

DETAILED SPECIFICATION  
FOR  
**CONSTRUCTION SEQUENCING**

**General Description:**

All work shall be performed in accordance with this Detailed Specification unless a separate sequence is submitted in writing by the Contractor and approved by the Engineer. Any proposed expedited schedule will be evaluated and dependent upon the Contractor's performance of the Phase I and/or first season of construction.

The Project is 5,675 feet long and will be divided into five phases: Phase I (0+00 to 9+00), Phase II (9+00 to 32+00), Phase III (32+00 to 42+00), Phase IV (42+00 to 57+25), and Phase V (the entire limits). Phases I through IV must be complete (except for wearing course, gravel shoulders, and pavement markings) prior to beginning work on the next phase. The Contractor may not begin work on an individual phase until a written notice to proceed is issued by the Engineer.

All pipe bursting activities must be completed, tested, and approved past the downstation limit of each phase prior to commencing the roadway construction and/or storm sewer construction activities within that phase.

The Dexter-Ann Arbor Run is expected to take place through the construction zone on June 1, 2008 and May 31, 2009. Therefore, by the Saturday prior to each Run, the road surface must be left in a graded condition, to be passable by runners and pedestrians. All equipment must be removed from the site or placed in an area within the grading limits such that at least 15-ft of road surface width is left unobstructed for the runners.

Silt fence and protective fencing shall be placed only in the phase being constructed and 25 ft. into next phase.

Gravel shoulders will be placed in two-part process. Gravel will first be placed to top of leveling course in each phase. After completion of wearing course and before placement of pavement markings the remainder, the shoulder will be scarified, and 1-1/2 inch to 0 inch wedge will be placed and compacted.

The Project is located in close proximity to wetlands and waters of the State. A great deal of care and scheduling of work must be followed during the performance of the work of this contract. Other requirements may also apply and may supersede these requirements and can be contained within other contract documents or permits. The following is an overview of what is required during construction of the project.

The Contractor may submit an alternate sequence of construction. The Engineer must approve any proposed changes to the sequence in writing. The ultimate goal of the phasing is to protect the adjacent natural features from any disturbance. Any alternate sequence must show that slope stabilization efforts and all seeding are complete by September 1 of the given year.

Soil Erosion and Sedimentation Control Phase I, II, III, IV

Soil Erosion and Sedimentation Control (SESC) measures must be installed within, and 25 ft beyond, the limits of each phase prior to beginning road or storm sewer work in that phase.

Any work within critical areas (e.g., steep slopes), such as removal/installation of culverts, placement of riprap, and retaining walls, must be worked on continuously (no work stoppage) until the work is complete. This includes backfilling, placement of embankment, topsoil, seeding, erosion control blanket, permanent riprap measures as indicated and any items needed to complete slope stabilization in the area. This will also include placement of temporary erosion control and sedimentation devices as directed by the Engineer to take care of unforeseen issues that arise during construction.

After work in a critical area is completed, silt fence must be placed to protect the area from the road building process. Maintaining of these areas is required to be able to work in next phase of construction.

Temporary soil erosion and sedimentation measures, such as temporary check dams, may be required at certain locations as determined by the Engineer during the course of construction. Temporary measures need to be built so they can be removed with minimal disturbance of the area.

No work will be done in rain or when the chance of rain could cause erosion or have sediment reach waters of the State or wetlands. Work in critical areas (e.g., steep slopes, wetlands that discharge directly to waters of the State) must be performed in a timely manner to be completed soon as possible. A schedule for work in these areas must be submitted to the Engineer for approval.

Removal of soil erosion devices will be done once vegetation is established in an area as directed by the Engineer.

### Retaining Walls

Each wall must be completed prior to performing the roadwork that area. Each wall must be built complete before suspending work (no work stoppage) on that wall. The walls are required to be built in this manner to limit impact on slopes and minimize possible soil erosion and sedimentation.

Soil Erosion and Sedimentation Controls must be installed at the wall work zones prior to beginning the work. Once the walls are complete, silt fence must be installed along the top of these walls to separate the completed wall work zones from the roadwork.

### Detours and message boards

The detour route shall be maintained in accordance with Sections 103.05, 103.06, 811, 812, 920, and 922 of the 2003 Michigan Department of Transportation Standard Specifications for Construction and in accordance with the 2005 Michigan Manual of Uniform Traffic Control Devices (MMUTCD) as amended, except as herein provided.

The Contractor shall furnish, erect, maintain and, upon completion of the work, remove all traffic control devices and barricade lights within the project and around the perimeter of the project for the safety and protection of through and local traffic. This includes, but is not limited to, advance, regulatory, and warning signs; barricades and channeling devices at intersecting streets on which traffic is to be maintained; barricades at the ends of the project

and at right-of-way lines of intersecting streets, and moving traffic control devices for construction operations.

All sign posts need to be permanently driven into ground. No sand bags allowed unless approved by engineer.

