AASHTO-AGC-ARTBA Joint Committee

Subcommittee On New Highway Material and Technologies

2006 Summary Report

American Road & Transportation Builders Association

The Associated General Contractors of America

American Association of State Highway and Transportation Officials 1914

NOTICE

AASHTO-AGC-ARTBA
Joint Committee

Annual Executive Session
September 10-12, 2006

Emerald Pointe Resort & Conference Center
Lake Lanier Island, Georgia





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Scope

The subcommittee has a scope for them to identify the needs and types of new highway materials and technologies required and to provide the appraisal, evaluation, and specification development for new materials and technologies being proposed for the highway industry.

Purpose

The subcommittee through the various task forces provides the liaison between industry and the highway program for the development of new materials and technologies to meet the highway program needs, through the testing grounds of the State highway departments, and provides industry with identification and need for the development of new materials and technologies to meet the needs of the highway organizations.

History and Mission

A Joint Committee was established between the American Association of State Highway and Transportation Officials (AASHTO) and the Associated General Contractors of America (AGC) in 1921. It was formed to consider matters of mutual interest and concern to State highway officials and contractors, and to provide a forum for cooperative resolution of highway construction problems.

In 1972, a merger was approved uniting AASHTO's Joint Committees with the AGC and the American Road and Transportation Builders Association (ARTBA). This merger created the present AASHTO-AGC-ARTBA Joint Committee.

Each participating agency selects a co-chairman and a co-secretary to represent their organization on the Joint Committee. The Joint Committee follows a format adopted in 1961 in which the co-chairmen, after receiving comments and suggestions from members of their organizations, establish an annual agenda of several subjects of current interest and significance. Following yearlong discussions at the meetings of the four regional associations of State highway and transportation officials, the Joint Committee, meeting in executive session, develops official recommendations that are then sent to the member organizations for adoption and implementation.

Joint Committee Functions

1. To provide harmonious relations between State highway and transportation officials and highway contractors that are in the public interest;

2. To discuss jointly those matters which relate to or affect the actual construction of highways. To this end the Joint Committee is responsible for considering any matters of general interest and application that affect both contractors and State highway officials; and

3. To promote an increased scope of joint cooperative activities between State highway departments and highway contractors at the State level.

Since the merger with ARTBA, the Joint Committee also discusses jointly the development, use, and application techniques of highway equipment and materials. It carries on a technical program to increase communication and dialogue between State highway departments and the highway equipment and materials industry so that consideration may be given to new products and the industry may learn of State highway department needs.

To assist the Joint Committee in this effort, special Subcommittees are created to address specific subject areas. Additionally, depending upon the complexity of the subject area, the Subcommittees may be further subdivided into a number of Task Forces.

Mission of Subcommittee on New Highway Materials and Technologies

The mission of the Subcommittee on New Highway Materials and Technologies is to develop guide specifications for new materials and technologies identified for use in highway construction projects. It provides a much needed forum for industry to express their views and concerns relative to the use of new products and to participate in the development of consensus guide specifications that are used by highway and transportation agencies to address the incorporation of these new materials and technologies into construction contracts.

The work of the Subcommittee is accomplished through the use of Task Forces that are created to address the particular items identified. Membership of the Subcommittee consists of three co-chairmen, a representative from each member organization, and a secretary from the Federal Highway Administration. Membership of the Task Forces consists of a chairman, a secretary and representatives from the member organizations interested in participating in the work of the Task Force. Persons with needed expertise in the subject being addressed but who are not members of the member organizations are sometimes asked to participate when deemed appropriate and necessary.

Members of Subcommittee

Co-Chairman: Dan Flowers (AASHTO)

Director of Highways and Transportation
Arkansas State Highway and Transportation Department
P.O. Box 2261, 10324 Interstate 30
Little Rock, AR 72203
Ph. 501-569-2211

Co-Chairman: Cork Peterson (AGC)

Vice President
Peterson Contractors, Inc.
104 Blackhawk Street; Box A
Reinback, Iowa 50669
Ph. 319-345-2713

Co-Chairman: Arthur M. Dinitz (ARTBA)

President
Transpo Industries, Inc.
20 Jones Street
New Rochelle, NY 10801
Ph. 914-636-1000

Secretary: King Gee (FHWA)

Associate Administrator, Office of Infrastructure
Federal Highway Administration
400 7th St. SW, Room 3212
Washington, DC 20590
Ph. 202-366-0371

Mission and Goals of ARTBA

ARTBA was organized in 1902 by a visionary Michigan public official, Horatio Earle, to advocate federal support for the construction of a "Capital Connecting Government Highway System" that would "connect every State capital with every other State capital and with the United States' Capital in Washington." The law enacted in 1956 creating and funding the program to build that system is arguably one of the greatest accomplishments ever achieved by a national association.

The transportation construction industry that ARTBA represents in the Nation's Capital generates over $200 billion annually in U.S. economic activity and sustains the employment of 2.5 million Americans.

Mission and Goals of AGC

The Associated General Contractors of America (AGC), the voice of the construction industry, is an organization of qualified construction contractors and industry related companies dedicated to skill, integrity, and responsibility. Operating in partnership with its Chapters, the association provides a full range of services satisfying the needs and concerns of its members, thereby improving the quality of construction and protecting the public interest.

AGC is the nation's largest and oldest construction trade association, established in 1918 after a request by President Woodrow Wilson. Wilson recognized the construction industry's national importance and desired a partner with which the government could discuss and plan for the advancement of the nation. AGC has been fulfilling that mission for the last 85 years.

AGC is dedicated to improving the construction industry daily by educating the industry to employ the finest skills, promoting use of the latest technology and advocating building the best quality projects for owners--public and private. AGC is committed to three tenets of industry advancement and opportunity: ***Skill, Integrity, and Responsibility***.

Summary of Task Force Status

Currently active Task Forces under the Subcommittee of New Highway Materials and Technologies are:

Task Force 13:	Standardization of Details for Bridge and Road Hardware
Task Force 44:	Electronic Information Technology Applications
Task Force 45:	Protocols, Procedures, and Technology for Asset Management Condition Data Collection

Forty-three task forces have now been disbanded.

