented as soon as possible. The plan claims one traffic lane to widen the sidewalk in front of the GRBCC by 13 feet, allowing large numbers of pedestrians to walk along ADLA comfortably while others queue up to enter the building for a show. The next three lanes are dedicated bus lanes, allowing 30° parking for drop-off/pick-up and a passing lane. The remaining four traffic lanes west of the median will accommodate north-south passenger vehicles. During periods when bus operations are not required, the dedicated bus lanes can accommodate other program uses.

Polk Street is planned for improvements including widening and a drop-off lane in front of the GRBCC Phase III expansion. The closing of Chenevert Street due to Phase III expansion will eliminate the need for the current traffic signal, simplifying today's three-signal condition between Chenevert, ADLA and Jackson Streets. Hamilton will be reduced from four-lanes to two-lanes to accommodate the service lane and loading docks of the future Phase III. In the plan, Rusk Street will remain open. METRO's eastbound LRT and the proposed parking garage on Block 160 are planned to allow vehicular thru-traffic.

Additionally, the 2025 Plan supports enhancement/upgrades to, and development along, Dallas Street which is seen as a major pedestrian connector to the Houston Pavilions shopping and Main Street activities.



Proposed ADLA Reconfiguration

GRBCC 2025 PLAN

District Amenities

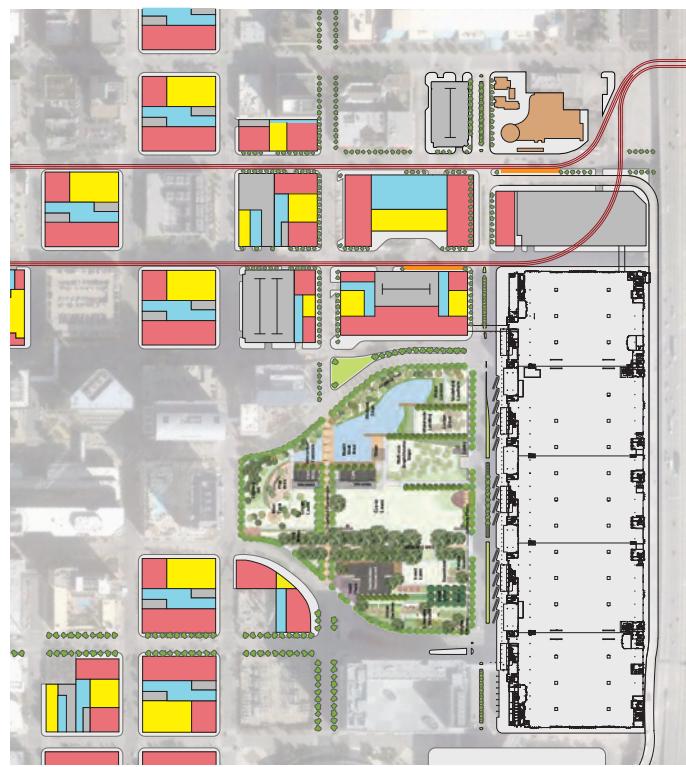
How a city is perceived by out-of-town visitors is influenced by the part of the city they experience. Many conventioneers and trade show attendees will only experience the part of Houston that exists between their hotel and the Convention Center. Ideally, the convention district should convey the City of Houston's desired image to visitors.

Characteristics of cities that visitors find desirable include:

- Pedestrian friendly
- Active street life
- Convenient dining, shopping and entertainment
- Variety of dining, shopping and entertainment options
- Ease of wayfinding



These same characteristics should be key considerations for all new development surrounding the Convention Center. Treatment of the streets, sidewalks and ground floor programmed spaces in buildings should promote a vitality that supports both the resident community as well as visitors to our city.



PROPOSED GROUND FLOOR LAND USE

Lobby	Retail	Parking
TX Heritage Visitor's Ctr.	Light Rail Stop	Back of House

The 2025 Plan illustrates a balanced mix of land use types with the concentration of non-GRBCC development occurring on the parcels to its north and northwest. The plan fosters the idea of a convention district that supports a resident community and offers amenities that appeal to locals and visitors alike. The plan envisions ground floor space in hotels, residential towers and parking garages to accommodate shops, restaurants and other programmed needs that sustain a thriving community. Creating a 'destination' district that is anchored by Discovery Green will attract Houstonians and their entertainment dollars as well as keep conventioneers and visitors in the area during their stay.

Achieving a fully developed convention district with amenities will take years to accomplish and the plan recognizes the importance of enhancing routes from the GRBCC to existing entertainment/shopping districts like the Houston Pavilions. For example, the Dallas Street corridor plays a key role in connecting the area's visitors to the Pavilion's shops, restaurants and clubs 5-7 blocks from the Convention Center.

Pedestrian Connectivity

The vitality of a district is best illustrated by the number of pedestrians and activity on the sidewalks. Pedestrian corridors should foster a sense of safety, comfort, visual interest and sense of direction to enhance the pedestrian experience.

The plan focuses on the importance of pedestrian connectivity to areas near the GRBCC. Until the Convention Center's adjacent blocks are developed with the envisioned hotels, residential, retail and entertainment venues, enhancing the pedestrian links to other hotel, shopping and entertainment districts a little further away in downtown Houston is important.

The proposed reconfiguration of ADLA widens the sidewalk in front of the Convention Center by 12-13 feet, creating more space to accommodate large crowds during peak pedestrian traffic

events. Maintaining and enhancing the east-west corridors of Rusk and Polk Streets will promote a higher utilization by pedestrians traveling to and from the EaDo District east of US 59. Additionally, the GRBCC Phase III expansion suggests a setback of the building facing Polk Street, creating a plaza that serves as a new pedestrian 'front door' for the Convention Center as well as a public space gateway into Eado.

Dallas Street is important as the key pedestrian connector between GRBCC and the Houston Pavilions shopping and entertainment venues. Upgrades to Dallas Street that improve the visual character of the street, foster mobility for all types of pedestrians and promote safety are strongly encouraged in this plan.

As momentum builds with future development in the convention district, Crawford Street is envi-



Examples of street-centric development
sioned to be an important north-south pedestrian corridor linking Discover Green to Minute Maid Park with proposed residential towers, hotels and shops lining the street.



View of proposed pedestrian-oriented development on Crawford Street

GRBCC 2025 PLAN

Phase III Expansion

Originally built in 1987 with Phase II expansion completed in 2003, the GRBCC is a well-managed, well-maintained facility. Despite the analysis that has determined the need for additional meeting space and the marketability of new (and larger) ballroom space, it is understood that several things must happen, including a significant increase in the Convention Center hotel room supply, before future expansion of the GRBCC facilities can be considered.

Future expansion of Convention Center facilities is best accommodated on the four city blocks immediately south of the existing GRBCC. Bounded by Polk, Hamilton, Bell and Jackson Streets, the pro-

posed Phase III will be physically connected to the Convention Center at both the concourse and upper floor levels with no impact to east-west traffic on Polk Street. The location, currently wedged between the GRBCC, US 59, the Hilton Americas Garage and Toyota Center, is a difficult space for other commercial uses but is ideal for the expansion of Convention Center exhibition and meeting space.

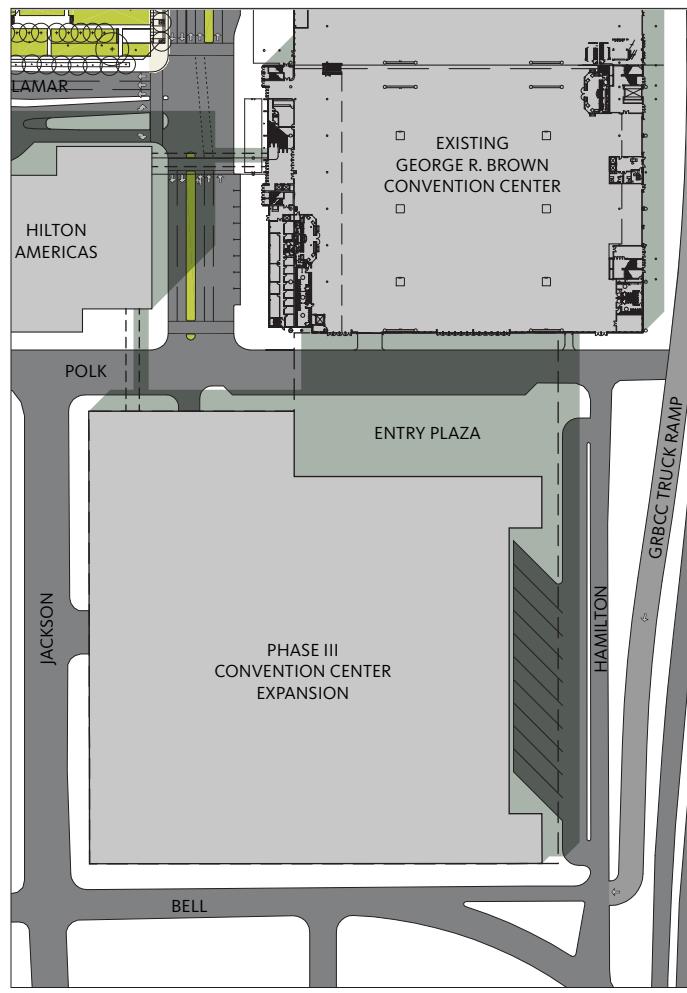
To create the desired ground level exhibition space, the existing Hilton Americas Garage is demolished and replaced with below-grade parking under the Phase III expansion. By doing this, the new Convention Center addition replaces the garage as the dominant feature at the terminus of ADLA. To accommodate a needed service lane/loading dock



Aerial view of proposed development in the Convention District

zone, Hamilton Street has been narrowed from four lanes to two lanes. The GRBCC upper level truck ramp is realigned to allow trucks to exit at Hamilton and Bell Streets.

The Phase III expansion includes 350,000 square feet of exhibition space, 211,000 square feet of meeting/ballroom/program space and up to 114,000 square feet of light exhibit/food & beverage space (provided by the bridge connection to the existing facility). At 257,500 SF, the new below-grade parking below the expansion will accommodate roughly 800 cars. A portion of the Polk Street façade is setback from the street to create a plaza that serves as a new front door to the convention center and gateway to EaDo. ■



Plan of proposed GRBCC expansion

MASTER PLAN RECOMMENDATIONS

INFRASTRUCTURE IMPROVEMENTS

- Reconfiguring Avenida de las Americas
- Enhancing Pedestrian Corridors / Streetscape

DISTRICT-WIDE STRATEGY FOR DEVELOPMENT

- Master Development Agreement for Mixed Use Projects
 - Convention Center Hotel
 - Parking Garage
 - Residential Tower(s)
 - Retail/Commercial Space/ Services/Amenities
- Policies; Incentives; Public-Private Partnerships
- Phased Development Strategies
- Land Acquisition / Parcel Assemblage

FORMAL CREATION OF CONVENTION DISTRICT

- Clearly Defined Development Zone
 - Design and Development Regulations/Policies
 - District-Specific Graphics and Signage
 - Capital Improvements/ Development/Marketing Focus

Appendix

- 70 Balanced Facility Analysis**
- 74 Structural Analysis**
- 77 Technology Analysis**
- 80 C.I.P. Conceptual Costs**

APPENDIX

BALANCED FACILITY ANALYSIS

The starting point for analyzing the market impact of the proposed master plan changes was gathering detailed information on the existing facilities and evaluating how different types of events could use the available space. Computer modeling examines how an audience of a given size would use the existing Convention Center, and then compares that audience to the function space available under multiple new configurations.

