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23 - MAINTENANCE OF TRAFFIC

The Design/Builder shall employ a Traffic Control Engineer (“TCE”), meeting all qualifications shown in Exhibit C – Technical Provision 23.2.1 (Traffic Control Engineer), whose primary responsibility shall be to develop and implement a traffic control plan (“TCP”) and supervise all maintenance of traffic (“MOT”) work in accordance with this Technical Provision and the *TMUTCD*. The Alamo RMA, with oversight by TxDOT and FHWA, shall review and comment on the TCP and MOT work.

23.1 Referenced Standards and Guidelines

The geometric design of all portions of the MOT Plan, including, but not limited to, detours and temporary roadway construction, shall conform to current versions, at the time of Agreement Execution, of the following documents:

- ▣ *AASHTO A Policy on Geometric Design of Highways and Streets*
- ▣ *AASHTO Roadside Design Guide*
- ▣ *TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges*, adopted June 1, 2004
- ▣ *TxDOT Roadway Design Manual*
- ▣ *TMUTCD*
- ▣ National Cooperative Highway Research Project (“NCHRP”) Report 350, *Guidelines for Work Zone Traffic Control Devices*

23.2 MOT Staff

The Design/Builder shall provide for the safe and orderly movement of traffic through and around the Project, from issuance of NTP to FA. The Design/Builder shall manage and maintain all traffic control devices in strict compliance with the requirements of this Exhibit C - Technical Provision 23, the *TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges*, the *TMUTCD*, and all other Contract requirements.

23.2.1 Traffic Control Engineer

The TCE shall develop, implement, and manage the TCP on the Project. The TCE shall have the following minimum qualifications:

- ▣ Be a Registered Professional Engineer in the State of Texas, or can become Registered in the State of Texas within six (6) months before construction begins.

- ▣ Have ten (10) years of experience in highway traffic control planning and maintenance with a contractor, consultant, or transportation agency; at least five (5) years must be in urban traffic operations, within the past ten (10) years
- ▣ Have extensive knowledge of the *TMUTCD*, work zone safety, and geometric design of highways.

TCE Duties. The TCE shall have no other assigned duties than to manage and maintain the TCP on the Project. The TCE’s primary duties shall be to:

- ▣ Develop a TCP which meets both the Design/Builder’s construction schedule and the Alamo RMA’s requirements for public mobility and safety during construction.
- ▣ Personally manage and supervise the implementation of the TCP at the Project Site.
- ▣ Revise the TCP as necessary to correspond with construction modifications.
- ▣ Conduct MOT meeting prior to any traffic switch.
- ▣ Attend all weekly Project meetings.
- ▣ Supervise, directly or through a certified and approved Traffic Control Supervisor (“TCS”), the implementation, maintenance, and inspection of all traffic control devices.

Traffic Switch MOT Meeting. The TCE shall conduct an MOT review meeting, at least two (2) Business Days, before switching traffic from one position to another. The TCE shall invite municipal and county representatives, law enforcement agencies, emergency response providers, and others who may be affected by the switch.

The purpose of the meetings will be to:

- ▣ Describe and modify, as necessary, the traffic control procedures to be used for the traffic switch.
- ▣ Obtain input from the meeting attendees.
- ▣ Assign work responsibilities to each group participating in the traffic switch and assure adequate resources are available to accomplish the work as scheduled.

The Design/Builder shall take meeting minutes and distribute them to the Alamo RMA within 24 hours of the meeting. Meeting follow-up items shall be the responsibility of the Design/Builder.

23.2.2 Traffic Control Supervisor

The Design/Builder may assign one (1) or more TCSs to work under the direction of the TCE and to act for the TCE in emergencies. At least one (1) TCS shall be on duty at all times during construction activities and on call during non-construction activities.

