



Transportation News

A Resource for Military Transportation Engineers



Volume 19, August 2000

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All-Star Opening Sets Tone for TS2K Workshop

The Transportation Systems 2000 (TS2K) Workshop opened with an all-star line up to a full house of 320 participants from the Army, Air Force, Navy and Industry. The workshop was held in San Antonio, Texas, 28 February - 3 March 2000.



Major General Earnest Robbins (1st star photo), Air Force Civil Engineer, Dr. Get Moy (2nd star photo), Chief Engineer & Director of Engineering and Base

Development for Naval Facilities, Dwight Beranek (3rd star photo), U.S. Army Corps of Engineers Chief of Engineering and Construction Division, Military Programs welcomed participants at Tuesday's Opening Session. Following the three services Charlie Plumb (4th star photo) former Navy fighter Pilot and POW, gave an excellent and inspiring talk that set the tone for the workshop.

(Continued on Page 4)

Revised Design Criteria for Airfields

In a previously published article ("C-17 Aircraft Replaces C-141", *Transportation News*, Volume 17, August 1999) it was noted that the C-17 aircraft was replacing the C-141 in design criteria. The Air Force recently published an ETL (Air Force Engineering Technical Letter (ETL) 00-8, "Airfield Pavement Design Criteria") that changes the criteria again. A recent survey found that most installations were supporting more operations of the C-17 than that of the C-141 found in criteria. The survey validated an approximate four-fold increase in operations at medium load bases since the original criteria were established. The revised criteria in the ETL (and shown on page 2) reflect the change to the C-17 and the increase in operations. Application of these revised criteria will result in a slight increase in pavement thickness for both rigid and flexible pavements. This new criterion is mandatory unless waived by the appropriate MAJCOM. For design projects initiated prior to publication of this ETL contact the appropriate MAJCOM regarding applicability.

Based on these findings the Army has also revised their criteria for the Airfield Class IV. These changes are also reflected in the table on page 2. For more information contact Jim Greene, HQ AFCEA, DSN 523-6334, commercial (850) 283-6334, FAX 523-6219, James.Greene@afcesa.af.mil or B.J. Skar, Transportation Systems Center, (402) 221-7262, bernard.j.skar@usace.army.mil.

Revised Design Criteria for Airfields

Air Force Design Gross Weights and Pass Levels for Airfield Pavements

Airfield	Design	A Traffic Area		B Traffic Area		C Traffic Area*		D Traffic Area*		Overruns*	
		Weight KG (LB)	Passes	Weight KG (LB)	Passes	Weight KG (LB)	Passes	Weight KG (LB)	Passes	Weight KG (LB)	Passes
Light	F-15C/D	30,844 (68,000)	400,000	30,844 (68,000)	400,000	23,133 (51,000)	400,000	N/A	N/A	23,133 (51,000)	4,000
	C-17	263,083 (580,000)	400	263,083 (580,000)	400	197,312 (435,000)	400			197,312 (435,000)	4
Medium	F-15E	36,741 (81,000)	100,000	36,741 (81,000)	100,000	27,556 (60,750)	100,000	27,556 (60,750)	1,000	27,556 (60,750)	1,000
	C-17	263,083 (580,000)	400,000	263,083 (580,000)	400,000	197,312 (435,000)	400,000	197,312 (435,000)	4,000	197,312 (435,000)	4,000
	B-52**	181,437 (400,000)	400	181,437 (400,000)	400	136,078 (300,000)	400	136,078 (300,000)	4	136,078 (300,000)	4
Heavy	F-15E	36,741 (81,000)	100,000	36,741 (81,000)	100,000	27,556 (60,750)	100,000	27,556 (60,750)	1,000	27,556 (60,750)	1,000
	C-17	263,083 (580,000)	200,000	263,083 (580,000)	200,000	197,312 (435,000)	200,000	197,312 (435,000)	2,000	197,312 (435,000)	2,000
	B-52	217,724 (480,000)	120,000	217,724 (480,000)	120,000	163,293 (360,000)	120,000	163,293 (360,000)	1,200	163,293 (360,000)	1,200
Modified Heavy	F-15E	36,741 (81,000)	100,000	36,741 (81,000)	100,000	27,556 (60,750)	100,000	27,556 (60,750)	1,000	27,556 (60,750)	1,000
	C-17	263,083 (580,000)	200,000	263,083 (580,000)	200,000	197,312 (435,000)	200,000	197,312 (435,000)	2,000	197,312 (435,000)	2,000
	B-1	217,724 (480,000)	120,000	217,724 (480,000)	120,000	163,293 (360,000)	120,000	163,293 (360,000)	1,200	163,293 (360,000)	1,200
Shortfield C-130	C-130	(79,377) 175,000	50,000 per squadron	N/A	N/A	N/A	N/A	N/A	N/A	(79,377) 175,000	50,000 per squadron
Shortfield C-17	C-17	(277,703) 502,000	100,000	N/A	N/A	N/A	N/A	N/A	N/A	(277,703) 502,000	100,000
Auxiliary	F-15	Design loads and passes are determined by the major command									