This approach identifies the demand for space for different types of event functions – banquet, plenary session, breakout meetings and exhibition – and compares the demand to the available function space. Utilization is compiled from actual equipment layouts in rooms similar in size to those in the space program. Conventional Wisdom uses proven data, not simply occupancy factors taken from building codes or meeting planner's guidelines.

The following table shows Conventional Wisdom's estimated audience sizes by typical uses of convention space within the existing GRBCC.

Use Type & Space	Area	Attendees	
Banquet, Ballroom	31,590 SF	2,100	GRBCC stated occupancy
Banquet, Ballroom	31,590 SF	1,500	Conventional Wisdom use factors
General Session	Theater	3,600	stated occupancy
Meeting Rooms, average	101,943 SF	6,796	
Meeting Rooms, school sets	101,943 SF	5,228	
Banquet, Halls A3 & B3	223,000 SF	8,000	GRBCC stated occupancy
General Session, A3 & B3	223,000 SF	14,500	GRBCC stated occupancy
Exhibition, average	639,000 SF	9,100	trade show
Exhibition, extensive	862,000 SF	14,400	trade show

Conventional Wisdom evaluated several different configurations by event type: conventions, trade shows, meetings, civic banquets and large assemblies. This event demand data was then compared to the mix and size of available function spaces in order to identify pinch points. If space was adequate for banquet and plenary session but the meeting space was not available to support breakout sessions, either the audience size or the mix of spaces was adjusted until a balance was achieved that maximizes the use of the facility.

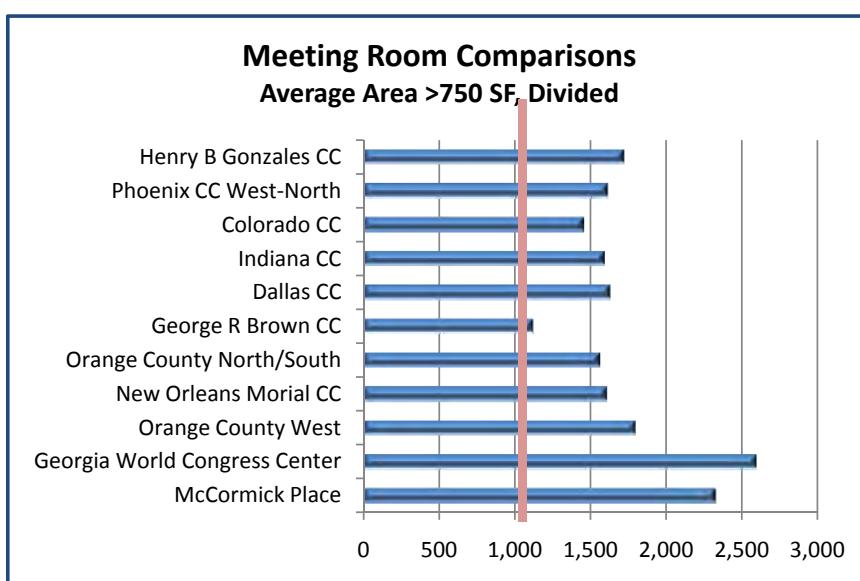
George R. Brown Convention Center, Houston
Event Profiles vs Space Allocation
Target Audience Size - Balanced Use of Facility

		Event Type #1	Event Type #2	Event Type #3	Event Type #4	Event Type #5a	Event Type #5b	Event Type #6
Scale Program	Total Function Space	Convention with Plenary Session and Banquet in Ballroom	Convention with Plenary Session and Banquet	Convention with Plenary Session (Theater) and Banquet	Convention with Banquet, No Plenary Session	Convention with Banquet in Ballroom (GRBCC-sized)	Convention with Banquet in Ballroom (CW-sized)	Trade Show in Ex Hall, Largest Plenary Session
Existing Center	995,533 SF	970	2,750	3,600	8,000	2,100	1,500	14,500

Convention events, banquets and plenary sessions are given equal importance in the analysis as the functions that drive the size and configuration of large assembly spaces due to their unique spatial and technical requirements. As design elements, these key spaces significantly affect the layout and final design of this building type. The sizing for meeting and exhibition space for a balanced facility is a direct extension of the target audience; providing space beyond the minimum calculated demand adds flexibility and may prove attractive to a broader market but adds to capital and operating costs.

Using the provided room specifications, Conventional Wisdom projected the target audience sizes for five to seven different event types ranging from full-service conventions to trade shows and civic banquets. Each event profile is designed to test the capacity of key spaces for particular functions: banquet, general session, conferencing and exhibition. The conclusions are based on single events filling any one space to maximum capacity then measuring the effect of that audience size on other portions of the Convention Center, with an assumption that multiple smaller events can be accommodated within the available space.

- The largest convention with a general session could include an audience of 14,500 in Halls A3+B3 (stated in the facility guide) but that configuration reduces overall exhibition space and limits capacity to events with slightly less-than-average need for that function
- Typical conventions with 3-4,000 attendees are a good fit for the theater but the audience significantly exceeds banquet capacity in the existing ballroom
- Meeting room capacity exceeds demand in this profile by 30 to 70 percent. The variation compares demand from a blended-average of typical uses to a high proportion of intensive classroom setups as occurs with medical or educational conferences
- Average size of the GRBCC's breakout rooms is the smallest relative to direct competitors and smaller than the industry-typical class sized for 100 to 150 people



APPENDIX

BALANCED FACILITY ANALYSIS

Based on analysis of space utilization for Event Type #3 within the existing Convention Center, Conventional Wisdom believes that the optimum size for a convention with banquet and general session is approximately 3,000 to 4,000 attendees. The different space uses are listed below. Color coding indicates the degree to which supply and demand are aligned, with green exceeding projected demand, yellow greater than 90% of demand, orange greater than 80% of demand and red is generally unacceptable to event planners.

Event Type #3 - Convention with Plenary Session and Banquet					
Attendees:	Constrained by Theater Capacity				
	Space Use	Area Demand	Area Available	Supply/Demand	
Theater	Plenary	3,600 seats	3,600 seats	100.0%	
Hall A3	Banquet	3,600 seats	3,500 seats	97.2%	
Meeting Rooms	School	70,200 SF	101,943 SF	145.2%	
Exhibition - Minimal	Exhibit	180,000 SF	252,000 SF	140.0%	
Exhibition - Average	Exhibit	360,000 SF	379,000 SF	105.3%	
Exhibition - Extensive	Exhibit	540,000 SF	639,000 SF	118.3%	

Legend:
■ Exceeds project demand
■ Meets greater than 90% of demand
■ Meets greater than 80% of demand
■ Unacceptable

There are two qualifiers to the initial findings that may affect final recommendations regarding new or reconfigured function space. First, it appears that the GRBCC and Conventional Wisdom use different assumptions as to ballroom setup and maximum occupancy, the latter being most conservative and potentially understating capacity. Second, it is difficult to classify Hall A3 as prime banquet space when compared to the quality and amenities provided in the Grand Ballroom. A new ballroom for hosting banquets for 3,000 to 4,000 could be sized from 45,000 to 84,000 SF depending on the methodology used. Further research is clearly needed on this topic.

George R. Brown Convention Center, Houston

Event Profiles vs Space Allocation

Existing Convention Facilities

Event Type #1 - Convention with Plenary Session and Banquet in Ballroom

Attendees: **970**

Constrained by Banquet+Theater Capacity

Space Use	Demand	Area		Supply/ Demand
		Available	Demand	
Ballroom A	Plenary	11,155 SF	10,530 SF	94.4%
Ballroom B-C	Banquet	20,370 SF	21,060 SF	103.4%
Meeting Rooms	School	18,915 SF	101,943 SF	539.0%
Exhibition - Minimal	Exhibit	48,500 SF	99,000 SF	204.1%
Exhibition - Average	Exhibit	97,000 SF	125,000 SF	128.9%
Exhibition - Extensive	Exhibit	145,500 SF	252,000 SF	173.2%

Event Type #2 - Convention with Plenary Session and Banquet

Attendees: **2,750**

Constrained by Ballroom / Plenary Capacity

Space Use	Demand	Area		Supply/ Demand
		Available	Demand	
Ballroom	Plenary	31,625 SF	31,590 SF	99.9%
Meeting Rooms	School	53,625 SF	101,943 SF	190.1%
Hall B3	Banquet	2,750 seats	3,000 seats	109.1%
Exhibition - Minimal	Exhibit	137,500 SF	124,000 SF	90.2%
Exhibition - Average	Exhibit	275,000 SF	379,000 SF	137.8%
Exhibition - Extensive	Exhibit	412,500 SF	509,000 SF	123.4%

Event Type #3 - Convention with Plenary Session and Banquet

Attendees: **3,600**

Constrained by Theater Capacity

Space Use	Demand	Area		Supply/ Demand
		Available	Demand	
Theater	Plenary	3,600 seats	3,600 seats	100.0%
Hall A3	Banquet	3,600 seats	3,500 seats	97.2%
Meeting Rooms	School	70,200 SF	101,943 SF	145.2%
Exhibition - Minimal	Exhibit	180,000 SF	252,000 SF	140.0%
Exhibition - Average	Exhibit	360,000 SF	379,000 SF	105.3%
Exhibition - Extensive	Exhibit	540,000 SF	639,000 SF	118.3%

Event Type #4 - Convention with Banquet, No Plenary Session

Attendees: **8,000**

Constrained by Ex Hall A3+B3 Banquet Capacity

Space Use	Demand	Area		Supply/ Demand
		Available	Demand	
Hall A3+B3	Banquet	8,000 seats	8,000 seats	100.0%
Meeting Rooms + Ballroom	Breakout	120,000 SF	133,533 SF	111.3%
(Not Applicable)	Banquet	0 SF	0 SF	0.0%
Exhibition - Minimal	Exhibit	400,000 SF	509,000 SF	127.3%
Exhibition - Average	Exhibit	800,000 SF	639,000 SF	79.9%
Exhibition - Extensive	Exhibit	1,200,000 SF	0 SF	0.0%

Event Type #5a - Convention with Banquet in Ballroom (GRBCC-sized)

