Diamond Match Park

Conceptual Plan
Biddeford, Maine

July 2010

Prepared For:

City of Biddeford
P.O.Box 586
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Prepared By:

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Executive Summary

Mitchell & Associates has been retained by the City of Biddeford to prepare a concept park design for the site of the former Diamond Match factory. The property is a 9.8 acre site with 1,200 feet of frontage on the Saco River, access to the property is from Main Street by way of a city right of way and Horrigan Court. The objective was to develop a community park that retained as much of the natural character of the site, incorporating existing site features, historic remnants, natural features and reuse of existing on-site materials in a sustainable design.

Evaluation of the property included review of the existing site conditions, historic documents, existing city survey plans, environmental studies, trestle structural report, review of City of Biddeford Zoning, Land Use Code, Maine Department of Environmental Protection regulatory requirements, Saco River Corridor Commission regulatory requirements, FEMA regulations, meetings with city department staff, MDEP staff and discussions with the SRCC. The property is located zoning districts, B-1 and GD-2 Overlay District (Shoreland Zoning). Approximately one third of the site is located within the 100 year flood zone.

An Existing Conditions plan was developed to document features of the site, including stored salvage materials and to identify opportunities and constraints for development of the park. An extensive evaluation of the property was completed over a two month time frame to assess the remnant historic features, vegetation complex and habitat and discussions with public utilities to assess the the condition and availability of existing utility infrastructure. The park concept design was developed to include the elements and uses identified by the city as important to the design and for the public use. Each of these elements was expanded upon in more detail to provide a basis for preparing a preliminary estimate of cost, identified as phased projects, to be used in seeking grants and or other available funding opportunities.
Site Evaluation

Location:

Diamond Match Park is approximately 9.8 acres in size with 1,200 linear feet of shoreline along the Saco River. The property is situated off Main Street with an existing access drive to the city sanitary pump station and from Horrigan Court. The city sanitary sewer pump station is located to the northwest, adjacent to the property, fronting on the river. The property is bound to the south by an existing residential neighborhood and commercial uses. Horrigan Court, Harvey Street and Hooper Street terminate at the property line.

History:

The Diamond Match Property has a rich cultural and industrial history. The Saco River drew Native Americans to its shores for hunting and fishing and the rivers safe harbor and wealth of natural resources attracted European settlers. Industrial activity thrived on the shores of the Saco River throughout the 1900’s. Historically, this property was owned and operated by the Diamond Match Company. The Diamond Match Company began in 1881 and operated in numerous states throughout the 1900’s. Beginning in the early 1900’s, the property housed a large log yard and numerous buildings including a sawmill used to mill lumber destined to become match sticks.
The sites proximity to the river allowed the company to utilize the water current to float logs to the mill. Two concrete pilings remain in the water where the logs were captured and brought to shore. The sites location adjacent to the rail lines enabled the company to efficiently ship the milled lumber to the match making factory for production into match sticks. In 1963 a devastating fire destroyed the Diamond International Match facility and the surrounding neighborhood.

The manufacturing operation and surrounding neighborhood were reconstructed and Diamond Match continued to operate into the 1970’s. In 1976 the property was gifted to the city from Diamond International. The property was subsequently leased from 1978 to 1984 for manufacture of wood pallets and crates. Another major fire in 1984 destroyed the operation and all structures were razed. All that remains of the numerous buildings on site are granite foundation walls, concrete pilings and brick from the fallen chimney. A train trestle spans the site and two loading docks are still present. Rail lines and asphalt pavement are visible underneath an overgrowth of herbaceous vegetation.

The McArthur Public Library has an extensive collection of information relevant to the Diamond Match Factory and the lumber industry along the Saco River. This information includes a photographic collection that will provide a base from which historic informational signage may be generated to document the history of the property.

**Site Inventory and Analysis:**

**Ecology:**

In addition to historic elements, the Diamond Match Property can be valued as a natural resource. The wooded waterfront property has the potential to be a significant recreational asset to the City of Biddeford and through site clean up could benefit the local ecosystem. Through removing invasive plant material, the quality of the riverfront ecosystem will improve and by maintaining and enhancing the native plant population, the natural character of the site can be reestablished and valued for its ability to offer respite from the urban environment. Ecologically, the site functions as habitat for birds, small mammals and invertebrates. By improving the diversity of the native plant material there is the potential to increase the sites ability to provide food for wildlife.
There is a significant opportunity to expand upon the features of the park through the enhancement of the native habitat for educational programs for the local schools and general public.

The waterfront site serves as a vegetated buffer or filter for stormwater flowing off of adjacent developed parcels of land. This buffer is important for improving water quality and decreasing the potential for flooding. The vegetated buffer filters pollutants from stormwater runoff and slows the movement of water from land to the river. An important goal of development of this parcel should be to improve the overall site ecology.

**Floodplain:**

The Federal Emergency Management flood maps indicate that the site is located within the 100 year flood zone of the Saco River. Flood elevation in this area is noted as Elev. 58.00 N.G.V.D. Based upon available topographic information provided by the city engineering department, it appears that approximately 3 acres of the site is situated in the 100 year flood zone. A more accurate topographic survey will be required to confirm the flood boundary.

Development within the flood zone will be limited to pedestrian trails, the main shared use access road and access points to service the CSO system. Improvements within the flood zone should be constructed of durable materials that can withstand potential flooding conditions as well as conform to the required permitting and federal funding requirements.

**Site/ Topography:**

The majority of the parcel is relatively flat with the southwesterly portion of the site rising steeply (20 feet +/-) up to Harvey Street. The site gradually rises (10-15 feet +/-) from the middle of the site to the northeast to a plateau area where several of the former mill buildings stood. The area adjacent to and under the trestle is a low point or bowl, is located along the southeasterly portion of the site. The grade change along the river varies with a moderate embankment of 2-4 ft for approximately 800 linear feet from Horrigan Court to a significant drop of ten feet +/- along the remaining portion of the site.
Vegetation Complex:

The site is comprised of a successional woody growth community consisting of native and invasive species. The majority of the site, dating back to evidence shown on a 1962 aerial photograph, indicates that approximately one third of the site was either building or pavement. Over all it appears from the photograph that about 90 percent of the site was used for the mill operations that included lay down areas for logs and lumber with a small wooded area in the southwest corner. There has been a significant recovery of sucessional growth, including invasive and volunteer species that have populated the better part of two thirds of the site.

- The vegetation in the area between the paved/gravel access drive and the river, extending up to the existing chain link fence is primarily mixed hardwood that is significantly compromised by an invasive shrub layer and dominant oriental bittersweet vine.

- The wooded area along the southerly side of the access drive between Horrigan Court to the existing chain link fence enclosure is predominately a hardwood complex with a moderate understory of saplings, shrubs and herbaceous cover. Invasive species are present however, not as extensive as along the river.