Qualifications. A TCS shall have the following minimum qualifications:

- ▣ Certification as a TCS by the American Traffic Safety Services Association (“ATSSA”) or successful completion, including passing a written examination, of an acceptable work zone traffic control course.
- ▣ Five (5) years of urban work zone experience in a supervisory capacity within the past ten (10) years

Before beginning work requiring traffic control management, the Design/Builder shall submit to the Alamo RMA a copy of the TCS certification for each TCS scheduled to supervise the Work.

TCS Duties. The primary duties of a TCS are to:

- ▣ Supervise the placement of all traffic control devices as required in the TCP.
- ▣ Correct all deficiencies in the TCP implementation.
- ▣ Coordinate all traffic control operations of Subcontractors, utility companies, and suppliers to ensure their operations are included in the reviewed TCP and do not result in conflicting traffic control situations.
- ▣ Maintain a Project MOT Diary documenting MOT activities.
- ▣ Notify the Alamo RMA Project Engineer immediately of any traffic accident involving significant injury or fatality on the Project.
- ▣ Record time and date of all accidents in the MOT Diary.
- ▣ Have readily available, at all times, the most current copies of the reviewed TCP, MOT Details, and the *TMUTCD*.
- ▣ Obtain the vehicle accident report from the local law enforcement agency for each accident occurring within the Project and provide a copy to the Alamo RMA.

Availability and Notification. An approved TCS shall be available twenty-four (24) hours per day throughout the duration of the Project; including times work on the Project is suspended. If the Design/Builder assigns more than one (1) TCS to manage the TCP, the Design/Builder shall submit a weekly schedule, identifying who will manage the TCP each day, to the Alamo RMA Project Engineer.

When a TCS is not on-Site, a TCS shall be on call and able to respond to the Site within thirty (30) minutes. The Design/Builder shall provide the Alamo RMA Project Engineer a telephone number for the on-call TCS.

23.2.3 MOT Diary

The TCS shall maintain a daily Project MOT Diary, in a format acceptable to the Alamo RMA. Each daily entry shall be signed by the TCS entering the data and photographs may be used to supplement the written text.

The MOT Diary shall be available for the Alamo RMA to review at all times. A copy of the diary shall be submitted to the Alamo RMA monthly. The original diaries shall become the property of the Alamo RMA at the completion of the Project. Failure to

submit the Project MOT Diaries shall result in the withholding of final payment until the diaries are submitted.

23.3 Traffic Control Plan

The TEC shall develop and submit to the Alamo RMA for review, a detailed TCP for all construction stages and phases which allows for the safe and orderly movement of traffic through the construction zones during the Project. The TCP shall:

- ▣ Advise, warn, and alert the traveling public in advance of the Project terminus and all roads, streets, and public trails approaching or crossing the Project.
- ▣ Control and guide traffic through the Project.
- ▣ Provide for the safe passage of pedestrian traffic.
- ▣ Protect and separate construction traffic and workers at all work sites.
- ▣ Provide for necessary flag persons and police officers when required.

Review and Revision of the TCP. The proposed TCP must be submitted to the Alamo RMA at least ten (10) Business Days before the start of construction, and obtain the Alamo RMA review before implementation.

The TCP shall be modified as necessary to correspond with construction modifications or unforeseen conditions encountered during construction. The Design/Builder shall respond to hazardous circumstances immediately and submit the modified TCP to the Alamo RMA within 24 hours. All other TCP modification shall be submitted to the Alamo RMA for review prior to the change.

The Alamo RMA may request modifications to the reviewed TCP to improve traffic flow through the construction zones. The Design/Builder must modify the TCP when requested.

Traffic Control Switches. The Design/Builder shall submit a traffic switching plan to the Alamo RMA for review at least five (5) Business Days before switching traffic from one position to another. The plan shall consist of the procedures, pavement markings, and signing necessary to complete the switch along with the number and duties of traffic control personnel assigned to perform the switch. If the traffic control switch is to be performed in a sequence other than shown in the reviewed TCP, the Design/Builder must submit a written request for change, at least ten (10) Business Days prior to the scheduled switch, to the Alamo RMA for review.