Attendees: **2,100**

Constrained by Ballroom Capacity

Space Use	Demand	Area		Supply/ Demand
		Available	Demand	
Ballroom	Banquet	2,100 seats	2,100 seats	100.0%
Meeting Rooms	School	40,950 SF	101,943 SF	248.9%
Theater	Plenary	2,100 seats	2,400 seats	114.3%
Exhibition - Minimal	Exhibit	105,000 SF	125,000 SF	119.0%
Exhibition - Average	Exhibit	210,000 SF	252,000 SF	120.0%
Exhibition - Extensive	Exhibit	315,000 SF	379,000 SF	120.3%

Event Type #5b - Convention with Banquet in Ballroom (CW-sized)

Attendees: **1,500**

Constrained by Ballroom Capacity

Space Use	Demand	Area		Supply/ Demand
		Available	Demand	
Ballroom	Banquet	31,500 SF	31,590 SF	100.3%
Meeting Rooms	School	29,250 SF	101,943 SF	348.5%
Theater	Plenary	1,500 seats	3,600 seats	240.0%
Exhibition - Minimal	Exhibit	75,000 SF	125,000 SF	166.7%
Exhibition - Average	Exhibit	150,000 SF	252,000 SF	168.0%
Exhibition - Extensive	Exhibit	225,000 SF	252,000 SF	112.0%

Event Type #6 - Trade Show in Ex Hall, Largest Plenary Session

Attendees: **14,500**

Constrained by Halls A3+B3 Plenary Capacity

Space Use	Demand	Area		Supply/ Demand
		Available	Demand	
Hall A3+B3	Plenary	14,500 seats	14,500 seats	100.0%
Meeting Rooms + Ballroom	Theater	166,750 SF	133,533 SF	80.1%
(Not Applicable)	Banquet	0 SF	0 SF	0.0%
Exhibition - Minimal	Exhibit	725,000 SF	639,000 SF	88.1%
Exhibition - Average	Exhibit	1,450,000 SF	639,000 SF	44.1%
Exhibition - Extensive	Exhibit	2,175,000 SF	639,000 SF	29.4%

APPENDIX

STRUCTURAL ANALYSIS

Current Assessment

The GRBCC was designed with structural steel systems that allow for large column-free spaces that can accommodate a wide variety of functions. The largest bays are 90'x142' and they run the entire length of the building. The majority of the elevated floor areas are designed for a live load of 100 psf, which is appropriate for lobbies, meeting rooms and ballrooms. Slabs and beams in the exhibit areas are designed for a live load of 400 psf or a 40 kip forklift load or AASHTO HS20-44 (truck loads). Primary and secondary trusses in the exhibit areas are designed for 200 psf live load. Mechanical rooms and service tunnels were designed for 150 psf. All floor areas have specific design loads noted in the construction documents, so that any changes in function or loading requirements can easily be assessed.

Roof Framing The main roof structure consists of steel bar joists spaced at 7'-6" on center. These span 26 to 38 feet and are supported by secondary roof trusses or joist girders. The trusses and joist girders are in turn supported by 15 feet deep main roof trusses that span in the east-west direction. Primary building columns located at the perimeter of the building are constructed of large pipes, 56-inch in diameter. Interior supports are not single columns, but are 40 feet wide towers constructed of 36-inch and 48-inch diameter pipes, braced with heavy W14 wide flange sections.

The roof was typically designed for a live load of 20 psf (which is the code-required minimum for roofs in Houston). Roof areas over mechanical rooms are designed for an additional 20 psf. The roof structure slopes approximately 1/8" per foot, from a north-south ridge line that runs down the middle of the building (at elevation +98.625'), to two low points and then back up to the east and west sides of the building. The roof deck is a 3" fluted steel deck.

Floor Framing The main floor level is at elevation +51.00'. The structure is configured similar to the roof, but instead of bar joists spanning in the east-west direction, composite steel beams are used to support the concrete floor deck. Secondary trusses support the composite floor system, and they in turn are supported by the main trusses running in the east-west direction. Truss depths vary from 13'-6" to 17'-10". The composite floor varies depending on the design requirements but is most typically 5-inch thick (3-1/2" lightweight concrete on 1-1/2", 18-gage deck). Floors in the exhibit areas are 9-inch thick (6" lightweight concrete on 3", 16-gage deck). The loading dock consists of a 14" double slab (5" normal weight concrete over a 9-inch composite deck).

First Floor and Foundation The floor at elevation 0.00' consists of slab-on-grade construction, and therefore has a much greater loading capacity than the elevated floors. Drawings indicate the floor was designed for 1000 psf or HS20-44 or 40 kip capacity forklift. Some of the dock areas at this level are on supported slabs and these floors have a live load capacity of 400 psf. A series of utility tunnels were constructed below the slab. A typical tunnel section is 11' high by 8' wide (inside) and is constructed of 12-inch thick walls, floors and roof slabs.

Building foundations consist of both spread footings and drilled piers. The tower columns are supported by large spread footings that bear 14 feet below the ground floor slab. These footings are 50'x42'x8' deep, and are constructed with a 10'x10' concrete plinth that anchors the 7'-6"x6'-6" tower column base plate. Footings were designed for an allowable bearing pressure of 5000 psf. The bearing capacity of the drilled piers was not noted on the drawings.

Opportunities

The structural systems are designed to allow for a great deal of flexibility within the Convention Center. The design loads are clearly marked on the construction documents so that any proposed changes to functions within the building can fairly quickly be assessed. The first floor can accommodate most any loading requirements, since a slab-on-grade system was utilized. The biggest limitation would be the need for additional exhibit area at the main elevated floor level (elev. 51.00'). As noted above much of the floor was only designed for 100 psf as compared to the 400 psf loading used for the exhibit hall area.

There is no provision for future vertical expansion to the structure. The roof is clearly designed for roof live loads only and could not be easily modified to accept floor loading criteria. Major structural upgrades would be required, including the construction of new columns and footings, strengthening of the roof framing members and complete replacement of the roof deck.

Horizontal expansion to the GRBCC may be considered as a way to expand the usable floor area. Due to the site constraints, expansion to the west seems to be the most feasible. The current floor (at elevation 51.0') extends out to the west face of the building, but is not continuous along this edge. The floor jogs in and out, so an expansion to the west may require filling in some of these open areas. The existing floor structure should have the capacity to support a minimal amount of additional loading, but for the most part new floor areas would require new columns, beams, joists and new foundations.

A key issue when considering a horizontal expansion to the west is establishing the location of new columns and footings. These will need to be carefully situated to avoid conflicts with existing underground structures, including existing utility tunnels and basement level floors that extend out to grid line A in several locations. In addition, large spread footings or drilled pier foundations are located at each existing column line. There may also be underground utilities to contend with. All of these potential obstructions need to be considered and columns strategically located to avoid them if possible.

Ideally, new footings would be placed at the same depth as that of the existing foundations. New piers would be located adjacent to (within a few feet of) the existing structure and as close as possible to new column locations. Where they cannot align, grade beams would be designed as transfer beams to support the new column loads. Foundation costs for structures built adjacent to existing buildings are typically more expensive due to these adjacency issues and the budget should allow for this.

APPENDIX

STRUCTURAL ANALYSIS

A westward expansion would also require that columns and footings be located in the street (Avenida de las Americas) and adjacent to Discovery Green. Here too, foundation construction may be a challenge. Underground utilities will need to be located before column placement can be determined. The eastern edge of Discovery Green is also the edge of the underground parking garage. Foundations located adjacent to this structure must be carefully designed and detailed to minimize impact on the garage basement structure.

Vehicle access to Avenida de las Americas will still be needed, so it may be necessary, or desirable, to eliminate columns in the center of the street. This would be possible if the construction budget and floor configuration allow for long-span joists or trusses to be used. Elimination of a center support would mean that columns and footings on each side would increase in size, which could in turn increase the likelihood that conflicts will occur.

Recommendations

Structural limitations should be considered when looking at reallocating floor space for new functions. Not all of the floors were designed the same and extensive (and costly) modifications may be required to accommodate proposed changes.

The structure was designed with minimal number of vertical supports which means the primary columns and tower columns should be considered as fixed objects, not subject to change. Any modification to these main components would be cost prohibitive.

Expansion of floor areas may occur in the westward direction over Avenida de las Americas as long as structural challenges can be met. These include foundation conflicts with existing underground structures and utilities, and design of long-span floor structure if columns cannot be located in the street.

TECHNOLOGY ANALYSIS

Attempting to predict what types of media will be available years into the future is difficult. Because of this, the best way to prepare for future requirements is to design a system of pathways that can be re-used many times over, and to establish a process for keeping record drawings up to date. The expense of setting up a system of pathways that can be evacuated and repopulated with the current technology will be easily recovered in future savings by not having to incur the expense of disrupting hardened surfaces and established landscaping to place new conduits. It is recommended that an operations budget for updating the permanent records for existing conduit be added to the facility's budget as a requirement as well as the completed as-built drawings for all expansion areas.

The main technology focus over the next five years is expected to be related to wireless internet access, providing higher quality, high-tech meeting rooms, and improving facility environment conditions such as air conditioning, heating and lighting all of which can be monitored and adjusted via controls fed back to web-based software.

To facilitate the growth of wireless networks, including WiFi and Radio Frequency (specifically the cellular GSM and CDMA bands), convention centers will need to invest in infrastructure and support spaces to house new electronics and carry new Distributed Antenna Systems (DAS) throughout the facility. DAS technologies can be used for indoor locations to boost coverage in large buildings allowing carriers to fill in coverage gaps and dead spots in their network. Neutrally hosted DAS that support multiple antennas for different carriers to bolster coverage and boost capacity have gone from a niche to a necessity. Carriers are often willing to share the cost of installation for high traffic facilities such as the GRBCC.

Existing Technology Infrastructure

GRBCC Technology Infrastructure is a network of conduits (Pathway) through which coaxial, copper and fiber cables (Media) are pulled from one Telecommunications Room to the next (Spaces).

Pathway The Exhibit Hall communications services are delivered through flush-mounted floor boxes on 30' x 30' centers routed through conduit to the under-floor Exhibit Hall tunnel system. The boxes contain open ducts which allow for communications services as required such as; phone lines, data connectivity, Internet Access, etc.

Spaces The Main Equipment Room (MER) provides space for the termination of incoming building Network pathway and media as well and the central hub of the in-building media and pathway. The current MER is near capacity with regard to floor space. Adequate space for termination of the new fiber optic media required for an expansion is not available. Telecommunications Rooms (TR) provide space for termination of floor serving pathway and media. There are fifty-five TRs located throughout the building. These rooms are congested and at capacity.

APPENDIX

TECHNOLOGY ANALYSIS

Media The media provides the platform to deliver the various building wide services needed to serve administrative operations, building services, as well as the tenant and event population for the Convention Center. The media delivers the following services; data networking, telecommunications (voice), video, and security networks and consists of coaxial, copper and fiber cabling which links to the building Network. The incoming media serving the building includes multi-pair copper and multi-strand single-mode and multi-mode fiber cable. The media serving each TR includes 6 strand single-mode and 6 strand multi-mode fiber optic cable.

Smart City Networks is the exclusive provider of telecommunications services at the GRBCC.

