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Aerial Photo of the Paducah Riverfront:



Purpose:

The purpose of this Memorandum is to define the final scope of the Transient Boat Dock and Schultz Park, and verify the program elements and associated design considerations as they relate to the approved Riverfront Redevelopment.

Project Introduction and Overview:

A future transient dock and improvements to Raymond C. Schultz Park have been identified by the City of Paducah as the catalyst for future improvements to the city's riverfront in accordance with the approved Riverfront Redevelopment Plan. Schematic development of the Transient Dock and Schultz Park emphasized goals and objectives identified in the master plan, including:

- Create or provide the highest and best use of the riverfront
- Ensure community involvement and use of the river by maximizing visual and physical access to the river
- Develop a vibrant riverfront that becomes an asset to downtown
- Provide a financially manageable phased implementation plan
- Create momentum through the implementation of catalytic projects
- Provide interface of commercial and recreational boating
- Establish a place for public gathering and celebration of Paducah.

The redevelopment of Schultz Park represents the inaugurating transformation of Paducah's entire riverfront. It is imperative that the final design respects the city's collective vision for their riverfront, which includes its role as primary contributor to the creation of a sustainable community in which to live, work and play, resulting in a better quality of life for future generations.

Process:

The City of Paducah's vision was preserved through a deliberate process of schematic design development that included the establishment of a design program, detailed analysis of project constraints and considerations, the provision of alternative concepts and consistent interface with city representatives. The attached appendices graphically illustrate this process as it evolved from the approved Riverfront Redevelopment Plan ([appendix A](#)) through development of the Context Diagram ([appendix B](#)) and three alternative concepts for Schultz Park ([appendix C](#)) to the final consensus plan ([appendix D](#)). Character sketches ([appendix E](#)) were provided to help convey some of the ideas shown in plan. Additional illustrations ([appendix F](#)) show how the design of Schultz Park fits in context with the approved master plan. Finally, the current AutoCAD file and opinion of probable construction cost is attached ([appendix H](#)). The final consensus plan for Schultz Park represents a culmination of efforts from every team member, including City of Paducah Elected Officials and Staff, Florence and Hutcheson, Inc., HCCL, and JJR.

JJR participated in design meetings with the city engineer and planners on September 7, 2007 and October 10, 2007. After each meeting, JJR incorporated comments from the city into the evolving schematic plan, which resulted in the Final Consensus Plan as shown in the attached appendices. The information provided in this Memorandum of Understanding illustrates this collaborative process and the resulting products. Meeting minutes from the above meetings and the permitting meetings are included ([appendix G](#)).

The following report includes the design program, project consideration, conclusions as well as a signature page. Once signed, this document will provide the guidelines for implementation of this project.

The formation of a design program was a product of the September '07 meeting with Paducah representatives. This program was an essential tool used throughout schematic development of the project, providing a clearly defined approach to the inclusion of desired attributes. Program elements were separated into three categories, including Schultz Park, the transient boat dock and the marina.

Schultz Park:

- Facilitate the creation of and adherence to a 'Vision' for the waterfront
- Emphasize the Paducah waterfront as an inherently public asset to be shared by everyone
- Establish Schultz Park as 'Gateway' to the Paducah riverfront and catalyst for future development
 - o Use Monroe Street as a pedestrian link between town and waterfront
- Celebrate the confluence between the Tennessee and Ohio rivers with an interpretive waterfront experience
 - o The Levee Trail
 - o Open space/park/greenway
 - o Gardens
- Seamlessly integrate Schultz Park into proposed redevelopment upstream
- Preserve and enhance existing viewsheds
- Reconfigure roadway alignment to provide landscape buffer along floodwall without encroaching upon pedestrian use of waterfront
- No substantive improvement to the floodwall
- No trees or deep foundations within the floodwall right-of-way
- Provide limited 'day-use' parking
- Allow 24-hour driving access
- Create a pedestrian promenade that serves as the unifying theme and connective tissue of the Paducah riverfront experience.
 - o Create public focal points and gathering areas that facilitate a multitude of uses and users
 - o Clearly delineate all paths and trails with appropriate signage/markers
 - o Establish spatial and visual separation amongst automobile, pedestrian and bicyclist to avoid potential circulation conflicts
 - o Maximize public accessibility at different elevations along waterfront to accommodate normal water fluctuations
 - o Provide multiple destinations along paths and trails to create a dynamic riverfront experience and continuity throughout the site
 - o Provide ADA accessibility wherever site conditions permit
- Limit proposed improvements to the area that is not currently leased to the Executive Inn.

- Establish a hierarchy of plant material to reflect anticipated water fluctuations
- Allow for placement of fuel storage tanks
- Include park amenities such as benches, trash/recycling receptacles and bike racks
- Provide pedestrian lighting where applicable
- Investigate the reuse of existing concrete structures
- Incorporate the reuse of historic cobbles
- Provide opportunities for public art and sculptural enhancements
- Develop a riparian buffer with clearly defined zones of impact
- Design shore protection to accommodate river flow velocity, wave/wake conditions and water level fluctuation
 - o Explore bioengineered alternatives to supplement more conventional slope stabilization applications

Transient Boat Dock:

- Design for future expansion and phased installation
- Create a floating system which is accessible for water elevations between 299 mean sea level (msl) and 322 msl
- Design as a wave attenuator
- No dockage for excursion vessels
- Dockage for transient vessels on both sides of the dock
- One gangway system (potentially will include three 80-ft gangway sections at 11.25% slope, or two gangway sections at 14% maximum slope or longer gangway sections.)
- Walking path and public access along gangway and dock
- Golf cart access and maneuverability on floating dock
- Provide fishing opportunities but no fish cleaning amenities

Marina:

- The financial analysis included in the master plan shows revenue projections for 200 slips and recommends phasing installation of the marina to test the market. A portion of the slips will be reserved for transient boaters.
- A fuel dock with gasoline and diesel fuel located along the dock
- Two above ground fuel storage tanks and enclosure located at the foot of floodwall.
- Marina Administration building with, showers and store.
- Marina/dock utilities: fuel, potable water, electric, sanitary pumpout
- Marina will share a gangway entrance with the transient boat dock but will have a secure entrance.