Their status and outcomes are now posted on the following website:

http://www.fhwa.dot.gov/pavement/materials/AASHTOAGCARTBA06.cfm

Task Force 13 - Standardization of Details for Bridge and Road Hardware

Patrick Collins (Co-Chair) Ph. 307-777-4484

John Durkos (Co-Chair) Ph. 330-346-0721

Nick Artimovich (Secretary)

Jim McDonnell (ex-officio AASHTO)

Executive Board Members

Dean Alberson	Paul Fossier	Clarence Mabin
Andy Artar	Rick Foster	Rick Mauer
Nancy Berry	Greg Fredrick	Adam Neuwald
Roger Bligh	John LaTurner	Mike Stenko
Mark Bloschock	Matt Leahy	Barry Stephens
Arthur Dinitz	Will Longstreet	BobTakach
Ron Faller		

Task Force Objective:

Recommend standards for bridge and road hardware to ensure optimum characteristics, aesthetics, and economy. Their role is to develop, recommend, and promote standards and specifications for bridge and road hardware used by highway and transportation agencies. Committee make up is from experienced representatives from industry, academia, and state and federal transportation departments. Task Force 13 is the longest standing of all existing subcommittee Task Forces.

What is a standard? They are documented agreements containing technical specifications and criteria to be used consistently as rules, guidelines, or definitions to ensure that material, products, processes and services are consistently used through out the nation's highways. For example, the construction details of the guardrail barrier common on across America's roadside are derived from a 1995 standard "Guide to Standardized Highway

Barrier Hardware." Adhering to this standard ultimately means that highway barriers will perform consistently from State to State to make roadsides safer for errant vehicles.

Activity In 2005 Report:

Task Force 13 held its Fall 2005 meeting in Perdido Beach, Alabama, in conjunction with the AASHTO Technical Committee on Roadside Safety, and its Spring 2006 meeting in Sarasota, Florida. There were 80 to 90 members present at the meeting.

The Task Force's web site is up and running at http://www.aashtotf13.org/ where minutes of past meetings and links to publications are available. The current editions of the Barrier Hardware and the Drainage Products guide are on-line. Others will be posted as they are updated.

The Task Force continues to move forward on revising its publications. There are two NCHRP 20-7 projects and one pooled fund study underway to update the "Guide to Standardized Highway Barrier Hardware," the "Guide to Bridge Rail Hardware" and the "Guide to Luminaire Support Hardware" respectively. The "Guide to Small Sign Support Hardware" has also received NCHRP funding to assist in the update.

The subject of cable barriers has become a hot topic with the states and with industry. Task Force 13 will cooperate with the contractor to publicize a study of cable barrier variations, focusing on 3 or 4 cable systems, conventional or pre-tensioned cables, post spacing, and barrier location with respect to ditches. Each manufacturer has their own "niche" that it jealously guards, and standardization of cables will be an interesting effort.

The subcommittee on Work Zones has cooperated with Texas A&M University to improve their "National Work Zone Safety Information Clearinghouse" as the Task Force did not wish to duplicate the good work already present at the NWZSIC. The subcommittee on Rail Highway Crossing Hardware has published its list of "Associated Rail Road and Grade Crossing Contacts" on the TF-13 web site: www.aashtotf13.org/Subcommittee-8-Rail-Crossing.asp

The Fall 2006 meeting will be held in Toronto, Ontario, in conjunction with the annual meeting of the AASHTO Technical Committee on Roadside Safety.

Past Summary Of Activities

- Task Force 13 held its Fall 2004 meeting in Irvine, California in conjunction with the AASHTO Technical Committee on Roadside Safety, and its Spring 2005 meeting in Ohio, meeting both at the facilities of the Battelle Memorial Institute in Columbus and the Transportation Research Center in East Liberty, Ohio, where members witnessed a crash test. There were 80 to 90 members present at each meeting.

- The Task Force's web site is up and running at http://www.aashtotf13.org/ where minutes of past meetings and links to publications are available. The current editions of the Barrier Hardware and the Drainage Products guide are on-line. Others will be posted as they are updated.

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  http://www.aashtotf13.org/Subcommittee-8-Rail-Crossing.asp

Publications or Guides by the Task Force:

- In 1972, "Guide to Standardized Highway Barrier Rail Hardware" was developed, published and 1700 copies distributed.

- In 1973, "Supplement to a Guide to Standardized Highway Barrier Rail Hardware" was developed, published and 1500 copies distributed.

- In 1979, "Guide to Standardized Highway Barrier Rail Hardware" was revised, consolidated, republished and distributed.

- In 1980, "Guide to Standardized Highway Lighting Pole Hardware" was developed, published and distributed.

- In 1986, "Guide to Standardized Highway Drainage Products," was developed, published and distributed.

- Initiated Drainage Structure Castings and Steel Anchor Bolts material specifications that were subsequently adopted by AASHTO.

- In 1990, "Work Zone Barrier Supplement to Guide to Standardized Highway Rail Hardware" was published.

- In 1995, "Guide to Standardized Highway Barrier Hardware," which replaced the 1979 guide of the same title and the 1990 work zone barrier supplement, was published and distributed. CAD and text files for the guide are available on-line at:
  http://www.ccad.uiowa.edu/ mhray/hardware.html

- "Guide to Standardized Highway Drainage Products" was marked up to show needed updates and has been turned over to an NCHRP contractor for redrafting and metrication.
- The Task Force is seeking resources to complete the following, including conversion to metric dimensioning:
  - An update to "Guide to Standardized Highway Lighting Pole Hardware. "
  - Guide for traffic signal support hardware.

- "Guide to Small Sign Support Hardware", prepared by the Task Force was approved for publication in 1994. However, because the guide was prepared using customary US units, its publication has been postponed until it can be converted to metric. The NCHRP is aiding the Task Force by contracting to have the guide converted to metric and into CAD drawings.

- The update of "Guide to Standardized Highway Drainage Products" has been approved for publication. The Task Force members are in the process of developing a camera-ready copy to give to AASHTO for publication.

- The document, "Guide to Small Sign Support Hardware" was published by AASHTO.

- In 1999, "Guide to Standardized Highway Drainage Products" was published by AASHTO.

Task Force at Texas Transportation Institute
College Station – Spring 2003

Task Force 44 - Electronic/Internet Bidding

Objective:

To develop guide specifications and possible standardization of electronic (Internet) bidding. The Task Force will also facilitate the construction industry's move to systems and procedures for electronic/internet information technology.

Arthur Dinitz, chairman and CEO of Transpo Industries, will be the acting chairman until the Task Force is established. Task Force 44 is still in development. AASHTO was contacted to enlist help in finding an AASHTO State DOT person to chair the Task Force.

Activity Since 2005 Report:

Work on this task is on hold while working out some issues on software. The executive session will be briefed and guidance on resolving issues will be solicited.

Task Force 45 - Protocols, Procedures, and Technology for Asset Management Condition Data Collection

Douglas R. Rose (chairman) Ph. 410-545-0360 (888-204-0132)	Vicki Miller (secretary)

Executive Board Members

Carl Bertrand	Charles Larson
Paul Harbin	Peter Stephanos
Ken Fults	Omar Smadi
Robert C. Briggs	Samuel R. Miller, Jr.
Paul Harbin	Steve Karamihas

Objective: To advance the state-of-the-art of condition surveys and data collection for Asset Management.