- The core of the site is primarily an herbaceous layer of grasses and other species that appear to be periodically mowed. The area also consist of bituminous and gravel surfaces, remnant building foundations and storage of granite foundation block, drainage structures and excavation material.

- The south easterly portion of the site, near the wood train trestle, has early stage successional growth, primarily invasive, while the far easterly edge of the site adjacent opposite the train trestle is a mixed hardwood canopy with a dense invasive shrub understory.

- The higher north easterly portion of the site, where several of the former mill structures stood, is a mixed hardwood and softwood successional growth canopy with a minimal shrub layer and dense herbaceous ground layer. The herbaceous layer, in a number of areas, is growing over existing bituminous pavement. There are several incursions of invasive species as well as volunteer species.

- Vegetation along the river, where steep slopes occur, is predominately a hardwood complex with a moderate to dense understory layer with some invasive species and an herbaceous layer.
**Disturbed Area**

- There is an extensive area of paved and gravel surface areas throughout the site with the highest concentration in the core of the site. These areas lend themselves to defining site circulation and location of significant site improvements. The estimated impervious area is 1 acre plus, with the extent of existing pavement that is overgrown with and herbaceous layer to be explored.

**Location:**
Center of property

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**Structures:**

- There are no remaining buildings on-site. Remnant sections of concrete and granite foundations remain throughout the site. Included with these elements are two concrete loading platforms, situated to the north of the wood train trestle, used to load product onto rail cars.

- An existing elevated wood trestle, approximately 230 feet long extends from the Gilford rail right-of-way to the north easterly portion of the site. The city contracted a structural engineering evaluation of the structure prepared by Gagnon Engineering, Inc. dated October 16, 2008. The evaluation included structural integrity as well as options to repair and use for a pedestrian footbridge. The costs to restore and create a pedestrian footbridge were not cost effective. Discussions and field inspection with a demolition contractor indicates there may be significant salvage value in materials to offset demolition cost. In addition, there may be potential value in some of the trestle support structure for milling into dimensional lumber to be incorporated into park elements that may be more cost effective then purchasing new material.

- There are remains of a brick smoke stack located in the northeast corner of the site. The stack was demolished after the fire in 1963. A substantial amount of brick remains however, evaluation for re-use indicates limited use. The brick is a soft porous building brick and not well suited for use as a paver brick.
Site Circulation:

- A significant portion of the historic mill circulation patterns remain on-site. This includes the main access drive that extends approximately 1,400 linear feet from Horrigan Court on the west to the eastern access point nearest Diamond Street.

- There are additional circulation routes that served former buildings on-site that are maintained open for city access to the combined sanitary and storm sewer system. Remnant paved circulation is also found in the northeasterly portion of the site, much of which has been overgrown with herbaceous vegetation.

Utilities:

- There is an existing combined city sanitary and storm drain system that courses the site. This is part of the city combined overboard discharge system that connects to the sanitary pump station at the end of Horrigan Court.

- There is an existing stormdrain line that runs through the middle of the site that discharges directly to the river. It appears that several storm drain structures found on-site may connect to this line.

- Public water had served the site connecting to a main in Diamond Street. Discussions with the Biddeford-Saco Water District indicated limited knowledge on the service. It was discontinued in early 1990’s; the size of the active service in Diamond Street is an 8 inch line. The assumption is that the service to the site is also 8 inch and most likely cast iron. To determine potential reactivation of the line would require a pressure test of the line and video inspection.

- Electric Service to the site is by overhead from Hooper Street. There are four existing utility poles with wire that extend from Hooper Street to the core of the site adjacent to the Union Oil Company property. Discussions with CMP indicate that this service may be energized and assumed to be a three phase service based on prior manufacturing use. Reactivating a new service is feasible; CMP would inspect existing poles and wires to determine conditions. Modification to the existing service such as removing excess poles and installing new service drops would be at the city expense. Required maintenance of the lines or poles necessary to provide service would be the responsibility of CMP.

- Telephone and cable services were not evaluated at this time.
Environmental Assessment:

The city contracted with Woodard & Curran Engineering to conduct and Environmental Site Assessment in 2005 and a Phase II Site Assessment Report in 2006 to evaluate the environmental conditions of the site and for MDEP Brownfield’s Assessment. The City obtained a Voluntary Response Action Program (“VRAP”) from MDEP and has executed a Declaration of Environmental Covenant that establishes the environmental protection activities for reuse of the property. Conditions include:

- Groundwater extraction is prohibited anywhere on the Protected Parcel without prior written permission from DEP.

- Any enclosed structures built on the Protected Parcel must incorporate a passive vapor collection system that is designed by a professional engineer.
Design Intent

The design intent for the concept plan of Diamond Match Park is to establish a healthy ecosystem and to expose and enhance the history and ecology on site for use and enjoyment by people today and for generations to come. The objective was to incorporate the elements identified by the city in the beginning stages of the design process into a cohesive design that blends into and reinforces a natural character, provides for connection with the Riverwalk Trail, the Eastern Trail and future trails or bike paths. Significant design elements included incorporating emergency vehicle access, maintain access for vehicles to service the city CSO system and to maintain the park, while maintaining a user friendly experience. Sustainability and maintenance requirements were key considerations in developing the plan. Incorporating salvageable and reclaimed materials into the design was also a key element that addressed recycling, potential cost savings and green design concepts.

The park design is organized to utilize site topography, existing vegetation and historic elements to benefit proposed uses. There are six distinguishable areas of the site that lend themselves to developing an integrated design with individual identity. These areas are somewhat attributable to the historic use of the property using the remnant paved circulation and building remains. The main access drive establishes a logical connection to abutting land where the trail could be extended in the future to the Riverwalk Trail. The main access trail lends itself to a shared use that includes pedestrians, bicycles, emergency vehicle and service vehicles.

The amphitheater location was determined based on the ability to integrate the seating into the existing vegetated slope incorporating existing hardwood trees into the design if possible and take advantage of the remote location. The plaza area is juxtaposed to the amphitheater and the train trestle allowing for an individual identity while providing an extension of the amphitheater and a symbolic gesture to the train trestle. An elevated location for the gathering space located above the amphitheater allows for a semi private space that also may be interactive with the adjacent activities of the plaza and amphitheater.

The natural play space was located to take advantage of the flat open non vegetated area that also benefits from a gentle slope rising to the east that will help to establish two distinct play areas and levels of activity. The open meadow and active play lawns take advantage of the wide open flat areas located in the core of the site and provide an opportunity to reinforce the active play space and natural environment.

The location for the picnic area on the level hilltop plateau above the amphitheater lends itself to a quite natural respite incorporating remnants of the historic past with the natural character exhibited by the successional growth that has reclaimed the area.
Two pedestrian trails were incorporated to provide for different experiences. Location of the riverfront trail takes advantage of views of the river and addresses sensitive environmental concerns with developing along the rivers edge. The woodland trail provides a different experience being semi secluded and removed from the more active areas and takes advantage of a moderate topographic change.