Restricted Shoulder Use. The use of the new concrete shoulders for temporary handling of traffic shall be limited to less than ninety (90) calendar days at any particular location. If the Design/Builder wishes to use segments of the new concrete shoulders for more than ninety (90) calendar days as temporary traffic lanes, the Design/Builder shall obtain approval from the Alamo RMA, and shall be responsible for any additional pavement structure required to obtain such approval. The Design/Builder shall document and log the durations of usage of the new concrete shoulders for temporary traffic lanes and submit such documentation and logs to the Alamo RMA monthly.

23.3.1 Items Included in the TCP

The Design/Builder's TCP shall include, but not be limited to, the following items:

- ▣ Scaled roadway plan sheets showing all permanent and/or temporary traffic control devices to be placed, remain, relocated, or removed,
- ▣ Scaled drawings showing dimensions on how to fabricate any sign not detailed in the *TMUTCD*, with background color and the legend.
- ▣ The size and color of all standard traffic control devices.
- ▣ Scaled roadway plan sheets with each traffic control device located on the roadway, so it can be easily and correctly placed. No number or letter may be used on the plan sheets as a reference for sign placement.
- ▣ All necessary uniform standards, as required by the *TMUTCD*.
- ▣ Type and location of all permanent and/or temporary pavement markings to be installed, removed, or renewed for each roadway.
- ▣ Indication of which signs are not to be removed but, which are no longer necessary for directing the traffic and the methods to cover each sign.
- ▣ Permanent markings meeting all the requirements and standards called for in the *TMUTCD*
- ▣ Route and details of pedestrian walkways

23.3.2 Lane Closures

Each lane closure shall have a changeable message sign (“CMS”) as part of the traffic control layout. One (1) CMS shall be installed, for each direction of traffic affected, with the lane closure information, dates and length of closure, five (5) days prior to the actual closing. Install one (1) flashing arrow board for each travel lane closed. Temporary lane closures exceeding 1,000 feet in length shall have Type III barricades placed in the closed lane.

- ▣ All temporary night lane closures and traffic alignment shifts shall have plastic drum-like channelizing devices with steady burn lights in the lane closure taper.
- ▣ Temporary lane closures will not be permitted during inclement weather, nor any other time when, in the opinion of the Alamo RMA, the lane closure will be a greater than normal hazard to traffic.
- ▣ The Design/Builder shall furnish qualified and trained flaggers as required to adequately control traffic. Qualified flaggers shall conform to the requirements set forth in the *TMUTCD*.
- ▣ The Design/Builder shall provide an off duty law enforcement officer(s) for each closure and additional officer(s) for each intersection closed or within the detour. This requirement is cumulative and if multiple lanes and/or intersections are closed, the Design/Builder will be required to provide multiple officers.

Restricted Hours. No temporary lane closures, which restrict or interfere with traffic, will be allowed during restricted hours, 5 AM and 10 PM, Monday through Friday. In addition, no work which restricts or interferes with traffic shall be allowed from 12 noon on the day preceding to 9 AM on the day following a legal holiday which falls on a Friday or Monday. The Alamo RMA shall have the right to lengthen, shorten, or otherwise modify these restrictions as actual traffic conditions may warrant.

Lane Reduction. The Design/Builder may reduce the number of travel lanes by one (1) lane in each direction during the hours of 10 PM to 2 AM and by two (2) lanes during the hours of 2 AM to 5 AM.

Moving Lane Closures. Truck-mounted crash cushions shall be used for moving lane closures.

Full Roadway Closure. The Design/Builder may fully close the total roadway from 2 AM on Saturday to 5 AM on Monday or for short-term durations upon approval of the Alamo RMA and in accordance with the TCP. The Alamo RMA will have the right to lengthen, shorten, or otherwise modify the foregoing restrictions as actual traffic conditions may warrant.