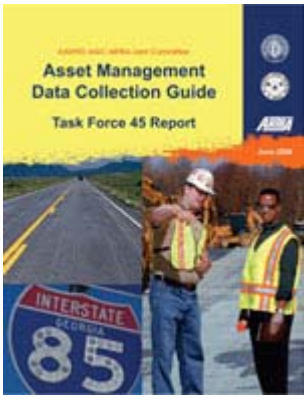
Activity 2005 Report:

The members of Task Force 45 are to be commended for their work and have accomplished their goal. A final report has been produced and is available for order from the AASHTO Bookstore.

https://bookstore.transportation.org/item_details.aspx?ID=389

Asset Management Data Collection Guide, AASHTO-AGC-ARTBA Task Force 45 Document

This Asset Management Data Collection Guide contains information on several highway right-of-way assets including pavements, bridges, culverts, guardrails, and drainage structures. This guide describes the functional characteristics of each asset type, the data that are usually collected about the asset, general data collection

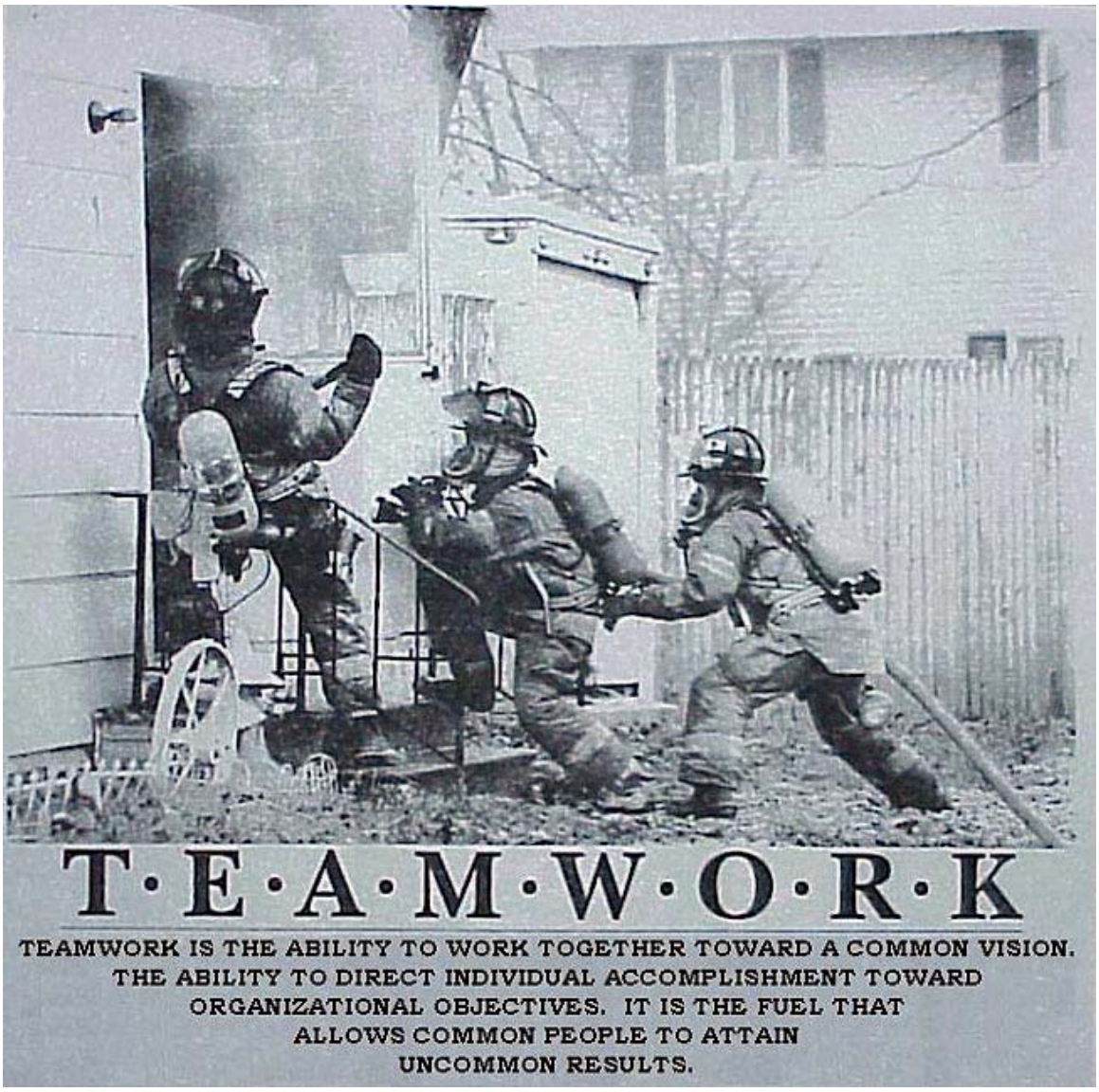


methods, equipment and/or technology that is employed to acquire the data, the formats and standards applied to data transfer and storage, how the information is used for condition assessment, and suggests performance and condition standards.

- The final members of the project panel for the AMDC Guide were: Peter Stephanos (Panel Chair) and John Andrews from MDSHA; Chuck Larson, Rob Hanson, and James Bryant from VDOT; Francine Shaw-Whitson, Vicki Miller, Thomas Van, and Lorenzo Casanova from FHWA; Robert Long and Sam Miller from ACPA; and Paul Harbin from Roadware Group, Inc. In September 2004, Roemer Alfelor from FHWA was replaced by Vicki Miller from FHWA as Task Force 45 Secretary.

- On February 2005, a follow-on project to the AMDC Guide was initiated with VDOT in cooperation with Virginia Tech to investigate how State DOTs are linking the data collection policies, standards, and practices to business decisions. This study will be accomplished by surveying current state practices through a carefully designed web-based questionnaire and studying in-depth current and planned practices in two leading states to document a compilation of "best practices" case studies.

Summary of Past Task Force Accomplishments



Task Force 1 - Epoxy Resins

Objective: Provide epoxy material specifications that meet service requirements for highway construction.

Action: Specifications were completed by Task Force and forwarded to AASHTO Operating Materials Committee (1963). Specifications were included as a standard item in AASHTO Publication (1964). With its mission accomplished, the Task Force was dissolved.

Task Force 2 - Hot Dip Galvanizing Steel

Objective: Provide specifications criteria that covers coatings for products fabricated from steel shapes.

Action: Task Force work completed and forwarded to AASHTO Operating Materials Committee for consideration as standard specifications (latter part of 1968). Specifications included in AASHTO publication of 1974. With its mission accomplished, the Task Force was dissolved.