Influential design and construction considerations were identified during schematic development of the transient dock and Schultz Park. These items, listed below, will continue to influence how the project evolves.

Park Access

- 24-hour access to park will be provided when the park is open
- All public access to the riverfront is closed when water elevation reaches 322.

Fill material

- Clean fill material, meeting Kentucky DEP water quality requirements will be used. Dredge materials may be investigated for use in some areas of the project.
- Delivery and placement by barge is preferred. Access will be restricted for vehicular access.
- The material will be placed with a maximum slope of 3:1. This slope may be adjusted as the geotechnical data becomes available and the material source is determined.
- Soft river bottom soils are predicted under the fill area. Pre-boring projection by the geotechnical engineer indicate that 6- to 24-inches of settlement could occur. Leaving this land mass in place for a period before creating the amenities could help protect the investment.
- The top elevation of the land mass will match existing elevations of the floodwall and grade will slope away.
- Fill material quantities are based on 3:1 slopes.

Phasing of Construction

- Public access to Schultz Park will be closed during construction
- Install initial erosion control measures
- Install piles for gangway support (pre-drilling will likely be required)
- Place fill material
- Install gangway system
- Construct and install first phase of floating wave attenuator (up to 400-ft)
- Timing for construction of park amenities will be based on geotechnical recommendations regarding subsurface consolidation.
- No construction will take place on the property leased by Executive Inn.
- Laydown areas are minimal until land mass is constructed. Water based access may be required for early phases of construction.

Schedule

- All scheduling items are based on permitting approvals.
- Material availability and delivery schedule may dictate schedule for land mass construction.
- Target bid date for Phase 1 is early June 2008.
- Target construction completion for Phase 1 is the end of 2009.

Roadway

- One-way vehicular access will be maintained via Water Street in the same direction as existing, with egress at existing location adjacent to lease property of Executive Inn.
- Width of asphalt roadway will be 15-ft

Parking

- Up to 24 parking stalls facing river for park users
- Up to 12 stalls facing floodwall with restricted time limits for marina drop off

- Curb stops will be provided at each parking stall.
- Parking stalls provided 18-ft long, 9-ft wide and angled at 30°
- No trailer parking will be provided within this portion of the project.
- No overnight parking or long-term parking for marina users will be provided within this portion of the project.

Pathways, Staircases and Amenities

- The Levee trail will be 10-ft wide concrete as it traverses the site.
- Sidewalks will be concrete and range in width between 6-ft and 8-ft.
- Stairs will be concrete and maintain a minimum width of 8-ft, with 6-inch risers and 15-inch treads.
- Indigenous limestone blocks will be used for terraced seating areas
- Existing concrete structures (piers) have been incorporated into the design as interpretive landmarks that display a vertical application of historic cobbles or brick.
- Specifics of the amenities (benches, picnic tables, trash/recycling receptacles) will be determined by client.
- Schematic design of Schultz park accommodates for the inclusion of Sculptural artwork and/or public art exhibits

Gangway System

- Three gangway sections are proposed with a grade of 10% from normal pool elevation. When water falls below normal pool the lowest gangway increases grade (13.75% at low pool elevation of 299). As the water rises, grade decreases. At elevation of 313, the lower gangway will be horizontal and the upper two sections will maintain their 10% grade.
- Gangway sections will fluctuate vertically with different water levels. A 5th wheel connection will exist at the head of the gangway. The lower end of each gangway will slide as the platforms rise and fall.
- The gangways will be approximately 9-ft wide, with an 8-ft interior clearance.
- Preliminary size estimates for the platforms are 30-ft wide by 50-ft long due to flotation requirements
- Four piles will be connected to the corners of each platform, providing the necessary vertical fluctuation, while inhibiting lateral movement. Preliminary pile size is 22-inches.
- The gangway will be designed to support golf carts in addition to pedestrians.
- Electric power will be run under the gangway and conduits and/or available attachment points will be provided to facilitate future water, sewer, gasoline and diesel pipes.
- During severe flood events, the gangway will float higher than the adjacent ground elevation

Floating Wave attenuator – Transient Dock

- 20-ft wide floating wave attenuator/transient dock with a chain and anchor system
- Anchors will be piles driven into the river bed
- A railing will be provided along the center of the dock; another rail is proposed at the end the dock.
- Periodic gaps will be provided in the railing to allow golf cart maneuverability.
- Cleats will be provided every 30-ft on either side of the dock
- Up to 400-ft of this wave attenuator/floating transient boat dock is included in the initial phase.
- Power pedestals will be placed every 60-ft. along the transient boat dock
- Freeboard will be determined based on the final numerical modeling (current estimate is 3-ft)

Flooding/Hydraulic Considerations

- The transient dock/wave attenuator, marina and gangway system will all be designed to accommodate the 500 year flood event.

- The remaining park areas will submerge as water levels rise.
- This project will maintain a buffer of 300-ft from the USACE Navigation Channel.
- The land mass will act as the initial deflector for debris and provide an area of calmer water for the transient dock and marina basin
- Navigation Aids will be determined by the US Coast Guard

Lighting

- Pole-mounted pedestrian lights will be provided along the access road and around the Grand Lawn.
- Pathway lighting will be provided every 30-ft along the transient boat dock.
- Down-lighting mounted onto piles will provide light for gangways.
- Submersible inset lighting will be provided for stairways.
- Lighting is not proposed in other areas of the park.