*The design gross weights for types C and D traffic areas and overruns are 75 percent of the design gross weights for types A and B traffic areas.

Pass levels for type D traffic areas and overruns are one percent of the pass levels for type A traffic areas.

**Do not include the B-52 if the runway is less than 60 meters (200 feet) wide or there are other geometric limitations.

Note: Shoulders are designed to support 5,000 coverages of a 4,536-kg (10,000-lb) single-wheel load having a tire pressure of 689 kPa (100 psi).

Army Class IV Design Gross Weights and Pass Levels for Airfield Pavements

Airfield Class	Runway Length (feet)	Design Aircraft	Weight (pounds)	Passes
IV	Less than or equal to 5,000 ft	C-130*	155,000	75,000
	Less than or equal to 5,000 ft	C-17**	580,000	50,000
	Greater than 5,000 ft but less than 9,000 ft	C-17	580,000	75,000
	Greater than 9,000 ft	C-17	580,000	100,000

* For runways not supporting the C-17 aircraft

** For airfields supporting the C-17 aircraft

You Asked for It

The Transportation Systems Center frequently receives questions on recommendations for projects or clarification on policies. If one person asks it, it is probably on the minds of many. To have a melding of the minds we plan to publish the responses to questions we receive. Sorry there is not room to publish all the questions, but if you are looking for pavement related advise send your questions to Terry Sherman at terry.w.sherman@usace.army.mil.

Use of Slurry Seal/Sand Seal on Overruns

Question: What is your recommendation for using slurry seal or sand slurry on runway overruns for Air Force runways/taxiways?

Reply: Existing Air Force criteria requires overrun areas to be paved for the full width of the runway exclusive of shoulders and for a length of 1000 feet. The overrun surface can be double-bituminous surface treatment except for the first 150 feet, which requires a wearing surface of 2 inches of dense graded hot mix asphalt (HMA). Portions of overruns used to certify barriers or support snowplow operations might also be surfaced with dense graded HMA. Slurry seals and/or sand seals could be used to repair the last 850 feet of the overrun, but not on the first 150 feet. Check with the MAJCOM to verify what their policy is before a final design decision.

Resin Modified Pavements (RMP)

Question: I am currently working on a project and the use of RMP was suggested to me. I have done some research and was able to obtain a copy of a FEAP Users guide by Mr. Gary Anderton. Does your group know of any additional information sources (URLs, etc.) that may assist me?

Reply: We also have an Engineer Technical Letter (ETL) 1110-1-177 and a Corps of Engineers Guide Specification (CEGS) 02746, which are available on TECHINFO at <http://w2.hnd.usace.army.mil/techinfo/index.htm>. The Air Force has a draft ETL 98-X, Resin Modified Pavement (RMP) Design and Application Criteria. I could not find it on their web site, but you can call Jim Greene at (850) 283-6334. ✉

Recycled Concrete Fill Found to Cause Heaving

by Ray Rollings, USACE, ERDC

Nasty heaving problems from sulfate attack occurred at Holloman AFB, New Mexico. The 30 - 40 year old concrete airfield pavement had never suffered any damage before being recycled. Consequently, the sulfate attack problem had not been expected. The recycled concrete was crushed to meet typical pavement base course gradations. It is not known if crushing the concrete simply exposed more sites for possible attack or if placing it in a moist environment allowed the attack to develop.