Task Force 3 - Aluminum Culvert Pipe

Objective: Provide specifications criteria for corrugated aluminum alloy page for use as culverts and under drains in highway construction.

Action: Task Force completed assignment and specifications were forwarded to AASHTO Operating Materials Committee June 1962. AASHTO approved the specifications in October 1962. Presently designated as AASHTO-M-197-74. With its mission accomplished, the Task Force was dissolved.

Task Force 4 - Protective Coatings for Concrete Bridge Decks

Objective: Develop guide specifications for protective coatings for concrete bridge decks (1962).

Action: Task Force was placed within Subcommittee on Bridge Deck Improvements and Durability (August 1971).

Task Force 5 - Mineral Fillers in Asphalt Paving Mixtures

Objective: Consider the problem of mineral fillers in asphalt paving mixtures and develop specifications accordingly.

Action: Since mineral fillers in asphalt paving mixtures are largely a local problem (differences in types of materials available), the Joint Committee decided to dissolve this Task Force (August 1965).

Task Force 6 - Joint Sealers for Concrete Pavements and Concrete Bridge Decks

Objective: Develop specifications regarding joint seal materials for pavements and bridge decks.

Action: Task Force was placed within Subcommittee on Bridge Deck Improvements and Durability (1970).

Task Force 7 - Reflective Sheeting and Coatings for Signs

Objective: Develop specifications for reflective sheeting, sign coatings, reflective paints, and button units.

Action: "Specifications for Glass Bead Reflectorized Coatings for Highway Signs" were developed by the Task Force and forwarded to the Joint Committee for review by the AASHTO Operating Materials Committee (1977).

"Specification for Acrylic Prismatic Reflectors Used in Cutout Letters Symbols and Accessories" were developed by the Task Force and forwarded to the Joint Committee for review and approval by the AASHTO Operating Materials Committee for (1972).

"Guide Specifications-Sheet Reflective Materials Enclosed Lens for Traffic Control Signs" were developed by the Task Force and forwarded to the Joint Committee for review by the AASHTO Operating Materials Committee. The requirements were included in AASHTO M-268-77I titled "Sheet Reflective Materials for Traffic Control Devices. "

"Guide Specifications-Sheet Reflective Materials Encapsulate Lens for Traffic Control Signs" were developed by the Task Force and forwarded to the Joint Committee for review by the AASHTO Operating Materials Committee (1974). With its mission accomplished, the Task Force was dissolved (September 1974).

Task Force 8 - Coating for Pavement Dowels

Objective: Develop specifications for low cost dowel coatings that are effective in preventing corrosion and dowel seizures.

Action: Specifications for low cost dowel coatings were completed by the Task Force and forwarded to the AASHTO Operating Materials Committee (1972). Included as AASHTO Interim Specification - spring 1975. With its mission accomplished, the Task Force was dissolved.

Task Force 9 - Materials for Insulation Under Concrete Slabs for Frost Penetration Control

Objective: Develop specifications for materials to be used, as insulation to be earth pavements to minimize frost penetration in areas of frost-susceptible soils.

Action: Specifications by the Task Force were forwarded to the AASHTO Operating Materials Committee in October 1967. Included in AASHTO specifications as M230-70.

A "Performance Study Report on Insulation Board (Polystyrene) " was forwarded to the Joint Committee for acceptance and reproduction (June 19 70). With its mission accomplished, the Task Force was dissolved.

Task Force 10 - Deterioration and Preservation of Concrete Pavements and Bridge Decks

Objective: Objectives of Task Forces 4 and 6 combined.

Action: This Task Force was placed under the Subcommittee on Bridge Deck Improvements and Durability.

Task Force 11 - Simplification of Gradation of Aggregates

Objective: Review fieldwork and recommend specifications for a series of aggregate gradations that will limit the number in effect and meet the needs for highway and bridge construction.

Action: Specifications recommendations by the Task Force were accepted by the Joint Committee regarding coarse and fine aggregate gradations as well as the number of coarse aggregates to be specified for concrete mixes (August 1970). Included in AASHTO specifications as M29-70 respectively. With its mission accomplished, the Task Force was dissolved.

Task Force 12 - Surfacing for Orthotropic Bridge Decks

Objective: Prepare recommend specifications for surfacing of Orthotropic bridge decks.

Action: Task Force was dissolved due to inactivity.

Task Force 13 – ACTIVE

Task Force 14 - Development and Promotion of Rapid Sampling and Testing Equipment and Methods

Objective: Develop and promote rapid sampling and testing equipment and methods for highway materials.

Action: In 1973, the Task Force developed a questionnaire for transmittal to State highway organizations and industry. The questionnaire was designed to provide answers to five questions on rapid test (RT) needs in the areas of

aggregates, plastic Portland cement concrete, hardened Portland cement concrete, bituminous concrete mixes, and soil. Several copies of the summary were sent to industry representatives and the State highway departments in 1974.

In 1975, the Task Force referred a number of test procedures to AASHTO and ASTM for consideration by the appropriate technical sections following a screening. Included in the tests were 14 of the RT.

Other test procedures referred to AASHTO and ASTM were:

1. Four concrete strength tests
2. Indiana's aggregate washing procedures
3. Nuclear density test
4. Specific gravity of bituminous mixtures
5. Vacuum extraction test for asphalt

In 1989, The Task Force completed and approved the revised final slide presentation on rapid sampling and testing equipment and procedures. With its mission accomplished, the Task Force was dissolved in January 1992.

Task Force 15 - Development of Specifications for Securing More Skid-Resistant Pavements

Objective: Develop specifications for securing more skid-resistant pavements.

Action: Specifications, prepared by both Portland cement concrete pavement group and the bituminous pavement group, were referred to the appropriate AASHTO Operating Materials Committee. With its mission accomplished, the Task Force was dissolved.

Task Force 16 - Development of Ways to Use Waste Products in Highways

Objective: Determine which waste materials are suitable to use as replacements for highway aggregates and fill material.

Action: This Task Force developed a report entitled "Ways to Use Waste Products in Highway Construction " which was approved for publication by the Joint Committee at the 1977 meeting and published by AGC in 1978. With its mission accomplished, the Task Force was dissolved.

Task Force 17- Storm Water Management

Objective: Recommend criteria for drainage systems that dispose of storm water runoff in porous soil strata.

Action: A design document, "Underground Disposal of Storm Water Runoff" was published in February 1980. With its mission accomplished, the Task Force was dissolved.

Task Force 18 - Applicability of Performance Specifications to Present Construction Practice

Objective: Study and develop guidelines for performance specifications and quality control procedures, where possible, in construction specifications.