Shore protection

- Bio-engineered slope stabilization alternatives will supplement more conventional application of stone revetment. Viable options need to account for flow velocities, extreme water level fluctuations and extended periods of inundation. Inherent risks are associated with 'green' approaches to slope stabilization. As design proceeds, JJR will provide the city with additional information.

Vegetation

- Plant material determinations will be based on zones of flood inundation and velocities. Survival of trees, shrubs and other woody species will improve when located at higher elevations. For lower elevations, some perennials, annuals and other herbaceous species are viable options.

Elevation

- Landmass protector will be designed for initial protection up to the 50-yr return interval (336.5 msl)
- The lowest elevation of the trail system is designed to ordinary high water (310.3 msl)
- Aspects of the project will be underwater at various water elevations.
- The "rock outcropping/stairs leading to water" are planned to be 'stepped revetment/seatwalls' rather than stairs. These are planned to have a rise of 18-inches and a run of 2-ft or greater.

Future items (to be included in future phases of project implementation):

- Marina
- Marina services building
- Fuel system and fuel tanks
- Potable water supply
- Sanitary pumpout station
- Extension of transient boat dock/wave attenuator
- Sculpture/public art

Hydraulic Impact Analysis (as provided by HCCL):

Flows and Water Levels

There is a considerable range of flood stage on the Ohio River, and it is necessary to consider the impacts of the proposed works on the local hydraulics, and the associated hydraulic stresses on the proposed works, under the full range of flood conditions. Typical key flood and low flow stage elevations and their descriptions are provided in the following Table.

Table - Key River Stages at Paducah (mean sea level and gauge)

Stage	Elevation (msl)	Comment
0	286.26	Gage Zero
12.74	299.0	Low Water
15.74	302.0	Normal Pool
24.04	310.3	Ordinary High Water
44.24	330.5	10-year return interval
50.24	336.5	50-year return interval
52.54	338.8	100-year return interval
55.54	341.8	500-year return interval
60.6	346.86	Max. Historic Flood

Waves

Fetches range from 3 miles from the northwest, 5 miles from the southeast and 0.6 miles across river (to the northeast). Wind generated wave conditions were estimated based on USACE Coastal Engineering Manual methodologies. Wind conditions at Paducah were analyzed with respect to direction and magnitude. Vessel induced wave conditions are expected to be in the order of 2 ft +/-, and therefore extreme wind generated wave conditions are expected to govern. Barge traffic can generate a long period drawdown which is reported to be in the order of a foot vertically on the Ohio.

Maximum (100 year) wind generated wave heights in this area are estimated to be in the order of 2.5 ft (from NE) to 2.7 ft (from SW). Wave periods are estimated to be less than 3.5 s. Shoreline protection requirements under such conditions, and assuming a revetment slope of 3H : 1V could involve placement of 2 layers of rock protection with a approximately 175lb W50 assuming a relatively widely graded revetment stone W15=70 lbs, W85=350 lbs. If a more uniform gradation is proposed for aesthetics, a W50 in the order of 300 lbs (gradation between 225 and 375 lbs) could be considered. This is expected to be adequate for the vessel generated waves and a relatively conservative estimate of the wind generated waves.

Debris

Debris should be assumed to move with the currents and may impact structures at the speed of the currents. Debris consideration should be based on local experience with regard to the size and weight of material that may be transported with the flow under certain stages.

Conclusion:

The following are the conclusions of the transient dock and Schultz Park schematic design process. The success of the project is dependent upon a mutual understanding of every component of the impending design and future implementation.

Cost:

The entire schematic design cost will exceed \$13 million. The first implementation phase (existing engineering agreement) will include: design engineering and one set of bidding documents for the gangway, earth fill, transient boat dock, pathways, roadway improvements, shore protection and landscaping as shown on the consensus schematic design.

The funds available for this project are in flux. At this time, approximately \$4.5 million are available to be used for the Ohio River Boat Launch and Transient Boat Dock project. The funding remaining after the implementation of the Transient Boat Dock will be available for use on this project. Future applications for Federal Funding have been and will continue to be requested. Allowing the Transient Boat Dock and Schultz Park project to have a phased implementation will facilitate construction within various budgets and allow the catalytic projects to begin.

Proposed Phase 1 is the construction of the gangway system, a portion of the transient boat dock and the land mass fill. The extent of the transient boat dock construction will depend on the price for the fill material and the type of shore protection required based on gradation of the ultimate fill material. As the fill material source is determined, we will develop a tighter opinion of probable cost. At this time, we believe Phase 1 could be completed for approximately \$2.5 million, if fill can be provided for around \$4/cy. As additional funding becomes available, the land side amenities, roadway and parking at Schultz Park could be completed. Future phases could include extension of the transient boat dock, creation of portions of the marina, utility/fuel services, marina services building, and/or public art enhancements.

Elevation and Water Level:

When the river elevation reaches 322, the City will close Schultz Park and access to the gangway. Because of the constant fluctuation of the river up to 322, portions of the Schultz Park improvements, including pathways and staircases will be under water. This will inherently include risks such as portions of staircases being submerged.

The transient boat dock will be operational from water elevation 299 up to 322. The actual dock will continue floating up to the water elevation of the 500-year recurrence interval flood of elevation 341.8 (elevation per Florence & Hutcheson, Inc. report dated May 4, 2006), repairs may be necessary to the structures in extreme flood events.

Maintenance:

The gangway and dock system will need to be evaluated annually. Shore protection systems need to be evaluated after large storms and flood events.