Development of the park, depending upon available funding should follow a logical progression avoiding the disturbance of completed improvements. With this in mind the following considerations have been identified:

**Demolition and Site Clean-up**

- Removal of household trash and other debris that has been deposited on site that includes determination of potential encroachment of disposed tires along the Union Oil side of the property.

- Selective demolition and salvage of the wood train trestle. Retain sections of track for use in seating plaza as well as sufficient quantity of upright support timbers from the “bents” for milling into dimensional lumber for reuse in the park features. Salvaged material should be stored in an accessible area and stored for reuse when appropriate. A temporary chain link fence should be installed to secure the section of the trestle retained for the overlook.

- Select granite block in the quantity and size as determined for construction of site improvements. Excess material should either be removed to other city property if available or evaluate for potential salvage value.

- Reclaim in-place all existing bituminous pavement on-site, excess material generated in areas designated for redevelopment should be excavated and stock piled in an accessible location on site for reuse.

- Invasive species removal should only occur in conjunction with proposed site improvements to avoid duplication of efforts and maintenance requirements. Disturbance of areas with invasive species that are intended to be naturalized should be stabilized and re-vegetated as soon as possible to avoid re-establishment of invasive species.

- Remove sections of existing chain link fence in conjunction with individual projects as necessary.
Site Improvements

- Phase I; construct the shared use trail beginning at Horrigan Court, including entry gate, to the easterly end of the river front trail at a minimum or to the boundary near Hooper Street. Defer paving of shared access trail until future phases requiring access of heavy construction equipment have been completed. Construct the river front trail including removal of invasive species and installation of mitigation plantings between shared trail and river front. Consideration should be given to the future installation of the city CSO system that is being considered on the westerly end of the property. Installation of this unit will have a significant impact upon the proposed improvements and should be designed to be integrated into the park design to diminish the impact on the natural character of the park.

- Phase II; construct amphitheater, including stage, trail and electrical service if required and site preparation for seating plaza and gathering space. As part of this phase, invasive species removal, up to the easterly boundary, should be evaluated.

- Phase III; construct natural play area, informal grassed play area and meadow areas. Paving of shared use trail may be completed during this phase depending upon the status of the city CSO unit.

- Phase IV; construct improvements for the picnic area including fencing requirements, vegetated buffers and trestle overlook and trail leading to amphitheater.

- Phase V; construct Diamond Street entry and plaza and connection to Diamond Street.

- Phase VI; construct seating plaza and gathering space improvements, trail connection improvements and perimeter fencing adjacent to the active rail line.

- Phase VII; construct Woodland trail as the last segment to be completed giving consideration to impacts from the installation of the city CSO system.

The phasing of improvements outlined above provides a potential scenario for implementing the park design and limit potential impacts to completed improvements during the completion of the park. Implementation of the plan is subject to available funding and as such, phases need to be evaluated and adjusted accordingly.


Preliminary Cost Estimate

Demolition & Site Reclamation

This section addresses the requirements and potential cost to mitigate existing site conditions that include demolition of remnant industrial features, salvaged granite building block, trash and existing rail trestle.

- There are several concrete foundation remnants scattered throughout the site. It may be possible for concrete wall remnants to be crushed and buried on-site where proposed non-structural improvements require fill. In the event such material is not suitable the following estimate provides for removal of foundations to a minimum of eighteen inches below finish grade.
  
  Estimated cost to remove: $ 6,500

- There is a fairly extensive area of bituminous pavement that includes access drive and paved service areas that require removal before proposed improvements can occur. To mitigate the cost of removal from the site it is recommended to reclaim bituminous paved areas in place to be reused where possible for proposed trail improvements or common fill. Reclaiming on-site has the potential to reduce the amount of new road base material that would be required to construct the shared access trail. Often there is an excess of material generated in this process that may be used in other areas.
  
  Estimated cost to reclaim: $ 6,500

- Existing granite foundation block stored on-site consist of approximately 500+/- sections varying in dimension. The amount of granite to be incorporated into the park is approximately 200 pieces leaving an excess of approximately 300 +/- pieces. The granite may have a salvage value market however an estimate has been prepared to remove the material from the site. Removal could be to another city property.
  
  Estimated cost to remove: $ 10,000

- There are several areas throughout the site where household trash has been arbitrarily dumped. In addition, vagrant and youth activities on-site contribute to trash situated across the site. The amount of trash is difficult to quantify, an assumption has been made that there will be at least 4 construction size dumpster units required to remove debris.
  
  Estimated cost to remove: $ 8,000
• There is approximately 1,450 linear feet of eight foot high chain link fence with razor wire along the perimeter of the site to be removed.

            Estimated cost to remove: $7,250

**Train Trestle**

The city contracted a structural evaluation and reuse study for the existing rail spur trestle in 2008. It was determined to be too costly to repair for reuse as a pedestrian footbridge. A preliminary evaluation of the trestle by a demolition contractor indicated that the potential salvage value of the wood girders (if they are Southern Yellow Pine) and the rails may off set the demolition cost. A potential exists for reuse of some of the structural support members that may be milled for dimensional lumber for use in park features. Reuse of material addresses sustainability and should be explored for cost effectiveness compared to the purchase of new material. Depending on the condition of the salvaged material from the trestle, proposed site features may be able to utilize the salvage materials to save cost and provide unique elements throughout the park.

Milling salvaged lumber from the support columns and other wood members could be used for on-site features such as a stage for the amphitheater, construction of rail spur overlook observation platform, play structures, picnic shelter and other features identified. An estimated demolition cost has been included.

            Estimated demolition cost: $30,000

**Invasive Species Removal:**

The existing site has developed a vegetative complex of successional growth since fire devastated the site in 1963 and again in the early 1980’s. Some of the vegetation is volunteer native species; however there is a predominant contribution of invasive plant species that have a negative impact on the survival of native vegetation and the natural character of the site. The following are some of the more aggressive species found on-site:

**Observed Invasives:**

Management:

To eliminate invasive species requires mechanical removal of the vegetation, including root system. Application of herbicides in conjunction with removal is necessary to manage sprout growth. It often takes several follow-up applications of herbicides to control the most aggressive species. Long term maintenance practices are necessary to control many invasive species.

Process:

• The best time of year to remove invasive species is after seed and fruit production has past, usually between October and June.

• Mechanically remove vegetation including root structure. When tree stumps are not removed, treat stumps with herbicide to control sprouting.

• Invasive material shall be burned either on-site or off-site to assure eradication of all parts of the vegetation.

• Disturbed areas are prime for existing seed base contained in soil to germinate. To help reduce germination it is recommended to apply a layer of wood mulch over the disturbed areas to limit growth. Follow up treatments with herbicides will be necessary.

• Where lawn areas are proposed to occur, a regular mowing practice will eventually eradicate sprouting of most species.

• A recommendation to consider is to initiate removal of invasive species concurrently with proposed site improvements. This will help to reduce cost as well as reoccurrence of species if the site is disturbed more than once.