Action: The Joint Committee discussed The Performance Specification Guidelines developed by the Task Force and the Committee moved that the report be published. With its mission accomplished, the Task Force was dissolved.

Task Force 19 - Guidelines for Value Engineering and Material Alternates

Objective: Develop guidelines for value engineering and material alternates by defining the value engineering system and procedures for application of value engineering.

Action: A publication entitled "Guidelines for Value Engineering" was approved by the Joint Committee at the 1977 meeting and later published by ARTBA in 1978. With its mission accomplished, the Task Force was dissolved.

Task Force 20 - Development of Generic Specifications for Patching Materials Used in the Rapid Repair of PCC

Objective: Develop generic specifications for patching materials used in the rapid repair of Portland Cement Concrete.

Action: During the early work of this Task Force, ASTM was drafting and balloting a standard specification in the same area. The ASTM specification was drafted, affirmatively balloted, and published. The Task Force arranged for the States of Louisiana, Pennsylvania, Oklahoma, Illinois, and Virginia to evaluate ASTM Standard Specification C928-80; "Packaged, Dry, Rapid Hardening Cementitious Materials for Concrete Repairs." The specification was evaluated by testing commonly used patching material in accordance with ASTM tests and procedures and then comparing the results with historical performance data. The test methods contained in ASTM C928 could not be totally complied with by all of the evaluating State laboratories in this multi-State evaluation. Some State testing laboratories did not possess the appropriate equipment for the testing of all specification requirements.

Any party interested in rapid-set patching material can use the ASTM Specification as a specification guide. Although these specifications are not considered to be performance-predicting specifications, they do identify properties of rapid-set patching material and reasonably classes these properties. Since no better state-of-the-art or state-of-the-practice specifications for the identification of rapid-set patching material existed, the Task Force was dissolved in 1984.

Task Force 21 - Development of Generic Specifications for Highway Pavement Markings

Objective: Develop generic specifications for pavement marking products.

Action: Based on the lack of interest from the Task Force members and the overwhelming opposition from the AASHTO traffic engineers, the Task Force was dissolved in 1982.

Task Force 22 - Development of a Cross-Reference for Materials and Specifications for Waterways, Airports, Railroads, Transit, and Highway Projects

Objective: Develop a set of standard requirements for materials used in the construction of waterways, airports, railroads, transit, and highways other than for building construction and track work.

Action: This Task Force developed recommendations to reduce the variety of requirements for materials common to the various modes and find ways to see if more uniformity could be obtained. Recommendations for revision of AASHTO T-245 and T-246 to be complete bituminous mixture design procedures; including all satellite procedures (e.g. specific gravity of the aggregates and the compaction mixtures) as well as inclusion of all computations needed for complete design (e.g. air voids filled with asphalt and voids in mineral aggregates, etc.) were made by the Task Force.

For bituminous mixture design, the Task Force recommended that the design procedures should include criteria for various highway loadings (preferably based on equivalent daily 18-kip axle loads used in the AASHTO Interim Pavement Design Guide) and various airport loadings (preferably based on the tire pressure concept used by the U.S.A. Corps of Engineers). The Task Force recommended that specifications for pavement compaction (density) for all of these various loadings be developed. The Task Force noted no substantial specification difference in cement for the different modes of transportation. The Task Force recommended that standard coarse aggregate sizes for Portland Cement Concrete Pavements (PCCP) be promoted through the AASHTO Executive Committee as presented in AASHTO M-43. The Task Force recommended that agencies review and reevaluate their present requirements for friable particles in PCCP aggregates. The Task Force urged that agencies adopt as many requirements of AASHTO M-6 as possible with appropriate modifications as necessary to address local conditions.

The Task Force developed a report entitled, "Report on Drainage Pipe, " in September 1988. It was approved by mail ballot for publication by the AASHTO AGC ARTBA Joint Committee in 1989. With its mission

accomplished, the Task Force was dissolved.

Task Force 23 - Development of Materials Specifications and Procedures for the 3-R Rehabilitation of PCC Pavements

Objective: Study and develop guidelines for performance specifications and quality control procedures, where possible, in construction specifications.

Action: The Joint Committee discussed The Performance Specification Guidelines developed by the Task Force and the Committee moved that the report be published. With its mission accomplished, the Task Force was dissolved.

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Any party interested in rapid-set patching material can use the ASTM Specification as a specification guide. Although these specifications are not considered to be performance-predicting specifications, they do identify properties of rapid-set patching material and reasonably classes these properties. Since no better state-of-the-art or state-of-the-practice specifications for the identification of rapid-set patching material existed, the Task Force was dissolved in 1984.

Task Force 21 - Development of Generic Specifications for Highway Pavement Markings

Objective: Develop generic specifications for pavement marking products.

Action: After encountering considerable difficulty in securing a new chairman, the Secretary of Task Force No. 21 sent a letter to members of the Task Force and to members of the AASHTO Highway Subcommittee on Traffic Engineering to seek their advice on whether or not the Task Force

should be maintained or terminated. All of the Task Force members responded. Two were for keeping the Task Force; the third, termination. Of the 50 States, 32 responded and only 3 felt that the Task Force should be kept. Most States indicated that they had their own specifications and did not need, nor would likely use, the specifications proposed. Four State responders suggested leaving it up to the ITE since it had developed some specifications already.

Based on the lack of interest from the Task Force members and the overwhelming opposition from the AASHTO traffic engineers, the Task Force was dissolved in 1982.

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The Task Force noted no substantial specification difference in cement for the different modes of transportation.

The Task Force recommended that standard coarse aggregate sizes for Portland Cement Concrete Pavements (PCCP) be promoted through the AASHTO Executive Committee as presented in AASHTO M-43. The Task Force recommended that agencies review and reevaluate their present requirements for friable particles in PCCP aggregates. The Task Force

urged that agencies adopt as many requirements of AASHTO M-6 as possible with appropriate modifications as necessary to address local conditions.

The Task Force developed a report entitled, "Report on Drainage Pipe, " in September 1988. It was approved by mail ballot for publication by the AASHTO AGC ARTBA Joint Committee in 1989. With its mission accomplished, the Task Force was dissolved.

Task Force 23 - Development of Materials Specifications and Procedures for the 3-R Rehabilitation of PCC Pavements

Objectives: Identify, evaluate and categorize procedures and related material specifications currently in use by agencies in the rehabilitation of Portland Cement Concrete pavements. Develop guide specifications for the rehabilitation of PCC pavements.