Contingency Plan. The Design/Builder shall provide the Alamo RMA a contingency plan for reopening closed lanes, roadways, and ramps to traffic in the event of an equipment breakdown, shortage of materials and other production failures, or when the Alamo RMA determines it necessary for traffic reasons. The Design/Builder shall submit the contingency plan one (1) day prior to the closure.

23.3.3 Signage

Sign Relocation. All regulatory signs, affected by the construction, shall be temporarily relocated outside the construction area, but remain visible to the traffic, until the sign can be placed in the permanent location.

Street Name Signage. Street name signage shall be maintained at all times. Where the only existing signs are small city or county signs located at the intersection, the signs shall be temporary relocated to maintain the 911 emergency system.

Covering. All existing or newly installed signs not consistent with the traffic operations shall be covered. If a sign is to remain covered for more than thirty (30) days, a solid opaque material, covering the entire legend or part of the legend, shall be used.

Post-Mounting. When temporary signs are to remain in the same location for more than ten (10) consecutive days, the signs must be mounted on a post. Portable signs which are set up and taken down each work shift are exempt of this requirement. All signs mounted on posts must be placed into the ground at the proper height and lateral offset, as detailed in the *TMUTCD*.

Optional Signs. The Design/Builder shall install “Fines Doubled in Work Zones” signs only at the approach to the Project construction corridor. The Design/Builder shall install “Road Work Ahead” and “End Construction” signs at the construction limits for all intersecting roads and streets.

Work Zone Speed Limit. A work zone speed advisory will be required at all times when lane closures are in use and workers are present. Work zone speed advisory must be provided in accordance with the *TMUTCD* guidelines and standards.

Side Street Signage. The Design/Builder may be required to place, maintain, or modify traffic control signing, markings, devices, or traffic signals outside the limits of the Project. When such changes are no longer required for the maintenance of traffic, the Design/Builder shall return all such altered items to their original preconstruction state within five (5) Business Days, unless directed otherwise by the Alamo RMA.

23.3.4 Temporary Pavement Markings

The TEC shall ensure a clear direction for traffic through the construction zones by:

- ▣ Inspecting and replacing all damaged or missing pavement markings, including temporary raised pavement markers (“TRPMs”), daily.
- ▣ Cleaning all signs and pavement markings, as necessary.
- ▣ Supplementing other pavement markings with TRPMs as permitted and where required.
- ▣ Cleaning of all adhesive material and repairing any holes in the pavement when the TRPMs are removed.
- ▣ Placing non-removable temporary markings only where they are not required to be removed. Removable preformed plastic pavement markings shall be required at all other locations. Paint may be permitted, with approval of the Alamo RMA, when the temperature prevents the placement of removable pavement marking. If paint is used as an interim pavement marking, an application of water-based traffic marking paint may be used.
- ▣ Replacing and maintaining all temporary pavement markings, as necessary, throughout the construction period.
- ▣ Properly removing all conflicting pavement markings, including lane lines in transition areas and improper colors.
- ▣ Placing lane lines in alignment change areas and supplementing with TRPMs. Alignment change areas include lane closure tapers, sharp curves, and shifts to temporary roadways.

23.3.5 Existing Property Fence

The Design/Builder shall ensure the existing right-of-way property fence is closed and secured, except when work requires the removal of the fence. The fence shall be secured at the close of each work day.

23.3.6 Illumination

The Design/Builder shall maintain existing quantity of street illumination by means of temporary illumination, newly constructed illumination, or a combination thereof, except as otherwise authorized by the Alamo RMA.

23.3.7 Coordination

The Design/Builder shall notify the local government entities, before any work is begun on their streets and roadways.

23.4 MOT Design Criteria

23.4.1 Design Parameters

Design Vehicle. The MOT Plan shall accommodate the WB-50 design vehicle.

Design Speed. The main lane design speed shall be 55 mph, except for major alignment transitions, where the design speed may be reduced to 45 mph. The design speed for other roadways shall be no less than 10 MPH below the existing posted speed.

