

SECTION 01 50 00 - TEMPORARY FACILITIES

PART 1 – GENERAL

1.1 SECTION INCLUDES

This Section specifies requirements, traffic control and sedimentation control.

- A. During the progress of the Work, Contractor shall accommodate both vehicular and pedestrian traffic as provided in these Specifications and as indicated on the Drawings. In the absence of specific requirements, Contractor shall maintain such traffic. Access to fire hydrants, water and gas valves shall always be maintained. Contractor's truck and equipment operations on public streets shall be governed by all local traffic ordinances and regulations of the Fire and Police Department and the Department of Public Works. Work within State highway rights-of-way shall be under the jurisdiction of the Michigan Department of Transportation. Contractor shall accommodate, and not disrupt, the schedules for trash collection and mail delivery. Contractor shall notify the local police agency of street obstruction and detours. Contractor shall clean out any storm collection system appurtenances that are impacted via soil erosion sediment that he creates.
- B. In the event of Contractor's failure to comply with the foregoing provisions, the Authority may, with or without notice, issue a stop-work notice; this notice shall in no way release Contractor from Contractor's liability for the safety of the traveling public.
- C. Special Requirements. Special requirements of Authority and MDOT being specified for traffic control on state trunk lines and major arteries due to the magnitude of traffic disruption involved in this Contract.

1.2 REFERENCES

- A. Act 346 of 1972, the Inland Lakes and Streams Act and corresponding general rules.
- B. Act 347 of 1972, the Soil Erosion and Sedimentation Control Act, as amended by Act 197 Public Acts of 1974 of the Michigan Compiled Laws.
- C. Local Soil Erosion Control Ordinance or requirements.
- D. Act 53 of Public Acts of 1974, as amended.
- E. Michigan Manual of Uniform Traffic Control Devices (MMUTCD).
- F. Standards. Comply with NFPA Code 241, "Building Construction and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library, "Temporary Electrical Facilities."
- G. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services," prepared jointly by AGC and ASC, for industry recommendations.

1.3 SUBMITTALS

- A. Traffic Control Plan of Action. Contractor shall submit the Plan of Action for Traffic Control in six copies within 10 days after the Notice to Proceed is issued. Contractor shall not commence Work on any State trunk line or major artery without written approval of the Plan for that portion of the Contract.
- B. Contractor's Plan of Action shall be based upon Authority's requirements for Traffic Control and shall detail specific detour routes including individual sign markings and locations. Contractor shall also propose Contractor's intended method for lane control within the construction Work areas.
- C. Authority and/or MDOT shall approve the proposed Plan of Action. Modifications to the proposed Plan of Action resulting in changes to the Bid quantities shall be adjusted as required during Contractor's submittal of monthly payment estimates.
- D. In addition to the Plan of Action, this Work shall consist of the furnishing, installation, operation, maintenance, and removal of the traffic control devices described in this Section.
- E. The location, type, and wording of warning and guide signs shall be proposed by Contractor as part of Contractor's required Plan of Action for Traffic Control.
- F. The erosion control program prepared by Contractor, as described herein, shall be reviewed and have received at least preliminary concurrence from the local Enforcing Agent before it will be presented and discussed at the preconstruction meeting, at which time final revisions may be made. Copies of the final agreed program shall be made available for Engineer and the local Enforcing Agent.

1.4 QUALITY ASSURANCE

- A. Regulations. Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:
 - 1. Building Code requirements.
 - 2. Health and safety regulations.
 - 3. Utility company regulations.
 - 4. Police, Fire Department and Rescue Squad rules.
 - 5. Environmental protection regulations.
 - 6. State and local soil erosion control regulations.
- B. Inspection. Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.5 PROJECT CONDITIONS

- A. All work site conditions shall comply with Michigan Manual of Uniform Traffic Control Devices.
- B. Security and protection facilities required include, but are not limited to:
 - 1. Soil erosion and sedimentation control measures.
 - 2. Environmental protection.

- C. Soil Erosion and Sedimentation Control Program. Contractor shall prepare a soil erosion and sedimentation control program for submittal to and approval by Local Soil Erosion and Sedimentation Control Agent prior to start of construction, as required in the following paragraphs. Copies of State guidelines "Better Environment through Soil Erosion and Sedimentation Control" and "Protection of Natural Resources" DNR Handbook of Specifications may be obtained at no charge from the Michigan Department of Environmental Quality. The "Michigan Soil Erosion and Sedimentation Control Guidebook" may also be obtained from the Michigan Department of Environmental Quality.

