

RACM/MULHANEY PROPERTIES, LLC/BADGER RAILING
TERM SHEET
FOR ACQUISITION OF LAND
IN MENOMONEE VALLEY INDUSTRIAL CENTER

Property: Approximately 1.70 acres located in the RACM Menomonee Valley Industrial Center identified as Parcel A on Exhibit A attached hereto. [Note: acreages to be confirmed by survey.]

Purchase Price: \$120,000/acre, payable in cash at closing.

Closing: Closing shall occur on or before August 17, 2006, as mutually agreed.

Property Condition: At closing, RACM shall have completed all filling, grading and environmental remediation at the site pursuant to the specifications attached hereto as Exhibit B. The costs for such site work shall be paid solely by RACM. RACM shall be responsible for obtaining case closure from the WDNR and shall indemnify Mulhaney Properties, LLC from and against any claims relating to adverse environmental conditions existing on or prior to closing. Mulhaney Properties, LLC shall provide RACM with reasonable access to the Property to accommodate case closure requirements (such as well monitoring). RACM shall allow Mulhaney Properties, LLC to dispose of any fill within the Menomonee Valley Industrial Center at no cost to Mulhaney Properties, LLC (i.e. tipping fee). RACM shall also make available to Mulhaney Properties, LLC crushed stone (at the consistency requested by the developer at a cost of \$7.00 per ton or \$10.50 per cubic yard.

Development: Mulhaney Properties, LLC shall construct and Badger Railing shall operate a new office and manufacturing facility on the site containing approximately 21,600 square feet (the "Project"). Mulhaney Properties, LLC and Badger Railing anticipate completion of construction of the Project sometime in the summer of 2007, subject to force majeure.

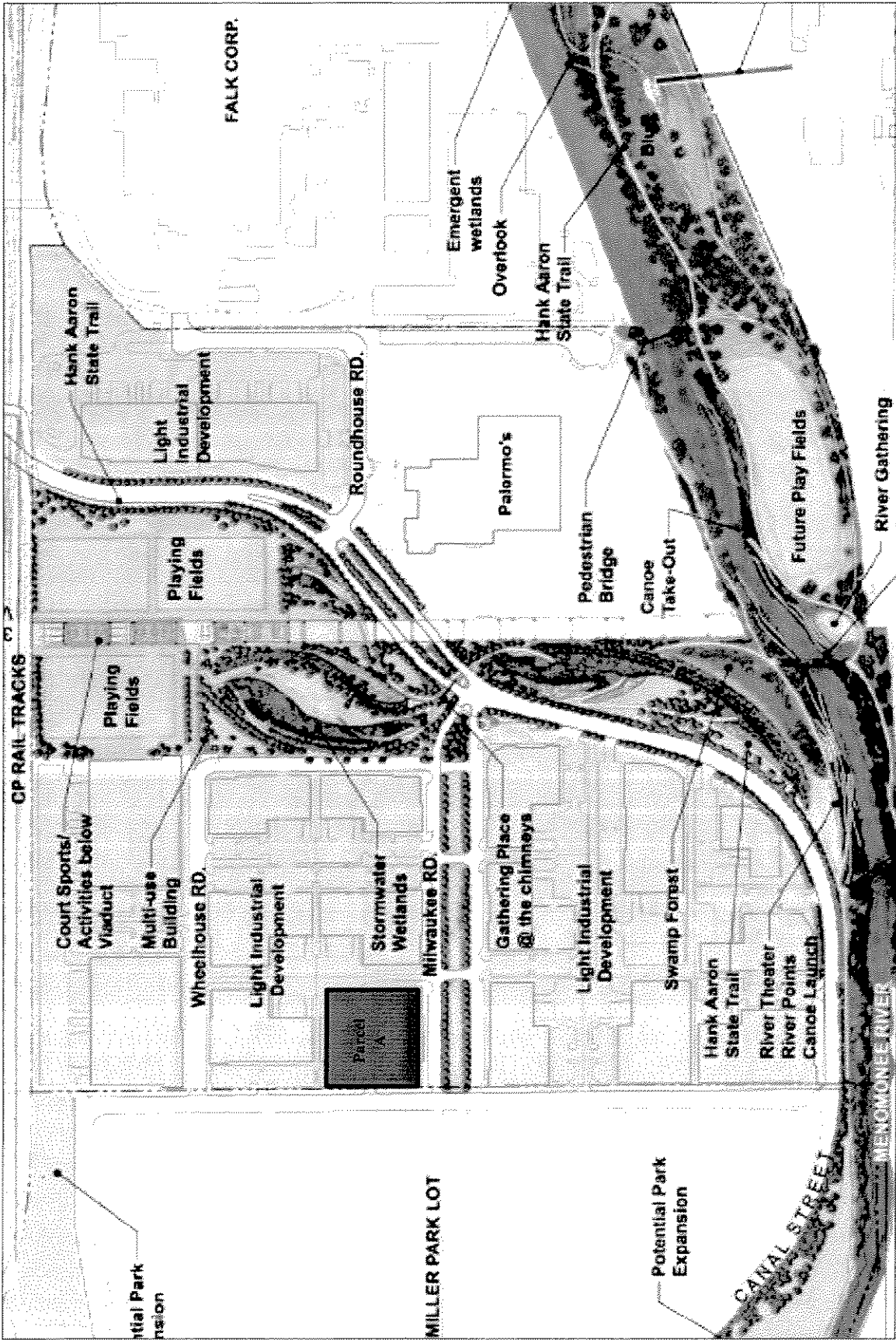
Design Guidelines: Mulhaney Properties, LLC shall develop and Badger Railing shall operate the Project in compliance with the Design Guidelines attached hereto as Exhibit C. These guidelines have been incorporated into a Redevelopment Plan and approved by RACM and the City and encompass Parcel A and the other land owned and being developed by RACM in the Menomonee Valley Industrial Center within Tax Incremental District No. 53.