Action: The following specifications were developed and mailed to each Task Force member for ballot in August 1983. Members were given the opportunity to accept or reject each specification as written:

1. *Concrete Pavement Jacking*
2. *Subsealing and Stabilization*
3. Joints and Crack Repairs
    a. Liquid Sealants
    b. Neoprene Compression Seals
    c. Silicone Sealants
    d. Cracks
4. Patching
    a. Partial Depth Patching
    b. Full-Depth Patching
5. *Grooving*
6. *Grinding*
7. Milling
8. PCC Bonded Overlays
9. PCC Unbonded Overlays
10. PCC Direct (Partially) Bonded Overlays

The revised specifications (designated as "Guide Procedures") were forwarded to the Chairman of the AASHTO Task Force in May for AASHTO clearance. Clearance by AASHTO through the AASHTO Subcommittee on Construction acting for the Executive Committee took place in July 1985. The final document was printed and distributed to the Joint Committee, all FHWA offices and State highway agencies. Between 1986 and 1988, Task Force members proposed minor revisions to the published Guide Procedures, and the revised text was reviewed by the Task Force membership. The Task Force forwarded these minor revisions and revised text to AASHTO for consideration in their guide specifications for highway construction.

Based on the substantial completion of the Task Force's objectives, the Task Force was dissolved in September 1988.

Task Force 24 - Development of Materials and Process Specifications for the Recycling of Asphalt Pavements

Objectives: Identify, review, and evaluate the materials and processes utilized by transportation agencies in the recycling of asphalt pavements. Catalog materials and processes, and their suitability. Identify materials and process research and specification development needs. Participate and cooperate in the development and presentation of seminars on asphalt recycling.

Action: The AASHTO-AGC-ARTBA Joint Committee directed the Task Force to conduct seminars in locations where there existed a need to further the use of asphalt pavement recycling.
This Task Force, in cooperation with the Demonstration Projects Division of the Federal Highway Administration, developed and sponsored a nationwide series of seminars on asphalt pavement recycling. Seminars were conducted in Rhode Island, Pennsylvania, North Carolina, Louisiana, Kansas, and Colorado, with approximately 900 participants representing Federal, State, county, and city governments; consultants; contractors; equipment manufacturers; and other interested individuals in attendance. The seminars utilized a combination of speakers nationally recognized in recycling, and local speakers with recycling experience.

Since asphalt recycling, in one form or another, was standard operating practice in over 40 States, the Task Force was dissolved in 1983.

Task Force 25 - Development of Specifications and Laboratory Procedures for Geotextiles Used in Civil Engineering Applications

Objective: Develop and publish through appropriate forums geotextile specifications and test procedures based on state-of-the-art knowledge.

Action: Eight test methods for index properties were adopted for use in the specifications developed by the Task Force. The fabric industry associations in conjunction with ASTM Joint Committee D-35, Geotextiles and Related Products developed test Methods 1-7. Since these procedures were more specific than the ones currently used, and since the use of these procedures were expected to result in a more uniform testing of fabrics, the Task Force recommended that these methods be submitted to AASHTO for adoption. Test Method 8 is unique to the application of paving fabrics. The eight test methods for index properties were provided to the Joint Committee's Subcommittee for New Highway Materials and the Materials and Construction subcommittees of AASHTO. All of these test methods were subsequently either replaced by new ASTM standard tests or adopted as an ASTM standard.

Specifications developed by the Task Force were incorporated into FHWA's publication FHWA-HI-90-001, "Geotextile Design and Construction Guidelines. "

A publication entitled "Guide Specifications and Test Procedures for Geotextiles" was approved by the Joint Committee at the 1990 meeting and later published by AASHTO. It provided guide specifications for paving fabrics, erosion control, drainage, temporary silt fence, and separation applications. With its mission accomplished, the Task Force was dissolved.

Task Force 26 - Standardization on An Area wide Basis of Specifications for Asphalt Mix Design Criteria and Mixture Gradation

Objective: Explore the possibility of getting user agencies to agree to common specifications for asphalt mix design criteria and mixture gradation using the following approach:

1. Solicit the support and involvement of all affected industry groups
2. Identify the potential savings that could result from specifications and asphalt mix design criteria on an area wide basis
3. Identify all the aggregate and asphalt mixture producers in three or four potential pilot areas that supply several user agencies
4. Select one geographical area for a pilot program to demonstrate the advantages of all agencies using common specifications and mix design procedures; and
5. Monitor effect of common specifications and mix design procedures and report results of pilot program to the Joint Committee.

Action: The conclusions of the 1982 meeting provided the objectives for:

- Determining whether or not common specifications for asphalt concrete, utilized in a given geographical area, would result in economic benefits to all using agencies in that area.
- Suggesting that a geographical area be selected for a pilot program to develop and evaluate the effects of common specifications and mix design procedures.

- Suggesting that cold feed materials for asphalt concrete should not be controlled by standard specification, but should be left flexible to allow utilization of the most economical local materials that can satisfy quality requirements.

- Suggesting that there would be merit in standardizing requirements for mixtures being placed, especially with respect to test methods and acceptance criteria. Asphalt tests pertaining to stripping characteristics also differ widely and are inconclusive as to what merit there would be in standardizing requirements for mixtures being placed, especially with respect to test methods and acceptance criteria. Asphalt tests pertaining to stripping characteristics also

differ widely and are inconclusive as to acceptability of both aggregate and asphalt.

The group was not able to arrive at a consensus as to the desirability of recommending a pilot program. Accordingly, a subcommittee was appointed to gather facts with respect to specifications of the DOT's in Georgia, Alabama, and Tennessee, and to define the areas that prevent materials producers from operating simultaneously for all three States.

It was agreed that subcommittee members discuss the broad topic with members of their individual DOT organizations to obtain opinions on the subject of a pilot program.

It was agreed that members of the FHWA should continue their efforts to upgrade the tabulation on individual agency requirements for asphalted concrete and its component materials.

It was agreed that the FHWA and National Association representatives on the ad hoc group should continue efforts to define areas other than Chattanooga where a regional pilot program could be conducted.
After conferring with their respective DOT's, the members of the Subcommittee all provided negative reports as to the merit and feasibility of standardized area wide specifications. Based on the Task Force's findings, Task Force 26 was dissolved.

Task Force 27 - Ground Modification Techniques for Transportation Applications

Objective: Define appropriate transportation applications for ground modification techniques and systems, promote and develop improved ground modification techniques, develop practical oriented technical guidelines, and develop specification and contracting procedures.

Action: A publication entitled "In Situ Soil Improvement Techniques" was approved by the Joint Committee at the 1990 meeting and later published by AASHTO. The sections included in this publication include:

- Guidelines for the Design of Mechanically Stabilized Earth Walls
- Construction Specifications for Mechanically Stabilized Earth Walls
- Design Guidelines for Use of Extensible Reinforcements (Geosynthetic) for Mechanically Stabilized Earth Walls in Permanent Applications
- Construction Specifications for Permanent Soil Nailed Structures (Design-Build Specifications)
- Dynamic Compaction - A Brief Overview
- Stone Columns
- Wick Drains
- Vibro-Compaction
- Lime Columns
- Ground Improvement Systems in Combination
- Permanent Ground Anchor Specifications
- Ground Anchor Inspector's Manual
- Grouting for Transportation Applications

With its mission accomplished, the Task Force was dissolved.

