

Statement of Ralph L. Stanley
Administrator of the Urban Mass Transportation Administration
Before the Committee on Public Works and Transportation of the
United States House of Representatives on December 13, 1983

Good morning, Mr. Chairman and members of the Committee. I am pleased to have the opportunity to address the Committee today about construction management of UMTA-financed projects. With me today are the UMTA Chief Counsel, Kent Woodman, and Associate Administrator for Grants Administration, Bob McManus.

Your letter inviting me to testify raises the broad question whether the capital assistance program as administered by the Urban Mass Transportation Administration (UMTA) guarantees satisfactory quality assurance and quality control on this federally-funded construction. The letter cites the Miami experience as a case in point raising your concern, but states that your interest goes beyond this specific construction project to the overall UMTA program as well. It also states your understanding that UMTA has been examining several options for improving quality assurance and quality control in the program it administers, and asks that I discuss these options and any recommendations in my testimony.

Mr. Chairman, as you know, I am relatively new to UMTA, having joined the staff as a Special Assistant to the Administrator on September 26 of this year. I was confirmed as Administrator on November 18, 1983. Therefore, while I am of course familiar with these issues, my personal experience with them dates only from September.

I would like to begin with a brief reference to the Miami Metrorail situation, inasmuch as it led to an overall internal assessment by UMTA of its construction management oversight practices. I will then briefly review UMTA's construction management oversight practices compared to those of other Federal agencies, some within the purview of this committee, and the options we have considered relating to this issue. I will also briefly describe construction management as conducted by a number of UMTA's grantees on new systems.

In Miami, the Dade County Transportation Authority (DCTA) initially delegated all field inspection responsibilities to their consultants, Kaiser Transit Group (KTG), but maintained a near duplicate construction management staff for positions of Area Engineer up to the Chief of Construction. Responsibility for quality control was that of KTG while the function of quality assurance was being performed jointly by KTG and DCTA. The only exception to this was that the girder manufacturer, R.T. Joint Venture, was contracted to perform quality control on the precast girders with KTG providing continuous quality assurance inspection.

As construction progressed, DCTA assumed greater responsibility for field inspection and eventually took over all construction management functions and responsibilities. Before the transition, an organization separate from the field inspection forces was responsible for quality assurance. After the transition, the authority/responsibility for quality assurance of completed structures was transferred to the Construction Division and therefore was no

longer independent of production.

UMTA oversight of the Metrorail project is performed by UMTA Region IV personnel in Atlanta. They attend quarterly review meetings and are concerned primarily with cost and schedule performance of the grantee. cursory inspection of construction progress is all that is possible with the current staff limitations.

With respect to Miami, on March 15, 1983, the Department of Transportation Inspector General (IG) advised the UMTA Administrator that there were potential construction problems on the Miami Metrorail project. UMTA decided to investigate, and retained the Department's Transportation Systems Center (TSC) to assist it in reviewing the IG's concerns and conducting on-site investigations. The report of this study team was submitted to the Administrator in June, and apart from its general conclusions and recommendations with respect to Miami, recommended that UMTA increase its attention to quality assurance and quality control plans for major capital assistance grants and oversee their implementation. This recommendation generated an overall assessment of UMTA's construction management oversight practices which I shall discuss momentarily.

With reference to Miami as a case in point, UMTA determined that further Federal oversight would be appropriate and beneficial. Accordingly, a respected engineering firm, Morrison-Knudsen, was retained to assist UMTA in reviewing and analyzing Miami's efforts to correct construction deficiencies,

and in otherwise monitoring for us the completion of the Metrorail project. UMTA awarded the Morrison-Knudsen contract in October of this year. I would note that Miami officials have been very cooperative in working with Morrison-Knudsen. A chronology of major events from the time UMTA was contacted by the IG until the present is attached to my testimony.

The construction management difficulties in Miami have caused UMTA to take a serious look at the issue of what is the appropriate role for UMTA to play in construction management oversight of federally funded projects. To assist the agency in determining what options are available to provide construction management oversight, a review was undertaken of the construction management procedures used by UMTA and other Federal agencies in large construction projects.