Human Resources Requirements: Mulhaney Properties, LLC shall use its best efforts to utilize Emerging Business Enterprise for not less than 21% of the construction cost of the Project and shall enter into an Emerging Business Enterprise Agreement for that purpose. Mulhaney Properties, LLC shall also use

its best efforts to cause its contractors to pay workers on the Project based on the current prevailing wage scale.

Stormwater Maintenance: As part of the overall development of the Menomonee Valley Industrial Center, RACM is installing a master stormwater management system that will serve Parcel A and the other lands within the Center. The cost of installation of the system is included in the purchase price. Subsequent to closing, Mulhaney Properties, LLC shall be obligated to pay to RACM or to a property owners association created by RACM, Mulhaney Properties, LLC's pro rata share of the annual costs of operating and maintaining such stormwater management system.

Subsequent Documentation: Prior to closing, RACM and Mulhaney Properties, LLC shall enter into an Agreement For Sale of Land containing RACM's customary provisions (consistent with the provisions of this Term Sheet) pertaining to the conveyance of RACM-owned property. Such provisions shall include the requirement that Parcel A shall be governed by a Redevelopment Plan containing use and design regulations and that title to properties within the Menomonee Valley Industrial Center shall be further subject to customary permitted encumbrances such as utility, access and other easements for common benefit (but which shall not impair Mulhaney Properties, LLC's anticipated development or Badger Railing's intended use).



SITE WIDE DEMOLITION AND REMEDIATION PKG 6

**SECTION 01010
SUMMARY OF WORK****PART 1 GENERAL****1.01 WORK COVERED BY CONTRACT DOCUMENTS**

- A. The Shops site (herein referred to as the "Site") is currently undergoing redevelopment activities. All Work is part of the overall redevelopment and includes relocation and solidification of environmentally contaminated materials, rubblization and potential removal of some concrete slabs, identification and filling-in of subsurface voids, structure demolition, and construction of a free-phase product cut-off wall and recovery trench. Work outside of this Contract performed by others may occur concurrently at the Site and includes roadway construction, demolition of former wastewater treatment structures, asbestos-containing materials (ACM) consolidation, and debris management.
- B. Sequence of Work: Work activities listed below may be performed simultaneously or as appropriate to coordinate with contractors performing other work at the Site.
1. Excavate, transport and place lead and/or CVOC impacted soil ("Impacted Soil") from cut areas to another designated area on-site. Place 6 inches of earthfill obtained from on-site stockpiles over the Impacted Soil as a temporary barrier to eliminate future direct contact with the material.
 2. Stabilize lead-impacted soil.
 3. Rubblize concrete slabs and pavement on grade from former buildings, roads, and other structures on-site.
 4. Break up and remove slabs covering basements and other subsurface structures and voids.
 5. Break up and remove all exterior and interior walls, footings, and concrete slabs > 18 inches of former buildings, as specified. Demolish former building LD-32 down to elevation 7.4, the North Roundhouse to elevation 11.4, and other areas as directed by the OWNER's REPRESENTATIVE.
 6. Remove fill and debris from subsurface structures encountered and transport and place these materials in designated placement areas, dewatering as necessary. Employ Asbestos Containing Materials Best Management Practices ("ACM BMPs") during transportation, placement, and compaction of ACM. Segregate, transport and place all concrete pieces greater than 12" in any dimension ("Oversized Concrete") in designated locations. Segregate, transport and dispose all wood, metal, and trash greater than 12" in any dimension ("Oversized Debris") encountered at an appropriate offsite facility.

SITE WIDE DEMOLITION AND REMEDIATION PKG 6

7. Excavate and stockpile soil material not classified as ACM ("Non-ACM Soil") including soil from the former building LD-32 to be relocated to an area on the Shops Site and the topsoil material to be relocated to the Airline Yards. Excavate and stockpile Non-ACM Soil from other locations identified during the Work as directed by the OWNER'S REPRESENTATIVE at either the Airline Yards or Shops Site areas.
8. Provide nominal 2-inch clean aggregate and bentonite pellets from an offsite source. Backfill all basements and other subsurface structures and voids with a 50:50 mixture of bentonite and nominal 2-inch clean aggregate below standing water and compact the backfill per the specifications.
9. Above standing water, backfill all basements and other subsurface structures with fill obtained from elsewhere on-site as approved by the OWNER'S REPRESENTATIVE. Backfill up to existing elevations or to the elevations shown on the Drawings and compact the backfill per the specifications.
10. Grade the stormwater management area as shown on the Drawings.
11. Perform exploratory trenching around the perimeter of former buildings to identify shallow subsurface sewers, vaults, pipelines, tunnels or other voids.
12. Abandon all sewers greater than 18 inches in diameter and less than 6 feet below existing grade ("Shallow Sewers") identified during exploratory trenching. Abandon by dewatering the sewer, if necessary, bulkheading the ends of the sewer, if appropriate, and pumping in cellular concrete. Ensure that the entire length of the sewer has been abandoned by tracking the quantity of cellular concrete used.
13. Construct bulkhead at connections to active MMSD sewer lines.
14. Cut off and remove manholes, as necessary, to 3 feet below final grades shown on the Drawings. Remove the upper portions of manholes. Abandon lower portions of manholes with a 50/50 mixture of bentonite and nominal 2-inch clean aggregate, provided/imported by the CONTRACTOR and compact per the specifications.
15. Properly handle, store, and dispose of all groundwater, free product, and sludge generated during all portions of the Work per Section 02002 MATERIALS MANAGEMENT.
16. Clear and grub remaining areas of the Site that require clearing and grubbing and as directed by the OWNER'S REPRESENTATIVE. Chip all trees and woody vegetation. Transport all chipped materials and stockpile near the Airline Yard Mounds. Also, chip previously stockpiled wood materials, and transport all previously stockpiled chipped materials to the Airline Yards Mounds area.
17. Demolish the existing Guardhouse building in the northwest quadrant of the Site. Prior to demolition, abate the guardhouse of all lead and asbestos indicated in the lead and asbestos survey done by Others.
18. Construct a free product cut-off wall and a recovery trench in the northeast quadrant of the Site.