• A budget range for removal of invasive species is between $20,000 to $25,000 per acre, exclusive of mitigation requirements that include mulch layer and plantings as may be necessary. Potential cost savings between 10-20% may be recognized if removal of invasives were to coincide with construction of proposed site improvements. Note: For activities that fall within the jurisdiction of MDEP, a stabilization and revegetation plan is required. (see riverfront trail) The estimate provided assumes removal of invasives as a stand alone activity for 8 acres. (The balance of the site is impervious)

Estimated Cost:

$160,000 to $200,000
Note:

- The above cost is for the removal of invasive species and does not include a mitigation plan. Mitigation requirements are based on the extent of vegetation to be removed and the intensity of compensation required.

- The cost for invasive plant removal has also been included in the construction cost for individual proposed improvement projects if done in phases.

- Annual maintenance costs vary depending upon the intensity of disturbance and mitigation activity. Initial budget estimates for year one is $1,200/acre decreasing approximately 25% annually once invasive species are under control with limited annual cost associated with spot control requirements after 4 years.

Site Improvements

Main Access Trail:

The main shared access trail between the entry from Horrigan Court to the future entry from Diamond Street follows the course of a former service road for the Diamond Match Company. The intent of the main trail is to provide multi-purpose access for pedestrian, bicycle, emergency vehicle and maintenance vehicle access.

Design

The design of the trail will follow the former access drive that extends from Horrigan Court to the property line with potential future connection to what is now Diamond Street, formerly River Street. The intent is to reclaim the existing bituminous pavement for the new trail construction to minimize the cost of construction.

- The trail will provide for a 15 ft wide travel way with an eight (8) foot wide bituminous surface with three and one-half foot wide stabilized grass shoulders designed to accommodate emergency vehicles and maintenance vehicles to service the city CSO system (assumes reclaim of bituminous pavement for sub-base gravel).

- Grassed shoulders will be stabilized with 'Permaturf' panels or an approved equal installed over compacted reclaim and gravel road base.

- Three grassed stabilized access drives will extend from the main trail to provide access for maintenance (pump truck) vehicles to access CSO manhole
structures. ‘Permaturf’ panels or approved equal will be installed over upgraded existing gravel, loamed and seeded. The drives will be delineated with permanent wood guide post or granite block to allow for winter maintenance. An alternate to using stabilized turf units would be recycled bituminous over a gravel base.

Estimated Construction cost:
- Shared access trail: $62,000
- CSO Access drives: $11,250
  $73,250

**Entry Gate:**

12’ swing gate mounted on granite posts or recycled on-site granite.

*Entry Gate Concept*

- The entry gate and wall assume the reuse of existing on-site granite and fabrication of a new steel swing gate and locking system.

Estimated Construction cost: $3,200
**Riverfront Trail:**

**Location:** The riverwalk trail, approximately 1,025 linear feet, and seating overlook areas will be field located to avoid removal of trees and desired understory vegetation and will generally follow the alignment shown on the plan. Siting of the trail shall comply with the permitting requirements established by the City, MDEP, and Saco River Corridor Commission as defined under Regulatory Requirements.

**Trail Design:** The trail should be six (6) feet wide to accommodate for two (2) individuals to walk side by side or to pass. A minimum twenty-five (25) foot setback should be maintained from the top of river embankments exceeding 3:1 side slope. Limb existing tree branches to maintain a minimum 8 foot head clearance where extending over the trail. Proposed overlook seating areas should limit disturbance to placement of granite block or manufactured seating and circulation necessary to provide access. In addition to granite block seating, two formal benches are recommended to be located along the trail.

- Trail material to consist of a compacted stabilized crushed aggregate surface and compacted gravel base. Grading of trail not to exceed five percent and shall be grade to direct runoff to vegetated area on the in board side of the trail to avoid runoff entering the river.

![Stabilized Trail Surface Detail](image)

**Stabilized Trail Surface Detail**

- Due to the extent of anticipated invasive vegetation removal between the river and the proposed paved shared access trail, a revegetation plan will be required to conform to MDEP permitting regulations. We recommend...
supplemental plantings of native trees, shrubs and groundcover to maintain and enhance natural character.

- To minimize cost it is recommended that the construction of the trail be undertaken in conjunction with invasive species removal.

**Estimated Construction cost:**

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<th>Cost</th>
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**Woodland Trail:**

**Location:** The woodland trail, approximately 1000 linear feet, will be field located to avoid removal of existing trees and desired understory. The trail should generally follow the alignment as shown on the concept plan taking advantage of the topographic relief along the southerly side of the park. Important to siting of the trail will be retention of a vegetated buffer adjacent to residential properties at Horrigan Court and Harvey Street.

**Trail Design:**

- The trail should be six (6) feet wide to accommodate for two individuals to walk side by side or to pass.

- Lay out trail to avoid trees and to limit extent of deep cut and fill situations as much as possible.

- Limb overhead branching to maintain a minimum ten (10) foot clearance.
• Provide a walking surface of “superhumus” or organic wood product material of equal quality and performance.

• Provide a compacted gravel base to provide a stable and uniform surface.

• Construction of trail should limit disturbance to adjacent area. Use of small construction equipment such as a ‘Bobcat’ is recommended. In areas closest to existing trees, excavation should be limited, hand work may be necessary to protect tree roots.

• To enhance the natural character of the trail and improve buffering of residential properties, supplemental plantings are recommended.

Estimated Construction Cost:

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Note: Limited removal of invasive species to confines of trail would provide a savings on initial construction cost however may increase potential maintenance cost to manage invasive species encroachment. Consideration should also be given to the potential construction of a new CSO unit that would significantly impact the area designated for the Woodland Trail.

Informal Grassed Play Area:

The informal grassed play area, approximately .80 acres, is intended to provide the opportunity for informal recreational activities such as Frisbee toss, kite flying or ball catch. Its juxtaposition with the natural play area provides the opportunity for families of all ages to be interactive. This area is divided by the shared access trail providing two somewhat distinct opportunities for various activities.

Design

• The grassed lawn area closest to the river is intended to provide a fairly level play surface. It has been located in a portion of the site that is relatively flat, where former structures and paved service areas existed.

• To reinforce a distinction between the two areas, the lawn area to the south side is proposed to be a gently sloped area, approximately two feet higher on the easterly end and framed by a low seating wall utilizing the existing on-site granite foundation block.
• The woods trail will border to the south and supplemental plantings are recommended to transition the trail along the open grassed area.

Estimated Construction Cost:

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Naturalized Meadow Area:

The naturalized meadow areas, approximately 1 acre, as proposed are situated in portions of the site that are predominately inhabited by grasses and other herbaceous vegetation. Other conditions include invasive woody species and remains of prior industrial use.

**Design**

The intent of the design is to provide a natural growth habitat that reinforces the natural character of the park, creating a stage of early successional growth.