### Materials

The materials and equipment shall meet the requirements specified in the sections designated of the MDOT 2003 Interim Standard Specifications for Construction and all Detailed Specifications contained elsewhere in this Contract Document.

### Permits

Prior to the start of construction, the Contractor shall obtain a "Right-of-Way" and "Grading" Permit from the City of Ann Arbor Building Department and a "Lane Closure" Permit from the City of Ann Arbor Transportation Division. The fees for these permits will be waived.

### Order of Operation Phases I, II, III, IV

Construction activities will take place in the order shown below unless a separate detailed Progress Schedule approved by the Engineer in writing.

### Phase I Construction Sequence 0+00 to 9+00

Completion date July 9, 2008

1. Installation of traffic control devices and the maintenance of traffic per the Maintenance of Traffic Plans.
2. Install Soil Erosion and Sedimentation Control Devices per plan and as directed by Engineer.
3. Begin Pipe Bursting Operations. This work may be performed concurrently with Item 2 and may continue through all phase limits of the project.
4. Perform exploratory excavations per plan and as directed by Engineer.
5. Upsized sanitary sewer testing is complete and accepted by the Engineer in the Phase I area. All sanitary manholes are complete and accepted by the Engineer in the Phase I area.
6. Install storm sewers in the order shown below. While working on these items, the Contractor will be limited to removing only that portion of the existing pavement surface that is, in the opinion of the Engineer, reasonably necessary to facilitate utility trench and structure excavation. In order to protect the gravel grade/subgrade and reduce the possibility of soil erosion and sedimentation, the Contractor will not be allowed to remove the entire pavement surface in advance of the utility work. After each run of storm sewer is complete area will need temporary or permanent soil erosion and sedimentation controls as directed by Engineer. This will need to be done before moving on to next storm sewer run.

- a. R-1 to R-7 (including removal of the headwall). This work shall be conducted in the following order:
    - i. Remove only the length of existing culvert necessary to facilitate the installation of the new 36" pipe from R-1 to R-2.
    - ii. Construct new 36" pipe from R-1 to R-5.
    - iii. Tap new 36" pipe into existing at R-5.
    - iv. Remove remainder of existing pipe.
  - b. R-6 to R-6A.
  - c. R-8 to R-14.
  - d. R-3 to R-5.
7. Lowering and plating of structures.
  8. Removal of pavement, curb and gutter.
  9. Construction of subgrade, sand subbase, and aggregate base course per cross sections. This includes the completion of undercuts as directed by the Engineer. No rubber tire equipment allowed on subgrade. Contractor will need to schedule subgrade excavation removals and material placement to accomplish this task. See Division V, section 3B, 3C and 3D of City of Ann Arbor Standard Specifications.
  10. Place concrete curb and gutter.
  11. Fine grading of aggregate base course
  12. Placement of HMA base and leveling course.
  13. Placement of gravel shoulder to top of leveling course.
  14. Completion of topsoil placement, seeding, erosion control blankets and any landscaping items such as trees.
  15. Removal of concrete spillway station 0+55L to 4+30L. This work will include removal, replacement as specified, permanent erosion control devices, placement of embankment, riprap, check dams, plunge pools, topsoil, seed, erosion control blankets, and any items needed to complete work. A schedule for this work shall be submitted to Engineer and approved before work may begin. Work will be approved dependent on weather forecast and number of days needed to complete. At the end of each day, temporary soil erosion control measures will be required, as directed by the Engineer, to protect waters of the State.

#### Phase II Construction Sequence 9+00 to 32+00

Completion date August 30, 2008

1. Install Soil Erosion and Sedimentation Control Devices per plan and as directed by Engineer.
2. Install storm sewers as shown below. While working on these items, the Contractor will be limited to removing only that portion of the existing pavement surface that is, in the opinion of the Engineer, reasonably necessary to facilitate utility trench and structure excavation. In order to protect the gravel grade/subgrade and reduce the possibility of soil erosion and sedimentation, the Contractor will not be allowed to

remove the entire pavement surface in advance of the utility work. After each run of storm sewer is complete area will need temporary or permanent soil erosion and sedimentation controls as directed by Engineer. This will need to be done before moving on to next storm sewer run.

- a. R-16 to R-15.
  - b. R-17 to R-18.
  - c. R-19 to R-20
  - d. R-21 to R-22. This includes removal and replacement of the headwall.
3. Lowering and plating of structures.
  4. Removal of pavement.
  5. Construction of subgrade, 1-3 limestone subbase, and aggregate base course per cross sections. This includes the completion of undercuts as directed by the Engineer. No rubber tire equipment allowed on subgrade. Contractor will need to schedule subgrade excavation removals and material placement to accomplish this task. See Division V, section 3B, 3C and 3D of City of Ann Arbor Standard Specifications.
  6. Fine grading of aggregate base course.
  7. Placement of HMA base and leveling course.
  8. Placement of gravel shoulder to top of leveling course.
  9. Completion of topsoil placement, seeding, erosion control blankets and any landscaping items such as trees.
  10. Removal of temporary erosion control measures, as directed by Engineer, in areas of that are established.
  11. Adjustment of structures in pavement (Phases I and II) to leveling layer.
  12. Place temporary pavement markings.
  13. Remove Traffic Control Devices and open the road to traffic.