Bow thrusters and prop wash could severely impact the fill slopes

Establishment of plant materials will be a critical issue and dependent on the weather and water elevations during establishment. Plantings will have various chances of survival during different flood events. Annual planting beds will be available along the central stair case. The annual planting beds will need to be maintained by the City, or their assignee.

Maintenance dredging will be required if dredging is ultimately included in the Marina development and potentially in other areas over time.

Conclusion:

The land mass will act as the initial deflector for transient boat dock and marina against flood debris. After flood events, debris removal from the land mass and park may be necessary. The land mass will likely protect the transient boat dock and marina from debris up to the 50-year level.

When the water surface exceeds the height of the land mass, the piles supporting the gangway as well as the gangway itself and all elements with stature (trees, light poles, etc.) will encounter the largest impact from debris and act as deflectors for the remaining elements. In higher flood events, damage may occur to the gangway, piles and/or transient boat dock and marina.

Graphics: The final consensus plan illustrative is included in the attached appendices, along with supplemental CAD documentation. Character sketches were also added to provide a 3-Dimensional illustration of the plan. Additionally, a 3-Dimensional computer model is being developed for enhanced visualization of the proposed design.

Additional information:

Schultz Park will be inaccessible during construction. Barges will be used to place material and piles within the river. A staging area outside the existing Schultz Park may be necessary. Pile driving will occur in the river to install the support structures.

Velocities in the transient boat dock and marina area will be reduced to around 1-ft per second from the land mass. Wave heights in the marina basin will be reduced by the land mass and concrete floating wave attenuator. During normal events, the design condition is to maintain less than a 1-ft wave in the marina basin.

ADA Accessibility will be provided to the various elevations of Schultz Park by a pathway system with a maximum grade of 5%. The gangway system's accessibility is based on a series of 80-ft gangways.

Railing will only be included along the center of the transient boat dock. Gaps will be provided in the railing to allow pedestrians and golf carts to turn around.

Pedestrian scale lighting will be provided along Water Street and the riverside edge of the Grand Lawn. The gangway will have lights in the top of the platform structures that will illuminate the gangway and platforms. The staircases will be lit with submersible lights embedded in the cheek walls of the staircases. Along the transient boat dock, pedestrian accent lighting will be provided in line with the railing.

Client Authorization:

City of Paducah Representative:

By: _____

Title _____

Printed Signature: _____

Date: _____

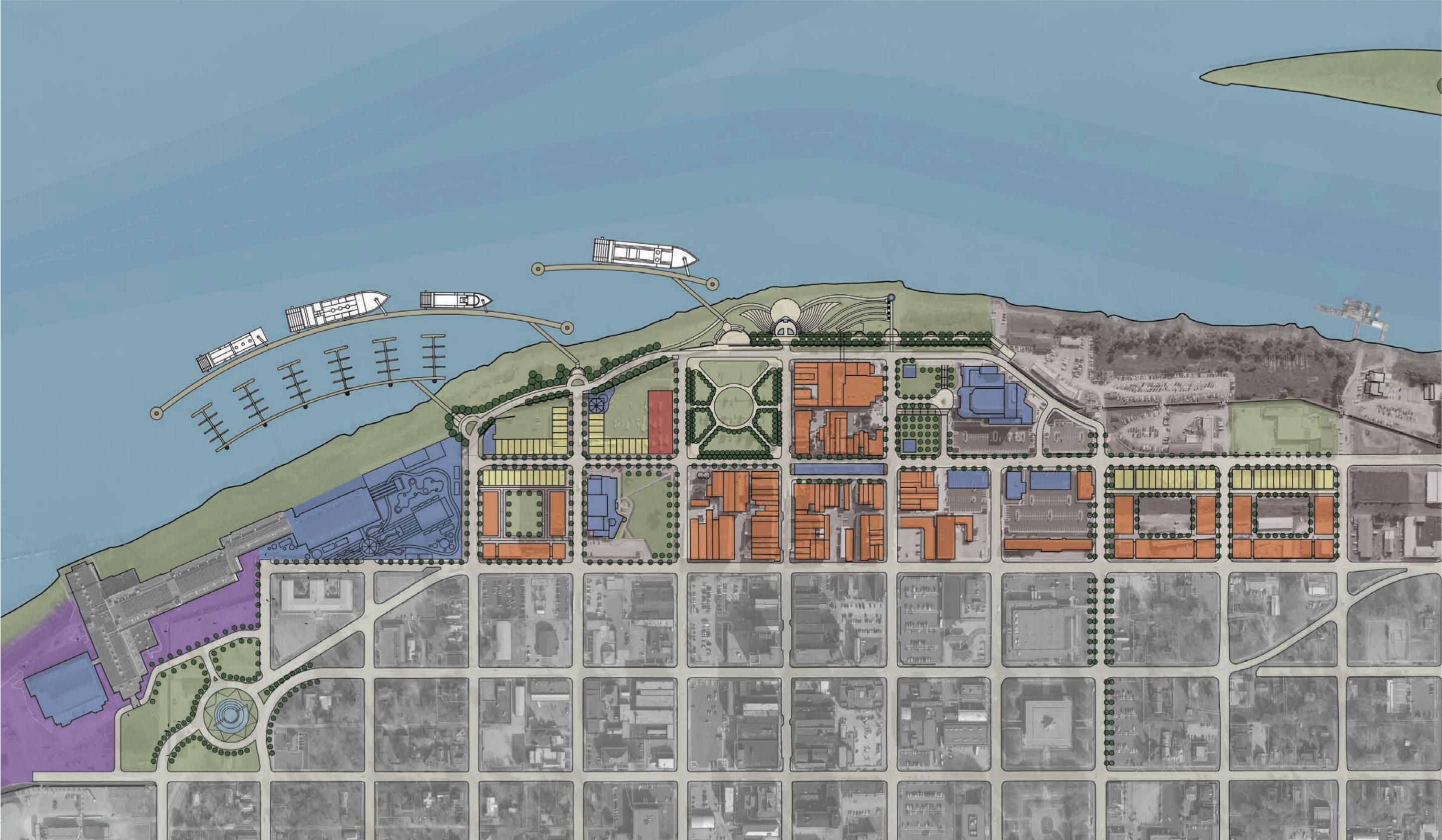
JJR Representative:

By: _____

Title _____

Printed Signature: _____

Date: _____



Transient Dock/Schultz Park Context Diagram

The Transient Dock/Schultz Park Context Diagram was used to facilitate discussion during the September 7, 2007 meeting in an effort to provide clear direction for JJR to proceed with design development of the Transient Dock and Schultz Park, which were identified as the catalytic project for Paducah's Riverfront Redevelopment Plan.

The design addresses elements originally proposed in the approved master plan including the marina and transient boat dock, and the redevelopment zone bounded by Broadway, 3rd and Madison Streets.

The Marina is strategically placed in a location that reduces impact from the imposing Ohio River in conjunction with the Tennessee's influence over the direction of flow at their confluence. The transient boat dock parallels the rivers direction of flow to limit current forces and serves as a wave attenuator for the marina. The land mass is intended to protect the transient dock, marina and related facilities from current impacts and debris during periodic flooding. The land mass also provides a unique opportunity for additional park space along the riverfront, which is addressed in the schematic development of Schultz Park.

The transient dock and marina would be a floating system which would be held in place by a chain and anchor system. Access between it and the adjacent landmass would be by a pile-supported gangway with a series of 80-ft sections. Some dredging of the river basin may be necessary within the proposed marina location to accommodate boat drafts. Rip-rap along the river's edge adjacent to the marina would minimize erosion and maintenance requirements.

On the land side of the flood wall, the diagram proposes the potential of closing of vehicular access to 2nd Street between Monroe and Broadway. This corridor could become an artisans/pedestrian mall with shops and restaurants anchored by a new hotel, conference center and the Quilt Museum. The pedestrian mall would then turn on Monroe Street and connect with Schultz Park through the existing opening in the floodwall. The hotel and parking garage would flank the mall and extend commercial opportunities. The concept diagram also proposes integrating the existing remnant support structures located on the river side of the floodwall as supports for a hotel restaurant deck system. The restaurant could be located on the second floor with commanding views of the Ohio River.



Schultz Park Concept Alternatives

Schultz Park -Concept 1

Plan



Schultz Park -Concept 2

Plan



Schultz Park - Concept 3

Plan



Appendix C

Schultz Park - Concept 1

Opinion of Probable Construction Costs

Landform and Shore Protection	\$2,170,000
Roads and Path	\$450,000
Overlook Structure	\$440,000
Miscellaneous*	\$710,000
Gangway/Ramp System	\$930,000
Transient Dock	\$2,440,000
Marina and Marina Building	\$5,600,000
Total	\$12,740,000

*Includes \$250,000 Public Art Allowance

Schultz Park - Concept 2

Opinion of Probable Construction Costs

Landform and Shore Protection	\$2,900,000
Roads and Path	\$600,000
Overlook Structure	\$440,000
Miscellaneous*	\$850,000
Gangway/Ramp System	\$930,000
Transient Dock	\$2,440,000
Marina and Marina Building	\$5,600,000
Total	\$13,760,000

*Includes \$250,000 Public Art Allowance

Schultz Park - Concept 3

Opinion of Probable Construction Costs

Landform and Shore Protection	\$2,710,000
Roads and Paths	\$970,000
Overlook	\$130,000
Miscellaneous*	\$840,000
Gangway/Ramp System	\$930,000
Transient Dock	\$2,440,000
Marina and Marina Building	\$5,600,000
Total	\$13,620,000

*Includes \$250,000 Public Art Allowance



Opinion of Probable Construction Costs

Landform and Shore Protection	\$2,580,000
Roads and Paths	\$830,000
Miscellaneous*	\$740,000
Gangway/Ramp System	\$930,000
Transient Dock	\$2,440,000
Marina/Utilities/Fuel	\$5,600,000
Total	\$13,120,000