• The vegetation will be a complex of meadow grasses and wild flower mix. The goal is to create a sustainable, low maintenance habitat that also provides an educational opportunity.

• To establish the meadow area will require removal of remnant structure foundations, pavement and invasive plant species. The area will require regrading and be supplemented with common fill and loam.

• An opportunity exists to manipulate the land form introducing an undulating topography to create a visually stimulating character.

• Maintenance of the meadow areas should be limited to an annual mowing to encourage growth and manage woody successional growth. Note: It may be necessary to mow more often than once a year or provide controlled applications of herbicides during the first few years to manage reoccurrence of invasive species.

• Recommend meadow area to be developed in conjunction with invasive species removal and informal lawn/play area.

Estimated Construction Cost:

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<td><strong>Total</strong></td>
<td><strong>$34,800</strong></td>
</tr>
</tbody>
</table>
Fencing:

The site is currently partially fenced. Existing fencing consists of approximately 1,450 l.f. of chain link with razor wire and is in poor condition. It was discussed with City staff to remove the existing chain link fence and to provide new fence in limited areas of the park. Fencing shall be established to deter foot traffic entering the park from across the train tracks near Thornton Street and to buffer Hooper Street residences from park activities. In addition; fencing will be required along the top of remnant foundation walls where public access will occur.

Estimated cost for installed fencing:

- 6’ Chain link: 300’ l.f. @ $14.00/l.f. = $4,200.00
- 6’ Cedar Board: 375 l.f. @ $36.00/l.f. = $13,500.00
- 4’ Split Rail: 100 l.f @ $18.75/l.f. = $1,875.00

Total $19,575.00

Picnic Area:

The designated picnic area consists of roughly .60 acres located in the northeast corner of the property. This area was once the location of several Diamond Match factory buildings and access to the rail spur. Still visible in this area are the train tracks and two concrete train loading docks. Ledge outcroppings are visible, as well as, numerous remnant granite foundation walls and concrete pilings. Remnants of bituminous paved service areas, some overgrown with grass and moss are found throughout this area. Successional growth vegetation including moderate understory and herbaceous layers has reestablished itself and softened the industrial remnants. The openness of the understory lends itself to an informal arrangement of spaces. Note: To offset permitted impervious cover in the shoreland overlay zone, if necessary, areas of bituminous pavement may be reclaimed and convert area to a vegetated state.

Design

- Recommendations include removal of existing concrete pilings and exposure of the existing rail line. Clearing of invasive plant species should be conducted with a more managed operation to protect the character of the area while meeting the same requirement as for the remainder of the park. Restore disturbed areas with meadow grasses. Minimal thinning of vegetation, conforming to shoreland zoning regulations, would be necessary to obtain select views to the river.
- Picnic tables and trash receptacles should be located roughly as shown on the concept design with the ability to incorporate at least 7-8 tables. To minimize mowing maintenance, crushed stone or stone dust pads to accommodate a 6’-8’ picnic table are recommended.

Plan Key

1. Picnic tables w/ grills
2. Focal Point
3. Planted hill
4. Viewing Platform (Industrial Remnant: Concrete Loading Dock)
5. Wooded Buffer
6. Entrance Plaza
7. Picnic Area w/ pavilion
8. Exposed Train Rails
• A small picnic pavilion (15’x10’) may be located in the north westerly corner overlooking the Diamond Street entry to serve larger gatherings; this could be fabricated from salvaged wood from the train trestle. A split rail fence shall be located atop the granite foundation wall that overlooks the Diamond Street entrance.

• The trail through the picnic area should be a minimum width of 6 feet and have a paved surface for minimal maintenance. Steps with handrails will be required where the upper picnic trail meets the main shared access trail adjacent to the river. It may be possible to utilize salvaged granite pieces to create the steps.

• The existing northerly concrete loading dock is elevated and provides a viewing opportunity to the river. The raised platform would require a handrail around the perimeter, there is also an opportunity to construct a shed roof that draws upon the original structure that could create a protected viewing area.

• To provide a buffer and security for the Hooper Street residents, a six foot cedar board fence is proposed to run along the top of the concrete wall (assumed property line) along the end of Hooper Street and property line of adjacent residence.

In general, this area of the park has interesting remnants from the match making industry that once inhabited the site. These remaining site elements allow history to have a subtle presence in the present. In addition to the pieces that remain, there are opportunities to incorporate community art/sculpture or a maze/labyrinth out of brick from the old Diamond Match chimney at minimum cost.

**Estimated Construction Cost:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathways</td>
<td>$8,400</td>
</tr>
<tr>
<td>Picnic Pavilion</td>
<td>$8,000</td>
</tr>
<tr>
<td>Seating Overlook</td>
<td>$4,000</td>
</tr>
<tr>
<td>Plantings/Buffer</td>
<td>$14,000</td>
</tr>
<tr>
<td>Furnishings</td>
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</tr>
<tr>
<td>Invasive Removal</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$58,400</strong></td>
</tr>
</tbody>
</table>
Entrance Plaza:

The entrance plaza at Diamond Street is defined by large granite foundation walls. These Diamond Match Factory remnants create a wonderful backdrop for information panels that could provide visitors with the history of the site. The surface material could be recycled cobbles or pavers. Existing native vegetation should surround the site with the entrance to the seating area framed by a grove of small to medium size trees. Additional shrub, vines and perennial plantings may be in a surface planter adjacent to the granite wall. More formal seating should be provided in this location. A sculptural art work is proposed as a focal point for this area. The sculpture could be initiated as a design competition for local artist.

Estimated Construction Cost:

Allowance $30,000

Trestle Overlook

The trestle overlook is located at the northerly terminus of the elevated trestle. This location provides for access from the picnic and amphitheater areas offering a view over the amphitheater, seating plaza, gathering area and making elements of the old trestle visible and a proposed water feature.

Design

- The intent is to preserve a section of the wood trestle up to the first bent (structural frame) with a short cantilevered section to provide a wood observation platform constructed from recycled trestle materials.

Estimated Construction Cost:

Allowance $15,000

Amphitheater:

The amphitheater, adjacent to an open lawn area and the trestle plaza, will serve as a seating area with the potential to hold small to medium outdoor events or impromptu happenings. Located in a low area of the park, the amphitheater is sited to take advantage of an existing slope. The proposed seating area extends up a wooded slope while the stage is set in the level part of the site. The surrounding topography and wooded plant material create a feeling of enclosure typical in a small amphitheater. Existing vegetation on the slope will be assessed for the ability to integrate it into the proposed seating design. Preferably, large trees, 1’ and greater in caliper, will be protected. Seating will be constructed using the granite block on site (approximately 40-45 blocks) and could seat approximately
135 to 180 people. The slightly raised stage may be constructed of recycled timbers from the deconstructed trestle or other approved rot resistant wood or composite material.