- D. Since it is impractical to identify specific potential soil erosion problems along a utility route, Contractor, after award but prior to the preconstruction conference, together with the local soil erosion Enforcing Agent, shall identify all potential soil erosion problem areas and prepare a detailed soil erosion and sedimentation control program satisfying Contractor's specific method of operation. This program shall include as a minimum, but not necessarily be limited to, the following:
 - 1. Identify on a separate set of plans all soil erosion problem areas.
 - 2. Identify specific control structure using MDEQ United Keying System from the "Michigan Soil Erosion and Sedimentation Control Guidebook" to be placed to control erosion and to prevent soil from entering storm sewers and streams.
 - 3. Indicate timing of placement and removal of structures both in relationship to time of year and to sequence of construction.
 - 4. Indicate timing of completion of cleanup and surface restoration after control structures are removed.

- E. The erosion control program, prepared by Contractor, shall be reviewed and have received at least preliminary concurrence from the local Enforcing Agent before it will be presented and discussed at the preconstruction meeting, at which time final revisions may be made. Copies of the final agreed program shall be made available for the Authority and the local Enforcing Agent. Should the local regulatory agency determine at any time during construction that the construction operation is in violation of the Act and cite Owner, Contractor or Subcontractor shall take immediate action, as directed by Authority, to ensure compliance with the Act.

1.6 SEQUENCING AND SCHEDULING

- A. Contractor shall inform the local Fire Department in advance of Contractor's program of street obstruction and detours, so that the Fire Department can set up plans for servicing the area in case of an emergency. Contractor shall also notify the public agency having jurisdiction over the roads at least one week prior to obstructing any street.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Seed shall be, at least, per acre, 10 pounds Kentucky 31 fescue, three pounds Birdsfoot Trefoil, and three pounds white clover.

- B. Fertilizers shall be, at least, 200 pounds per acre 12:12:12 or equivalent.

- C. Mulches shall be two tons per acre of straw or hay. A chemical mulch or other approved material may be used.
- D. Barricades. When a road or street is closed to all through traffic, movable Type III barricades shall be erected at all points of closures, including cross streets. If barricades are to be left over night, three warning lights shall be provided for each Type III barricade.
- E. Barriers. Whenever the excavation on roads open to through traffic exceeds ten feet below surface grade, portable concrete barriers shall be provided between the open trench and any traffic lanes including barriers at the ends of the trench as necessary. The maximum length of open trench shall be 50 feet.
- F. Signs. Standard sign sizes and colors, as shown in "MMUTCD," shall be used to make the approach to construction areas and to direct motorists on any detour route. All signs shall be reflectorized.
- G. Temporary Pavement Marking. Bituminous surfaces shall be marked with either marking tape or paint after each day's paving or prior to opening to traffic. Temporary marking shall be applied to the leveling course if that section will be open to traffic. Removal of temporary pavement marking will not be required unless markings are improperly applied or incorrectly located by Contractor.
- H. Temporary pavement markings shall be placed as directed by Engineer and shall include the following types of markings:
 - 1. Two-foot dashed pavement marking line.
 - 2. Four-foot dashed pavement marking line.
 - 3. Solid pavement marking line.
- I. All markings shall have a nominal width of four inches. Markings shall be either white or yellow in accordance with the "MMUTCD." Dashed lines shall be spaced not greater than 50 feet, center to center of markings.

2.2 EQUIPMENT

- A. General. Provide new equipment; if acceptable to Engineer, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Lane control shall be accomplished by the use of drums and/or Type II barricades to channel the traffic flow, supplemented by guide signs and/or flag persons as necessary. Lighted arrow panels, Type A, shall be required for lane control on both State trunk lines and all City streets open to through traffic.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.
- C. Temporary Paving. Construct and maintain temporary roads and paving to adequately support the indicated loading and to withstand exposure to traffic during the construction period. Locate temporary paving for roads, storage areas and parking where the same permanent facilities will be located. Review proposed modifications to permanent paving with Engineer.
- D. Comply with Section 02513, Asphalt Concrete Paving, for construction and maintenance of temporary paving.
- E. Coordinate temporary paving development with subgrade grading, compaction, installation and stabilization of subbase, and installation of base and finish courses of permanent paving.
- F. Install temporary paving to minimize the need to rework the installations and to result in permanent roads and paved areas that are without damage or deterioration when occupied by Owner.
- G. Delay installation of the final course of permanent asphalt concrete paving until immediately before Substantial Completion. Coordinate with weather conditions to avoid unsatisfactory results.
- H. Extend temporary paving in and around the construction area as necessary to accommodate delivery and storage of materials, equipment usage, administration and supervision.
- I. Dewatering Facilities and Drains. For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division 2 Sections. Where feasible, utilize the same facilities. Maintain the site, excavations and construction free of water.
- J. Collection and Disposal of Waste. Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than seven days during normal weather or three days when the temperature is expected to rise above 80 degrees F (27 degrees C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.
- K. Barricades, Warning Signs and Lights. Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and

warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.

