DEMOLITION

1. For utilities or other services requiring removal or abandonment in-place, submit materials documenting completion of such work.
2. Verify all gas and electrical utilities have been abandoned or disconnected and associated hazards mitigated, prior to beginning any demolition.
3. Take all necessary precautions while dismantling piping containing gas, gasoline, oil or other explosive or toxic fluids or gases. Purge lines and contain materials in accordance with all applicable regulations. store such piping outdoors until fumes are removed.
4. Unless otherwise noted, Contractor shall be responsible for obtaining and paying for all permits necessary to complete demolition work.
5. Use Contractor's normal equipment for demolition purposes and which meets all safety requirements imposed on such equipment.
6. Remove all equipment, fixtures and other materials scheduled for salvage prior to be beginning demolition operations.
7. Abandon gas, electric and communication utilities in accordance with local utility company requirements, or applicable substantive requirements if considered private.
8. Transport and dispose all demolition waste in accordance with local, state, and federal guidelines.

EARTHWORK AND EROSION CONTROL

1. Contact the Project Manager to determine the type, and frequency of quality assurance geotechnical testing required on each project. Provide listing of quality assurance geotechnical testing requirements in this item.
2. Contractor shall be solely responsible for determining all earthwork quantities based on the existing and proposed elevations provided on the plans. Any geotechnical investigations provided by the Owner apply only to those locations that the data was collected, and may not be indicative of conditions elsewhere on the site.
3. Erosion control and storm water management practices shall be installed and maintained in accordance with the WDNR approved Technical Standards (or equivalent).
4. Erosion mats, soil stabilizers, and trackifiers shall be listed on the Product Acceptability List for Multi-Modal Applications ("PAL") as published by the Wisconsin Department of Transportation.
5. Silt fence fabric shall comply with the requirements of Standard Specifications for Highway Construction 628.2.6, in 3 foot tall rolls, with 4' tall 2" x 2" nominal cross section hardwood posts spaced a maximum of 10' o.c.. Silt fence shall be Mirafi, Trevira, Amoco, CFM, or approved equal.
6. Erosion mat shall comply with the requirements of Class I, Type A erosion mat as defined by Standard Specifications for Highway Construction and the PAL. Erosion mat shall be American Excelsior, SI Geosolutions, Erosion Control Systems, North American Green, or approved equal.
7. Fieldstone Cobbles stone shall be the size and type specified on plans. Contractor shall provide an on-site sample for approval prior to installation.
8. The aggregate for tracking pads shall be 3 to 6 inch clear of washed stone. All materials shall be retained on a 3-inch sieve.
9. Soil stabilizers shall be non-asphalt-based products of the type specified, and meeting the requirements of the PAL.
10. Water soluble anionic polyacrylamide (PAM) used as temporary soil binding agents to reduce erosion shall meet the requirements of WDNR Technical Standards.
11. Install erosion control measures as required by the erosion control plan and contract documents. **Provide additional erosion control measures as dictated by Contractor's means and methods, or by differing site conditions.** Notify Construction Representative of additional erosion control features that are provided, but not shown on the plan.
12. Temporary stockpiles are to located greater than 25 feet from any roadway, parking lot, paved area, drainage structure, or channel.
13. Convey drainage to the nearest adequate stormwater facility. Do not discharge water in a manner that will cause erosion or sedimentation of the site or receiving facility.
14. Construct and maintain tracking pads in accordance with the Technical Standards. Provide each entrance to the site with a stone tracking pad at least 50 feet in length with a minimum thickness of 12 inches. The tracking pad shall be the full width of the egress point. Inspect tracking pads on a daily basis and replace aggregate when no longer effective.
15. Inspect all erosion control measures within 24 hours of the end of each rainfall event that exceeds 0.25", or daily during period of prolonged rainfall, or weekly during periods without rainfall. immediately repair and/or replace any and all damaged, failed, or inadequate erosion control measures.