Until more is understood about this problem, it is recommended that recycled concrete not be used where it will be exposed to sulfates in the soil or water unless testing of the recycled concrete shows sulfate attack will not be a problem.

Ray Rollings, Marian Rollings, Toy Poole, Sam Wong, and Chuck Weiss from the Waterways Experiment Station and Gene Gutierrez from USACE, Albuquerque District are currently working on resolving this problem. ✉

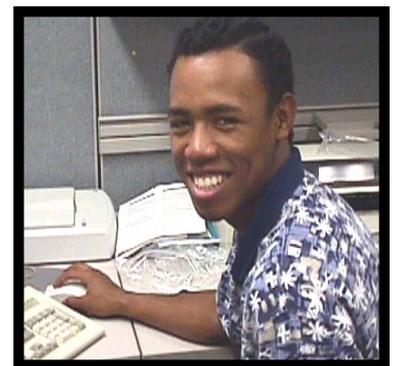
Welcome Addition to the Transportation Systems Center Team

Welcome to Justin Watters, the newest member of the Transportation Systems Center team. Justin is a Computer Science student at the University of Nebraska at Omaha. If all goes well he anticipates graduating in 2003.

So far at the Transportation Systems Center he has enjoyed developing databases, reports and a brochure and also updating files, any kind of computer work. He hopes to do more computer work for the TSMCX in the months to come. When he is not at the computer he loves sports, particularly basketball, soccer and bowling.

Justin is hearing impaired and came to the Transportation Systems Center through the Workforce Recruitment Program for College Students with Disabilities. The program is sponsored by the Department of Defense and the President's Committee on Employment of People with Disabilities. He communicates efficiently with the TSMCX staff by reading lips, hand written notes and e-mail. He has a wonderful sense of humor and often reminds the staff to smile.

Justin will work part-time with the Transportation Systems Center after school resumes this fall. Thank goodness, because he has already been a great asset to the team. Welcome Justin, and keep up the great work! ✉

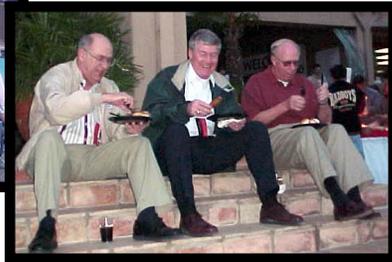


Justin Watters, newest team member of the Transportation Systems Center

TS2K Workshop (Cont'd)



Plenty of food and fun at the Ice Breaker Reception



The workshop activities began on Monday with 8 full- to half-day seminars. Monday's seminars were followed by a delicious Ice Breaker reception generously sponsored by participating companies from Industry. Following Tuesday's Opening Session through Thursday noon there were 25 concurrent sessions that included 80 presentations. Thursday afternoon a stimulating Panel Discussion was held with a panel of experts from the Army, Air Force, Navy, and Industry to answer questions and concerns pertaining to Transportation Systems. Friday offered 5 more half-day Seminars. In addition to the seminars and sessions there were computer

labs that offered hands-on classes throughout the week on PCASE, PAVER and RAILER. Other festivities included browsing the many exhibitor booths and sampling goodies poolside at the coffee breaks sponsored by the exhibitors. The Holiday

Inn Select, location of the workshop, provided bus transportation to the RiverWalk one evening for participants to get a glimpse of the nightlife available in San Antonio.



Attendees participating in one of the computer labs offered throughout the week

There were many positive comments on the Workshop, with the only reoccurring complaint being that the Workshop should be held more often than every 4 years.

Visit the TS2K web site at

www.transportation2000.com. On the site you can pull down a list of attendees, get a glimpse the workshop activities from the posted photos or download papers and fact sheets from the presentations. 📧



Holiday Inn Select provided transportation down to the Riverwalk for an evening of entertainment

Where on Earth is...