SITE WIDE DEMOLITION AND REMEDIATION PKG 6

19. Have Making The Grade, Inc. of Menomonee Falls, WI survey the locations of all remnant concrete slabs and other features broken up and/or left in place. Submit a map showing the survey data gathered and identify each remnant structure including thickness, type of material, and the overall condition.

C. Additional Notes on Work

1. Standby time will be negotiated between the OWNER's REPRESENTATIVE and the CONTRACTOR.
2. The CONTRACTOR shall leave all areas impacted by the Work in a manner that prevents erosion from occurring before subsequent phases of construction take place. This includes partially and completely filled placement areas, locations from which materials were removed, and areas used for temporary haul routes.

1.02 WORK NOT COVERED BY CONTRACT DOCUMENTS

- A. The CONTRACTOR shall not be required to perform lead and asbestos surveys under this contract. If such surveys are deemed necessary, they will be performed by others.
- B. The OWNER's ACM REPRESENTATIVE will provide supervision and perform air monitoring to ensure proper ACM BMPs are followed.
- C. The CONTRACTOR shall coordinate with the City of Milwaukee to protect the storm sewer underneath the 35th Street viaduct.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

**SECTION 02316
EXCAVATION**

PART 1 GENERAL

1.01 SUBMITTALS

- A. The CONTRACTOR shall submit an Excavation Plan that includes methods and sequencing of the excavation activities.

1.02 WEATHER LIMITATIONS

- A. Material excavated when frozen or when air temperature is less than 32 degrees F shall not be used as fill or backfill until material completely thaws.
- B. Material excavated during inclement weather shall not be used as fill or backfill until after material drains and dries sufficiently for proper compaction.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. Excavate as necessary to accomplish the Work. Excavation activities included in the Work primarily involve either removal of materials pushed into subsurface structures during previous site activities or environmentally contaminated soils.
- B. If encountered, remove or protect obstructions as specified in Section 01040, COORDINATION AND SITE CONDITIONS.
- C. Manage all materials during excavation activities in accordance with Section 02002, MATERIALS MANAGEMENT.

3.02 UNCLASSIFIED EXCAVATION

- A. Excavation is unclassified. Complete all excavation regardless of the type, nature, or condition of the materials encountered.

3.03 STOCKPILING EXCAVATED MATERIAL

- A. Stockpile excavated material until it can be transported to its designated placement area.

SITE WIDE DEMOLITION AND REMEDIATION PKG 6

- B. Confine stockpiles to within easements, rights-of-way, and approved work areas. Do not obstruct roads or streets.
- C. Do not stockpile excavated material adjacent to trenches and other excavations, unless excavation side slopes and excavation support systems are designed, constructed, and maintained for stockpile loads.
- D. Do not stockpile excavated materials near or over existing facilities, adjacent property, or completed Work, if weight of stockpiled material could induce excessive settlement.

3.04 TRENCH WIDTH

- A. Minimum Width of Trenches:
 - 1. Single Pipes, Conduits, Direct-Buried Cables, and Duct Banks:
 - a. Less than 4-inch Outside Diameter or Width: 18-inches.
 - b. Greater than 4-inch Outside Diameter or Width: As necessary to safely remove pipes.
 - 2. Multiple Pipes, Conduits, Cables, or Duct Banks in Single Trench: As necessary to safely remove pipes.
- B. Maximum Trench Width: Unlimited, unless otherwise shown or specified, or unless excess width will cause damage to existing facilities, adjacent property, or completed Work.

3.05 RELOCATION OF EXCAVATED MATERIALS

- A. Transport and place excavated materials as specified in Section 02315, FILL AND BACKFILL.
- B. Dispose of organic matter, trash, refuse, and junk as specified in Section 02002, MATERIALS MANAGEMENT.

END OF SECTION

**SECTION 02220
EXCAVATION AND SITE FILL**

PART 1 - GENERAL

SECTION INCLUDES

This Section includes excavation, placement, backfilling and compaction of materials within the limits of the Site to construct the improvements in accordance with these specifications and drawings and as directed by the Engineer.

The quantities shown on the BID FORM are estimates and are not guaranteed values. It is expected that actual final quantities will vary from the estimates. The contractor must provide for all work that needs to be done on the site as directed by the Engineer regardless of quantities shown.

PART 1 – GENERAL

Section Includes
References
Classification

PART 2 – EXECUTION

General
Broken Concrete Placement
Grading
Site Fills
Geotextiles
Site Surveying
Settlement Plates
Equipment
Tolerances
Dust Control

PART 3 – MEASUREMENT AND PAYMENT

REFERENCES

The work must conform to the applicable portions of the State of Wisconsin Department of Transportation, Standard Specifications for Highway and Structure Construction, 1996 Edition, including latest revisions and except as herein modified.