Number of Lanes. Design/Builder shall maintain an equivalent number of lanes as the existing facility except as specified below in Exhibit C – Technical Provision 23.4.2 (Allowable Closures).

Lane Widths. Each lane shall be 11 feet minimum wide.

Temporary Devices. The Design/Builder must conform to all requirements of Report 350 of the National Cooperative Highway Research Project (“NCHRP”) for temporary traffic control devices.

23.4.2 Detour Routes

The Design/Builder shall use State routes wherever applicable. If State routes are unavailable, the Design/Builder may use city and/or county arterials, provided all necessary permits have been obtained from the owner of the facility. All detours must be reviewed by the Alamo RMA prior to implementation.

The Design/Builder shall install and maintain temporary detour signs to guide motorists through the detour route as necessary and reviewed by the Alamo RMA.

23.4.3 Temporary CTB and Attenuators

The Design/Builder shall use temporary CTB and attenuators, conforming to *TMUTCD* Standards, to protect the traveling public from the following:

- ▣ Fixed objects within the clear zone.
- ▣ Drop-off areas exceeding the guidelines established by TxDOT for longitudinal joints and edge drop-offs.
- ▣ Slopes steeper than 3:1

Low profile barriers shall be permitted only at locations with design speeds of 45 mph or less.

23.4.4 Pedestrian Access & Recreational Trails

The Design/Builder shall maintain, when possible, pedestrian access to all sidewalks and intersections along existing City streets. If access cannot be maintained, proper warning signs and detours shall be provided.

23.5 Traffic Control Devices

Traffic control devices include all items used to direct traffic through the construction zone such as, but not limited to, barricades, barricade weights, warning signs, directional trailers, flashers, cones, drums, pavement markings, flaggers and off-duty police officers as required to properly maintain traffic.

The Design/Builder shall modify its traffic control devices if requested and as deemed necessary by the Alamo RMA.

Inspection, Repair, and Replacement of Devices. The TCE or designated TCS shall inspect the traffic control devices on the Project several times a day. These inspections shall continue during periods of non Work, including Work suspension.

The TCE or designated TCS shall immediately repair or replace any traffic control device not functioning as designed to ensure the safety of public traffic and construction personnel.

Emergency Repairs. The MOT staff shall be on call twenty-four (24) hours per day, seven (7) days per week, and able to respond within thirty (30) minutes of being notified of a traffic emergency. The name and telephone number of the TCS responsible for the maintenance of the traffic control devices must be furnished to the Alamo Project Engineer during the weekly Project meeting.

Removal of Traffic Control Devices. The Design/Builder shall remove any traffic control device which is no longer required for the traffic situation. The removal shall be in total and include, but not limited to, barricades, barricade weights, warning signs, directional trailers, flashers, cones, drums, and pavement markings. The removal of barricade weights shall include any spilt sand from the weight.

23.6 MOT Compliance

Failure to Comply. If the Design/Builder fails to comply with the reviewed TCP and details within 24-hours after notification of the condition, the Alamo RMA may suspend all or part of the construction operations. If the Design/Builder does not take appropriate action to correct the situation, the Alamo RMA may proceed with the corrective action using its own forces and deduct such costs from the monies owed to the Design/Builder. If the Design/Builder's operations are suspended, due to non-compliance, the normal contract time assessment will not cease while corrective actions are taken.

Deficiencies and Penalties. The Design/Builder must respond immediately when notified by the Alamo RMA of a unsafe condition with the traffic control devices. If the Design/Builder does not correct the deficiency within one (1) hour of receiving a notification, an amount of \$1,000 per hour or any portion thereof, will be charge for each incident of failure to maintain the traffic control devices in accordance with the requirements of the Agreement and the TCP. Penalties associated with the noncompliance charge will be deducted from the moneys owed the Design/Builder on a monthly basis.

Suspension. The Design/Builder shall not be relieved of the responsibility to provide safety to the traveling public while the Project is under full or partial suspension.