Horizontal Distribution

Horizontal distribution extends the services from the TR to the individual work areas via cable tray. Existing capacity in the cable tray exists; however, it is important to note that cable distance from the patch panel to the work area can not exceed 295'. The existing Category 5 cabling serves as the horizontal distribution media to the work areas in the facility. Category 5 cabling was industry standard when the building was built, but is now obsolete. Current recommended industry standard is Category 6.

The horizontal media is used for transport of the following:

- City
- Aramark
- Tenant Spaces
- Campus Network – office spaces, conference rooms, etc.

Voice Communications

The telephone switch that serves the building is a Nortel Networks CS 1000. The phone switch is IP-enabled and with maximum 50,000 line capacity. The switch was purchased approximately five years ago. There are 1200 Direct Inward Dialing (DIDs) in the building, 48 trunks inbound/outbound, 24 port for first choice long distance. The offices use digital phones.

Wireless

Currently wireless exists in selected public access areas in the building; however it can be slow and/or spotty in some areas.

TV Distribution

The Center has recently installed a VBrick IPTV system throughout the facility. The Convention Center has 25 units which broadcast ten channels. In addition, the facility is utilizing VBrick to stream live or on-demand IP video for digital signage.

AV System

The GRBCC does not currently have set AV standards or specification documentation. A large variety of audio visual equipment exists throughout the facility with newer installation utilizing AMX controls. A portion of these newer systems have been installed, but commissioning and programming is incomplete resulting in, some cases, systems which do not work. The existing sound system in older meeting rooms is about twenty-one years old, but is simple to operate and works well. The Center added some meeting rooms in the expansion area and utilized a digital sound system which has proven to be complex to operate and difficult to adjust sound quality; as a result, the technical staff preferred proven product that is easy to use and maintain.

Security

Currently, there are 180 IP security cameras in the building. The Convention Center has recently upgraded the security servers and switches. An upcoming project includes the adding video surveillance external to the building along with a card access system.

Recommendations

New technology will replace the existing deployments at the GRBCC and is contingent upon the existing pathway infrastructure. There is an opportunity to upgrade the cable tray and conduit pathway system in the near term to accommodate the new high bandwidth cable media such as Category 6A and Category 7 prior to new deployment. This high bandwidth 10 Gigabit cabling is approximately 1/3 larger than previously installed Category 5E and 6 which leaves potential for inadequate pathway for new deployment.

It is recommended that, where there is existing cable tray, the GRBCC installs a 2nd tier to parallel the existing tray. In areas where there is currently a dedicated 1" conduit for technology, a parallel 1-1/4" conduit be installed. The current Main Equipment Room and Telecom Rooms located throughout the building are near capacity and will require expansion or the addition of new rooms to accommodate future growth.

APPENDIX

C.I.P. CONCEPTUAL COSTS

Prepared by Project Cost Resources

George R. Brown Convention Center - Conceptual Cost Estimate

North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E

April 18, 2011

DIV	DESCRIPTION	NEW NORTH GARAGE 434,000 sf	SKYBRIDGE 1,710 sf	ADLA 54,400 sf	SCHEME E 933,000 sf	TOTALS				
01	General Requirements	\$ 2,004,000	\$ 4.62	\$ 123,475	\$ 72.21	\$ 128,000	\$ 2.35	\$ 2,631,000	\$ 2.82	\$ 4,886,475
02	Existing Conditions	\$ 200,000	\$ 0.46	\$ 113,000	\$ 66.08	\$ 569,200	\$ 10.46	\$ 3,945,986	\$ 4.23	\$ 4,828,186
03	Concrete	\$ 10,374,600	\$ 23.90	\$ 108,942	\$ 63.71	\$ -	\$ -	\$ 20,085,660	\$ 21.53	\$ 30,569,202
04	Masonry	\$ 3,381,000	\$ 7.79	\$ -	\$ -	\$ -	\$ -	\$ 4,390,800	\$ 4.71	\$ 7,771,800
05	Metals	\$ 2,256,800	\$ 5.20	\$ 125,685	\$ 73.50	\$ -	\$ -	\$ 40,721,950	\$ 43.65	\$ 43,104,435
06	Wood and Plastic	\$ 21,700	\$ 0.05	\$ 1,710	\$ 1.00	\$ -	\$ -	\$ 2,099,250	\$ 2.25	\$ 2,122,660
07	Thermal/Moisture	\$ 713,100	\$ 1.64	\$ 34,200	\$ 20.00	\$ -	\$ -	\$ 15,432,056	\$ 16.54	\$ 16,179,356
08	Doors/Windows	\$ 512,900	\$ 1.18	\$ 219,625	\$ 128.44	\$ -	\$ -	\$ 10,252,050	\$ 10.99	\$ 10,984,575
09	Finishes	\$ 1,184,175	\$ 2.73	\$ 47,455	\$ 27.75	\$ -	\$ -	\$ 11,540,475	\$ 12.37	\$ 12,772,105
10	Specialties	\$ 110,080	\$ 0.25	\$ -	\$ -	\$ -	\$ -	\$ 4,311,409	\$ 4.62	\$ 4,421,489
11	Equipment	\$ 400,000	\$ 0.92	\$ -	\$ -	\$ -	\$ -	\$ 630,000	\$ 0.68	\$ 1,030,000
12	Furnishings	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
13	Special Construction	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
14	Conveying	\$ 980,000	\$ 2.26	\$ -	\$ -	\$ -	\$ -	\$ 1,490,000	\$ 1.60	\$ 2,470,000
21	Fire Suppression	\$ 168,080	\$ 0.39	\$ 8,550	\$ 5.00	\$ -	\$ -	\$ 3,732,000	\$ 4.00	\$ 3,908,630
22	Mechanical (Plumbing)	\$ 461,900	\$ 1.06	\$ 6,840	\$ 4.00	\$ -	\$ -	\$ 9,139,375	\$ 9.80	\$ 9,608,115
23	Mechanical (HVAC)	\$ 449,350	\$ 1.04	\$ 27,360	\$ 16.00	\$ -	\$ -	\$ 35,229,350	\$ 37.76	\$ 35,706,060
26	Electrical	\$ 1,517,500	\$ 3.50	\$ 25,650	\$ 15.00	\$ -	\$ -	\$ 26,753,850	\$ 28.68	\$ 28,297,000
27	Communications	\$ 25,000	\$ 0.06	\$ -	\$ -	\$ -	\$ -	\$ 3,260,125	\$ 3.49	\$ 3,285,125
28	Electronic Safety and Security	\$ 270,300	\$ 0.62	\$ -	\$ -	\$ -	\$ -	\$ 1,669,700	\$ 1.79	\$ 1,940,000
31	Earthwork	\$ 306,681	\$ 0.71	\$ 9,527	\$ 5.57	\$ -	\$ -	\$ 3,215,000	\$ 3.45	\$ 3,531,207
32	Exterior Improvements	\$ 455,000	\$ 1.05	\$ 8,400	\$ 4.91	\$ 1,202,800	\$ 22.11	\$ 2,257,720	\$ 2.42	\$ 3,923,920
33	Utilities	\$ 775,000	\$ 1.79	\$ -	\$ -	\$ 250,000	\$ 4.60	\$ 650,000	\$ 0.70	\$ 1,675,000
Subtotal Construction		\$ 26,567,166	\$ 61.21	\$ 860,419	\$ 503.17	\$ 2,150,000	\$ 39.52	\$ 203,437,757	\$ 218.05	\$ 233,015,341
CM General Conditions	5.00%	\$ 1,328,358		\$ 43,021		\$ 107,500		\$ 10,171,888		\$ 11,650,767
	Subtotal	\$ 27,895,524		\$ 903,440		\$ 2,257,500		\$ 213,609,645		\$ 244,666,109
CM Fee	2.50%	\$ 697,388		\$ 22,586		\$ 56,438		\$ 5,340,241		\$ 6,116,653
	Subtotal	\$ 28,592,912		\$ 926,026		\$ 2,313,938		\$ 218,949,886		\$ 250,782,761
Design Contingency	10.00%	\$ 2,859,291		\$ 92,603		\$ 231,394		\$ 21,894,989		\$ 25,078,276
	Subtotal	\$ 31,452,203		\$ 1,018,629		\$ 2,545,331		\$ 240,844,874		\$ 275,861,037
Escalation	0.00%	\$ -		\$ -		\$ -		\$ -		\$ -
	TOTALS	\$ 31,452,203	\$ 72.47	\$ 1,018,629	\$ 595.69	\$ 2,545,331	\$ 46.79	\$ 240,844,874	\$ 258.14	\$ 275,861,037

George R. Brown Convention Center - Conceptual Cost Estimate
 North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E
 April 18, 2011

Square Footages	
Level 1	62,000
Levels 2-7	372,000
Retail Space	12,500
TOTAL	434,000

NEW NORTH GARAGE WITH GROUND FLOOR RETAIL

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
Division 1 - General Requirements						
General Requirements - Cost of Work						
Field Engineering	24	mos	\$ 7,500.00	\$ 180,000		
Cleanup	24	mos	\$ 5,000.00	\$ 120,000		
Cleanup - Final Clean	1	ls	\$ 30,000.00	\$ 30,000		
Tower Crane 1, Including Operator	17	mos	\$ 45,000.00	\$ 756,000		
Tower Crane 2, Including Operator	20	mos	\$ 45,000.00	\$ 918,000		
			Subtotal	\$ 2,004,000		
					Subtotal Division 1	\$ 2,004,000
Division 2 - Existing Conditions						
Existing Site Demolition Allowance	1	allow	\$ 200,000.00	\$ 200,000		
			Subtotal	\$ 200,000		
					Subtotal Division 2	\$ 200,000
Division 3 - Concrete						
Foundation Piers	62,000	sf	\$ 20.00	\$ 1,240,000		
Grade Beams	62,000	sf	\$ 12.00	\$ 744,000		
Tower Crane Foundations	2	ea	\$ 40,000.00	\$ 80,000		
7" SOG Level 1	62,000	sf	\$ 7.75	\$ 480,500		
Thickened Slabs Level 1	6,200	sf	\$ 10.50	\$ 65,100		
Columns - Concrete, Pump & Place	434,000	sf	\$ 1.50	\$ 651,000		
Cast in Place Concrete Walls	434,000	sf	\$ 2.00	\$ 868,000		
Elevated Concrete Beams	372,000	sf	\$ 6.00	\$ 2,232,000		
6" Typical Concrete Decks	372,000	sf	\$ 10.00	\$ 3,720,000		
Thickened Concrete Decks	37,200	sf	\$ 5.00	\$ 186,000		
Concrete Curbs	9,000	lf	\$ 12.00	\$ 108,000		
			Subtotal	\$ 10,374,600		
					Subtotal Division 3	\$ 10,374,600
Division 04 - Masonry						
Primary Exterior Walls - Assume Precast 50%	50,400	sf	\$ 40.00	\$ 2,016,000		
Exterior Walls - Assume Face Brick 25%	25,200	sf	\$ 15.00	\$ 378,000		
Exterior Accents - Cast Stone	12,600	sf	\$ 65.00	\$ 819,000		
Interior CMU Partitions	14,000	sf	\$ 12.00	\$ 168,000		
			Subtotal	\$ 3,381,000		
					Subtotal Division 4	\$ 3,381,000