With the abolishment of U.S. Army Center for Public Works (USACPW) there were a lot of misplaced engineers. Where did they all go and what are they doing now? Well we've tracked down one pavement engineer and here's his story...

At USACPW, **Mike Dean** was the chief of the Pavements and Railroads Division. With a team of program managers he handled the following Army programs: Pavements Maintenance and Repair, Airfield Evaluation, Railroad Maintenance and Repair, Railroad Track Inspector, Installation Dam Safety, DPW Equipment, PAVER, and RAILER.

Mike currently works in Military Programs, Engineering and Construction Division at HQUSACE, in Washington DC. He does policy oversight in support of the ACSIM for the Army on Railroad Track Inspector Certification, and oversight of the U.S. Army Installation Dam Safety, Railroad Track Maintenance and Repair, PAVER, RAILER, and Engineered Management Systems (EMS) programs.

This month Mike and Dave will be reorganized to the HQUSACE's Site Preparation Team, Water Resources Branch, Engineering and Construction Division, Civil Works and will be moving back to Ft. Belvoir, but will continue to do the same work they are currently performing.

Mike Dean can be contacted at HQUSACE, (202) 761-1499, mike.dean@usace.army.mil. 📧

Construction Quality of Air Force Pavement

Air Force and Corps of Engineers representatives met to discuss construction quality of Air Force airfield pavements. As a result of that meeting the Corps agreed to:

- 1) Ensure full time, qualified quality assurance on airfield paving projects.
- 2) Establish a hot line to HQUSACE for an immediate response to problems. A procedure will be established by HQ AFCESA that will ensure the MAJCOM pavements engineers and HQ AFCESA are immediately notified when problems occur so that they can be resolved in a timely manner.
- 3) Establish a working group composed of HQUSACE, TSMCX, HQ AFCESA and MAJCOMs that will meet semi-annually to discuss problem areas.
- 4) Look at ways to ensure more qualified contractors are selected for airfield projects.
- 5) Ensure Fuel Hydrant Systems projects are reviewed by the TSMCX to preclude recent design/construction pavement problems.

For more information contact Greg Hughes, HQUSACE, (202) 761-4140 or Terry Sherman, Transportation Systems Center, (402) 221-7260. ✉



New Web Site Address for the TSMCX

The Transportation Systems Center has a new web site address at www.tsmcx.com. Check out the web site for the services and expertise the Transportation System Center offers. The site also has links to the newsletter, PCASE and other pavement related sites.

Construction Workshops Available

Upon request the Transportation Systems Center, with the support of District personnel and industry experts, will conduct an Airfield Paving Construction Workshop. The 2-3 day workshop is typically requested and funded by a District and attended by contractors, subcontractors, testing lab, concrete supplier, Air Force and Corps of Engineers (designers, inspectors and project manager) personnel. Workshop includes both hot mix asphalt (HMA) and portland cement concrete (PCC) paving practices. HMA topics include plant operations, construction joints, materials testing, control charts, inspection, troubleshooting and a discussion of contract specifications 02749. PCC topics include plant operations, materials testing, quality control/quality assurance testing, control charts, cold and hot weather paving, aggregate processing, placement, consolidation, finishing, curing, grooving, joint seals, and a discussion of contract specifications 02753. For more information about the construction workshops contact Terry Sherman, Transportation Systems Center, (402) 221-7260, terry.sherman@usace.army.mil. ✉

Navy Policy on Void Detection

by Vince Donnally and Dr. Javier Malvar

As the result of a recent Naval Air Station pavement incident associated with aircraft damage suffered when a taxiway collapsed due to subsurface voids, Naval Facilities Engineering Command has adopted a comprehensive policy regarding airfield pavement void detection. The Naval Facilities Engineering Service Center developed a methodology to detect such subsurface weaknesses summarized in a technical report, "Airfield Pavement Void Detection Technology", available at <http://www.nfesc.navy.mil/publicat.htm>. The procedures involve a combination of destructive and non-destructive testing techniques. Since most reported subsurface void problems have occurred near leaking drain pipes, the Navy guideline specifically addresses detection at drain pipe crossings, although a subset of the methodology can be applied elsewhere, for example where subgrade conditions facilitate the formation of sinkholes (e.g. karst conditions in Florida).

