# 200 GENERAL

Normally, the first stage of roadway construction is clearing and grubbing of the roadway area. The Inspector should review the Project Plans, Standard Specifications, and Special Provisions covering this phase and make certain that the work is performed as required. Survey and staking activities should be completed before clearing and grubbing takes place and conform with sections 105.01, 107.11 and 925-3.01 of the standard specification. Particular attention should be given to keeping the contractor's activities confined within the limits of the slope stakes. The disposal of the resulting materials should be as directed in the contract documents. However, if disposed of off site, a letter granting permission should be in the project files.

The Resident Engineer and Inspector should be thoroughly familiar with the Project Plans and Special Provisions, soil profile, all right-of-way (ROW) agreements, and borrow pits before grading operations are started. Together, the Resident Engineer (RE) and Inspector should make a plans-in-hand inspection of the project noting the following:

- Clearing limits shown on the Project Plans versus clearing actually needed
- Typical sections shown on the Project Plans
- Soil profile, cut slopes, and shrink and swell factors indicated
- Drainage profiles (check that existing drainage has not changed, proposed drainage does not flow off the right-of-way, and natural drainage isn't changed to adversely affect landowners or structures upstream and downstream)
- Utilities, fences, or other obstructions to be moved or protected
- Private property boundaries and other restricted areas
- Vegetation, survey monuments, archeological sites, or other physical features to be protected, preserved, or relocated
- Borrow sources and access roads
- Unusual soil/moisture conditions such as springs, seeps, or swamps
- Construction traffic control requirements
- Subgrade/embankment stabilization requirements and ROW infringements or unresolved ROW agreements.
- Noxious and invasive species within the disturbance area

As noted above, the Resident Engineer should inspect the drainage of lands adjacent to the highway and make certain that all drainage structures, inlets, outlets, channels, and dikes are properly located. The Resident Engineer should investigate the need for any additions to drainage infrastructure with the design team and Project manager.

Special care should be given to locations of material sources in streambeds. The impact on structures and other developments due to changes in the stream flow must be carefully considered. Impacts can extend a considerable distance from the point of disturbance so it is often necessary to consult with the hydraulics specialists before approving work in streambeds.

Highway construction projects have been identified as one of the primary sources of soil erosion and sedimentation. Construction of highways typically disturbs large areas of natural vegetation that can result in an accelerated rate of soil erosion. During the course of the grading and draining, frequent inspections should be performed to determine that the sequence of operations is such that damage to any of the work will be kept to a minimum in case of heavy rains (see Subsection 104.09).

For roadway excavation, the Inspector should review the soil profile while inspecting the work and should note radical variations in the actual soil conditions compared with those on the soil profile. Major differences in the soils encountered from those indicated could justify changes in the design. Should wide differences be found, it would be advisable to request a review of the conditions by the Geotechnical Services Section. additional review may be needed by other Design Sections. This is especially critical at finished subgrade elevation. The plasticity index (PI) and amount passing the #200 sieve of the final subgrade material are checked against the design values to determine whether adjustments to the pavement structural section are necessary. This must be done as soon as possible since any increase in pavement section could mean extra surveying and additional work by the contractor, both may have an impact on the contractor's schedule. (See Subsection 203-3.03(D), Unsuitable Materials).

For embankment construction, the entire subgrade will be proof rolled as the lifts are being placed. The inspector should focus on watching the embankment as it interacts with the heavy construction equipment passing over it. Make notes and correct any areas where pumping (movement of the material), rock pockets (areas with excessive rock and very little fine material) and standing surface water (may lead to pumping later) are observed. Paying close attention to the effects the machinery has on the underlying grade will ensure uniform results as the grade approaches final elevation. The entire subgrade must be proof-rolled with a loaded water truck or any other heavy piece of equipment. The Inspector should see that any unstable spots in the natural ground are corrected before any embankment lifts are placed. Deep embankment fills, especially near structures, should be given special attention to reduce potential for excessive settlements.

The Inspector must be familiar with the location of approved borrow pits and the quantity and quality of materials to be removed.

The Inspector is responsible for seeing that the grade is constructed in accordance with the Project Plans to the limits indicated by the slope stakes. If there is any question concerning the placement or markings of a slope stake, the Inspector should contact the contractor’s survey party chief for clarification.

**Construction of Detours**

Many construction projects require detours prior to building the roadway. Usually, the need for such detours is foreseen, and detailed information about detour construction is given in the Project Plans or referred to in the Standard Drawings. An on-site inspection of all proposed detours should be made. Any recommendations that might serve to add to the safety of the traveling public should be referred to the Resident Engineer.

When changes are made to the detours shown on the Project Plans or new detours are added, the changes are to be submitted by the contractor and reviewed by the Regional Traffic Engineer. (See Section 701, Maintenance and Protection of Traffic)

The Department recognizes its obligation to provide safe, easy-to-drive detours. This, along with minimal delay, is a benefit to our public relations.

Proper signing, marking, and lighting of detours are extremely important. All detours should be signed and marked as directed in Part 6 of the MUTCD with the ADOT Supplement.

After the completion of detour construction including signing, striping, and lighting, the Resident Engineer should make a daytime and nighttime inspection of the detour. The traffic control coordinator for the project should do frequent re-inspections and documentation of the detour.

A complete record including diagrams, plans, photographs and/or video recordings must be kept showing all traffic control devices and the detour including any changes to either. Plans and diagrams should show the type, location, and sizes of all signs, barricades, and any other traffic control device. The photographs

and video recordings should be taken to provide a sequence of pictures showing the detour from beginning to end.