APPENDIX

C.I.P. CONCEPTUAL COSTS

George R. Brown Convention Center - Conceptual Cost Estimate

North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E

April 18, 2011

Square Footages

Level 1	62,000
Levels 2-7	372,000
Retail Space	12,500
TOTAL	434,000

NEW NORTH GARAGE WITH GROUND FLOOR RETAIL

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL

Division 05 - Metals

Structural and Miscellaneous Steel

Stair Tower Framing	72	tons	\$	3,200.00	\$	230,400
Steel Stairs Including Pan Fill (4 stairs)	560	riser	\$	600.00	\$	336,000
Allow for Bollards	434,000	sf	\$	0.25	\$	108,500
Cable Rails w/Mesh Screen	8,500	lf	\$	38.00	\$	323,000
Misc. Angles/Plates for Brick Support	25	tons	\$	3,500.00	\$	87,500
Barrier Posts	25	tons	\$	3,300.00	\$	82,500
Miscellaneous Ornamental	434,000	sf	\$	0.15	\$	65,100
Miscellaneous Metals	434,000	sf	\$	0.20	\$	86,800
				Subtotal	\$	1,319,800

Exterior Metals

Aluminum Facia	9,000	sf	\$	20.00	\$	180,000
Louvers	1,500	sf	\$	40.00	\$	60,000
Screens	15,000	sf	\$	32.00	\$	480,000
Misc Exterior Metal	434,000	sf	\$	0.50	\$	217,000
				Subtotal	\$	937,000

Subtotal Division 5 **\$** **2,256,800**

Division 06 - Woods and Plastics

Miscellaneous Blocking and Bracing	434,000	sf	\$	0.05	\$	21,700
				Subtotal	\$	21,700

Subtotal Division 6 **\$** **21,700**

Division 07 - Thermal & Moisture Protection

Water Repellents

Waterproofing	434,000	sf	\$	0.75	\$	325,500
Traffic Topping - Top Level Only	62,000	sf	\$	3.00	\$	186,000
				Subtotal	\$	511,500

Subtotal Division 6 **\$** **21,700**

Roofing

Modified Bitumen Roof at Stair Towers / Elevators	2,400	sf	\$	22.00	\$	52,800
				Subtotal	\$	52,800

Subtotal Division 6 **\$** **21,700**

Flashing

Roof Flashing/Cap	2,400	sf	\$	3.50	\$	8,400
				Subtotal	\$	8,400

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NEW NORTH GARAGE WITH GROUND FLOOR RETAIL

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
Miscellaneous						
Fireproofing	18,000	sf	\$ 4.00	\$ 72,000		
Under Slab Rigid Thermal Insulation	12,500	sf	\$ 2.00	\$ 25,000		
Miscellaneous Caulking and Sealants	434,000	sf	\$ 0.10	\$ 43,400		
				Subtotal	\$ 140,400	
						Subtotal Division 7
						\$ 713,100
Division 08 - Doors and Glazing						
Hollow Metal Doors and Frames						
Door/Frame/Hardware - Alum/Glass	2	pr	\$ 5,500.00	\$ 11,000		
Door/Frame/Hardware - Alum/Glass - Garage	8	ea	\$ 3,500.00	\$ 28,000		
Door/Frame/Hardware - Alum/Glass - Retail	9	ea	\$ 3,500.00	\$ 31,500		
Door/Frame/Hardware - HM	40	ea	\$ 1,700.00	\$ 68,000		
Access Doors	28	ea	\$ 300.00	\$ 8,400		
Add for Panic Hardware	20	ea	\$ 1,200.00	\$ 24,000		
				Subtotal	\$ 170,900	
Glazing						
Exterior Wall - Storefront Glazing - Entries & Retail	4,560	sf	\$ 75.00	\$ 342,000		
				Subtotal	\$ 342,000	
						Subtotal Division 8
						\$ 512,900
Division 09 - Finishes						
Plaster Allowance						
Exterior Soffits, Misc Plaster	434,000	sf	\$ 0.35	\$ 151,900		
Elevator Lobbies - Soffit, Framing Plaster Finish	8,400	sf	\$ 10.00	\$ 84,000		
				Subtotal	\$ 235,900	
Partitions						
Drywall Partitions Allowance	3,500	sf	\$ 5.45	\$ 19,075		
				Subtotal	\$ 19,075	
Elevator Lobbies Finish Allowance						
Floors / Walls / Accents	8,400	sf	\$ 45.00	\$ 378,000		
Miscellaneous Finishes	434,000	sf	\$ 0.25	\$ 108,500		
Pavement Marking, ADA Signage, Wheel Stops	434,000	sf	\$ 0.30	\$ 130,200		
				Subtotal	\$ 616,700	

APPENDIX

C.I.P. CONCEPTUAL COSTS

George R. Brown Convention Center - Conceptual Cost Estimate

North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E

April 18, 2011

Square Footages

Level 1	62,000
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Retail Space	12,500
TOTAL	434,000

NEW NORTH GARAGE WITH GROUND FLOOR RETAIL

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
Retail Spaces Finish Allowance - Shell						
Floors / Walls	12,500	sf	\$ 25.00	\$ 312,500		
			Subtotal	\$ 312,500		
					Subtotal Division 9	\$ 1,184,175
Division 10 - Specialties						
Graphics						
Signage	1	ls	\$ 100,000.00	\$ 100,000		
			Subtotal	\$ 100,000		
Fire Protection Specialties						
Fire Extinguisher Cabinets Allowance	42	ea	\$ 240.00	\$ 10,080		
			Subtotal	\$ 10,080		
					Subtotal Division 10	\$ 110,080
Division 11 - Equipment						
Payment Station	2	ea	\$ 150,000.00	\$ 300,000		
Card Read/Intercom/Detecting Sensor	1	ls	\$ 100,000.00	\$ 100,000		
			Subtotal	\$ 400,000		
					Subtotal Division 11	\$ 400,000
Division 14 - Conveying						
Passenger Elevators - 7 Stop	4	ea	\$ 245,000.00	\$ 980,000		
			Subtotal	\$ 980,000		
					Subtotal Division 14	\$ 980,000
Division 21 - Fire Protection						
Sprinkler System						
Sprinkler System	20,900	sf	\$ 3.00	\$ 62,700		
Fire Protection						
4" Fire Line	1,000	lf	\$ 75.00	\$ 75,000		
Siamese Connection	1	ea	\$ 880.00	\$ 880		
Fire Hose Cabinets at Floors	20	ea	\$ 1,250.00	\$ 25,000		
FDC	15	ea	\$ 300.00	\$ 4,500		
			Subtotal	\$ 168,080		
					Subtotal Division 21	\$ 168,080

George R. Brown Convention Center - Conceptual Cost Estimate
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 April 18, 2011

Square Footages	
Level 1	62,000
Levels 2-7	372,000
Retail Space	12,500
TOTAL	434,000

NEW NORTH GARAGE WITH GROUND FLOOR RETAIL

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL

Division 22 - Plumbing

Fixtures

Water Closet WC-2/Carrier/Rough-in	6	ea	\$ 1,550.00	\$ 9,300
Urinal/Carrier/Rough-in	6	ea	\$ 1,650.00	\$ 9,900
Lavatory/Carrier/Rough-in	6	ea	\$ 1,450.00	\$ 8,700
Floor Drain FD-1 3"	10	ea	\$ 500.00	\$ 5,000
Sump Pump	2	ea	\$ 2,000.00	\$ 4,000

Piping

Piping - Domestic/Sanitary	1	ls	\$ 75,000.00	\$ 75,000
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Storm

French Drain/Storm System	1	ls	\$ 350,000.00	\$ 350,000
Subtotal			\$	461,900

Subtotal Division 22 **\$ 461,900**

Division 23 - HVAC

Equipment

Equipment - Retail/Elevator Equipment	20,900	sf	\$ 10.00	\$ 209,000
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Ductwork

Allow for Ductwork/Diffuser	20,900	sf	\$ 8.00	\$ 167,200
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Controls

Controls	20,900	sf	\$ 2.50	\$ 52,250
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Miscellaneous

Miscellaneous	20,900	sf	\$ 1.00	\$ 20,900
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Subtotal **\$ 449,350**

Subtotal Division 23 **\$ 449,350**

Division 26 - Electrical

Equipment

Primary Equipment	1	ls	\$ 125,000.00	\$ 125,000
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Panelboards

Panelboards 277/480V and 120/208V	1	ls	\$ 65,000.00	\$ 65,000
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Transformers

Transformer	1	ls	\$ 10,000.00	\$ 10,000
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Emergency

Emergency Generator	1	ls	\$ 75,000.00	\$ 75,000
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Motor Connections

Motor and Equipment Connections	1	ls	\$ 7,500.00	\$ 7,500
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APPENDIX

C.I.P. CONCEPTUAL COSTS

George R. Brown Convention Center - Conceptual Cost Estimate

North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E

April 18, 2011

Square Footages

Level 1	62,000
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Retail Space	12,500
TOTAL	434,000

NEW NORTH GARAGE WITH GROUND FLOOR RETAIL

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
Lighting						
Lighting Fixture and Exit Fixtures	434,000	sf	\$ 1.15	\$ 499,100		
Devices						
Outlets/Lighting Control/Other	434,000	sf	\$ 0.05	\$ 21,700		
Build-Out for Retail						
Retail Build-out	12,500	sf	\$ 12.00	\$ 150,000		
Conduit and Wire						
Feeders/Motor Feeders/Branch	434,000	sf	\$ 1.00	\$ 434,000		
Lightning Protection						
Lightning Protection	434,000	sf	\$ 0.30	\$ 130,200		
			Subtotal	\$ 1,517,500		
					Subtotal Division 26	\$ 1,517,500
Division 27 - Communications/Security/Other Electrical						
Voice/ Data System						
Telephone and Data	1	ls	\$ 25,000.00	\$ 25,000		
			Subtotal	\$ 25,000		
					Subtotal Division 27	\$ 25,000
Division 28 - Security and Fire Alarm						
Blue Phone						
Blue Phone and Circuit	15	ea	\$ 5,000.00	\$ 75,000		
Life Safety Systems						
Fire Alarm	434,000	sf	\$ 0.20	\$ 86,800		
Security Systems						
Security Rough-In	434,000	sf	\$ 0.25	\$ 108,500		
			Subtotal	\$ 270,300		
					Subtotal Division 28	\$ 270,300
Division 31 - Earthwork						
Earthwork						
Excavation @ Pad - 1'-6"	3,444	cy	\$ 4.50	\$ 15,500		
Haul Off	4,306	cy	\$ 8.50	\$ 36,597		
Import and Place Fill 3'-0" Compacted	8,611	cy	\$ 12.00	\$ 103,333		
Add for Fill @ Ramp @ Level 1	5,208	cy	\$ 12.00	\$ 62,500		
Fine Grade	77,500	sf	\$ 0.50	\$ 38,750		
Dewatering	1	ls	\$ 50,000.00	\$ 50,000		
			Subtotal	\$ 306,681		