PAVEMENT

1. Proof-roll all subgrade areas that are to receive aggregate base or pavement. Proof-roll with a loaded dump truck prior to the placement of base courses to locate soft spots that yield under loading.
   a. Loaded truck shall have a minimum gross operating weight of 30 tons.
2. Contractor shall assume 10% of proposed paved areas may require undercutting. This work shall be included in base bid.
3. Undercut soft or unsuitable areas of subgrade 2 to 3 feet or as directed by the Geotechnical Engineer. Backfill with granular soil (as indicated in the geotechnical report) fill in maximum 8 inch loose lifts, and compact to the minimum required degree of compaction.
4. Proofrolling,undercutting, and fill operations shall be performed under the observation of the Geotechnical Engineer.
5. Asphalt pavement shall only be installed after a successful proof-roll of the base course has been completed and observed/approved by the geotechnical engineer (immediately before the asphalt pacement).
6. Provide hot mix asphalt (HMA) pavement conforming to the requirements Section 460 of Standard Specifications for Highway Construction. Utilize the same material type through the paving operation unless noted elsewhere on the plans. Materials under this section to the requirements of WisDOT Standard Specifications for Highway AND Structure Construction, Section 445 and as revised in any current Supplemental Specifications.
7. HMA Type:
   7.1. Heavy Duty: E1.0 (Surface & Binder Course) (19 mm aggregate for Binder, 12.5 mm aggregate for surface.)
8. HMA shall be place in accordance with the requirements of Section 460 of Standard Specifications for Highway Construction.
9. Asphalt shall not be installed adjacent to new curb nor shall backfilling occur adjacent to new curb no sooner than 7 days after pouring. If desired, Contractor (at his cost) may provide cylinders (tested by the geotechnical engineer) that prove a minimum strength of 3000 psi sooner than 7 days.
10. Pavement Repairs: Sawcut all pavement surfaces to neat and straight lines at the limits of removal by a two-step method (only applicable in areas where existing pavement is not being pulverized). Limit the initial pavement removal to the immediate area of the proposed work. Adjust all inlets, manholes, catch basins, valve boxes, and other such castings to match new finished grade as incidental work.

WATER REPELLENT SURFACE SEALERS

1. All work shall be in accordance with applicable manufacturer's and supplier's
2. Do not proceed with application of materials if ambient temperature is below 40 degrees Fahrenheit or if ice or frost are covering the substrate.
3. Do not proceed with application if ambient temperature of surface temperature exceeds 100 degrees Fahrenheit.
4. Material should not be applied to damp surfaces or if high winds cause improper evaporation rates.
5. Water repellent concrete sealer shall be a solvent-based (not water-based) silane product with 40% solids content:
   - "Chem-Trete BSM-40 VOC", DeGussa Inc., Parsippany, NJ (800-828-0919)
   - "Hydrozo 40", Chemrex, Shakopee, MN.
   - "Sil-Act ATS-40", Advanced Chemical Technologies, Oklahoma City, OK.
   - "Baracade Silane 40", or "Silane 40 IPA", Tamms Industries, Kirkland, IL.
   - Approved equal
6. All testing most be performed by an independent laboratory.
7. Do not proceed with application until manufacturer's technical representative is present and approves environmental conditions and application rate.
8. Avoid puddles that persist more than 60 minutes. Do not allow material to accumulate on sealant installations. Redistribute puddled material to higher elevations or pick up. Excess sealer should be removed from surface.
9. Protect treated areas from rain and other surface water for a period of not less than eight hours after applications.
10. The sealer system shall be protected from traffic until fully cured.