- L. Environmental Protection. Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.
- M. Control of Noise. Contractor shall eliminate noise to as great an extent as possible at all times. Air compressors shall be equipped with silencers, and the exhaust of all gasoline motors and other power equipment shall be provided with mufflers. In the vicinity of hospitals, libraries and schools, special precautions shall be taken to avoid noise and other nuisance, and Contractor shall require strict observances of all pertinent ordinances and regulations. Any blasting permitted in such locations shall be done with reduced charges.
- N. Dust Control. Contractor shall take all steps necessary for the alleviation or prevention of dust nuisance caused by or resulting from Contractor's operations and shall apply water or dust palliative, or both, as required. No direct payment will be made for any such work performed or materials used to control dust from this Contract.
- O. Maintenance of Traffic. During the progress of the Work, Contractor shall accommodate both vehicular and pedestrian traffic as provided in these specifications and as indicated on the Drawings. In the absence of specific requirements, Contractor shall maintain such traffic. Access to fire hydrants, water and gas valves shall always be maintained. Contractor's truck and equipment operations on public streets shall be governed by all local traffic ordinances and regulations of the Fire and Police Departments and the Livingston County Road Commission.
- P. Small street openings necessary for manholes, alignment holes, pipe connections, etc., will be permitted. Such holes shall not be open longer than necessary and shall be protected in accordance with the requirements of the local agency having jurisdiction, and any traffic detouring necessary shall be done to the satisfaction of the Agency. Whenever possible, small openings shall be covered with steel plates at pavement level and secured in place at the time that Work is being performed.
- Q. Where streets are partially obstructed, Contractor shall place and maintain temporary driveways, ramps, bridges and crossings which, in the opinion of Engineer, are necessary to accommodate the public. As part of the Work under this Contract, Contractor shall be responsible for providing and maintaining flag persons, warning lights, signs and/or barricades, including necessary detour signs outside the Project limits as required to direct and protect vehicular and pedestrian traffic. In the event of Contractor's failure to comply with the foregoing provisions, Owner may, with or without notice, cause the same to be done and deduct the cost of such Work from any monies due or to become due Contractor under this Contract; but the performance of such Work by Owner, or at Owner's insistence, shall serve in no way to release Contractor from Contractor's liability for the safety of the traveling public.
- R. Contractor shall inform the local Fire Department in advance of Contractor's program of street obstruction and detours, so that the Fire Department can set up plans for servicing

the area in case of an emergency. Contractor shall also notify the public agency having jurisdiction over the roads at least one week prior to obstructing a road.

- S. Complete all Work as required, such as pipe stubs to connecting mains or utility service replacements, while constructing mains, so the street will only be closed once.
- T. Complete new or restored roadways along a street during the same construction season as the trench work. Coordinate traffic rerouting with road work by others so as to minimize the disruption of traffic.
- U. Markings shall be applied so that they adhere adequately to the surface. Paint shall be applied at a rate of 15 gallons per mile of 4-inch solid line and reflectorized by applying glass beads on the wet paint at a rate of six pounds per gallon. Markings which do not function properly as temporary pavement marking shall be replaced and the application methods revised as directed by Engineer.
- V. Shaft locations shall be selected at points where they will interfere with traffic as little as possible and their working site arrangements shall meet the approval of Engineer. Detouring of traffic shall be done in accordance with the requirements of the public agencies having jurisdiction over the roads.
- W. Crossing Railroad Tracks. Owner will obtain the necessary rights-of-way from the railroad company for crossing under its tracks. Contractor shall conduct Contractor's Work in strict accordance with all provisions of the right-of-way agreement thus obtained. Contractor shall make all necessary arrangements with the railroad company as to time of construction, watchpersons, warnings, etc., and all such costs shall be borne by Contractor.
- X. Soil Erosion and Sedimentation Control. Contractor shall take all precautions necessary to prevent soil erosion of areas disturbed by the construction and shall ensure that all soil erosion be contained within the construction site. Contractor shall provide temporary slope protection, temporary dikes, etc., as required to prevent eroded materials from entering any sewers or natural watercourses.
- Y. Contractor shall comply with the soil erosion and sedimentation control requirements of Act No. 347 of the Public Acts of 1972 as amended by Act 197, Public Acts of 1974 of the Michigan Compiled Laws and local city or county soil erosion control programs.