George R. Brown Convention Center - Conceptual Cost Estimate
 North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E
 April 18, 2011

Square Footages	
Level 1	62,000
Levels 2-7	372,000
Retail Space	12,500
TOTAL	434,000

NEW NORTH GARAGE WITH GROUND FLOOR RETAIL

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
					Subtotal Division 31	\$ 306,681
Division 32 - Exterior Improvements						
Site Development						
Site Development Allowance	1	allow	\$ 300,000.00	\$ 300,000		
Exterior Paving & Curbs	15,500	sf	\$ 10.00	\$ 155,000		
				Subtotal	\$ 455,000	
					Subtotal Division 32	\$ 455,000
Division 33 - Site Utilities						
Domestic and Fire Water	1	allow	\$ 150,000.00	\$ 150,000		
Sanitary Sewer	1	allow	\$ 250,000.00	\$ 250,000		
Storm Sewer	1	allow	\$ 200,000.00	\$ 200,000		
Site Electrical	1	allow	\$ 175,000.00	\$ 175,000		
				Subtotal	\$ 775,000	
					Subtotal Division 33	\$ 775,000
					Subtotal Construction	\$ 26,567,166

SEE RECAP FOR MARK-UPS

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C.I.P. CONCEPTUAL COSTS

George R. Brown Convention Center - Conceptual Cost Estimate

North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E

April 18, 2011

Bridge Length	95.0
Bridge Width	18.0
Levels	1.0
TOTAL SF =	1,710 SF

SKYBRIDGE TO NEW NORTH GARAGE FROM GRBCC

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
Division 1 - General Requirements						
Crane	1.5	mo	\$ 38,000.00	\$ 57,000		
Other Equipment Rentals	6	wk	\$ 1,700.00	\$ 11,042		
Street Clean	6	wk	\$ 800.00	\$ 5,196		
Other Cost of Work General Requirements	1	ls	\$ 10,000.00	\$ 10,000		
Testing	1	allow	\$ 15,000.00	\$ 15,000		
Safety Meetings/Materials	1.5	mo	\$ 6,000.00	\$ 9,000		
Layout	6	wk	\$ 2,500.00	\$ 16,238		
			Subtotal	\$ 123,475		
					Subtotal Division 1	\$ 123,475
Division 2 - Existing Conditions						
Demolition at Bridge Ends	2	ea	\$ 20,000.00	\$ 40,000		
Retrofit at Bridge Ends	2	ea	\$ 30,000.00	\$ 60,000		
Misc Demolition	1	ls	\$ 10,000.00	\$ 10,000		
Haul Debris	300	cy	\$ 10.00	\$ 3,000		
			Subtotal	\$ 113,000		
					Subtotal Division 2	\$ 113,000
Division 3 - Concrete						
Piers (20 ea 18" dia. at 60' depth)	1,200	lf	\$ 20.00	\$ 24,000		
Reinforcing at 200 lb per cy	39	tn	\$ 1,100.00	\$ 43,267		
Pile Caps (4 ea 8' x 8' x 5')	50	cy	\$ 425.00	\$ 21,156		
Concrete on Metal Deck	3,420	sf	\$ 6.00	\$ 20,520		
			Subtotal	\$ 108,942		
					Total Division 3	\$ 108,942
Division 05 - Metals						
Steel Bridge Framing - 30# per sf	26	tn	\$ 3,200.00	\$ 82,080		
Add for Erection in Constricted Area	26	tn	\$ 700.00	\$ 17,955		
Metal Deck	3,420	sf	\$ 4.50	\$ 15,390		
Misc Steel	1,710	sf	\$ 6.00	\$ 10,260		
			Subtotal	\$ 125,685		
					Total Division 5	\$ 125,685
Division 06 - Woods and Plastics						

George R. Brown Convention Center - Conceptual Cost Estimate

North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E
April 18, 2011

Bridge Length	95.0
Bridge Width	18.0
Levels	1.0
TOTAL SF =	1,710 SF

SKYBRIDGE TO NEW NORTH GARAGE FROM GRBCC

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
Miscellaneous Blocking and Bracing	1,710	sf	\$ 1.00	\$ 1,710		
				Subtotal	\$ 1,710	
						\$ 1,710
Subtotal Division 6						
Division 07 - Thermal & Moisture Protection						
Insulation and Waterproofing	1,710	sf	\$ 6.00	\$ 10,260		
Roofing and Sheet Metal	1,710	sf	\$ 14.00	\$ 23,940		
				Subtotal	\$ 34,200	
						\$ 34,200
Subtotal Division 7						
Division 08 - Doors and Glazing						
Curtain Wall System (50% of skin)	1,425	sf	\$ 100.00	\$ 142,500		
Alucobond Panels (50% of skin)	1,425	sf	\$ 45.00	\$ 64,125		
Alum/Glass Doors at Both Ends of Bridge (1 Level)	2	pr	\$ 6,500.00	\$ 13,000		
				Subtotal	\$ 219,625	
						\$ 219,625
Subtotal Division 8						
Division 09 - Finishes						
Flooring	1,710	sf	\$ 10.00	\$ 17,100		
Drywall	1,425	sf	\$ 5.00	\$ 7,125		
Ceilings	1,710	sf	\$ 4.00	\$ 6,840		
Finishes in Utility Level	1,710	sf	\$ 5.00	\$ 8,550		
Millwork (Wall Trim)	392	lf	\$ 20.00	\$ 7,840		
				Subtotal	\$ 47,455	
						\$ 47,455
Subtotal Division 9						
Division 21 - Fire Protection						
Sprinkler	1,710	sf	\$ 5.00	\$ 8,550		
				Subtotal	\$ 8,550	
						\$ 8,550
Subtotal Division 21						
Division 22 - Plumbing						
Storm	1,710	sf	\$ 4.00	\$ 6,840		
				Subtotal	\$ 6,840	
						\$ 6,840
Subtotal Division 22						

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C.I.P. CONCEPTUAL COSTS

George R. Brown Convention Center - Conceptual Cost Estimate

North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E
April 18, 2011

Bridge Length	95.0
Bridge Width	18.0
Levels	1.0
TOTAL SF =	1,710 SF

SKYBRIDGE TO NEW NORTH GARAGE FROM GRBCC

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
Division 23 - HVAC						
HVAC	1,710	sf	\$ 16.00	\$ 27,360		
			Subtotal	\$ 27,360		
					Subtotal Division 23	\$ 27,360
Division 26 - Electrical						
Electrical	1,710	sf	\$ 15.00	\$ 25,650		
			Subtotal	\$ 25,650		
					Subtotal Division 26	\$ 25,650
Division 31 - Earthwork						
Grading	1,710	sf	\$ 3.00	\$ 5,130		
Excavate Pile Caps	50	cy	\$ 9.00	\$ 448		
Haul Spoils	62	cy	\$ 8.50	\$ 529		
Restoration	1,710	sf	\$ 2.00	\$ 3,420		
			Subtotal	\$ 9,527		
					Subtotal Division 31	\$ 9,527
Division 32 - Exterior Improvements						
New Walks and Curbs	800	sf	\$ 8.00	\$ 6,400		
Site Amenities	1	ls	\$ 2,000.00	\$ 2,000		
			Subtotal	\$ 8,400		
					Subtotal Division 32	\$ 8,400
					Subtotal Construction	\$ 860,419

SEE RECAP FOR MARK-UPS

George R. Brown Convention Center - Conceptual Cost Estimate
North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E
April 18, 2011

Square Footages	
ADLA	54,400
TOTAL	54,400 sf

ADLA Reconfiguration

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
Division 1 - General Requirements						
General Requirements - Cost of Work						
Field Engineering	6	mos	\$ 5,000.00	\$ 30,000		
Barricades / Traffic Safety	6	mos	\$ 8,000.00	\$ 48,000		
Cleanup	6	mos	\$ 5,000.00	\$ 30,000		
Cleanup - Final Clean	1	ls	\$ 20,000.00	\$ 20,000		
			Subtotal	\$ 128,000		
					Subtotal Division 1	\$ 128,000
Division 2 - Existing Conditions						
Demolition ADLA - One Lane	20,400	sf	\$ 8.00	\$ 163,200		
Retrofit Work Following ADLA Demolition	20,400	sf	\$ 15.00	\$ 306,000		
Misc Demolition - ADLA	1	ls	\$ 100,000.00	\$ 100,000		
			Subtotal	\$ 569,200		
					Subtotal Division 2	\$ 569,200
Division 32 - Exterior Improvements						
Site Development						
Island / Re-Alignment / Curbs / Walks	54,400	sf	\$ 12.00	\$ 652,800		
Site Development Allowance	1	allow	\$ 250,000.00	\$ 250,000		
Reconfigure Intersection at ADLA and Polk	1	allow	\$ 300,000.00	\$ 300,000		
			Subtotal	\$ 1,202,800		
					Subtotal Division 32	\$ 1,202,800
Division 33 - Site Utilities						
Storm Sewer	1	allow	\$ 100,000.00	\$ 100,000		
Site Electrical	1	allow	\$ 150,000.00	\$ 150,000		
			Subtotal	\$ 250,000		
					Subtotal Division 33	\$ 250,000
					Subtotal Construction	\$ 2,150,000

SEE RECAP FOR MARK-UPS

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C.I.P. CONCEPTUAL COSTS

George R. Brown Convention Center - Conceptual Cost Estimate

North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E

April 18, 2011

Square Footages

Parking	257,500	
Level 1	269,000	
Level 3	292,500	
Level 2	57,000	Connector
Level 3	57,000	Connector
TOTAL	933,000	

GRBCC EXPANSION - SCHEME E

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
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Division 1 - General Requirements

General Requirements - Cost of Work

Field Engineering	36	mos	\$ 7,500.00	\$ 270,000
Cleanup	36	mos	\$ 5,000.00	\$ 180,000
Cleanup - Final Clean	1	ls	\$ 75,000.00	\$ 75,000
Tower Crane 1, Including Operator	23	mos	\$ 45,000.00	\$ 1,053,000
Tower Crane 2, Including Operator	23	mos	\$ 45,000.00	\$ 1,053,000
			Subtotal	\$ 2,631,000