#### Phase III Construction Sequence 32+00 to 42+00

Completion date July 21, 2009

1. Installation of traffic control devices and the maintenance of traffic per the Maintenance of Traffic Plans.
2. Removal of temporary erosion control measures, as directed by Engineer, in areas of that are established.
3. Install Soil Erosion and Sedimentation Control Devices per plan and as directed by Engineer. This also includes installation of the required silt fence surrounding retaining walls A and C.

4. Begin work on the retaining walls in the Phase III and IV areas. Walls A and C must be completed before performing roadwork in each respective area. Completion of the walls includes backfill, embankment, topsoil, seed, fertilizer, erosion control blankets and all other work required on the Plans and as directed by the Engineer. The work on the walls may commence in conjunction with items 3 and 4 below. Soil Erosion and Sedimentation Controls must be installed around the wall work zones prior to beginning the work. Once the walls are complete, silt fence must be installed along the top of these walls to separate the completed wall work zones from the roadwork.
5. Install storm sewers as shown below. While working on these items, the Contractor will be limited to removing only that portion of the existing pavement surface that is, in the opinion of the Engineer, reasonably necessary to facilitate utility trench and structure excavation. In order to protect the gravel grade/subgrade and reduce the possibility of soil erosion and sedimentation, the Contractor will not be allowed to remove the entire pavement surface in advance of the utility work. After each run of storm sewer is complete area will need temporary or permanent soil erosion and sedimentation controls as directed by Engineer. This will need to be done before moving on to next storm sewer run.
  - a. R-24 to R-23.
  - b. R-25 to R-26.
6. Lowering and plating of structures.
7. Removal of pavement.
8. Construction of subgrade, 1-3 limestone subbase, and aggregate base course per cross sections. This includes the completion of undercuts as directed by the Engineer. No rubber tire equipment allowed on subgrade. Contractor will need to schedule subgrade excavation removals and material placement to accomplish this task. See Division V, section 3B, 3C and 3D of City of Ann Arbor Standard Specifications.
9. Fine grading of aggregate base course.
10. Placement of HMA base and leveling course.
11. Placement of gravel shoulder to top of leveling layer.
12. Completion of topsoil placement, seeding, erosion control blankets and any landscaping items such as trees.

#### Phase IV Construction Sequence 42+00 to 57+25

Completion date September 1, 2009

1. Removal of temporary erosion control measures, as directed by Engineer, in areas of that are established.
2. Install Soil Erosion and Sedimentation Control Devices per plan and as directed by Engineer.

3. Install storm sewers as shown below. While working on these items, the Contractor will be limited to removing only that portion of the existing pavement surface that is, in the opinion of the Engineer, reasonably necessary to facilitate utility trench and structure excavation. In order to protect the gravel grade/subgrade and reduce the possibility of soil erosion and sedimentation, the Contractor will not be allowed to remove the entire pavement surface in advance of the utility work. After each run of storm sewer is complete area will need temporary or permanent soil erosion and sedimentation controls as directed by Engineer. This will need to be done before moving on to next storm sewer run.
  - a. R-27 to R-28.
  - b. R-30 to R-29.
  - c. R-31 to R-32.
  - d. R-33 to R-34.
4. Lowering and plating of structures.
5. Implementation of Phase IVA Traffic Control per the Maintenance of Traffic Control Plan.
6. Removal of pavement.
7. Construction of subgrade, 1-3 limestone subbase, and aggregate base course per cross sections. This includes the completion of undercuts as directed by the Engineer. No rubber tire equipment allowed on subgrade. Contractor will need to schedule subgrade excavation removals and material placement to accomplish this task. See Division V, section 3B, 3C and 3D of City of Ann Arbor Standard Specifications.
8. Fine grading of aggregate base course.
9. Placement of HMA base and leveling course.
10. Install all guardrail.
11. Placement of gravel shoulder to top of leveling layer.
12. Placement of topsoil, seeding, erosion control blankets and any landscaping items such as trees.
13. Adjust structures in pavement (Phases I, II, III, and IV) to wearing course.
14. Removal of temporary erosion control measures, as directed by Engineer, in areas that are established.

#### Phase V Construction Sequence (Entire project limits)

1. Pave the wearing course across the entire project limits.
2. Place the final layer of the gravel shoulder. After completion of wearing course and before placement of pavement markings, scarify the shoulder and place and compact the remainder 1-1/2 inch to 0 inch wedge.

### 3. Placing all permanent pavement markings

Once these items are complete, the temporary traffic control devices will be removed and the road open to traffic. Per the project schedule, the road must be open to traffic by September 15, 2009.