The new void detection policy stresses:

- ✉ Visual inspection of the airfield pavements by the airfield manager or his assigned representative on a frequent basis to locate potential problem areas.
- ✉ If potential problem areas are identified by visual inspection, Heavy Weight Deflectometer (HWD) test/evaluation can be performed at the request of the station.
- ✉ Identified problem areas should be further tested to determine the depth of the weakness and the type of repair needed. This testing can be completed using either a DCP (Dynamic Cone Penetrometer), ECP (Electronic Cone Penetrometer), or SPT (Standard Penetration Test).
- ✉ Alternate non-destructive techniques are currently being evaluated, but are not believed to be as effective as the aforementioned tools in determining the existence of voids under airfield pavements. Ground Penetrating Radar (GPR) cannot be used as a reliable tool to predict weak areas and GPR should not be used for void detection at this time.
- ✉ For new construction, use of a geotextile fabric to prevent loss of fines through a drainage structure is encouraged to prevent voids.

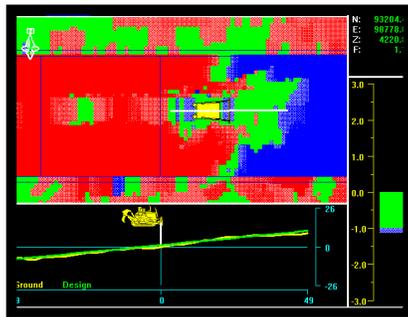
If you have questions, please call the local NAVFAC Engineering Field Division Pavement Team, Charlie Schiavino at (610) 595-0597, Dr. L. Javier Malvar at (805) 982-1447, or Vincent Donnally Naval Facilities Engineering Command (757) 322-4204. ✉

From the Labs...

Joint Rapid Airfield Construction

Joint Rapid Airfield Construction (JRAC) is a combination of technologies intended to aid the warfighter in force projection. The three basic parts of JRAC are site selection, rapid earthmoving and rapid surface stabilization.

For rapid earthmoving ERDC's Geotechnical Laboratory has been testing the Computer Aided Earthmoving System (CAES), originally developed for the mining industry by Caterpillar, Inc. The CAES uses the latest Real Time Kinematic (RTK) – Global Positioning System (GPS), a radio network, and CADD-type planning software to greatly improve the efficiency of earthmoving operations. The GPS locates the position and elevation of the construction



LED Screen with construction equipment: red = cut, blue = fill, green = at proper grade.



Computer Aided Earthmoving System (CAES) being tested at ERDC's Geotechnical Laboratory for rapid earthmoving

equipment on the site. The radio network communicates with a control location and provides a necessary link with GPS system to obtain accuracy to within an inch. The CAES system accepts most CADD type formats which layout the site, dimensions, and elevations. The operator of the construction equipment sees a LED type screen which locates the equipment on the site and provides information to the operator such as where cut needs to occur, where fill needs to be placed, and when the site is at proper grade.

The CAES system is scheduled to be installed on several pieces of equipment owned by the 20th Engineer Brigade, Fort Bragg, North Carolina. A test plan is being developed to evaluate the improvements obtained by using the CAES system over conventional construction techniques.

For more information contact Bill Grogan, ERDC-WES, (601)-634-2226, groganw@wes.army.mil.

Recycled Glass

As part of their efforts to minimize the use of natural resources, ERDC-CRREL has investigated the use of recycled glass as an unbound construction aggregate. The search for construction aggregates has been spurred by the diminishing supply of high quality “select” base course material in New Hampshire. Glass cullet is a strong, safe, and economical construction aggregate and thus, a logical substitution. An added benefit of glass cullet is the possible decrease in frost susceptibility. Laboratory tests conducted at CRREL have indicated that frost susceptibility of glass and blends of glass and aggregate was always less than or equal to that of aggregate specimens composed of 30% glass, 70% gravel, by volume.