Subtotal Division 1 \$ 2,631,000

Division 2 - Existing Conditions

Demolish Hilton Garage	720,000	sf	\$ 0.75	\$ 540,000
Partial Demolition of Truck Ramp	3,000	sf	\$ 3.50	\$ 10,500
Demolition of Parking	90,000	sf	\$ 3.50	\$ 315,000
Electrical Demolition	1	ls	\$ 50,000.00	\$ 50,000
Demolish Connector from Garage to Convention Ctr	1	ls	\$ 125,000.00	\$ 125,000
Tree Removal / Relocation	1	ls	\$ 75,000.00	\$ 75,000
Re-configure Freeway Off Ramp	1	ls	\$ 2,500,000	\$ 2,500,000
Traffic / Pedestrian Control	1	ls	\$ 25,000.00	\$ 25,000
Misc Demo - Fencing / Curbs / Walks	1	ls	\$ 150,000.00	\$ 150,000
Haul Debris	18,293	cy	\$ 8.50	\$ 155,486
			Subtotal	\$ 3,945,986

Subtotal Division 2 \$ 3,945,986

Division 3 - Concrete

Foundation Piers	269,000	sf	\$ 20.00	\$ 5,380,000
Grade Beams	269,000	sf	\$ 12.00	\$ 3,228,000
Tower Crane Foundations	2	ea	\$ 40,000.00	\$ 80,000
Lower Level Parking Pavement	269,000	sf	\$ 7.75	\$ 2,084,750
Concrete Walls - Below Grade	24,360	sf	\$ 15.00	\$ 365,400
Concrete Columns - Parking to Level 1	1,200	cy	\$ 450.00	\$ 540,000
Pan Slab Deck - Level 1 over Parking	269,000	sf	\$ 20.00	\$ 5,380,000
Concrete on Elevated Deck - Level 3	292,500	sf	\$ 3.50	\$ 1,023,750
Concrete on Elevated Deck - CONNECTOR	114,000	sf	\$ 3.50	\$ 399,000
Housekeeping Pads	37,320	sf	\$ 5.50	\$ 205,260
Misc Concrete	933,000	sf	\$ 1.50	\$ 1,399,500
			Subtotal	\$ 20,085,660

George R. Brown Convention Center - Conceptual Cost Estimate
North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E
April 18, 2011

Square Footages	
Parking	257,500
Level 1	269,000
Level 3	292,500
Level 2	57,000 Connector
Level 3	57,000 Connector
TOTAL	933,000

GRBCC EXPANSION - SCHEME E

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
Subtotal Division 3						\$ 20,085,660
Division 04 - Masonry						
Stone Cladding - Building Base - 15% of Exterior Skin	30,600	sf	\$ 65.00	\$ 1,989,000		
Interior CMU Walls	200,150	sf	\$ 12.00	\$ 2,401,800		
				Subtotal	\$ 4,390,800	
Subtotal Division 4						\$ 4,390,800
Division 05 - Metals						
Structural and Miscellaneous Steel						
Steel Columns	488	tons	\$ 3,200.00	\$ 1,560,000		
Structural Steel Framing - Main Building 15 pounds per sf	6,143	tons	\$ 3,200.00	\$ 19,656,000		
Structural Steel Framing - Polk Connection 18 pounds per sf	1,026	tons	\$ 3,200.00	\$ 3,283,200		
Add for Long Span Trusses - 10 pounds per sf	3,378	tons	\$ 3,200.00	\$ 10,808,000		
Penthouse Framing	25	tons	\$ 3,200.00	\$ 80,000		
Steel Stairs Including Pan Fill (8 stairs)	800	riser	\$ 600.00	\$ 480,000		
Metal Deck	406,500	sf	\$ 3.50	\$ 1,422,750		
Escalator Railing Allowance	1	allow	\$ 125,000.00	\$ 125,000		
Catwalks	1	allow	\$ 100,000.00	\$ 100,000		
Allow for Bollards	933,000	sf	\$ 0.25	\$ 233,250		
Miscellaneous Ornamental	933,000	sf	\$ 0.75	\$ 699,750		
Miscellaneous Metals	933,000	sf	\$ 1.50	\$ 1,399,500		
				Subtotal	\$ 39,847,450	
Exterior Metals						
Louvers - 5% of Exterior Skin	10,200	sf	\$ 40.00	\$ 408,000		
Misc Exterior Metal	933,000	sf	\$ 0.50	\$ 466,500		
				Subtotal	\$ 874,500	
Subtotal Division 5						\$ 40,721,950
Division 06 - Woods and Plastics						
Millwork Allowance	933,000	sf	\$ 2.00	\$ 1,866,000		
Miscellaneous Blocking and Bracing	933,000	sf	\$ 0.25	\$ 233,250		
				Subtotal	\$ 2,099,250	
Subtotal Division 6						\$ 2,099,250

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C.I.P. CONCEPTUAL COSTS

George R. Brown Convention Center - Conceptual Cost Estimate

North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E
April 18, 2011

Square Footages	
Parking	257,500
Level 1	269,000
Level 3	292,500
Level 2	57,000 Connector
Level 3	57,000 Connector
TOTAL	933,000

GRBCC EXPANSION - SCHEME E

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
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Division 07 - Thermal & Moisture Protection

Water Repellents

Waterproofing / Dampproofing	933,000	sf	\$ 0.75	\$ 699,750		
Waterproofing Garage Below Grade	31,050	sf	\$ 6.00	\$ 186,300		
Subtotal					\$ 886,050	

Roofing

Modified Bitumen Roof	349,500	sf	\$ 14.00	\$ 4,893,000		
Subtotal					\$ 4,893,000	

Flashing

Roof Flashing/Cap	349,500	sf	\$ 1.75	\$ 611,625		
Subtotal					\$ 611,625	

Insulation

Under Slab Rigid Thermal Insulation	269,000	sf	\$ 2.00	\$ 538,000		
Deck Insulation	406,500	sf	\$ 1.75	\$ 711,375		
Exterior Solid Wall Insulation	150,525	sf	\$ 2.75	\$ 413,944		
Subtotal					\$ 1,663,319	

Miscellaneous

Fireproofing (Tnemec Paint)	2,764,625	sf	\$ 2.50	\$ 6,911,563		
Miscellaneous Caulking and Sealants	933,000	sf	\$ 0.50	\$ 466,500		
Subtotal					\$ 7,378,063	

Subtotal Division 7 \$ 15,432,056

Division 08 - Doors and Glazing

Hollow Metal Doors and Frames

Door/Frame/Hardware - HM Exterior Entry Doors	96	ea	\$ 1,700.00	\$ 163,200		
Door/Frame/Hardware - HM Interior Doors	150	ea	\$ 1,500.00	\$ 225,000		
Access Doors	28	ea	\$ 300.00	\$ 8,400		
Add for Panic Hardware	96	ea	\$ 1,200.00	\$ 115,200		
Subtotal					\$ 511,800	

Glazing

Door/Frame/Hardware - Alum/Glass	2	pr	\$ 5,500.00	\$ 11,000		
Door/Frame/Hardware - Alum/Glass	10	ea	\$ 3,500.00	\$ 35,000		

George R. Brown Convention Center - Conceptual Cost Estimate
North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E
April 18, 2011

Square Footages	
Parking	257,500
Level 1	269,000
Level 3	292,500
Level 2	57,000 Connector
Level 3	57,000 Connector
TOTAL	933,000

GRBCC EXPANSION - SCHEME E

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
Interior Glass Allowance	1	ls	\$ 500,000.00	\$ 500,000		
Alucobond Panels - 60% of Exterior Skin - MAIN	106,875	sf	\$ 45.00	\$ 4,809,375		
Exterior Curtainwall - 20% of Exterior Skin - MAIN	35,625	sf	\$ 95.00	\$ 3,384,375		
Alucobond Panels - 60% of Exterior Skin - CONNECTOR	13,050	sf	\$ 45.00	\$ 587,250		
Exterior Curtainwall - 20% of Exterior Skin - CONNECTOR	4,350	sf	\$ 95.00	\$ 413,250		
			Subtotal	\$ 9,740,250		
					Subtotal Division 8	\$ 10,252,050
Division 09 - Finishes						
Drywall Partitions						
Drywall Partitions	212,400	sf	\$ 4.00	\$ 849,600		
			Subtotal	\$ 849,600		
Level 1 - Exhibit Hall						
Floor - Sealed Concrete	200,000	sf	\$ 1.50	\$ 300,000		
Walls - Paint	90,000	sf	\$ 2.25	\$ 202,500		
Walls - Acoustical Treatment	90,000	sf	\$ 15.00	\$ 1,350,000		
Ceilings - Exposed	200,000	sf	\$ 1.35	\$ 270,000		
			Subtotal	\$ 2,122,500		
Level 1 - Lobby / Registration						
Floor - Carpet	62,000	sf	\$ 3.50	\$ 217,000		
Walls - Paint	23,500	sf	\$ 2.25	\$ 52,875		
Walls - Acoustical Treatment	5,875	sf	\$ 15.00	\$ 88,125		
Ceilings	62,000	sf	\$ 3.50	\$ 217,000		
			Subtotal	\$ 575,000		
Level 1 - Offices						
Floor - Carpet	3,000	sf	\$ 3.50	\$ 10,500		
Walls - Paint	7,500	sf	\$ 2.25	\$ 16,875		
Ceilings	3,000	sf	\$ 3.50	\$ 10,500		
			Subtotal	\$ 37,875		
Level 1 - Restrooms						
Floor - Ceramic Tile	4,000	sf	\$ 12.00	\$ 48,000		
Walls - Ceramic Tile	4,800	sf	\$ 12.00	\$ 57,600		
Ceilings	4,000	sf	\$ 3.50	\$ 14,000		
			Subtotal	\$ 119,600		

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C.I.P. CONCEPTUAL COSTS

George R. Brown Convention Center - Conceptual Cost Estimate

North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E
April 18, 2011

Square Footages	
Parking	257,500
Level 1	269,000
Level 3	292,500
Level 2	57,000 Connector
Level 3	57,000 Connector
TOTAL	933,000

GRBCC EXPANSION - SCHEME E

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
Level 3 - Exhibit Hall						
Floor - Sealed Concrete	136,000	sf	\$ 1.50	\$ 204,000		
Walls - Paint	62,500	sf	\$ 2.25	\$ 140,625		
Walls - Acoustical Treatment	62,500	sf	\$ 15.00	\$ 937,500		
Ceilings - Exposed	136,000	sf	\$ 1.35	\$ 183,600		
			Subtotal		\$ 1,465,725	
Level 3 - Ballroom						
Floor - Carpet	55,000	sf	\$ 3.50	\$ 192,500		
Walls - Paint	49,000	sf	\$ 2.25	\$ 110,250		
Ceilings	55,000	sf	\$ 25.00	\$ 1,375,000		
			Subtotal		\$ 1,677,750	
Level 3 - Meeting Rooms (50 each)						
Floor - Carpet	83,500	sf	\$ 3.50	\$ 292,250		
Walls - Paint	120,000	sf	\$ 2.25	\$ 270,000		
Walls - Acoustical Treatment	60,000	sf	\$ 15.00	\$ 900,000		
Ceilings	83,500	sf	\$ 4.50	\$ 375,750		
			Subtotal		\$ 1,838,000	
Level 3 - Restrooms						
Floor - Ceramic Tile	4,000	sf	\$ 12.00	\$ 48,000		
Walls - Ceramic Tile	4,800	sf	\$ 12.00	\$ 57,600		
Ceilings	4,000	sf	\$ 3.50	\$ 14,000		
			Subtotal		\$ 119,600	
Level 3 - Support Spaces						
Floor - Sealed Concrete	5,000	sf	\$ 1.50	\$ 7,500		
Walls - Paint	5,200	sf	\$ 2.25	\$ 11,700		
Ceilings - Exposed	5,000	sf	\$ 0.15	\$ 750		
			Subtotal		\$ 19,950	
Level 2 and 3 - CONNECTOR						
Floor - Carpet	114,000	sf	\$ 3.50	\$ 399,000		
Walls - Paint	57,500	sf	\$ 2.25	\$ 129,375		
Ceilings	114,000	sf	\$ 3.50	\$ 399,000		
			Subtotal		\$ 927,375	