Estimated Construction Cost:

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Amphitheater</td>
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<tr>
<td>Stage</td>
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<tr>
<td>Trail/Pathway</td>
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<td>Plantings</td>
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<td>Invasive Removal</td>
<td>$20,000</td>
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<tr>
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</tbody>
</table>
Seating Plaza & Gathering Area:

The seating plaza is located adjacent to the existing train trestle and the proposed amphitheater. The train trestle will be dismantled due to structural decay. To retain reference to the movement of the trains onto the site a water feature is proposed that will follow the alignment of the trestle.

Design

- The plaza provides additional area to sit if a performance is being held at the amphitheater and there is opportunity to incorporate outdoor game tables to provide recreation for all ages.

- Surface material options for the plaza could include recycled cobblestone, brick or concrete pavers. Depending on which material is used, there may be opportunities to incorporate trestle materials, including salvaged rails into the ground plane.

*Trestle Plaza Paving Detail*
Proposed plant material for the plaza include small to medium size trees to provide filtered shade and character. Additional plantings of shrubs and herbaceous plant material would be used along the slope to the trestle overlook, on the east side of the water feature and in the bed adjacent to the gathering area.

Estimated Construction Cost

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Plaza Paving</td>
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<td>Water Feature</td>
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<td>$66,000</td>
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</tbody>
</table>

Design

The elevated gathering area is located to the southeast overlooks the amphitheater & plaza areas. The area is contained within the remnant foundation of a former mill structure.

- Sited atop a ledge outcropping, there are remnant concrete foundation walls from a Diamond Match building that provide for a semiformal enclosure that defines the space.

- This area provides an opportunity to create an intimate seating area, set aside from the open active areas.

- Teen games and activities could be included in this space with board games or table tennis.

- The concrete foundation walls were constructed on top of ledge and sections are failing and should be removed. To retain the hard edge, remnant granite block should be used to define the limit of the gathering area.

- Circulation would be a continuum of the trails that link the plaza/amphitheater area with the woodland trail and core of the park.
**Plan Key**

1. Gathering Area with Table Tennis
2. Game Tables
3. Play Lawn
4. Water Feature
5. Path to Trestle Overlook & Picnic Area
6. Seating Plaza

- Recommendations include removal of the existing vegetation including along the northerly slope, restoration of retained foundation walls that include cleaning of graffiti, application of “Therosel” or similar product and/or painting of concrete.
• The surfacing for the seating area should be stone dust or other compactable surfacing such as reclaimed bituminous.

• Seating opportunities should consist of manufactured benches and/or granite block. The concrete table tennis tables could provide a wonderful activity for older kids and adults.

• Landscaping should consist of small to medium size flowering trees to provide shade and supplemental plantings along the perimeter adjacent to the trail/pathways are recommended to enhance the area stabilize the slope leading down to the amphitheater and reinforce the intimacy of the space.

Estimated Construction Cost:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Paving/Surface</td>
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<td>Plantings Allowance</td>
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<tr>
<td>Pathway/Trail</td>
<td>$5,000</td>
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<tr>
<td>Furnishings</td>
<td>$6,000</td>
</tr>
<tr>
<td>Total</td>
<td>$21,000</td>
</tr>
</tbody>
</table>

Natural Playground

Natural playgrounds are site specific play spaces that rely primarily on natural materials for play. Play structures are integrated among manipulated landforms, plant material and exposed natural processes to create safe and playful natural environments. Natural playgrounds grow and change as they are used and users often find new experiences upon each visit.

While natural playgrounds vary widely depending on site, they typically incorporate the following elements:

• **Entrance & Art:**
  The entrance area defines the play space and is a good location to incorporate signage that educates visitors on the concept of natural play. Communities can use local art resources to work with children to create an entrance area that reflects the local population.

• **Water Feature:**
  Water is a wonderful play element that continuously engages children. It provides opportunities for both learning and play.

• **Climbing Structure:**
  Climbing structures challenge children’s gross motor skills while encouraging imaginative play.
• **Swings:**
  Swings can be social environments as well as providing the necessary vestibular motion important to healthy development.

• **Slide:**
  Slides are inherently fun; a slide nestled into the side of a natural slope is even more fun.

• **Hills & Paths:**
  Hills and paths provide definition to the play space and create special places for children to explore.

• **Plant material:**
  Plant material is essential to natural play environments. Plants create dynamic environments that grow and change with the seasons. Leaves and branches provide loose parts for children to manipulate while shrubs and trees create imaginative spaces.

**Diamond Match Park, Natural Playground**

The cost of a natural playground varies on the size and intensity of development of the space. The concept plan for the Diamond Match Park Natural Playspace incorporates the elements below into a moderately sloped hillside to the east.
Plan Key

1. Entrance
2. Water Feature
3. Slide
4. Climbing Net (Vertical)
5. Fort
6. Tire Swing
7. Tot Swing
8. Climbing Nets (Horizontal)
9. Willow Maze

Site

The area designated for the play space is mostly cleared of woody vegetation except at the eastern edge of the site. Significant invasive plant material will need to be removed and there may be few trees worth saving. There are signs of exposed ledge in this area which may be possible to incorporate into the design of the play space. Grading and drainage for the play area should address storm water quality standards and avoid direct discharge toward the river. Incorporating bioretention cells with the design can provide enhancement and educational opportunities.

Water Feature

The water feature would consist of a hand pump system operated ‘on demand’ and spilling out into a ‘naturalized’ stream bed. There would be opportunity to create small dams and engage creative play. A hand pump will be less expensive than a full recirculating system. Recycled granite block and boulders from the site may be used to create the play ‘stream’. The base of the stream bed may be formed out of concrete and imbedded with natural stones; this area should flow naturally into a sand play area. Ultimately, the water feature should appear as natural as possible.

Play Elements

Many of the elements incorporated in the concept design can be materials found on site. Logs and boulders can be used to define safety surfacing edges and should be used extensively throughout the site for climbing and play. Salvage materials from the trestle, if re-sawn to remove creosote treated surfaces, may provide climbing or balancing features, entry gate and fort structure. Slope slides are typically either plastic or stainless steel. A stainless steel slide is preferable for durability and aesthetics but there is a significant cost difference between metal and plastic. The net climber and tire swings are both standard play equipment. The equipment should be integrated among significant plant material including trees,
shrubs and perennials. The swings may be located to take advantage of river views. Where possible, wooden play elements like the fort & entrance arbor, should be designed and constructed by local craftsmen. Plant material should be primarily native species and chosen for hardiness, low maintenance, and interest. Willow (shrub) is often used on natural playgrounds because it grows fast and can be used to construct play forts and tunnels. If the site is used in conjunction with an education program, willow could be used to teach about ecology, as well as, Native American culture along the Saco River.

**Surfacing & Materials**

Engineered wood fiber and sand are cost effective materials for safety surfacing. Paths may be constructed of stone dust or superhumus and may require minimal annual maintenance. Wood bridges and structures should be constructed of cedar or other naturally rot resistant material. A playground maintenance plan should be developed along with the final construction plans.