CLASSIFICATION

- A. Acceptable Fill refers to suitable unclassified excavation material that is non-organic, non-decayable and non-rubble material. It must contain no particles, rock, or broken concrete material greater than the sizes noted below. The material must be easily compactible to the required density and approved by the Engineer. The material shall not possess an organic content greater than 5 percent when tested in accordance with AASHTO T-194. All fill material imported from the Marquette project must meet the technical requirements of the Memorandum of Understanding between WisDOT and the City of Milwaukee. "Acceptable Fill" may be used in undercut and fill areas. The Engineer will be the sole judge of the suitability of all materials whether from on-site excavations or off-site borrow sources.
- B. Unacceptable or Unsuitable Material is any material containing vegetable or organic matter, such as muck, peat, organic silt, topsoil or sod and must be considered unsuitable for use in embankment construction.
- C. All compaction testing will be performed by the City or an approved outside testing firm, depending on personnel availability.

PART 2 – EXECUTION

GENERAL

- A. The Contractor must inform and satisfy himself as to the character, quantity and distribution of all material to be excavated. The Engineer will make final determination of classification of all excavated material as Acceptable Fill or Unsuitable Material.
- B. The suitability of material to be placed in fill areas is subject to approval by the Engineer. All Unsuitable Material excavated from the site must be disposed of on site at a location identified by the Engineer.

BROKEN CONCRETE PLACEMENT

- A. Broken concrete used in the SMA areas shall have a nominal size of 4 inches to 10 inches. It shall be generally free of smaller materials and free of rebar or other foreign materials. The Contractor shall screen as required to remove oversize and undersize material from the broken concrete.

GRADING

- A. The subgrade must be inspected by proof rolling. The subgrade must be proof-

rolled with methods and equipment as approved by the Engineer. Any continuously yielding or unstable area, as determined by the Engineer, must be undercut a maximum depth of 1 foot and backfilled with stabilization stone. The stabilization stone shall be placed into the undercut area, leveled and compacted to make the subgrade firm and stable. Additional undercutting of the unstable area will not be required. Stabilization stone will consist of the granular material that exists on-site at various locations.

- B. Topsoil, muck, peat, matted roots or other yielding material, unsatisfactory for subgrade foundation, must be removed to the depth specified by the Engineer and backfilled with stabilization stone. Unsuitable material must be disposed at a location on site designated by the Engineer. Any removed material may be used as site fill, if the material is acceptable to the Engineer.
- C. If the Contractor encounters an area of suspected contaminated material, the Engineer, must be notified and the procedures followed as specified in the existing Materials Management Plan. Excavation of the contaminated material must be to the top of subgrade level only, no undercutting or backfilling will be required unless the proposed subgrade soil is unsuitable.
- D. The SMA-2 will be filled with a clay liner as noted on the plans. After the clay liner is placed and compacted per these specifications, a granular layer of broken concrete is required on top of the clay liner. A geotextile and final cover material will then be placed over the broken concrete.
- E. Grade must be maintained so that the surface is well drained at all times. Grades must generally slope to the south and to the east. When necessary, temporary drains and drainage ditches must be installed to intercept or divert surface water, which may affect the work. All surface runoff shall be contained on the Shops property.
- F. Compaction Requirements. Refer to Article SITE FILL. The in-place field density must be determined in accordance with the Modified Proctor density method. Particles or fragments larger than 6 inches in their greatest dimension will not be permitted in top 6 inches of the subgrade.
- G. All loose or protruding rocks on the back slopes must be bared loose or otherwise removed to line of finished grade of slope. All fill slopes must be uniformly dressed to the slope, cross section, and alignment shown on the Plans or as directed by the Engineer.

SITE FILL

- A. Site fills must be formed in successive horizontal layers of not more than 8 inches in loose depth in the undercut and site fill areas, unless otherwise approved by the

Engineer. The work for site filling shall include all required segregation of oversized or other unsuitable material in the stockpiled soil in the southwest quadrant. Materials such as brush, hedge, roots, stumps, grass and other organic matter must not be incorporated or buried in the fill.

- B. Material must be compacted to at least 90 percent Modified Proctor density for the undercut fill and site fill areas. Material must be compacted to at least 92 percent Modified Proctor density for the SMA-1/SMA-2 clay liner. Only material from the existing "Schneider Pile" shall be used for the clay liner.
- C. The grading operations in SMA-1/SMA-2 shall be conducted to produce a soil profile as shown on the typical cross section.
- D. Operations on earthwork must be suspended at any time when satisfactory results cannot be obtained because of rain, freezing, or other unsatisfactory conditions of the field. The Contractor must drag, blade, or slope the embankment to provide proper surface drainage if operations are suspended.
- E. The material in the fill layers must be within +/- 2 percent of optimum moisture content in undercut areas and within - 2 percent and + 3 percent in the fill area as determined by ASTM D 1557 before rolling to obtain the prescribed compaction. In order to achieve uniform moisture content throughout the layer, wetting or drying of the material and manipulation will be required when necessary. Should the material be too wet to permit proper compaction or rolling, all work on all of the affected portions of the material must be delayed until the material has dried to the required moisture content. The material may be disked to a depth of 8 inches to hasten drying and then be recompacted to the requirements of Article E of this Section. Samples of all materials for testing, both before and after placement and compaction, will be taken for each material placed per layer, or as required by the Engineer. Based on these tests, the Contractor must make the necessary corrections and adjustments in methods, materials or moisture content in order to achieve the correct material density.
- F. Rolling operations shall be continued until the material is compacted to the requirements noted in Item B of this Article.
- G. Compaction areas must be kept separate, and no layer may be covered by another until the proper density has been obtained.
- H. Frozen materials must not be placed in the embankment nor must embankment be placed upon frozen ground.

GEOTEXTILES

- A. A separation geotextile must be placed over the broken concrete before placement of the topsoil.