*Includes \$250,000 Public Art Allowance



ROAD AND PATH THROUGH INTERPRETIVE LANDMARKS



TERRACED GARDEN & OVERLOOK



TERRACED LAWN & INFORMAL SEATING



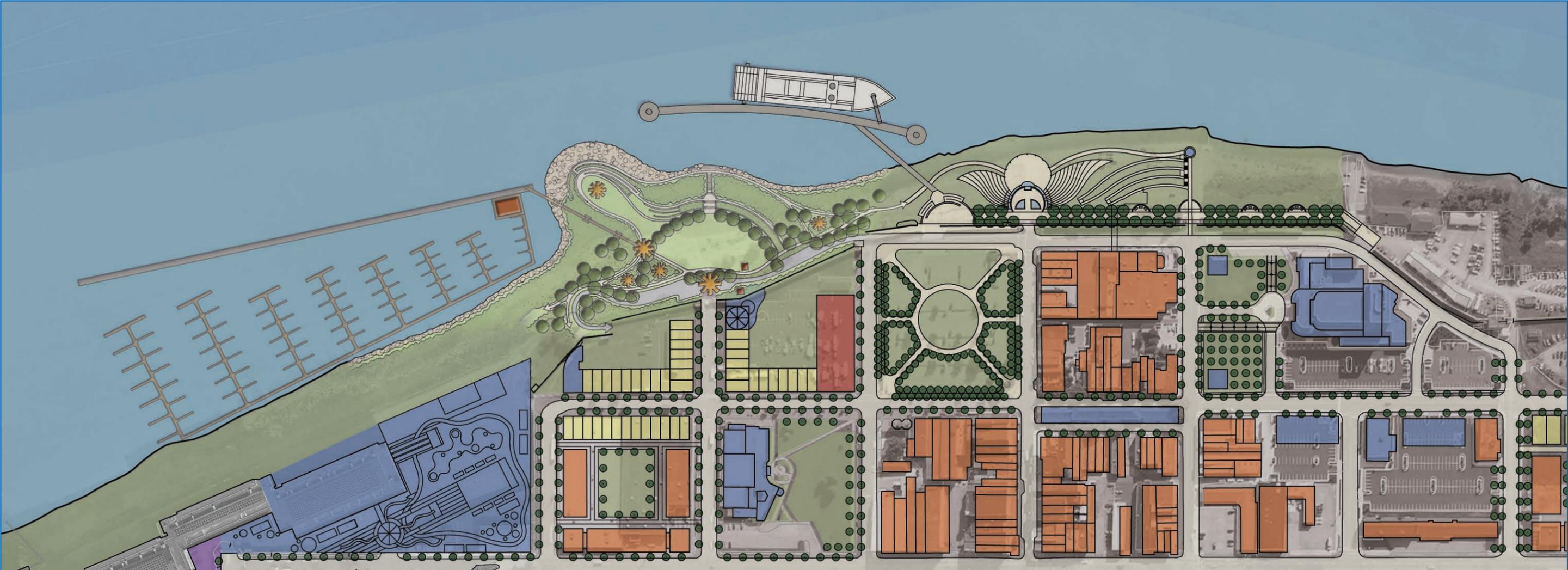
ROCK OUTCROPPING & STEPS LEADING TO WATER



GANGWAY LEADING TO TRANSIENT BOAT DOCK



TRANSIENT BOAT DOCK



Schultz Park Schematic overlaid with approved Master Plan



Aerial Photograph of the Paducah Waterfront



Aerial Photograph of the Paducah Waterfront overlaid with Master Plan

The following text summarizes critical meetings during the schematic design process:

Transient Boat Dock Meeting
Friday, September 7, 2007
JJR No. 24757.200

The follow are items discussed and decisions reached during this meeting and/or in subsequent emails.

- The transient boat dock shall allow for seasonal day use for boats of a variety of sizes (johnboat to 90') Commercial Craft are not compatible (even if compliance with size) with the Transient Boat Dock Facility.
- Fishing from the dock is desired, but is not specific to dock design.
- The marina mix will be determined by the market. The Market Analysis completed by Bob Lewis of Development Strategies states that a maximum of 25 transient slips be provided.
- City is investigating private partner for the marina. The investigation process has begun, but there are no qualified applicants at this time.
- We will not incorporate the excursion vessels into this project, but excursion vessels should be taken in to consideration the “foot print/place holders” associated with the Excursion Dock Facilities so they blend seamlessly together.
- The floating docks will likely be on a chain and anchor system with gangways and floating platforms.
- The Schultz Park, transient dock project will set the stage for the rest of the riverfront (Broadway area.)
- The additional Federal money is in the pipeline, but availability for this project may be doubtful.
- Although materials will be determined in the future, the bulkhead floating docks will (likely) have a concrete surface.
- Golf cart access and maneuverability are desired. The City desires a transient dock width of 18' to 20' (minimum).
- The floodwall should not be aesthetically improved in a way that reduces the likelihood of future changes but the wall should be aesthetically pleasing.
- For design and permitting, this project includes only the transient dock and Schultz park area. Actual implementation portions will be based on available funding.
- For programming, we will look at a floating building for the head dock. This building should include a minimum of bathrooms, showers, food and beverage and area where sales of “souvenirs routine boating items” can occur.
- Parking shall face the river. Specifically, the sequence of features from river to floodwall; 10' Greenway Trail, parking facing the river, though traffic isle and floodwall.

- A fuel dock should be sited/included. The City's preference would be above ground storage tanks (AST).
- The levee bike path will continue through this project corridor and should be accounted for in the design.
- Bike racks, garbage and recycling facilities should be available. The size and location of the refuse containers are to be carefully considered with respect to their aesthetics, convenience, and serviceability.
- Lighting is important and because the actual lighting requirements are not specified, an illumination array may need to be completed as part of this project.
- The land mass will be designed at an elevation of 331 (approximately +3 feet above what was shown on our presented sketch). This requirement was subsequently modified to 336 and ultimately to an elevation lower than 336 that allows surface drainage from the floodwall toward the river.
- The requirement of a minimum of 300-ft from sail line is maintained. The master plan includes 250-ft of setback.
- Enhancements/improvements to the river bank near the Executive Inn will not be included, but consideration will be given to blending these in the future.
- The transient dock will be parallel to the sail line to allow easy extension.

Additional Comments provided by the City after the original meeting:

It has been determined that every effort should be given to maintain, enhance, and to be objectively creative with the large abandoned square concrete silos previously discussed. They offer more valuable returns in the event they are/ can be converted into foundation supports for overlooks and/or other creative for their potential that can be appreciated by other quality of life design elements integrated into this project.

The Ohio River Gage needs to be carefully considered regarding its integration into the project.

The existing "Gangway Buttresses" are to be incorporated into the Excursion Landing Phase associated with "Ultimate" Riverfront Development Plan.

A number of storm sewer structures previously constructed on the river side of the floodwall. The City desires surface flow of storm drainage to the river without the need for storm sewer systems for all design considerations proposed for this project.