**Note** An allowance is being recommended to construct the natural playground as elements will vary from recycled material to manufactured equipment and cost could vary significantly. Construction could also be phased.

**Playground Estimated Cost:**

Allowance $100,000 - $125,000

**Site Furnishings:**

Site furnishings should be coordinated with the Riverwalk design standards. Initial discussions with members of the Riverwalk design team indicated that materials had not yet been selected for the Riverwalk and may not be determined until late summer 2010. The following cost estimates will provide an idea of what the recommended site furnishings should cost.

**Drinking Fountain:**

A minimum of two drinking fountains is recommended for use in the park. These should be located in central locations between the playground, picnic area, and the amphitheater and seating areas. If it is anticipated that dogs will be using the park as well as people, a fountain with a dog spigot is recommended.
Estimated Materials Cost:

ADA Accessible, Vandal Resistant: $3,000 EA
Fountain with Pet spigot option: $3,800 EA

Seating:

A variety of seating options are recommended to be used throughout the park. In many of the informal seating areas, salvaged granite block may be used effectively to provide seating at minimal cost. Manufactured benches may be used in addition to the granite. A minimum of 6 manufactured benches located along the main and river front trail for seating options are recommended.

Estimated Cost:

Granite Block: Assume $150/ea for labor and site preparations.

Allowance $6,000

Estimated Construction Cost:

Manufactured Benches (6): Standard 6’
Recycled Plastic in ground mount: $800/each

Allowance $4,800

Trash Receptacle:

Trash receptacles should be located near the main gathering areas including the picnic area, amphitheater, play area, seating plaza and at the entrances. Dog waste bag dispensers should be located at entry points to the park and strategic locations within the park, assume a minimum of 4 locations.

Estimated Cost: Allowance $3,000

Concrete aggregate 35 gal trash receptacle (5) $600/EA

Estimated Cost: Allowance $1,000

Dog Waste Bag Dispenser (4) $250/EA
Signage:

Informational signage may be used throughout the park to explain the history of the site and specific site and regional ecology. These panels could show historic images of the site and explain the importance of the river to early settlers and the industrial movement or discuss the importance of the riverfront ecosystem and its role in buffering the river from pollution. Directional and general informational signage will also be required throughout the park. The most affordable and durable option for signage is an aluminum plate sign with a digital print image and laminate for protection.

Estimated Cost: Allowance $4,500

- Historic Panels: $200-$300 per sign
- General signage: $50 - $100 per sign

Bike Racks:

Bike racks located at strategic areas in the park are recommended. Areas to be considered include the natural play area, amphitheater/plaza, gathering area and picnic area. Bike racks should be a durable low maintenance metal system permanently anchored.

Estimated Cost: Allowance $4,000

- Assume 4 racks for 8 bicycles/$1,000 each installed

Lighting:

Lighting is recommended, at minimum along the main access trail between Horrigan Court and the future Diamond Street entry. If night use of the amphitheater is planned then, adequate pedestrian lighting should be installed for safety. Both solar lighting options and access to electric power were reviewed (Cut sheets for solar light options can be found in the appendix). These options should be compared closely in the next phase of project development to determine the most cost effective and suitable fixtures. Solar and LED light fixtures are approximately twice what conventional metal halide units run. The benefit of solar is no energy cost or electrical infrastructure cost and LED units have a longer life and reduced energy consumption.
- Solar Fixtures for a standard shoebox unit is approximately $6,000 per unit installed.
- Traditional metal halide shoebox fixtures average around $2,500 per unit installed, not including conduit service.
- Led Fixtures average around $5,000 per unit installed, not including conduit service.

**Water Service:**

Water service requirements would be necessary to serve the Natural Playscape feature, the Seating Plaza trestle water feature and drinking fountains. The condition of the existing infrastructure (assumed 8 inch cast iron main) is unknown at this time and further inspection and testing will be necessary to determine if the system can be reactivated and or what measures are necessary to activate. In the event that the system is not suitable, an option to consider is to insert a new fused polyethylene water line in the existing cast iron main. The service requirements for the park would not necessitate a line greater the 4 inches. Estimating a service run of 1,500 linear feet to the middle of the site, where the existing line is assumed to end, would run between $6.00 and $10.00/linear foot. New water lines to serve the water features and drinking fountains would be extended from the old line or tap the inserted line.

**Estimated Cost:**

Insert 4 inch pipe $ 9,000 - $ 15,000

**Note:** Assume an allowance of $8,000 for extending service to various water features. Total cost is subject to final design requirements.

**Electric Service**

There is an existing overhead service extending from the Hooper Street that crosses through the area designated as the picnic area and terminates along the southerly property line adjacent to Union Oil. Discussions with CMP indicate that the line may still be active and most likely is a three phase service based on the prior mill operation. The cost to remove any poles and overhead service would be the responsibility of the city. Should the decision to have electrical service be made, CMP would maintain and or replace any of the existing infrastructure to remain. New service requirements, including underground service, transformers or poles would be the responsibility of the city. Electrical service demands were not included in the scope however; based on the design concepts a budget to extend service to the amphitheater and for site lighting should make an allowance for $10,000.
Preliminary Cost Estimate Summary

The preliminary cost estimate has been prepared to provide a target budget for proposed improvements to be included in funding request for grants, municipal budget and or other sources as may be identified. The figures are based on concept level design and do not purport to reflect actual construction cost.

Site Demolition & Reclamation

- Foundation and Concrete Structures $6,500
- Reclaim Bituminous Pavement $6,500
- Granite Block Salvage Removal $10,000
- Trash Removal $8,000
- Trestle Removal $30,000*

Total $61,000

Site Improvements

- Main Access Trail $73,250
- Entry Gate $3,200
- Riverfront Trail $51,000
- Woodland Trail $87,000
- Informal Grasped Play Area $31,000
- Naturalized Meadow Area $34,800
- Site Fencing (multiple locations) $19,575
- Picnic Area $58,400
- Entrance Plaza (Diamond Street) $30,000
- Trestle Overlook $15,000
- Amphitheater $72,000
- Seating Plaza Area $66,000
- Gathering Area $21,000
- Natural Playground $125,000
- Site Furnishings (Includes Signage) $30,900**

Total $718,125

Utility Services

- Water Service Reactivation/lining $15,000 +/-***
- Electric Service (Allowance) $10,000

Total $25,000

Total Preliminary Cost Estimate $804,125
* Trestle Removal cost may be off-set by salvage value depending upon girders being “Southern Yellow Pine”.

**Site Lighting cost have not been included in site furnishings due to varying options available and determination of lighting requirements.

*** Water service cost is dependent upon condition of abandoned water main that served the site. Options include reactivating existing line if feasible or inserting a 4 inch fused polyethylene pipe inside the existing main to assumed end of existing main at hydrant. Lateral services can be tapped where necessary along the existing main to extend service to identified improvements.