We examined construction management practices and techniques utilized by other funding agencies that do not themselves carry out construction activities. Such agencies include the Federal Highway Administration (FHWA), the Federal Aviation Administration (FAA), the U.S. Environmental Protection Agency (EPA) and the World Bank. Except for the World Bank, which works through foreign governments, all the agencies examined provide funds to local governments, either general or special purpose, who in turn contract with private firms for actual construction work. It is the local government that owns, and in most cases operates, the facility that has been constructed with Federal financial assistance. In some instances, there are norms or standards which the funding agency mandates: safety, access for handicapped persons, utilization of

minority contractors, compatibility with a national system (e.g., highways, airways) and so forth.

A question both important and sensitive, then, is what role and what interest does the Federal Government have in overseeing such construction projects, be they waste water treatment facilities, airport expansion activities, highways or mass transit construction. Our review concluded that the examined agencies were relatively consistent in the general way they saw the Federal role. The local government performed all direct and routine construction management functions; the Federal agencies endeavored to review the progress of the local governments to ensure that the Federal investment was being prudently managed. The Federal agencies, for example, did not generally monitor day-to-day construction work. But they did review progress reports, budget documents, quality control records, and so forth, and conducted occasional site visits. The Federal agencies saw their role as oversight, not direct construction management.

It may be useful at this point to define the terms quality control and quality assurance, as they are constantly used in the context of this construction management subject, and the distinction between them is somewhat critical to a proper understanding of how a Federal agency can and perhaps should oversee construction activity carried out by its grantees. Quality control is a routine systematic procedure whereby steps are taken during a construction project--inspections, measurements, and testing of completed work--to insure that various phases of the activity are being built to proper standards and

specifications. Quality assurance, on the other hand, can be described in a shorthand way as a subsequent audit of the quality control process.

It should also be pointed out that we do finance the Quality Assurance/Quality Control function of our grantees. To put this in context, normally ten to twelve percent of total construction cost is for the grantee's construction management process. This cost generally includes all of the grantee's activities related to control of the construction process. They begin when the construction is initiated. Initial design and procurement activities which take place before construction are not included in construction management. Forty percent of construction management cost typically is for the grantee's Quality Assurance/Quality Control function (4-5% of the total construction cost), whereas the remaining 60 percent is for other activities including administration, design support and contract monitoring.

I would now like to address the options that UMTA has considered and evaluated for handling the construction management issue.

The first of these would be to increase UMTA staff to perform construction management oversight. At the present time UMTA has 20 field engineers available to do construction management oversight. None of these individuals are assigned to construction management oversight on a full-time basis. Carrying out construction management oversight with UMTA staff would require a very significant financial commitment to allow for additional staff and

expanded duties. It would also require a significant and inappropriate increase in Federal involvement at a time when, under Administration policy and the concept embodied in the recent Surface Transportation Assistance Act, grantees are being given more control over their projects. Therefore we feel that this option would not be appropriate.

The second option would be to use FHWA engineers to perform construction management oversight on UMTA-funded projects. The FHWA has approximately 525 field engineers engaged in performing construction management oversight on FHWA projects, and they are working at near capacity now. Even if FHWA had additional capacity, the FHWA engineers are not experienced in all particular facets of transit construction, such as signalling, command and control, power distribution, and electromagnetic interference. These are very different from the construction elements of highway projects. Therefore, it would require at least the same significant financial commitment for FHWA to do UMTA's construction management oversight as it would for UMTA's engineering staff to perform that role itself. In fact, it might require more money to rely upon FHWA, since the entire staff would require training in the particular facets of transit projects. It is my understanding that the FHWA is willing to assist UMTA in performing construction management in its area of expertise. However, with a 50% increase in its own program, resulting in a significant acceleration in construction and rehabilitation of our Nation's highways and bridges, the FHWA's first priority must be its own program.

The third option would be to use UMTA research and development funds to retain consultants to perform construction management oversight on a direct contractual basis with UMTA. This, in fact, is similar to the approach that we took in Miami where we hired Morrison-Knudsen, and that arrangement is working very well. However, we view the situation in Miami as an exception, not one we consider a national model. We see several serious disadvantages to this approach. In our opinion, the R&D program was not enacted by Congress to pursue this type of activity. In order to fund construction management under R&D, existing R&D funds and staff resources would be strained, displacing activities on more appropriate R&D projects. In addition, funding construction management oversight under R&D would give UMTA a greatly heightened role at a time when we are trying to give grantees more control over their programs. Let me note that an appropriate routine use of R&D funds for construction management is to provide technical assistance to grantees in the form of guidelines and seminars, an activity which we are already undertaking.