Meeting Subject: Paducah Transient Boat Dock and Schultz Park Schematic Design

Location: Teleconference

Meeting Date: October 10, 2007

Issue Date: October 25, 2007

Participants: Rick Murphy, Tom Barnett, Steve Ervin, Ben Peterson, Kathy Lake, Bob Jones, Bill Brose, Joe Porter, Brett Oftedahl

Prepared By: Kathy Lake

DISCUSSION:

The purpose of this teleconference was to discuss the potential schematic design options. The following items are noted from the discussions:

1. Broadway and Kentucky Avenue should be shown on JJR's drawings/mapping. This will enable the public to see how the project fits into the community.
2. Concept 1 shows the least cost/least amenities.
3. The current analysis/flow analysis indicates how the landmass will affect flow. It shows that there are lower velocities behind the land mass. The hydraulic modeling is still in progress and will take all water levels into account.
4. There is a potential impact to the type of the docking that the excursion vessels could enjoy based on the development of Schultz Park. JJR will keep the various excursion vessels in mind to allow the City future flexibility.
5. The City would like to see the cost differential between Concepts 1 and 3. Bill stated that without pile supported structure, there would likely be savings on Concept 3 even though there will be more fill for option three.
6. Largest cost for the project will be the cost of fill. Rick noted that he has information about a project upstream of Paducah that will have a large quantity of fill that will need to be wasted in the 18- to 24-month time period. The material is overburden that would be moved out and may be able to be used for our project. He will continue following this lead and pass along any pertinent information to JJR. Ultimately, JJR will need to know the makeup of the material. Bill noted that leads like this can make projects happen and asked that the City keep their ears open for opportunities.
7. Tom asked what the gangway and overlook structure could look like. JJR has been evaluating options. In general, it could look like the previously submitted cross-section of gangway and overlook, but without the large bollard and overlook. In addition, JJR is investigating architectural elements for the piles.
8. We discussed the operation of the gangway. It will be a floating system such that each platform will float as the water rises to its level and at high water all gangway sections would be horizontal above the water. There is a 5th wheel connection at the head of the gangway and the lower end of the each gangway slides as the platforms rise and fall.
9. In general, if it doesn't inhibit the queens and river barge and the budget can handle the cost, everyone on the call likes Concept 3 and the concept drawings.
10. JJR plans to provide the City a SketchUp model of the agreed upon schematic design that the City can use with their existing downtown model.

11. The City would like to put up a big weather-proofed sign near the project site and at the mall that shows graphics that will help the public to see what is being considered.
12. JJR is working on the costs. Rick will provide a budget number for fill material. Based on our current quantity takeoffs, there are 190,000cy for Concept 1, and 225,000 cy for Concept 3.
13. During the City's on-site meeting, they used a tape measure to determine that 18 to 20-ft feels more comfortable with the golf cart access and turn around requirements.
14. Bill Brose stated that approximately \$70/sf for the wave attenuators. This attenuator will be required for the entire length of the transient dock. A curtain on one side would cause design/operation problems.
15. Safety, railing issues, ladders were discussed. Bill noted that this is always an issue: risk, legal issues, one side/both sides/middle, life rings, ladders, services. Bill also noted that a railing is not required and that from the other side, there have been cases where rubrails have been placed and people have sued due to pinched fingers, legs, arms as well as the fact that some people tie off to railings. Tom noted that the current is also an issue at this location. Rick noted difficulty boarding the transient boats when a railing is in place. The City will review with their legal experts.
16. We discussed various options for railings; including a system that included a design for a railing that may or may not be placed. One complicating factor is that these docks are made from post-tensioned concrete. Another item that was discussed was whether a rail could be placed down the center.
17. Other safety items discussed included signage, call box, life rings, and ladders. Also, we discussed curbs, but it was noted that a curb could cause a tripping hazard.
18. Rick noted that the City wants an adequate number of power pedestals on the dock.
19. The City noted that the only people that will have a golf-cart would be the red coats and harbor master.
20. After some calculations, it was determined that there is an approximately 10% increase to expand from an 18- vs. 20-ft transient boat dock, JJR will check on any cost economies for size increase. The width of the wave attenuator is being considered in the hydraulic modeling. The modeling may recommend a specific width.
21. The building shown is 40x60 feet. Steve notes that his research shows that restrooms, showers, laundry are absolutely necessary. There was discussion regarding a rough basic space needs and floor plan. The summary was that once you get into the design of the marina, there will be time to get into size of the building, etc. This is a place holder for an item that is not in this implementation phase, when it comes time to design the marina, we can change the shape/size, and programming can be worked out in the future.
22. Parking: skew it so the one-way access will be maintained and mistakes will not be encouraged. Directional parking, you can only come in one way and angled parking, to force exit in the same direction as entrance.
23. Parking access to gangway was discussed. The summary was to look at the area that states, "floodwall" on the drawing and add some parking up along the floodwall, slight angled parking facing river and floodwall and pull in by floodwall is drop off for marina.
24. The arrow noting the position of fuel tank projected into the marina is the end of Executive Inn leased property. The roadway layout needs to be modified to exit before this and landscaping needs to end at this line. There will be a trail at some point, but it doesn't need to show up now. Rick will draw lines that show, 'design from here back' and 'from here ahead' and send them to JJR.
25. The master plan shows 250-ft setback from the sail line, we have been using 300-ft during this design.
26. Are there specific elements that area liked/disliked? The only red flags from Concept 3 are cost and landbased Queen landing.
27. Erosion prevention systems: there are good looking vs. bad looking systems. JJR noted that we have been approaching this from both the standpoint of vegetation that can survive inundations as well as protection from currents.
28. The discussion determined that the paths will not be along equal contours because they are providing ADA accessible to various levels and therefore most of the paths are on a grade.
29. Landings ADA accessibility. Lower walkway is at river's edge so could that walk be under water