DENSE GRADED BASE

1. Materials shall conform to Section 301.2 of the WisDOT Standard Specifications for Highway and Structure Construction. Material gradations shall conform to Section 305.2.2 of the WisDOT Standard Specifications for Highway and Structure Construction unless specified elsewhere in the contract documents.
2. Base course material shall be crushed stone or crushed gravel only.
3. Prepare the foundation, or resurface the previously placed base layer, as specified in WisDOT Section 211 before placing base. Do not place base foundations that are soft, spongy, or covered by ice or snow. Water and rework or re-compact dry foundations as necessary to ensure proper compaction, or as the representative designates.
4. In proposed pavement areas, all organic solid shall be removed.
5. In areas of existing pavement to be modified or adjusted in grade, the existing pavement section shall be removed by an acceptable method. The new pavement section shall match the construction details.
6. Proof-roll all subgrade areas that are to receive aggregate base or pavement.
7. Build and maintain stockpiles using methods that minimize segregation and prevent contamination. If the contract specifies location, place stockpiles where specified. Clear and prepare stockpile areas to facilitate the recovery of the maximum amount of stockpiled material.
8. Place aggregate in a manner that minimizes hauling on the subgrade. Do not use vehicles or operations that damage the subgrade or in-place base. Deposit material in a manner that minimizes segregation.
9. Compact the base until there is no appreciable displacement, either laterally or longitudinally, under the compaction equipment.
10. Compact each base layer, including shoulder foreslopes, with equipment specified in WisDOT Section 301.3.1. Use standard compaction conforming to WisDOT Section 301.3.4.2, unless the special provisions specify other methods. Final shaping of shoulder foreslopes does not require compaction.
11. After the project is completed, thoroughly clean up all debris which may have accumulated during the placement of dense graded base. Replace or repair as required, all surfaces and/or landscape features damaged or disturbed under this item of work.

STORM DRAINAGE UTILITIES

1. Conform all materials to the size and type shown on the plans or as called for in the specifications and to applicable Laws, Codes, and Ordinances.
2. Conform to ASTM D-3034 with solvent weld or elastomeric joints. Pipe shall be SDR-35, unless otherwise noted. Pipe over 15 inches in diameter shall meet the requirements of ASTM F679-03.
3. The wall thickness shall conform to requirements for a T-1 wall. PVC material shall have cell classification 12434-B or 12454-C as defined in ASTM D1784 with minimum modules of elasticity of 400,00 psi in tension. The pipe wall shall be homogeneous and contain no seams. Minimum pipe stiffness per ASTM D2412 shall be 60 psi for pipe sizes through 18-inch and 46 psi for 21-inch and larger pipe sizes. Pipe shall withstand impact of 210 foot-pounds for pipe sizes through 8-inch and 220 foot-pounds on larger sizes.