The fourth option is to require grantees to use capital grant funds to contract with consultants to perform construction management oversight. That could be accomplished under the current UMTA program by making construction management oversight a budget and scope of work item in full funding contracts. One potential problem could be that of accountability in that the consultant would be paid directly by the grantee. However, I believe

that we can impose sufficient contractual conditions, such as requiring an independent reporting relationship between the contractor and the Federal Government, to guard against any such conflicts. As I've just described it, this fourth option would require the grantee to pay a 25 percent local share for construction management oversight.

I would like to turn now to construction management practices in several new rail cities other than Miami. In all of these cities, UMTA has worked with the transit authorities to set up construction management systems. The transit authorities in Atlanta, Baltimore, Buffalo, Washington, D.C., and Portland all use a combination of in-house personnel and consultants to perform construction management. I will briefly summarize construction management practices in those cities.

In Atlanta, project quality control is carried out primarily through consultant-provided resident engineers and inspectors. Quality Assurance is carried out by the Metropolitan Atlanta Rapid Transit Authority (MARTA) Construction Division. UMTA's project management oversight of MARTA is carried out by the Region IV staff, who review project plans and specifications. We are not aware of substantial construction management difficulties on the MARTA project.

In Baltimore, consultants, working under the direction of the Mass Transit Administration (MTA) staff, oversee the quality control contractors. Within the consultant's construction management team, a separate staff is set up to perform internal audits and inspector checks. UMTA's oversight of the MTA

is performed by the Region III staff. Their activities cover project design reviews, procurement (including construction bidding) progress reports and quarterly project management reviews. The staff also reviews and monitors the grantee's proposed project management team, its organization, schedule, finance, project controls and proposed quality control/quality assurance plans. Baltimore has not experienced major construction management difficulties.

In Buffalo, the Niagara Frontier Transportation Authority (NFTA) performs quality assurance reviews in-house and uses a consultant for most quality reviews, and construction reviews. UMTA's oversight of NFTA is performed by the Region II staff. Staff holds quarterly review meetings with NFTA to discuss progress, as well as any financial or construction problems, on the light rail project; reviews NFTA's proposed change orders and approved change orders; and makes site inspections of key activities at the quarterly review meetings and when specific problems arise. In addition, the regional staff receives information from the two New York State employees who are at the construction site at all times. UMTA also performs spot checks of construction records for the light rail project. Buffalo has not experienced major construction management problems, although it has had two significant construction problems of which we are aware. The first was water infiltration in the main line tunnel. Although the cause of the problem is in dispute, NFTA proceeded to hire a contractor to waterproof the main line tunnel. The second problem was that the thickness of the liner in the main line tunnel is not

sufficient in some places. In the course of grouting the tunnel to repair the water infiltration situation, the contractor found insufficient thickness, tested the liner, and repaired where necessary. The IG and the New York State inspectors also found some indications of insufficient thickness of the main line tunnel liner in other places. Corings have been taken and tested for thickness and strength. Repairs are being made as necessary.

In Washington, D.C., the Washington Metropolitan Area Transit Authority (WMATA) in-house staff includes two contracting officers and a construction engineer for each line. The construction engineer performs the quality assurance function. Periodically a WMATA management team consisting of about ten people visits each project site to conduct an intensive construction management inspection/review. The quality control consultant has a construction manager who oversees three area managers, who have close contact with their resident engineers. Field office staff consists of a resident engineer, one or two office engineers, and a number of inspectors which varies with the size and complexity of the construction element. The resident engineer performs the quality control function, can conduct spot inspections, and has a right to reject any construction materials not conforming to specifications. UMTA's oversight of WMATA is performed by the Region III staff. The oversight involves holding quarterly progress meetings with WMATA at which they review construction progress and discuss problems, if any, as well as any required corrective measures, receiving monthly progress reports from WMATA, and conducting occasional on-site inspections. We are not aware of any substantial construction management difficulties at WMATA.