23.7 Safety Provisions

23.7.1 Courtesy Patrol

The Design/Builder shall operate a Courtesy Patrol, providing all required personnel, materials, equipment, facilities, and incidentals. The Courtesy Patrols' main function is to assist stranded motorists and provide traffic control. The TEC shall manage the program.

Operation Times. Except during periods of Project suspension authorized by the Alamo RMA, one (1) Courtesy Patrol vehicle shall operate each work day, special event, and whenever lanes are closed on the Project.

Vehicles. The Design/Builder shall provide cellular telephones and service for the Courtesy Patrol operators. The vehicle shall have fuel and water provisions to assistance stranded motorists. The vehicle shall also have Arrow boards, CMS boards, and/or attenuators, as deemed necessary, for protection of the Courtesy Patrol operators.

Operators. The Design/Builder shall ensure the drivers chosen for this service have had a criminal background and motor vehicle license check. The drivers shall present a consistent, clean, professional look and be courteous to the public at all times.

Duties. Specific duties include:

- ▣ Removing disabled vehicles from travel lanes; arrange for towing of vehicles when necessary.
- ▣ Transporting drivers and passengers to locations within five (5) miles of the Project.
- ▣ Making local emergency telephone calls for stranded motorists.
- ▣ Reporting issues of public safety, such as a defective CMS, any dangerous traffic condition, and any traffic incidents to the TCS.
- ▣ Notifying the Texas Department of Public Safety of unattended vehicles.

Towing. The Design/Builder shall arrange for towing services with a local company for the Project.

Reporting. The TEC shall report weekly the numbers, types, and times of day of the Courtesy Patrol assistance to the Alamo RMA.

23.7.2 Emergency Response

Prevention, Mitigation, and Notice. If an emergency occurs affecting the safety or protection of persons, the Project, or the property adjacent thereto, the Design/Builder shall immediately act to prevent and mitigate the threatened damage, injury, or loss. If the Design/Builder believes such emergency or damage has caused any significant change in the Project or variation from the Agreement, the Design/Builder shall give the Alamo RMA written notice within five (5) Business Days of such occurrence.

Response Assistance. The Design/Builder shall cooperate with law enforcement and emergency response agencies in their response to emergencies on the roadways and detours open to public traffic within the construction work area. The Design/Builder shall help implement these agencies' pre-approved response plan for accidents, fires, hazardous substance spills, or other emergency events along the Project. In an emergency, the Design/Builder shall make personnel and equipment available at the direction of law enforcement or emergency response personnel in response to reasonable requests to protect public safety. The Design/Builder shall cooperate with law enforcement personnel in all investigations of traffic accidents and incidents along the Project.

Access Routes. The Design/Builder shall work with emergency service providers to address concerns about emergency access to the highway corridor. The Design/Builder shall identify for Law enforcement and emergency response agencies specific routes for emergency access as agreed to by the Law enforcement and emergency response agencies, the Alamo RMA, and the Design/Builder. These may include, but are not limited to, openings in barriers, median openings, gates, emergency use of Design/Builder's haul routes, and temporary graded roadways. The Design/Builder shall identify the locations of these emergency access points and routes as part of the TCP revisions and details.

Access Notifications. The Design/Builder shall notify the Alamo RMA, the Texas Department of Public Safety, and local and county emergency agencies of the access routes to and through the construction corridor. The Design/Builder shall notify emergency service providers of any major changes to the TCP and/or construction sequencing. These written notifications shall be provided to the contact persons identified in the Public Information Program ("PIP") no later five (5) Business Days of prior to the change

Contact Notifications. Within twenty (20) Business Days of NTP, the Design/Builder shall provide the Alamo RMA the names and all telephone numbers, business, residential, and cellular, for the emergency personnel, Project and response agencies, to be contacted on the Project. This contact list shall be updated as necessary. No construction work may commence until the contact list has been provided.

Emergency Response Plan. An Emergency Response Plan, complete with affected agencies, contact persons, and telephone numbers, shall be included in the PIP.