Note

1. The total estimated budget includes assumptions based upon desired outcome of the park design. Final budget constraints should be refined during design development for each of the proposed site improvement projects.

2. Invasive Species Removal (cost included in each identified project where required) ranges from $160,000 - $200,000 for removal only, mitigation cost are not included in this estimate range.

3. Budget numbers have been based on most recent construction cost occurring within the last 24 months.
Permitting Requirements

City of Biddeford

The property is located in the B-1 zoning district and GD-2 Overlay District (Shoreland zoning). Municipal use/Parks and Recreation are a permitted use and require a Conditional Use Permit. Local permit review is subject to Planning Board or Planning Staff review as determined by the city Planning Department.

Attached is a Draft summary of zoning/development review summary provided by the city planning department.

The location of the property within the defined 100 year flood zone will require that a permit application be filed with the city in compliance with Federal Flood Insurance Regulations and the local authority designated review process. Review of the permitting requirements with the state planning office indicated that the proposed park improvements should comply with the regulations as well as meet the Federal requirements of the CDBG funding.

MDEP Permits

Permitting requirements depend upon the activity and the location in relation to the natural resource being protected. Multiple permits may be necessary depending upon proposed activity.

All permits need to be submitted at the same time.

NRPA Permit by Rule

A permit by rule would be required for any activities between 25 - 75 feet from the rivers edge. This would include disturbance associated with removal of invasive species.

Steps to filing:
  • Any PBR requires 2 weeks for review/approval
  • Stormwater PBR = $55 application fee
  • NRPA PBR = $65 application fee

Disturbance associated with removal of invasive species is subject to DEP review. Depending upon the amount of soil disturbance a full NRPA permit application may be required that would include a site plan and planting mitigation plan to restore the impacted area.
NRPA Permit

A NRPA permit would be required if any activities occur within the 25 foot setback from 3:1 slopes on the rivers edge. Activities within the 25 foot setback require documentation that there is no alternative to construct the proposed improvements.

Steps to filing:
- Set up Pre-Application Meeting
- Submit Permit
- 15 Business Days for review to determine completeness
- 90 Calendar Days maximum timeframe to receive permit
- NRPA Activity Adjacent to Protected Natural Resources = $267 application fee ($197 processing and $70 licensing fee)

Stormwater Permit

The requirement for a storm water permit is dependent on the amount of new impervious and developed area resulting from the project. If the project results in 1 acre of impervious surface or greater, some level of storm water permitting will be required. Preexisting impervious coverage and or disturbance may allow the option to meet the DEP Basic Standards and not the current Chapter 500 regulations.

Steps to filing:
- Set up Pre-Application Meeting
- Submit Permit
- 15 Business Days for review to determine completeness
- 90 Calendar Days maximum timeframe to receive permit

Site Location of Development – NOT REQUIRED

Saco River Corridor Commission

The Saco River Corridor has review jurisdiction over lands within 200 feet of the river. Diamond Match Park is located in the General Development zone according the SRCC. A permit application would be required for the proposed park development, however due to its location in the General Development District, restrictions are not as difficult to meet. Discussions with the SRCC director confirmed that projects like this are looked upon favorably as they will be improving the environmental conditions.
The application process requires that a submission be made by the first Wednesday of the month to be heard by the commission at their monthly meeting. Staff recommended an initial site visit and review of the plans before an application is submitted.
PART 1 GENERAL

1.1 DESCRIPTION:

A. Bidding requirements, conditions of the contract and pertinent portions of sections in Division One of these specifications, apply to the section as fully as though repeated herein.

B. Work under this section includes

1. Removals - The Contractor shall perform all work necessary for clearing and grubbing and/or removal, backfill and disposal of all existing materials noted on the Drawings, as well as temporary structures installed for construction.

2. Limit of Work - Take special care to keep all operations within the Limit of Work as shown on the Drawings. The Contractor shall take all necessary precautions to protect existing site elements to remain.

3. Grade and Elevation

a. The Drawings indicate, in general, the alignment and finished grade elevations. The Owner’s Authorized Representative, Engineer or Landscape Architect, however, may make such adjustments in grades and alignment as are found necessary in order to avoid interference or to adapt piping to other special conditions encountered.

b. The Contractor shall establish the lines and grades in conformity with the Drawings and maintain by means of suitable stakes placed in the field.

4. Protection of Existing Structures and Utilities

a. Barricade open excavations occurring as part of this work and post with warning signs. Backfilling or secured covering of excavations shall be required.

b. Provide necessary supports, bracing and covering to protect existing and new structures and utilities during all phases of excavation and backfill.

c. Notify appropriate owners before excavating adjacent to poles, cables, pipes, and other utilities.

d. Note that location of existing underground utilities on plans is approximate and may be incomplete. Responsibility for exact locations and protection of all utilities rest with the Contractor.

e. Conflicts between existing and new utilities and/or structures to be built under this contract shall be reported to the Owner’s Authorized Representative, Engineer or Landscape Architect.
C. Related work:

1. Erosion Control: Section 31 25 13
2. Pipe Installation: Section 33 09 10

1.2 SUBMITTALS:

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

1. Tests for soil density and/or gradations as herein designated shall be taken at the option of the Architect, Engineer and/or Landscape Architect. Costs of testing shall be paid by the Owner.

2. Soil samples representative of the borrow source and suitable laboratory testing shall be furnished by the Contractor for each material listed in Section 2.1. Test results shall be submitted at least two (2) weeks prior to their proposed use or placement on the site. In the event a proposed material does not meet the specified gradation requirements, the material type shall not be placed on-site until an alternative borrow source is selected and the laboratory test results indicate the material meets the specified gradation requirements.

Note: Contractor shall provide testing for loam in accordance with Section 32-90-00.

3. Compaction tests shall be determined on the basis of laboratory Proctor tests (ASTM D.1557, Modified Proctor).

4. Field density tests not specified on a comparative basis shall be to the percent density specified in this Section for both earth excavation and earth and granular type fills. Tests shall be in accordance with ASTM D.1556, ASTM D.2167, ASTM D.2922 OR ASTM D.3017.

1.3 QUALITY ASSURANCE:

A. Conform to all applicable town, county and state codes for excavation, earthwork and disposal of debris.

B. Conform to all applicable standards of the various utility companies.

C. References - Where M.D.O.T. appears it shall be taken to mean The State of Maine Department of Transportation Specifications, Highways and Bridges - (Latest Revision).

D. Reference Standards

The following most current publications form part of this specification to the extent indicated by references thereto and shall be followed for all construction testing:

American Society for Testing and Materials (ASTM):

D 422 Method for Particle Size Analysis of Soils
D 698 Test for Moisture-Density Relations of Soils Using 5.5 lb. (2.5 kg) hammer and 12-inch (304.8mm) Drop (Standard Proctor)
D 1556 Test for Density of Soil in Place by the Sand Cone Method