3.2 INSTALLATION

- A. Dewatering Trenches and Disposal of Excess Excavated Material. For dewatering requirements, refer to Section 02140, Dewatering. For disposal of excess excavated material, refer to Section 02210, Excavation and Backfill (Sewers and Water Main).
- B. Stream Bank Protection. The banks of streams shall not be left unprotected for more than one day where possible, but never more than seven days after the stream crossing is completed. Replacing of bank plug and grading of stream banks within 50 feet of the stream shall be accomplished immediately following pipe laying. Construction will not be allowed to continue at the expense of not providing stream bank protection.
- C. All disturbed stream banks shall be finished with a slope not steeper than 2: 1 (two horizontal to one vertical). The 2: 1 slope shall be graded up and back to the high water line. If the top of

- the natural bank is more than three feet above the high-water line, a 10-foot (minimum) berm shall be constructed at this level, and the remaining slope constructed upward parallel with or on a flatter slope than the original natural bank, provided sufficient adjoining property is available. If such property is not available, permanent riprap shall be placed to the top of the bank. Permanent riprap material shall be placed from the bed of the channel to three feet above the normal high-water line or to the top of the bank. If riprap is placed to the top of the bank, a berm will not be required. Permanent riprap shall be five to one mix of sand to cement in burlap or canvas bags, "Sacrete," broken concrete, man-sized rock, or other material approved by Engineer. "Sacrete," where used, shall be transferred to burlap or canvas bags. All raw soil exposed above the riprap shall be either sodded or seeded, fertilized and mulched. On slopes greater than 10 percent, sod shall be pegged for stability.
- D. Slope Protection - Adjacent to Stream Crossings. In clearing and grubbing of right-of-way, a 20-foot-deep strip of natural vegetation the full width of the right-of-way shall be left on both sides of the streams or drains to be crossed. Deflection dikes consisting of gravel or other suitable material, reinforced by one row of sandbags, shall be used to divert runoff from steep slopes adjacent to water crossing, where contributing runoff could be great enough to cause slope erosion and resulting sedimentation at the stream crossing. Diversion berms, filter berms, diversion ditches or terracing may be appropriate. On slopes greater than 20 percent, such diversion structures shall be placed at the top of said slopes and at 100-foot intervals or less on the slope face. Similar diversion structures shall be placed along the top of the stream bank where the entire slope is not protected with riprap. Water shall be diverted to undisturbed areas adjacent to the right-of-way.
 - E. A pipe trench excavation shall stop some distance from the stream to leave a protective plug of 10 to 20 feet of unexcavated material at each bank. The plugs shall be left in place until the pipe laying operation across the stream has begun. Bypassing of water in the trench to the side by diversion ditches or by pumping may be required. The water shall be diverted to undisturbed areas adjacent to the right-of-way. Replacing of bank plug and grading of stream banks within 50 feet of the stream shall be accomplished immediately following pipe laying. Clearing and the removal of protective vegetation shall be kept at a minimum distance ahead of the trenching unit.
 - F. Slope Protection. On slopes greater than 20 percent, but not immediately adjacent to stream crossing, mulch shall be anchored with a spray of asphalt, Type SS-IS emulsion mixed with an equal amount of water at a rate of 200 gal/acre. A chemical self-adhering mulch may be used. Mulch shall be anchored on slopes greater than 10 percent if immediately adjacent to stream crossings. Mulch may also be held in place by discing with a farm disc. If mulch materials such as netting or excelsior blankets are used, they may have to be pegged.
 - G. Protection. When final topography has been established, all bared soil shall be seeded, fertilized and mulched in an effort to restore to a protected condition, except in flat, active farm fields. Critical areas shall be sodded as specified under Section 31 20 00 Earth Moving.
 - H. The permanent protection measures shall be in effect not more than 30 days after the earth change is completed, except at tie-in areas at both sides of the stream where temporary measures will be installed within three days following a pipeline crossing. Temporary measures may include a row of sand bags at the top of the bank, a row of pegged bales of straw, or an earth berm or diversion ditch. These temporary measures shall be maintained until permanent measures are installed.

- I. Where construction involves placing pipes in roadways or under other impervious materials, special care shall be provided by Contractor.
- J. Provide control measures at all storm sewer catch basins by providing straw or other types of filters or construct sediment traps adjacent to inlets.
- K. If a roadway has a grass ditch area, minimize disturbance and provide filter berms (straw or gravel) or sediment traps as appropriate.
- L. Provide proper down drain structures to control increased runoff to streams and drains.
- M. Stabilize the roadway as soon as possible after placement of the utility. Temporary erosion control measures shall be instituted until final paving is complete. Such measures may include a subbase surfacing application or gravel surfacing. Compaction of soil may suffice if other control measures are effected.

3.3 FIELD QUALITY CONTROL

- A. Any unforeseen situations that may be encountered during the course of construction that may cause accelerated erosion and deposition of sediment into waterways and/or lakes shall be controlled by methods that may include sediment traps, sediment basins, or holding ponds. Any slope failures or development of gullies after construction has been completed shall be corrected immediately.
- B. Should the local regulatory agency determine at any time during construction that the construction operation is in violation of Act 346 and cite Owner, Contractor or Subcontractor shall take immediate action, as directed by Owner, to ensure compliance with the Act.
- C. Public roadway surfaces shall not be used as a work platform. Any disruption to the existing surface must be repaired at the Contractor's expense.

END OF SECTION 01 50 00