George R. Brown Convention Center - Conceptual Cost Estimate
North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E
April 18, 2011

Square Footages	
Parking	257,500
Level 1	269,000
Level 3	292,500
Level 2	57,000 Connector
Level 3	57,000 Connector
TOTAL	933,000

GRBCC EXPANSION - SCHEME E

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
Garage Finishes						
Garage Finishes + Traffic Coating	257,500	sf	\$ 5.00	\$ 1,287,500		
Subtotal						
						\$ 1,287,500
Finish Upgrades						
Lobbies / Vestibules / Upgrade Allowance	1	allow	\$ 500,000.00	\$ 500,000		
Subtotal						
						\$ 500,000
Subtotal Division 9						
						\$ 11,540,475
Division 10 - Specialties						
Graphics						
Signage	1	ls	\$ 500,000.00	\$ 500,000		
Subtotal						
						\$ 500,000
Fire Protection Specialties						
Fire Extinguisher Cabinets Allowance	187	ea	\$ 240.00	\$ 44,784		
Subtotal						
						\$ 44,784
Folding Partitions						
Folding Partitions Allowance	15	ea	\$ 35,000.00	\$ 525,000		
Subtotal						
						\$ 525,000
Misc Specialties						
Acoustical Requirements - Panels/Fabric/Ceiling/Batt	675,500	sf	\$ 2.00	\$ 1,351,000		
AV Systems	1	ls	\$ 250,000.00	\$ 250,000		
Project Screens/Boards	50	ea	\$ 4,500.00	\$ 225,000		
Toilet Partitions / Accessories	1	ls	\$ 150,000.00	\$ 150,000		
Movable Partitions in Meeting Rooms	16,875	sf	\$ 75.00	\$ 1,265,625		
Subtotal						
						\$ 3,241,625
Subtotal Division 10						
						\$ 4,311,409
Division 11 - Equipment						
Dock Equipment	8	ea	\$ 10,000.00	\$ 80,000		
Parking Equipment	1	ls	\$ 300,000.00	\$ 300,000		
Misc Equipment	1	ls	\$ 250,000.00	\$ 250,000		
Subtotal						
						\$ 630,000

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C.I.P. CONCEPTUAL COSTS

George R. Brown Convention Center - Conceptual Cost Estimate

North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E
April 18, 2011

Square Footages	
Parking	257,500
Level 1	269,000
Level 3	292,500
Level 2	57,000 Connector
Level 3	57,000 Connector
TOTAL	933,000

GRBCC EXPANSION - SCHEME E

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
Subtotal Division 11					\$ 630,000	
Division 14 - Conveying						
Escalators	2	ea	\$ 300,000.00	\$ 600,000		
Passenger Elevators	8	ea	\$ 80,000.00	\$ 640,000		
Freight Elevators	2	ea	\$ 125,000.00	\$ 250,000		
			Subtotal	\$ 1,490,000		
Subtotal Division 14					\$ 1,490,000	
Division 21 - Fire Protection						
Sprinkler System						
Sprinkler System/Stand Pipe/Paint	933,000	sf	\$ 4.00	\$ 3,732,000		
			Subtotal	\$ 3,732,000		
Subtotal Division 21					\$ 3,732,000	
Division 22 - Plumbing						
Fixtures and Equipment						
Plumbing Fixtures/Equipment	675,500	sf	\$ 4.50	\$ 3,039,750		
Piping						
Piping - Domestic/Sanitary	675,500	sf	\$ 4.00	\$ 2,702,000		
Services to Exhibit Hall	336,000	sf	\$ 8.00	\$ 2,688,000		
Paint	675,500	sf	\$ 0.25	\$ 168,875		
Storm						
Drainage @ Garage/Pumps	257,500	sf	\$ 1.50	\$ 386,250		
French Drain/Storm System -Roof Area	257,500	sf	\$ 0.60	\$ 154,500		
			Subtotal	\$ 9,139,375		
Subtotal Division 22					\$ 9,139,375	
Division 23 - HVAC						
Equipment/Piping						
Equipment	675,500	sf	\$ 22.00	\$ 14,861,000		
Piping	675,500	sf	\$ 12.00	\$ 8,106,000		
Garage Systems						
Garage Exhaust	257,500	sf	\$ 2.50	\$ 643,750		
Ductwork						
Ductwork/Insulation/Distribution	675,500	sf	\$ 10.00	\$ 6,755,000		

George R. Brown Convention Center - Conceptual Cost Estimate
North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E
April 18, 2011

Square Footages	
Parking	257,500
Level 1	269,000
Level 3	292,500
Level 2	57,000 Connector
Level 3	57,000 Connector
TOTAL	933,000

GRBCC EXPANSION - SCHEME E

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
Controls						
Controls	675,500	sf	\$ 4.00	\$ 2,702,000		
Miscellaneous						
Paint	675,500	sf	\$ 1.00	\$ 675,500		
Miscellaneous	675,500	sf	\$ 2.20	\$ 1,486,100		
			Subtotal	\$ 35,229,350		
					Subtotal Division 23	\$ 35,229,350

Division 26 - Electrical

Equipment

Primary Equipment/Switchgear

Primary Equipment 675,500 sf \$ 2.00 \$ 1,351,000

Panelboards

Panelboards 277/480V and 120/208V 675,500 sf \$ 3.20 \$ 2,161,600

Transformers

Transformer 675,500 sf \$ 1.00 \$ 675,500

Emergency

Emergency Generator/Transferswitch 675,500 sf \$ 1.50 \$ 1,013,250

Motor Connections

Motor and Equipment Connections 675,500 sf \$ 1.00 \$ 675,500

Other

Exhibit Electrical 336,000 sf \$ 10.00 \$ 3,360,000

Garage 257,500 sf \$ 4.00 \$ 1,030,000

Lighting

Lighting Fixture and Exit Fixtures 675,500 sf \$ 12.00 \$ 8,106,000

Devices

Outlets/Lighting Control/Other 675,500 sf \$ 1.75 \$ 1,182,125

Special Lighting/Dimming Controls 675,500 sf \$ 1.00 \$ 675,500

Conduit and Wire

Feeders/Motor Feeders/Branch 675,500 sf \$ 8.00 \$ 5,404,000

Miscellaneous

Miscellaneous Electrical 675,500 sf \$ 0.50 \$ 337,750

Paint 675,500 sf \$ 0.75 \$ 506,625

Lightning Protection

Lightning Protection 1 ls \$ 275,000.00 \$ 275,000

Subtotal **\$ 26,753,850**

Subtotal Division 26 **\$ 26,753,850**

APPENDIX

C.I.P. CONCEPTUAL COSTS

George R. Brown Convention Center - Conceptual Cost Estimate

North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E
April 18, 2011

Square Footages	
Parking	257,500
Level 1	269,000
Level 3	292,500
Level 2	57,000 Connector
Level 3	57,000 Connector
TOTAL	933,000

GRBCC EXPANSION - SCHEME E

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
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Division 27 - Communications/Security/Other Electrical

AV - Rough-In

Rough-In Only	675,500	sf	\$ 2.00	\$ 1,351,000	
Subtotal					\$ 1,351,000

Voice/ Data System

Garage	257,500	sf	\$ 0.20	\$ 51,500	
Telephone and Data	675,500	sf	\$ 2.75	\$ 1,857,625	
Subtotal					\$ 1,909,125

Subtotal Division 27 \$ 3,260,125

Division 28 - Security and Fire Alarm

Life Safety Systems

Garage	257,500	sf	\$ 0.75	\$ 193,125	
Fire Alarm	675,500	sf	\$ 1.40	\$ 945,700	

Security Systems

Security Rough-In - Garage	257,500	sf	\$ 0.75	\$ 193,125	
Security Rough-In	675,500	sf	\$ 0.50	\$ 337,750	
Subtotal					\$ 1,669,700

Subtotal Division 28 \$ 1,669,700

Division 31 - Earthwork

Earthwork

Mass Excavation	175,000	cy	\$ 4.50	\$ 787,500	
Haul Off	218,750	cy	\$ 8.50	\$ 1,859,375	
Tie-Backs / Soil Retention	1	ls	\$ 250,000.00	\$ 250,000	
Fine Grade	336,250	sf	\$ 0.50	\$ 168,125	
Dewatering	1	ls	\$ 150,000.00	\$ 150,000	
Subtotal					\$ 3,215,000

Subtotal Division 31 \$ 3,215,000

Division 32 - Exterior Improvements

Elevated Structures

Re-Build Skybridge to Hilton Hotel	90	lf	\$ 9,058.00	\$ 815,220	
Subtotal					\$ 815,220

George R. Brown Convention Center - Conceptual Cost Estimate
North Garage and Skybridge / ADLA Reconfiguration / GRBCC Expansion - Scheme E
April 18, 2011

Square Footages		
Parking	257,500	
Level 1	269,000	
Level 3	292,500	
Level 2	57,000	Connector
Level 3	57,000	Connector
TOTAL	933,000	

GRBCC EXPANSION - SCHEME E

DESCRIPTION	QTY	UNIT	UNIT COST	EXTENSION	SUBTOTAL	SUBTOTAL
Site Development						
Site Development Allowance	1	allow	\$ 250,000.00	\$ 250,000		
Entrance Plaza along Polk	28,500	sf	\$ 25.00	\$ 712,500		
Exterior Paving & Curbs	40,000	sf	\$ 12.00	\$ 480,000		
			Subtotal		\$ 1,442,500	
					Subtotal Division 32	\$ 2,257,720
Division 33 - Site Utilities						
Domestic and Fire Water	1	allow	\$ 150,000.00	\$ 150,000		
Sanitary Sewer	1	allow	\$ 250,000.00	\$ 250,000		
Storm Sewer	1	allow	\$ 100,000.00	\$ 100,000		
Site Electrical	1	allow	\$ 150,000.00	\$ 150,000		
			Subtotal		\$ 650,000	
					Subtotal Division 33	\$ 650,000
					Subtotal Construction	\$ 203,437,757

SEE RECAP FOR MARK-UPS