Task Force 28 - Fly Ash Highway Construction

Objective: Develop specifications as appropriate and assemble user package for various applications of fly ash such as Portland cement concrete, lime-fly ash aggregate bases, undersealing, and subgrade stabilization.

Action: the Task Force developed the following specifications:

- Guidelines for Usage of Pozzolanic Stabilized Mixture (PSM) Base Course or Sub base
- Guide Specification for Pozzolanic Stabilized Mixture (PSM) Base Course or Sub base
- Guidelines for Use of Fly Ash for In-Place Subgrade Soil Modification
- General Contract Specification for Acceptance of Fly Ash by a State Highway Agency

These guidelines and guide specifications were combined into a report entitled, "Guidelines and Guide Specifications for Using Pozzolanic Stabilized Mixture (Base Course or Subbase) and Fly Ash for In Place Subgrade Soil Modification." It was approved by mail ballot for publication by the

AASHTO AGC ARTBA Joint Committee in 1989. With its mission accomplished, the Task Force was dissolved.

Task Force 29 - Cathodic Protection of Reinforced Concrete Bridge Decks

Objective: Develop standard specifications for cathodic protection of reinforced concrete bridge decks.

Actions: At its first meeting in June 1987, Mr. Clear informed the committee members and guests that this Task Force was only concerned with Cathodic Protection of Bridge Decks, and that the goal was to accomplish the Task Force's mission within one year. After considerable discussion on a wide range of issues, subgroups were formed to address various aspects of the technology. Each Subgroup was asked to develop a list of critical items. The Subgroup topics and their membership were as follows:

- General Specifications - Rectifier, Cadwelds, Probes, etc.
- Specifications for Conductive Coke Asphalt (Modified) (Hannah Shell, Vernon Dunlop, Don Jackson)
- Specifications for Non-overlays, Slotted CP System (Gerry Clemena, Kevin Garrity, Jack Bennett)
- Specifications for Rigid Overlays CP Systems (Dan Johnston, Jack Bennett, Ken Clear, James Thompson, Gerald Malashewski)
- Specifications for System Activation/Energization (Joe Rog, Don Jackson, Ken Clear)
- Specifications for Maintenance (Kevin Garrity, Joe Rog, Gerry Clemena)

The followings were the Task Force activities to carry out its mission:

- The Task Force met in 1987, to work on certain problem areas such as type of anodes and rectifiers to be included in the specification.
- At the January 1988 meeting in Washington, D. C., the Task Force attempted to bring the various Subgroups' topics -- slotted cathodic protection; rigid concrete overlay cathodic protection; coke breeze

overlay cathodic protection; and rectifiers -- into a workable format for specification development.

- The Task Force convened in April 1988 to layout the format for the "Guide Specification on Cathodic Protection."
- At their August 1988 meeting in Charlottesville, Virginia, the Task Force reviewed the first draft of the guide specification.
- At their January 1989 meeting in Washington, D. C., the Task Force reviewed the second draft of the guide specification for scope and content.
- A publication prospectus was prepared and submitted to the AASHTO AGC-ARTBA Joint Committee in August 1989 for permission to finalize the document for acceptance and printing. The publication prospectus was approved. The Joint Committee also approved the use of a mail ballot for soliciting approval of all guide specifications including subsequent permission to publish these specifications.
- A glossary was prepared for the specification document. Specifications for remote monitoring of the rectifier were incorporated into the guide specifications. Consideration was given to the inclusion of a new type of rectifier called the "switching rectifier, "developed in Canada. Most of the major technical decisions were completed.
- The Task Force addressed whether or not the Ferex 100 anode, which has developed some problems infield applications after several years of successful operation, should be included in the guide specifications.
- A meeting was held in December at the Virginia Transportation Research Council to discuss the rectifier to be included in the report specifications. Editing of the final report was started. It was also decided to dedicate the document to Mr. Richard Stratfull who dedicated most of his professional life to developing cathodic protection for reinforced concrete structures.
- In June 1992 the final draft was submitted to the secretary, Mr. Donald R. Jackson, for the final editing and distribution to Task Force members for their approval.
- The Task Force voted to accept their document and to forward it to the Subcommittee on New Highway Materials for their approval. The Task Force's final report, "Guide Specification for Cathodic Protection of Concrete Bridge Decks" was submitted for balloting in

July 1994, and approved for publication. The Subcommittee granted the Task Force's request to continue evaluation of emerging anode materials for inclusion in the guide specification.
- The Task Force 29 guide specification was submitted to and approved by the AASHTO Subcommittee on Construction in 1994.

With its mission accomplished, the Task Force was disbanded in September 2002.

Task Force 30 - Concrete Resurfacings

Objective: Development of guide procedures and specifications for practices, materials, and equipment used in concrete resurfacings.
Action: The Task Force created two subgroups: the Roads Subgroup and the Bridges Subgroup. The Roads Subgroup developed a publication entitled "Guide Specifications for Concrete Overlays of Pavements". It contained:

- Guide Specifications for Bonded Portland Cement Concrete Overlay
- Guide Specifications for Unbonded Portland Cement Concrete Overlay
- Guide Specifications for Portland Cement Concrete Overlay over Existing Asphalt Concrete Pavement (White topping)

The Bridges Subgroup developed a publication entitled "Guide Specifications for Concrete Overlays of Bridge Decks." Both publications were combined and approved by the Joint Committee at the 1990 meeting and later published by AASHTO under the title: "Guide Specifications for Concrete Overlays of Pavements and Bridge Decks." With its mission accomplished, the Task Force was dissolved.

Task Force 31 - Polymer Modified Asphalts

Objective: Develop generic guide specifications for polymer modified asphalts.

Action: The initial Task Force meeting was held at TRB in January 1988. A subsequent meeting was held at RAPT during the first week of March 1988. As a result of these meetings, the Task Force decided to compile

and review all of the existing specifications pertaining to polymer modified asphalt use.

The Task Force agreed to coordinate its activities with the recently organized ASTM's Subcommittee D04.45 on Modified Asphalt Specifications. The Subcommittee is charged with developing specifications for bitumen modified by the inclusion of polymers, crumb rubber, fibers, chemical modifiers, and other materials used in paving highways and airfields.