In Portland, Tri-Met, the regional transit authority, is constructing a light rail system. A significant portion of the project involves highway construction, and therefore is subject to the Federal Highway Administration's (FHWA) review rather than that of UMTA. The portion of the project that UMTA is overseeing involves about \$100 million in construction, for track installation, signalization, electrification, maintenance facility construction, and vehicle procurement. At the beginning of the light rail project Tri-Met set up a special project management office. The project management office, headed by a light rail construction expert, has 4 supervisors, one for each line section. The office performs both quality control and quality assurance. The civil and systems engineering firms on the project are also providing quality control supervision. UMTA oversight of Tri-Met is performed by the regional engineer. The Region X staff holds quarterly progress management meetings with Tri-Met, FHWA, and the Oregon Department of Transportation, at which they discuss Tri-Met's quality control and quality assurance efforts with the transit authority. The regional staff also reviews Tri-Met's monthly engineering reports. Those reports contain considerable technical detail, as well as project budget and schedule issues. So far Tri-Met has not experienced construction management problems.

Mr. Chairman, I have fully reviewed the context in which UMTA's decisions on construction management oversight must be made and the options for handling those decisions. The question now is, where do we go from here? I believe that the situation in Miami is exceptional if not unique. I would note that UMTA has been providing financial assistance for transit for almost two decades. In that time there has been approximately \$18 billion in federally-assisted construction, with few significant construction management difficulties. However, based on the review we've conducted, some increase in the extent of construction management oversight activities on UMTA funded projects may be warranted. But it is not a giant step that is needed, and we should be concerned about overkill. Therefore, I would not favor significantly increasing UMTA direct staff oversight or routinely using research and development funds to hire consultants to perform construction management oversight. Instead, at present I believe that we should continue to explore dealing with this issue through use of the existing capital resource, by requiring, for example that grantees on major projects contract with consultants to perform construction management oversight.

Thank you again for the opportunity to discuss this important issue with you. I would be glad to answer any questions that you might have.

Miami Metrorail Major Events

Dates

Events

March 15, 1983

Administrator (A. Teele) and Executive Director (R. Sander) advised by the DOT Inspector General of potential problems of non compliance with contract specifications.

March 21, 1983

R. Sander and staff (H. Evoy) met with R. Ravera and Director of Transportation Systems Center (J. Costantino) to establish a DOT Review Team and prepare a statement of work for review of Metrorail project.

March 23, 1983

A. Teele, R. Sander, Associate Administrator for Technical Assistance (P. Benjamin) and other URT/UGM engineers met with Miami delegation in Washington, D.C. Delegation was lead by M. Stierheim, County Manager; also in attendance from Miami were Dade County Commissioner, C. Oesterle, W. Higgins, B. Powell, H. Priluck, and W. Talbert.

March 28, 1983

A. Teele sent M. Stierheim a letter announcing the purpose of the DOT Review Team and a copy of the technical review plan.

R. Sander and staff (H. Evoy, W. Dougherty) travelled to Miami to meet with M. Stierheim and staff.

Review Team study was initiated on this date.

April 13, 1983

R. Sander met with Review Team in Miami to discuss preliminary findings.

June 1, 1983

Review Team's draft final report made available to UMTA officials for review.

June 2 and 3, 1983

Miami representatives H. Priluck and J. Crognalle travelled to TSC to review draft final report.

June 8, 1983

Miami delegation (Stierheim, Higgins, Priluck, Crognalle, Talbert) travelled to Washington to review draft final report (Volumes I and II).

June 15, 1983

R. Ravera delivered final report to A. Teele.

Miami Metrorail officials order county inspectors to tighten oversight of contractors and begin to staff up the quality assurance effort.

June 23, 1983

Official transmittal of Review Team's final report (Teele to Stierheim); 60 day requirement specified for Miami response to Review Team's findings.

June 24, 1983

Miami prepares preliminary response to Review Team's report transmitted by internal memorandum from Stierheim to Mayor and Board of Commissioners. Preliminary Miami response also transmitted to UMTA.

August 22, 1983

Final Miami response to Review Team's findings due in UMTA.

September 1, 1983

Miami transmits response to Review Team's technical assessment, per agreement extending due date.

September 22, 1983	Meeting at headquarters with senior Miami staff professionals and UMTA staff.
October 10, 1983	Contract signed (letter contract) with Morrison-Knudsen (M-K) to conduct review and analysis of Miami's efforts to correct construction deficiencies.
October 13, 1983	M-K on-site and initiates work program.
November 12, 1983	M-K first progress report received by UMTA.
First week of November, 1983	Planned December 18 opening date of Miami Metrorail postponed.