30. The City currently block off their entrances and close riverfront at 36-ft (+286 = 322 feet).
31. At the location of the oversized asterisks, the City would like character sketches at these locations from various directions (gangway, switchback, overlook, etc.) that show other opportunities that are available (public art included, seating, lighting).
32. Tom noted that at some point, he would like to include kids (could a tot-lot, climbing structure, sand lot, be included on this side or floodwall side?)
33. We discussed barricades and attractive gate like elements (toll booth analogy, fixed post with gate.) JJR and the City will investigate possibilities.
34. JJR was asked to keep the sizes of the Excursion Vessels: 55-ft by 777-ft Riverbarge Explorer (midship service area) and 70-ft by 425-ft American Queen (back end service) footprint in mind during the design process. Also, soot could be an issue from the stacks. Paducah will discuss this with the excursion vessels (ie: stacks blown in the middle of river).
35. Rick continues to be the main point contact. The City will hold more regular meetings will occur within the City to aide keeping this project rolling smoothly.
36. Reuse of disturbed historic cobbles as interpretive, historical elements, is imperative.
37. We discussed potential uses for the concrete pillars (observation deck, painted, lit - historic photos may help). Paducah will try to locate some. These pillars were formerly owned by Federal Materials Concrete Yard and the pillars supported a rail line. They moved in the late 1970's. Rick noted that these pillars have 8-inch concrete walls and are 12-ft square filled with DGA and that these were constructed much like river pylons for barge traffic.

On October 30, 2007, Kathy Lake met with both the floodplain and water quality permitting groups from the Kentucky Department of Environmental Protection, Division of Water. The following are the information gathered regarding permitting for this project:

Floodplain:

Meeting with Art Clay, Branch Manager and Ron (Ramendra) Dutta, Supervisor. Ron will be the primary reviewer, Art is his boss. They are both located at the same office and telephone number:

Kentucky Department for Environmental Protection
Water Resources Branch
14 Reilly Road
Frankfort KY 40601-1189
502-564-3410
Art.clay@ky.gov
Ron.Dutta@ky.gov

They are solely concerned only about 'no net rise' certification. They opened up Panel #3, 2101520003, 1982, which covers Paducah, Kentucky and noted the project is in the floodplain and floodway. They stated that it would be best to complete the permitting before the FEMA maps are revised (predicted in 2-years) in case the floodwall is not certified. If there are no upstream impacted properties that are not owned by the City, they stated that we should investigate having the area removed from the floodplain (floodway) by a map revision request. This would allow easier permitting for future portions of the project. The permit application is joint with the water quality branch, called "stream construction permit" and located at: http://www.water.ky.gov/NR/rdonlyres/431DB9FD-7662-47EC-A575-A73D91E3822A/0/Stream_Construction_Application_2_28_07.pdf Along with the standard application, they want a CD with the HEC RAS that shows no net rise; good location and site maps and the City Floodplain Coordinator will need to sign the application. As long as there is no net rise, they do not foresee any problems getting this project permitted. If we construct any building for human occupancy, the first floor will need to be above the flood elevation.

Water Quality Certification Staff:

Kentucky Department for Environmental Protection
Water Resources Branch
14 Reilly Road
Frankfort KY 40601-1189

[Joyce Fry](#), Project Manager
Frankfort Office
502-564-3410, ext. 452

[Barbara Scott](#), Project Manager
Frankfort Office
502-564-3410, ext. 485

Alan Grant, (boss of Barbara and Joyce)
Frankfort Office
502-564-3410, ext. 565

Joyce will be our assigned reviewer, but she was out of town during the meeting. Barbara and Al attended the meeting. Barbara stated that if any threatened or endangered species are encountered, it could hurt the project. Otherwise, they are mainly concerned that the material we put in the river will not adversely affect the water quality.

Their concerns:

1. Fill Material: they want to know what it will be and that there will be no leachable contaminants.
2. They want to know if there are mussel populations that will be disturbed by the fill. Unless a study has been completed in the area, this will likely be required. The entire footprint of the fill will need to be reviewed. The window to complete this is almost past therefore, if necessary, this work will likely need to be completed in the spring.
3. If there are any current or future dredge materials, they would like to have the existing sediments analyzed. They noted that it may be good to sample at this time to allow the City to predict future expenses due to disposal. Our permit would not cover dredging at this time. Before dredging, a full metals scan and suite of materials scan would need to be completed. If the sediments are contaminated, they will need to be disposed of on upland location.

As far as timing goes, Barbara noted that when we have enough information to go out for the USACE public notice, we should submit their permit application. Review will take a while. They are unable to give us any review windows. There is one joint application for both Division of Water permits (see above). The Water Quality Staff would also like a copy of the USACE permit application submitted with their application. Most of the information that USACE and Water Quality need are the same. We should submit separately to USACE. Barbara noted that the USACE is looking for disposal areas for their dredge materials and we should contact them regarding material for this project. Her contact is Kent Browning (Huntington) and her example project was Big Sandy Park.

USACE

In addition to yesterday's meetings, Kathy Lake had telephone and email conversations with Michael Ricketts, 812-853-1472, michael.s.ricketts@usace.army.mil, on August 30, 2007. He will be the USACE reviewer for the Paducah Transient Boat Dock Project. Mr. Ricketts' main concern on this project (and he states 'our biggest hurdle') is navigation. He said that most of the public comments will likely come from the navigation interests and most of those from the barge companies (Crouse, Ronnie James – James Marine and Ingram Barge.) He said that USACE sees their role as that of judge and arbitrator. They receive comments and then based on those comments, decide whether to issue a permit.