Possible substitutes for natural aggregate must possess low-frost susceptibility because during the winter any water in the soil migrates to the freezing front and may generate ice lenses. Ice lens formation causes frost heave, which is responsible for the “mud season” in New England. When frozen soil containing ice lenses begins to melt from the top down, excess water is trapped above the underlying frozen layers. Consequently, this soil becomes highly saturated. Most damage to the pavements occurs during spring melting when pavement subgrades and sometimes base courses are in an extremely weakened condition. Using non-frost susceptible materials in road construction can prevent this type of damage.

Ms. Karen Henry, ERDC-CRREL research engineer, states that glass cullet is a “good way to reuse glass for Army bases and small towns.” The results of preliminary laboratory tests have been encouraging. More information on glass cullet is available on the Internet at <http://www.cwc.org>. For more information on recycled glass contact Karen Henry, CRREL, (603) 646-4188, khenry@crrel.usace.army.mil.

Kudos to...

PCASE Software Developer Awarded Scientist of the Year

Robert Walker, ERDC-WES, received the Herbert D. Vogel award for Scientist for the Year 2000. This is an annual award presented at WES to an outstanding Engineer, Scientist, Technician, or Administrator.

Mr. Walker distinguished himself with his planning and development of the Pavement-Transportation Computer Assisted Structural Engineering (PCASE) programs. His expertise in computer science and pavements technology has been critical to the success of PCASE by providing sponsors innovative tools for accomplishing pavement design and evaluations. His willing "can do" attitude make it a pleasure to work with him.

Kudos to you Robert! An award well deserved. 🍷

Fort Worth District's Engineer of the Year

Edward A. Murphy was named the Fort Worth District's Engineer of the Year. The award is presented annually to an individual who made specific contributions in the field of engineering resulting in a significant accomplishment for the district. Mr. Murphy, a civil engineer in the district's Design Branch, Engineering and Construction Division, accepted the challenge of mastering the leading-edge technology in railroad design, which led to the design of the Fort Hood (Texas) Railhead Project and the oversight for the Fort Polk (La.) Consolidated Rail Loading Facility. Mr. Murphy was recognized for his contributions to excellence in engineering design and to the engineering profession.

Kudos to you Edward! We couldn't be more proud. 🍷

What's Wrong with this Picture?



Read on to find the correct answer

Study on New Generation of Marking Materials

A two-year study is being performed to evaluate the durability of new generation pavement marking materials. This study will be part of a partnering effort with the United States Air Force Civil Engineering Services Center (AFCESA) and the U.S. Army Corps of Engineers.

New pavement marking systems composed of a polymer composite material incorporating flexible polymers and portland cement are demonstrating considerable promise. Two commercial products are currently available: PermaStripe and Lumimark. Both systems appear to have increased retention of reflective beads over paint and higher durability under traffic and high-pressure washing.

The study will compare durability under traffic, evaluate quality control tests necessary for Polymer Composite Pavement Markings (PCPM) quality assurance, and provide estimates of life-cycle costs for PCPM and FS TT-P-1952 paint using standard techniques for life cycle cost analysis. Actual field trials of PCPM products in multiple locations will be conducted to provide a field comparison of the performance to standard pavement markings.

For more information contact Dr. Kent Newman, ERDC, (601) 634-3858, newmanj@wes.army.mil. 🍷

For myself I am an optimist - it does not seem to be much use being anything else. ...Winston Churchill

Look well into yourself; there is a source of strength which will always spring up if you will always look there..." ...Marcus Aurelius

Source: "Health Works" by the Methodist Employee Assistance Program, Volume 10, Issue 1



New PCASE Setup Program

Fulfill your pavement software needs by getting the latest PCASE setup program, pcasetup101f.exe. The setup contains several updates to the design and evaluation programs, as well as a few new “draft” programs. You only have to download one file, which installs the PCASE suite (includes all PCASE programs). You do not need to uninstall previous versions of the programs. The new installation will over-write existing programs. If you choose to uninstall the previous versions it is recommended that you make a directory called PCASEBackup and copy all of your LEEP files (*.lpf), APE files (*.ape), and DCP files (*.dcp) into this directory before uninstalling. It is recommended that you remove any DOS programs you are still hoarding (DOS programs are no longer updated). You can check to see what changes were made to each of the programs on the PCASE homepage under “Current Projects” button, “Currently Released Programs”. In future announcements we will be sure to include information on which programs were upgraded.