23.7.3 Worker Procedures and Precautions

Excavations and Other Hazards. No unprotected open excavation will be permitted adjacent to the through traffic roadways or walkways. Excavations on both sides of the roadway will not be permitted at the same time. The Design/Builder must provide protection for the traffic from excavations, drop-offs, falling objects, splatter, or other hazards which may occur during construction.

Vehicle Access. The Design/Builder shall prevent all access to or from any residential neighborhood by construction equipment, material deliveries, hauling of excavated materials of any kind, or employees' private vehicles. All construction entrances and exits shall be accepted by the Alamo RMA.

Parking. The Design/Builder, Subcontractors, and Suppliers shall not park vehicles or construction equipment so as to obstruct any traffic control devices or traffic flow. Workers may only park their private vehicles within the Project limits at designated sites accepted by the Alamo RMA.

Storage. The Design/Builder shall not store materials or equipment within thirty (30) feet of through traffic lanes unless accepted by the Alamo RMA. When accepted, the Design/Builder shall provide barricades or barriers as required by the *TMUTCD*.

Nighttime Work. The Design/Builder must provide adequate illumination for the work area during nighttime work activities. A work plan shall be established to minimize the noise and lighting effect on adjacent commercial and residential properties.

Vehicle Warning Devices. All of the Design/Builders', Subcontractors', and Suppliers' mobile equipment, operating on the Project, shall be equipped with operable warning lights and backup alarms meeting the appropriate requirements. All equipment operating during night time hours shall have "white noise" backup alarms.

23.8 Hauling Operations

All hauling operations, whether to bring materials to the Project or to haul material off the Project, shall comply with the TCP and this Exhibit C - Technical Provision 23.

Hauling Plan. The Design/Builder shall prepare and submit, at least twenty (20) Business Days before the start of any hauling, a hauling plan to the Alamo RMA for approval. The plan shall include:

- ▣ Locations of all haul roads.
- ▣ The type and quantity of materials anticipated to be hauled.
- ▣ The duration required for the haul roads.
- ▣ The location of all borrow and waist sites.

Failure of the Design/Builder to obtain the Alamo RMA approval will delay the commencement of the hauling operations.

Road Restoration. If non-approved roadways are used to haul materials, the Design/Builder shall restore the roadway to a condition at least as good as the condition before the hauling operations. If the Design/Builder does not restore the damaged road(s), the Alamo RMA may proceed with the corrective action using its own forces and deduct such costs from the monies owed to the Design/Builder.

24 - Warranties

The Alamo RMA requires warranties on construction items to ensure both the initial and long-term quality of the Projects' products, workmanship, and materials.

24.1 Referenced Standards and Guidelines

All warranties shall conform to current versions, at the time of Agreement Execution, of the following documents:

- ▣ *TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges*, adopted by TxDOT on June 1, 2004.
- ▣ *TxDOT Pavement Design Guide*
- ▣ *TxDOT Pavement Management Information, System Rater's Manual*
- ▣ *TxDOT Pavement Marking Handbook*

24.2 Summary of Project Warranties

The Design/Builder must Warranty the Work in accordance with the Contract. Warranties shall commence at FA and must remain in effect as specified in Table 24.2 (*Summary of Project Warranties*). Manufacturer's Warranty period shall be used if the manufacturer's period exceeds the requirements specified in Table 24.2

Table 24.2
Summary of Project Warranties

<i>General Subject</i>	<i>Warranty Period</i>
Flexible Pavement:	2 years
Rigid Pavement:	2 years
Structural Concrete	2 years
Roadway Settlement	2 years
Noise and Retaining Walls Settlement	2 years
Trenches Settlement	2 years
Striping	2 years
Signing (Permanent)	2 years
Traffic Signals	2 years
Lighting	2 years
Buildings and Toll Structures	2 years
Steel Paint System	2 years
Turf Establishment/Landscaping	1 year
Intelligent Transportation System (ITS)	2 years