B. The geotextile must consist of a non-woven fabric. The fabric must have the following minimum average roll values for the parameters listed (john – please review):

- Grab tensile strength (ASTM D4632) – 380 pounds
- Puncture strength (ASTM D4833) - 140 pounds
- Mullen burst strength (ASTM D3786) – 740 psi
- Trapezoidal tear strength (ASTM D4533) – 235 pounds
- Flow rate (ASTM D4491) – 50 gal/min/sf

The fabrics listed below or an approved equal can be used.

- US fabric 380 NW
- Propex 4516
- M irafi 1160N

SITE SURVEYING

A. The site must be surveyed as part of this work. The topographic surveying must occur monthly to verify the quantities requested for payment for that invoice. In addition, a final survey must be completed at the end of the construction season.

SETTLEMENT PLATES

A. Settlement plates must be placed on the approved subgrade prior to filling. The plate locations will be determined by the Engineer. The plates must be maintained during the course of the work. The plates will be surveyed according to the schedule provided in the SITE SURVEYING section and additionally once a month for a period of at least 6 months.

EQUIPMENT

A. The Contractor may use any type of earth moving, compaction and watering equipment it may desire or has at its disposal, provided that the equipment is in satisfactory condition and is of sufficient capacity to perform the work as specified. The only requirements specified are that tamping rollers (generally referred to as Sheepsfoot Rollers) will be considered the proper type of equipment for compaction of cohesive soils and vibratory/mechanical tamping equipment will be applicable for compacting granular soils.

TOLERANCES

- A. In those areas upon which a subbase or base course is to be placed, the top of the subgrade must be on such smoothness that, when surveyed, it must not show any deviation in excess of 1/2 inch, or must not be more than 0.05 foot from true grade as established by grade hubs or pins. Any deviation in excess of these amounts must be corrected by loosening, adding, or removing materials; reshaping; and recompacting by sprinkling and rolling.

DUST CONTROL

- A. The Contractor must control dust by all necessary means, including but not limited to covering trucks, stockpiles and open materials, watering haul roads, sweeping paved roads, and limiting the speed of all on-site vehicles.

PART 4 – MEASUREMENT AND PAYMENT

Payment shall be made at the Contract unit prices and according to Section 01025 of these specifications.

END OF SECTION 02220

Sustainable Design Guidelines

for the

Menomonee River Valley

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I. Site Design

Purpose: *Promote adaptive reuse of Valley lands that recognizes the ecological context, river influence, existing landmarks, building stock and industrial heritage, and improve existing infrastructure (sidewalks, streets, storm drainage).*

Sustainable site design should address water quality, quantity and floodplain issues, native species, open spaces, and provides recreation, wildlife habitat, cultural and neighborhood connectivity, and alternative transportation and parking design.

1 Site Analysis & Planning

Site planning guidelines are intended to maximize the build out area and create a cohesive image for the Menomonee Valley.

- A. Design all parking facilities and open spaces to work together to manage stormwater, create connections to the river and Hank Aaron State Trail [www.renewthevalley.org/hast] and improve the aesthetics of your site.
- B. From the outset of the development project, integrate site, landscape and soil needs into architectural and construction sequences.
- C. Preserve and enhance cultural resources that might exist on or near your property. Refer to the Menomonee Valley Cultural Resource Management Plan. [<http://renewthevalley.org/files/pdf/CulturalResourcesPlan.pdf>]
- D. Maintain a ratio of total gross floor area to total lot area of no less than 25% for initial site build-out.
- E. Build to street-fronting property lines, or to the setback of neighboring buildings. When buildings cannot be at property lines, minimize parking along the street frontage.
- F. Do not construct within ten feet of any interior side lot line of the property. Side yards on the street side of corner lots shall have no minimum required width.
- G. Attach signage to a vertical surface of the building or to a ground-mounted base. Do not post signs other than corporate identification signs, directional and educational or interpretive signs.
- H. Where feasible, install utility lines underground.

2 Stormwater Management

Cost effective natural systems use water efficiently and enhance water quality.

- A. Connect to regional stormwater treatment areas where available (Contact Menomonee Valley Partners for site specific information, 414-274-4655), or share stormwater management practices with neighboring parcels.
- B. Design your stormwater conveyance system to use a connected series of vegetated swales and channels for stormwater infiltration in place of enclosed storm sewers.
- C. Design your stormwater treatment system to avoid the direct concentrated discharge of stormwater into the river or canals. Use the techniques identified in Appendix 3 to capture and infiltrate stormwater up to a 2-year storm event without any discharge to surface water or municipal storm sewers. **Error! Bookmark not defined.**
- D. Design landscape planting materials, soils and sub-soils for infiltration and evapotranspiration of rainwater. Note that soils and subsoils placed above a remedial cap can serve to store and evapotranspire collected stormwater.
- E. Use drought resistant plantings, eliminating irrigation other than collected rainwater. **Error! Bookmark not defined.**

- F. Consider using green roof systems to collect and evapotranspire rainwater, thus reducing runoff as well as heating and cooling loads.

3 Natural Landscape

Well designed landscaping with native species reduces water consumption and long-term maintenance costs and improves building energy efficiency and aesthetics.

- A. Specify native plant and tree species for at least 80% of planted area. See Appendix 4 for tips on planning, installing, and maintaining a native landscape, as well as a list of locally native plants and invasive species.
- B. Landscape all open areas, except those required for driveways, parking, or walks, not later than 6 months after occupancy.
- C. Use deciduous shade trees, vegetative cover and exterior structures such as louvers, arbors and trellises to provide 30% shade over non-roof impervious areas within 5 years. **Error! Bookmark not defined.**
- D. Where rooting area will be limited, use strategies such as connected planting beds, rooting breakouts under parking, or walkways floating on root-permeable soils to extend rooting space and increase plant vigor. Establish engineering specifications for these strategies, drainage patterns, and installation of structural soils as part of the building design and site grading plans.
- E. Use Integrated Pest Management practices and appropriate plantings to eliminate the use of pesticides, herbicides and fertilizers.