The PCASE setup size is currently 35 MB. Users have complained about the large size. To break this down into smaller increments would mean increasing the total package size. If the setup were to be broken down into separate packages, i.e. airfield evaluation, airfield, design, layered elastic, etc., each separate package would be 17 MB for a total of 85 MB. Each package needs 14 MB of Microsoft overhead attached to it. Therefore to keep the size down and for simplicity all programs are tied together.

It Just Keeps Getting Better

The following “extras” have been added to the PCASE web site.

- ✦ Message Board is available for users to post questions on the programs or any pavement-related question. A response is then posted back answering the user’s question. Users can check the message board to see if similar problems, questions, or solutions exist.
- ✦ Chat room is available for users to ask the “expert”. A specific time will be set up with an “expert” available for registered PCASE users to chat on-line. A message will be sent out to users via e-mail to let them know what the featured topic is, who the expert is and when the chat room will be open for comments and questions.
- ✦ Search Engine is available for searching for key words. This engine will search the entire site including the message board.
- ✦ Document Page gives a listing of the technical documents that the programs are based on and links to the documents that are available in electronic form.
- ✦ Link Page gives a catalog of transportation related web-site links.

New Pay Adjustment (PAYAD) Program

by Ron Shafer, USACE, Alaska District

Corps of Engineers guide specifications for both heavy duty Portland Cement Concrete (PCC) pavements and heavy duty Hot Mix Asphalt (HMA) pavements have provisions for payment adjustments for deficiencies in grade, smoothness, and thickness. In addition, the guide specification for HMA requires payment adjustment for air voids and density. The PCASE program, PAYAD, computes the payment adjustments for these deficiencies.

Payment adjustments are based upon a “lot” which is a quantity of pavement. A lot may be a specific quantity of tons, cubic yards, square yards or a specific production period. PAYAD computes the payment adjustment for each lot of pavement placed.



PAYAD (Cont’d)

Also incorporated into the program is the ability to establish and maintain process control via linear control charts on both individual samples and the running average of last four samples for various parameters. For HMA paving, these parameters include aggregate gradations, stability, flow, AC content, air voids, and in-place density. For PCC paving, control charts are available for compressive strength, slump, and air content.

The process control charts are necessary for the Quality Control and Quality Assurance team to monitor the construction and production processes and to identify trends so that potential problems can be corrected before they get out of control. The control charts identify the project number, the test parameter being plotted, the individual sample numbers, the Action and Suspension Limits applicable to the test parameter being plotted, and the test results. The control charts enable early recognition when test results exceed either applicable Action Limit (the point at which action is taken to bring test results back to the desired level) or applicable Suspension Limit (the point at which the process is deemed out of control and production is halted until the problem is solved). Decisions concerning modifications to the processes should be made based on thorough analysis of the results provided in the control charts.

For more information about PCASE contact Mary Adolf, Transportation Systems Center, (402) 221-7265, mary.j.adolf@usace.army.mil or Robert Walker, ERDC, (601) 634-2145, walkerr@wes.army.mil.

From the PCASE Message Board

Question: Do you have any information on the use and performance of Coal Tar Rejuvenators for Asphalt Runways, such as the Pavement Dressing Conditioner (PDC) and Rejuvaseal.

Reply from James Shoenberger, (601) 634-3553: PDC has been placed in many general aviation airfields. One major location that has used it was Houston. Other coal tar based products are also available, BCR2000 and PS/R007 are two examples. We currently are working on an Air Force project placing test sections using these and other rejuvenators. These materials will be place in the next few months.

Question: We currently use a Falling Weight Deflectometer (FWD) to design our overlays for pavement rehabilitation. Is it possible to use our FWD to determine load carrying capacity of airfield pavements? Do you know what guidelines that I should adhere to in determining this?