CAST IN PLACE CONCRETE

1. All work shall be in accordance with applicable manufacturer's and supplier's instructions.
2. All concrete work which does not conform to the requirements of the Contract Documents and ACI 301, including function, durability, appearance, strength, cracking, tolerances and finishing, shall be corrected as directed by Architect at Contractor's expense. Additional testing, engineering, reinforcement and removal and replacement of defective concrete shall be paid for by Concrete Contractor. Contractor shall also be responsible for the cost of corrections to any other work affected by or resulting from corrections to the concrete work.
3. Concrete shall conform to Sections 501 and 601 of the Standard Specifications for Highway Construction.
4. All concrete, unless otherwise specifically permitted by Architect, shall be transit-mixed in accordance with ASTM C 94.
5. In general, comply with ASTM C 33 for grading and quality of fine and coarse aggregate for use in concrete.
6. Portland cement shall conform with ASTM C 150 and shall only contain the following ingredients: portland cement clinker; water or calcium sulfate, or both; limestone; processing additions; and air-entraining addition for air-entraining portland cement.
7. Admixtures shall not contain more chloride ions than are present in municipal drinking water.
8. Water Reducing Admixtures shall conform to ASTM C 494.
9. Air Entraining Admixture shall conform to ASTM C 260
10. Calcium chloride, thiocyanates or admixtures containing more than 0.05% chloride ions by weight of admixture are not permitted for use in concrete mixes.
11. Synthetic Fibers shall be used in concrete mix design in lieu of welded wire fabric. Synthetic fibers shall not replace reinforcing rebar/dowels as depicted on the Construction Details.
12. For concrete sidewalks: Matrix Bi-Blend micro fiber - FRC Industries. Application dosage shall be 1.5 pounds per cubic yard.
13. For concrete pavements: Matrix HPS 950 Macro/micro synthetic blend fiber or Forta Ferro macro fiber - FRC Industries. Application dosage shall be 5 pounds per cubic yard.
14. Concrete must meet all requirements of the ASTM C 94, ACI 211, ACI 318 Chapter 4 Durability Requirements, and those herein specified for materials, proportioning, mixing and other details of manufacturer, quality and deliver.
15. Air entrained concrete: Use for all exterior slabs, walls, walks, platforms, ramps, steps, all portions of parking
16. Minimum compressive strength at 28 days: 4000 psi.
17. Maximum aggregate size shall not exceed one third of the slab on grade thickness.
18. Fly Ash may be used as a pound for pound replacement of cement up to 20% of the total cementitious content, 25% for footings, except for finished flatwork during winter construction, subject to Architect's approval.
19. Concrete requiring air entrainment shall contain six (6) percent plus or minus one and a half (1.5) percent air by volume, for 3/4" dia. aggregate. Conform to ACI 318, Chapter 4.
20. All concrete must contain the specified water-reducing admixture or water-reducing -retarding admixture and/or the specified high-range water-reducing admixture (superplasticizer). Specified cement contents shall be increased 10 percent (10%) when no water-reducing admixtures are used.
21. Measuring Materials: Cement, aggregates, water and admixtures shall be measured and combined strictly in accordance with ASTM Specification C 94.
22. Make one slump test of the first truck of each mix, each day, one test for each compression test and other tests as often as required thereafter, whenever consistency changes.
23. Air content tests shall be made from the first truck of each mix, each day and when-ever test cylinders are made, in accordance with ASTM C 173 or ASTM C231. Test more often when required air contents are not achieved.
24. Concrete Temperature: Test hourly when air temperature is 40 degrees F (4 degrees C) and below, and when 80 degrees F (27 degrees C) and above; and each time a set of compression test specimens is made.
25. If measured slump, air content or concrete temperature falls outside limits specified, a check test shall be made immediately on another portion of same sample. In event of a second failure, concrete shall be considered to have failed to meet requirements of specifications and shall not be used in structure. Notify Architect immediately.
26. Strength tests shall be made for each of the following conditions: Each day's pour, each class of concrete, each change of supplies or source, each 150 cubic yards of concrete or fraction thereof, and each 5000 square feet of surface area for slabs or walls.
27. To conform to requirements of this Specification, the strength level shall be considered satisfactory so long as the average of all sets of three (3) consecutive strength test results equals or exceeds the specified f'c and no individual strength test result falls below the specified strength f'c by more than 500 psi. Architect shall be notified immediately of nonconformance.
28. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
29. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures in conformance with ACI 301 and ACI 308.
30. Concrete curb and gutter shall be placed in accordance with WisDOT Section 601 to the dimensions and shapes shown in the standard detail drawings. Where curb and gutter details are not provided, curb and gutter shape and dimensions shall match existing adjacent curb and gutter.
31. Concrete sidewalk and driveway shall be placed in accordance with WisDOT Section 602 to the dimensions and thicknesses shown in the standard detail drawings.
32. Provide concrete pavement having the thickness and reinforcement as shown on the drawings, or to match adjacent existing pavement. Tie bars should be placed at all construction joints parallel to traffic and consist of No. 4 reinforcing bars, 24 inches in length and 48 inches on center, unless otherwise noted on the standard details.
33. Each curb ramp shall be provided with a detectable warning field installed in fresh concrete of all sidewalk and multi-use trails at legal crosswalks, and as shown in the detail drawings. A detectable warning field shall not be installed in asphalt pavements. The detectable warning field shall be installed per manufacturer's recommendations.

HARWOOD ENGINEERING CONSULTANTS
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Project:
SKYLINE - MEDICO MART

PRELIMINARY REVIEW SET
NOT FOR CONSTRUCTION
DATE: JANUARY 26, 2015

2323 CORPORATE DRIVE

Location:
WAUKESHA, WI 53189

SKYLINE DEVELOPMENT CORPORATION

Sheet:
Specifications

Date:	Issue Set:

Date:
2016-02-01 WAUKESHA PC

Project No.:
15-1214.00

Sheet No.:
C5.01