4 Parking and Transportation

Well designed parking areas efficiently use space, accommodate pedestrians and are aesthetically pleasing.

- A. Encourage transportation alternatives for employees and visitors by providing **Error! Bookmark not defined.:**
- o Bicycle racks and employee shower/changing facilities. Free bike racks are available from the City of Milwaukee. [<http://www.mkedcd.org/business/busbike.html>]
 - o Covered bus shelters or waiting areas.
 - o Pleasant, safe and accessible walkways.
 - o Preferred parking for carpools.
- B. Provide a buffer of native plantings between parking areas and the river edge.
- C. Do not locate parking or waste facilities within 10 feet of the front line of the property, and screen these areas from view. Contain all refuse in an appropriate receptacle further enclosed by a 6-foot fence of solid material.
- D. Provide no more than two drive openings, and provide appropriate traffic control measures at all entrances to public rights-of-way.
- E. Locate truck loading berths at the side or rear of the building.
- F. Include on-street and shared parking resources in parking calculations. Minimize parking stall dimensions to 9' x 18', as smaller stalls will decrease the parking lot size and allow for a large building footprint.
- G. Use concrete pavement rather than asphalt where possible to keep parking areas cool.
- H. Incorporate green spaces into parking areas to break up large expanses of concrete.
- I. Consider using porous paving systems to extend the life of the pavement, allow for stormwater infiltration, reduce maintenance costs, and reduce the urban heat island effect in summer. See Appendix 3 for additional guidance on using porous paving systems.

5 Site Lighting

Effective and efficient site lighting improves aesthetics, reduces energy use and maintenance, and preserves the night sky.

- A. Provide site lighting appropriate for the security needs of the site while maintaining an overall "low-lighting profile" for the complex.
- B. Use high efficiency lighting (metal halide or high pressure sodium lamps) with low cut off angles and down-lighting for landscaping. **Error! Bookmark not defined.**
- C. Utilize reflective-type lighting fixtures to reduce or eliminate glare and provide safer, more human-scaled nightscapes.
- D. Allow zero direct-beam exterior lighting at the property line. **Error! Bookmark not defined.**
- E. To reduce dependence on high-wattage electrical lighting at night, use light colored or reflective edges along driveways or walkways.

II. Building Design and Energy Use

Purpose: Generate operating cost savings by designing for energy efficiency and ensuring that the building is capable of operating in accordance with its design.

Building design should address energy efficiency, daylighting techniques, building commissioning, improved system controllability and improved aesthetics.

1 Building Design

Thoughtful building design creates a uniform and inviting sense of place for employees and customers.

- A. Ensure that the scale and design of new buildings are compatible with adjacent buildings. At pedestrian areas of the building, use awnings, landscaping, windows and doors to lower the scale of the building.
- B. Design a principal façade and obvious entrance parallel to the street edge. Do not face blank walls towards public streets.
- C. Utilize brick (reclaimed or new), architectural pre-cast concrete panels, decorative concrete block or cut stone. Corrugated sheet metal, vinyl siding, reflective glass and imitation stone siding are discouraged.
- D. Screen sources of mechanical noise, odors and loading operations from public open space areas and adjacent properties.
- E. Locate utility meters and exhaust vents on the side or rear of building.
- F. Screen or locate roof-top mechanical equipment so it is not visible from the street.
- G. Design to accommodate areas for recycling of waste materials. Provide a centralized ground-floor location for collection and storage of recyclables.
- H. Where possible, orient buildings along an east-west axis for maximum daylighting benefits.

2 Energy Efficiency

Simple energy-saving techniques and technologies generate significant operating cost savings.

- A. Design for energy performance that improves upon State of Wisconsin Building Code [<http://www.commerce.state.wi.us/SB/SB-DivCodesListing.html>] by 25%, and demonstrate energy efficiency using hourly simulation tools. See Appendix 5 for guidance on meeting this objective for Office, Assembly/Manufacturing and Warehouse spaces. Additionally, consider the following strategies:**Error! Bookmark not defined.**
 - o Group spaces for similar functions or requirements to concentrate similar heating and cooling demands, and use non-program spaces as climate buffers.
 - o Use thermal mass such as masonry or concrete to moderate interior temperatures and to achieve desired R-value in foundation, walls and roof.
 - o Design air-lock entrances to reduce heat loss or gain.
 - o Use Energy Star Roof-compliant, high reflectance and high emissivity roofing to reduce heat retention in summer, unless using a green roof.**Error! Bookmark not defined.**
- B. Specify Energy Star [www.energystar.gov] equipment and appliances.
- C. Consider separate circuitry to isolate HVAC, lighting and plug loads, enabling operations and maintenance staff to monitor energy use on site.

3 Daylighting and Interior Lighting

Daylighting and efficient interior lighting reduce energy use and create a pleasant, productive work environment.