A meeting of the Task Force was held in June during the ASTM meetings in St. Louis, Missouri. A publication prospectus was prepared and submitted to the AASHTO-AGC-ARTBA Joint Committee for permission to finalize the document for acceptance and printing. The publication prospectus was approved. The Joint Committee also approved the use of a mail ballot for soliciting approval of all guide specifications including subsequent permission to publish these specifications.

The guide specifications were submitted to the AASHTO Subcommittee on Materials for comment at their August, 1990 meeting. Only minor comments were received.

The Joint Committee tentatively approved the Task Force's final report in August 1991 subject to review of additional comments received from the National Center for Asphalt Technology (NCAT).

The guide specifications were revised to address some changes relative to lowering the softening point requirements of the material. The revised guide specifications were submitted to the Joint Committee for publication in January 1992. They were printed as "Guide Specifications: Polymer Modified Asphalt."

The Task Force completed its mission of preparing the guide specifications and a "White Paper" on the use of Polymer Modified Asphalt. With its mission accomplished, the Task Force was dissolved in September 1992.

Task Force 32 - Corrosion Protection of Concrete Structures

Objective: Catalog and evaluate concrete corrosion protection systems and develop criteria, specifications and construction procedures that will improve the ability of concrete superstructure and substructure elements, excluding highway pavements, to withstand corrosive effects of chlorides from deicing chemicals or saltwater.

Action: Task Force meetings were held in San Diego, California in conjunction with the 1989 ACI Convention and in Cocoa Beach, Florida in conjunction with the 1990 AASHTO Bridge Subcommittee meeting.

The Task Force issued a questionnaire to all AASHTO Bridge Committee members asking for their current practices on corrosion control and an assessment of the effectiveness of their strategies. Thirty-nine bridge owners from the United States and Canada responded.

The Task Force met in Denver, Colorado on March 10, 1991 to discuss the first draft of the report. A revised format for each chapter was agreed upon and a deadline was established.

The Task Force met again in San Francisco, California in conjunction with the annual AASHTO Bridge Subcommittee meeting to discuss progress on the 2nd draft. Due to individual workloads, progress was less than anticipated. A target of completing the manual by the end of calendar year 1991 was established.

The Task Force met in St. Louis, on September 20, 1991, in conjunction with the AASHTO Bridge Subcommittee meeting (to discuss LRFD specification) to discuss comments on the final draft.

The Task Force 32 final report entitled "Manual for Corrosion Protection of Concrete Components in Bridges" was submitted for review in March 1992 and approved by mail ballot in June 1992 from AASHTO, ARTBA, and AGC. The Report was published in November 1992. With its mission accomplished, the Task Force was dissolved in November 1992.

Task Force 33 - Reflective Signing and Striping

Objective: To develop guide specifications for new materials used for both temporary and permanent retro reflective traffic control devices.

Action: Due to increasingly scarce resources and in order to eliminate redundant or parallel efforts, the Task Force was dissolved.

Task Force 34 - Polymer Concrete Overlays of Bridge Decks

Objective: To develop guide specifications and procedures for the design and construction of polymer concrete bridge deck overlays.

Action: The Task Force held its initial meeting in January 1992. The format of the guide specification was developed and included the areas of multiple layer polymer overlays, slurry polymer overlays, and premixed polymer overlays. The Task Force was subdivided into four subgroups to facilitate the writing of the document.

The Task Force approved the fifth draft of its guide specification and the final report was distributed to the Joint Committee for balloting in 1995. The final report, "Guide Specifications for Polymer Concrete Bridge Deck Overlays," was approved for publication by the Joint Committee members and forwarded to AASHTO for publication. With its mission accomplished, the Task Force was disbanded.

Task Force 35 - Joint Sealants In-Place Performance & Test Procedures

Objective: To determine performance criteria for in place sealants in PCC joints and cracks, and develop procedures to evaluate their in place performance that might be used for acceptance testing.

Action: Due to increasingly scarce resources and in order to eliminate redundant or parallel efforts, the Task Force was dissolved.

Task Force 36 - Use of Fibers in Portland Cement Concrete

Objective: The main goal is to develop a guide specification for the State Highway Agencies on the use of Fiber Reinforced Concrete (FRC). The guide provides information on the properties of FRC, proportioning, mixing, placing, and finishing FRC. It also provides examples of recent uses in pavements, bridges, and overlays, and future considerations and implementation needs.

Action: The publication titled "The Use and State-of-the Practice for Fiber Reinforced Concrete" became available in October 2001 from AASHTO. Prices for the publication are $26.00 for member and $31.00 for non-member. With its mission accomplished, the Task Force was disbanded in August 2001.

Task Force 37 - Shotcrete for Bridge Rehabilitation

Objective: Develop a guide specification for the use of shotcrete in the rehabilitation of bridges. The work included the use of microsilica and polypropylene fibers.

Action: The final report was published in January 2000. This concludes the work originally commissioned for Task Force 37. The Task Force was officially disbanded in February 2000.

Task Force 38 - Cold-In-Place Recycled Asphalt Pavements

Objective: Develop analysis criteria to aid in the evaluation of aged asphalt pavement and its potential to be rehabilitated via cold recycle method. Included with this will be guide specifications, construction methods and testing procedures for cold recycling of asphalt pavement.

Action: The final report was completed and published in March 1998. This concludes the work originally commissioned for Task Force 38. The Task Force was disbanded in August 1998.

Task Force 39 - Development Of Specifications For Flowable Fills

Objective: To develop guide specifications for materials, mix design, and construction of flowable fills for a variety of applications

Action: Due to the unavailability of new members, this Task Force was disbanded in August 2000.

Task Force 40 - Hot In Place Recycled Asphalt Pavements

Objective: Development of analysis criteria for evaluation of the potential for an asphalt pavement to be rehabilitated via hot in place recycling and development of guide specifications for materials, construction, and quality control/quality assurance of hot in place recycled asphalt pavement.

Action: It was determined that the need no long exist, this Task Force was disbanded in August 2001.

Task Force 41 - High Range Water Reducer Use in Concrete

Objective: To develop guide specifications for high range water reducer in concrete

Action: The continuing need to develop guide specifications in this technology area has been overcome by events in terms of current practices in the industry. The need no longer existed which contributed to the difficulty inputting together the task force membership. Hence, the Task Force was disbanded in August 1999.

Task Force 42 - Thermoplastic Pipe Use In Highway Applications

Objective: To develop guide specifications for installation of thermoplastic pipe used in highway applications.

Action: It was determined that the need no long exist, this Task Force was disbanded in August 2001.

Task Force 43 - Full Depth Cold-In Place Flexible Pavement

Objective: To develop guide specifications for cold in place full depth flexible pavement reclamation.

Action: Due to the unavailability of new members, this Task Force was disbanded in August 2000.