- A. Maximize daylight in your building through the appropriate use of the following strategies:**Error! Bookmark not defined.**
 - o Maximize window height, and use roof monitors, clerestory windows, skylights, and light-pipe technology to transmit light to spaces not reachable by other means.
 - o Balance glazing color for view, daylight and energy performance. Note that City of Milwaukee zoning ordinance requires that street level glazing must be at least 65% transparent.
 - o Use interior windows, light shelves and low partitions to bring daylight deeper into the space, manage glare, and balance light levels.
 - o Use south-facing windows with appropriate overhangs to reduce summer sun and admit winter sun.
- B. Supplement daylighting with highly efficient electric light distribution that improves visual quality while reducing electricity use. For instance:
 - o Rely on low ambient lighting levels for general illumination (predominantly light reflected from the ceiling where achievable) boosted by high quality, flexible task lighting. For general office space and non-critical manufacturing task areas, consider achieving a lighting power density (LPD) goal of between 0.8 and 1.0 watts/ft².
 - o Use high efficiency lamps and luminaires with electronic ballasts.
 - o Employ efficiency-based controls such as dimmers, occupancy sensors, and lumen maintenance controls.
 - o Wire luminaires parallel to walls with windows so they can be dimmed or turned off by row.

4 Alternative Energy

Alternative conventional and renewable energy sources reduce your energy costs and your impact on natural resources.

- A. Purchase power generated from renewable sources (solar, wind, biomass, or low-impact hydro sources) through We Energies' Energy for Tomorrow Program.**Error! Bookmark not defined.** [http://www.we-energies.com/house/electric_services/energy_for_tomorrow/index.htm]
- B. Consider closed-loop ground-source (geothermal) heating and cooling.**Error! Bookmark not defined.**

5 Building Commissioning (Quality Control)

Building Commissioning is a systematic and documented process of ensuring that the owner's operational needs are met, building systems perform efficiently, and building operators are properly trained. Commissioning can be applied in new construction, post construction and existing buildings.

- A. Contract with an independent commissioning authority from the beginning of the design process to review design options and expected operation of building and its component systems.**Error! Bookmark not defined.**
- B. Have commissioning agent train building staff to operate and maintain the building.
- C. Ensure that energy measures are installed and operating one year after completion of construction.
- D. Use long-term continuous measurement of performance for building and site systems.

III. Materials and Resources

Purpose: Reduce impact on natural resources as well as reduce costs, increase performance and improve aesthetics and the working environment.

Selection of building materials and resources should involve consideration of available and renewable natural resources in addition to more traditional criteria such as cost, durability, performance, and aesthetics.

1 Exterior and Interior Materials

Using building materials with low life cycle costs, high-recycled content and low toxicity reduces environmental impacts.

- A. Reuse existing building shells and components where feasible. **Error! Bookmark not defined.**
- B. If on-site reuse is not possible, create a demolition management plan that identifies opportunities to reuse, recycle or sell salvaged materials.
- C. For historic buildings (constructed before 1935), make changes to exterior in accordance with US Department of the Interior Rehabilitation Guidelines. **Error! Bookmark not defined.**
[<http://www2.cr.nps.gov/tps/standguide/index.htm>]
- D. Use with Wisconsin Green Building Alliance's Wisconsin Built Directory [<http://www.wgba.org/newdata/DirSearch.asp>] to locate sources of the following building materials, and achieve the following goals: **Error! Bookmark not defined.**
 - o Use 25% materials with post-consumer and post-industrial recycled content.
 - o Use 20% materials and products that are manufactured within a radius of 500-mile radius.
 - o Specify US Forest Stewardship Council-certified wood-based materials and products for 25% of all wood used in the project.
- E. Specify mold- and moisture-inhibiting construction materials.
- F. Use low-VOC sealants and adhesives. For standards, see the California South Coast Air Quality Management District Rule #1168 [<http://www.aqmd.gov/rules/reg/reg11/r1168.pdf>], and California Bay Area Air Quality Management District Regulation 8, Rule 51 [<http://www.baaqmd.gov/dst/regulations/rg0851.pdf>]. **Error! Bookmark not defined.**
- G. Use paints and coatings that are certified by Green Seal for VOC and chemical component limits. **Error! Bookmark not defined.**
- H. Use carpet systems that meet the requirements of the Carpet and Rug Institute's Green Label Indoor Air Quality Test Program. **Error! Bookmark not defined.** [http://www.carpet-rug.org/drill_down_2.cfm?page=8&sub=6]
- I. Use composite wood and agrifiber products that do not contain added urea-formaldehyde resins. **Error! Bookmark not defined.**
- J. Specify building materials (e.g. insulation, carpet pad) that do not use CFC's or HCFC's as foaming agents or in other parts of the manufacturing products. **Error! Bookmark not defined.**
- K. Use CFC-free HVAC&R equipment. **Error! Bookmark not defined.**

2 Water Conservation

Off-the-shelf technologies can significantly reduce water consumption and associated costs.

- A. Employ whole-building design strategies and use the following high-efficiency plumbing fixtures to reduce aggregate water use:**Error! Bookmark not defined.**
- o Specify lavatory faucet aerators.
 - o Specify low-flow electronic sensor faucets in lavatories or provide lavatories with pedal controls.
 - o Consider waterless urinals as a way of reducing first cost in plumbing risers and to reduce water consumption.

IV. Construction & Demolition

Purpose: *Improve construction and demolition waste management practices to reduce waste, costs and environmental impacts of demolition and construction activities and transform wastes into resources.*

The materials in Appendix 6 are designed to assist you in managing Construction and Demolition waste.

1 Waste and Recycling

Reduce, Reuse and Recycle construction and demolition waste to protect on-site materials and reduce environmental impacts.

- A. Reuse existing building shells and components. Salvage materials for reuse or resale. **Error! Bookmark not defined.**
- B. Implement a Construction or Demolition Waste Management Plan to recycle and/or salvage at least 50% of construction, demolition and land clearing waste. Include waste reuse and recycling in project specifications. Calculations can be done by weight or volume, but must be consistent throughout. **Error! Bookmark not defined.** This plan should cover:
 - o Identification of a Plan Manager.
 - o Identification of opportunities to reduce site disturbance and minimize environmental impact of construction activities.
 - o A list of materials to be separated for recovery and designation of areas for collection.
 - o A plan to educate workers about separation requirements
 - o Procedures for waste auditing.
 - o On-site soils management, including areas of concern, types of contamination and disposal or encapsulation methods.
 - o List sorting/separation/tracking rules.

2 Erosion and Dust Control

Appropriate control measures protect air and water quality.

- A. Follow Wisconsin Administrative Code NR 216 [http://folio.legis.state.wi.us/cgi-bin/om_isapi.dll?clientID=75132&infobase=code.nfo&jump=ch.%20NR%20216] and City of Milwaukee Chapter 290 [<http://cc-code.milwaukee.gov/code/volume2/ch290.doc>] regardless of the size of disturbance. **Error! Bookmark not defined.**
- B. Decrease work during high winds and spray loose soils with water.

3 Pre-Occupancy Controls for Indoor Air Quality

Protection of mechanical equipment and building materials during construction will ensure healthy indoor air quality after occupancy.

- A. Protect stored on-site or installed absorptive materials from moisture damage and mold, and replace all filtration media immediately prior to occupancy. **Error! Bookmark not defined.**
- B. Install wet materials before dry in construction sequence to reduce indoor air pollutants.
- C. Consider a two-week flush of systems at 100% outside air before occupancy. **Error! Bookmark not defined.**

V. Indoor Environmental Quality

Purpose: *Provide a healthy and productive environment for facility occupants; increase the comfort and alertness of occupants; improve productivity and reduce absenteeism.*

Good indoor environmental quality encompasses such factors as temperature and humidity, lighting, ventilation, visual comfort, and noise control.

1 Indoor Air Quality

Indoor air quality affects occupants' health, which can impact absenteeism rates and employee productivity.

- A. Meet the minimum requirements of voluntary consensus standard ASHRAE 62-1999, Ventilation for Acceptable Indoor Air Quality, and approved Addenda (see ASHRAE 62-2001, Appendix H, for a complete compilation of Addenda) using the Ventilation Rate Procedure. **Error! Bookmark not defined.**
- B. Replace all filtration media immediately prior to occupancy using filtration media that have a Minimum Efficiency Reporting Value (MERV) of 13, as determined by ASHRAE 52.2-1999. **Error! Bookmark not defined.**
- C. Increase ventilation to exceed air change effectiveness of 0.9 per ASHRAE 129-1997. **Error! Bookmark not defined.**
- D. Provide for the use of natural ventilation in transition seasons. Take advantage of cross ventilation, prevailing winds and stack effects when possible.
- E. Provide direct exhaust for all spaces that generate moisture and pollutants, including manufacturing, toilet and locker rooms, copy rooms and rooms where chemicals and cleaners are stored.
- F. Provide mats or grills at entry areas to control dirt and dust.
- G. Prohibit smoking in the building. **Error! Bookmark not defined.**
- H. Consider a carbon dioxide monitoring system in spaces of variable occupancy to provide feedback on space ventilation performance. Specify initial operational set point parameters to ensure indoor carbon dioxide levels do not exceed outdoor levels by more than 530 ppm at any time. **Error! Bookmark not defined.**

2 Acoustic Quality

Improved acoustic quality ensures high employee productivity, attention span and minimizes stress.

- A. Maintain a maximum interior Noise Criteria of 35 decibels in occupied areas. Ceiling panels and carpeting can assist in absorbing sound.
- B. Place acoustic buffers (corridors, lobbies, stairwells, storage rooms, etc.) and sound-insulated partitions between noise-producing spaces and noise-sensitive areas.
- C. Place vibrating equipment on isolation pads and enclose in sound-absorbing walls, floors and ceilings.
- D. Maintain a maximum external decibel reading of 50 db at property line.
- E. In areas of high ambient noise, specify windows rated at an STC of 40 or better.
- F. In other areas, specify windows rated at 35 or better.

VI. Operations and Maintenance

Purpose: *Ensure the building operates at its designed efficiency, reducing costs and increasing occupant productivity over the full life of the facility.*

1 Operations Manual and Monitoring

A building that is operated in accordance with its design and construction will maintain its value and continue its high performance.

- A. Prepare an Operations & Maintenance manual, including monitoring of energy use, luminaire and filter maintenance, in accordance with ASHRAE 4-1993. This plan should clearly describe the principles of design intentions, O&M procedures, and should be accessible to building occupants.
- B. Schedule regular systems review and maintenance.
- C. Prepare an operational waste prevention and recycling plan.
- D. Design to accommodate areas for recycling of waste materials.

2 Facility Maintenance

Proper housekeeping and operations activities can protect the health and comfort of occupants and decrease the impact of the building on the environment.

- A. Maintain healthy and efficient custodial operations using Green Seal [<http://www.green seal.org/certproducts.htm>] or equivalent cleaning products.
- B. Frequently inspect for fungus and molds.
- C. Form an in-house "Green Team" to raise awareness of workplace associated environmental concerns.
- D. Provide centralized ground-floor location for collection and storage of recyclables. Train occupants on recycling procedures and consider incorporating recycling facilities such as compactors, chutes or other technologies to accommodate predicted volumes.
- E. Do not store materials, products or equipment outdoors, except finished product in transit and company-owned vehicles.

3 Maintenance and Stewardship of Site and Landscape Elements

Proper long term maintenance of landscape elements will maintain their aesthetic beauty and financial value.

- A. Prepare and implement a landscape care and maintenance manual or plan to ensure long-term viability of plantings. This should identify any long-term sequencing actions that are intended by the landscape designer.