Reply from Robert Walker, ERDC, (601) 634-2145: We use our FWD/HWD on a daily basis to determine allowable loads and passes for airfield pavements. There is a PCASE program located at <http://www.pcase.com> called "LEEP", Layered Elastic Evaluation Program that uses the deflections from the FWD data to backcalculate the Moduli values. The program then asks the user for aircraft traffic information and calculates the allowable loads and passes.

Question: What experience/problems is there with the durability and/or freeze/thaw of roller compacted concrete?

Reply from David Pittman, ERDC (601) 634-3304: In the Corps of Engineers, we've researched the freeze-thaw durability of RCC. Briefly, the results of the research concluded that RCC samples fabricated in the laboratory or cut from actual pavements usually perform poorly in the ASTM C 666 freeze-thaw tests. This is attributed to the lack of an adequate air-void matrix in RCC that would prevent the destruction caused by expansion of freezing water in the hardened RCC. However, observation of RCC pavements in the field that have been exposed to many cycles of freezing and thawing temperatures, as well as moist conditions (i.e. British Columbia, upstate New York, Norway, Sweden, etc), has indicated that RCC apparently suffers little or no detrimental effects from freezing and thawing conditions — at least from surface observations. This could be due to the relatively low w/c ratio typical of RCC, and relatively high density achieved during compaction — or it could be that those pavements never experienced a combination of freezing and thawing combined with moisture content that would cause saturation and subsequent damage. At any rate, the field experience provides anecdotal evidence at least that RCC pavements can perform well in freezing and thawing environments — we just don't know exactly why. For more information contact Dr. Bryant Mather, (601) 634-3264; Steve Ragan, Granite Construction; or Edel Cortez, (603) 646-4301. ✉

What's Wrong with this Picture...

The picture on page 7 shows the audience at the Transportation Systems 2000 Workshop. The only thing wrong with the picture is if you are not in it. It means you missed a week of informative seminars and presentations and need to now wait 4 years for another one. For more information on the workshop see the article on page 1 or the web site at www.transportation2000.com. ✉

Call for Papers

The International Society for Concrete Pavements (ISCP) is looking for papers for the **7th International Conference on Concrete Pavements**. The Conference will be held in Orlando, Florida, 9-13 September 2001. The theme of the conference is "The Use of Concrete in Developing Long-Lasting Pavement Solutions for the 21st Century". The focus is to present information on new technologies related to design, construction, and rehabilitation of various types of concrete pavements. The conference is targeted at pavement and geotechnical engineering professionals who are involved in various aspects of concrete pavement design, construction, testing and evaluation, and rehabilitation. The preliminary selection of papers will be made on the basis of abstracts (250 to 300 words) which are due 1 September 2000.

For a copy of the conference announcement and Call for Papers for the conference go to ISCP's web site at <http://iscp.tamu.edu>. For more information contact Shiraz Tayabji, (410) 997-0400, fax (410) 997-8480, stayabji@ctlgroup.com. ✉

HQUSACE Publication Bulletins

The HQUSACE Publication Bulletin serves as the "official" notification of new, rescinded or changes to existing Forms, USACE and DA publications. Printing of HQUSACE "official" publications (i.e., Engineer Regulations, Circulars, Technical Letter, Manuals, Reports, Studies, Commanders Policy Memoranda, Pamphlets) ceased on 22 July 1998. All HQUSACE "official" publications are distributed in electronic format on HQUSACE's Publication Library web site located at <http://www.usace.army.mil/inet/usace-docs>. ✉

Calendar of Events

SWIFT 2000 - Airfields and Operations Conference

Calgary, Alberta Canada
10-14 September 2000
www.swiftconference.org

American Concrete Institute (ACI) Convention

Toronto, Ontario, Canada
15 - 20 October 2000
POC: Conventions and Meetings, ACI,
P.O. Box 9094, Farmington Hills, MI
48333-9094, (248) 848-3795

Nat'l Airfield Concrete Pavement Conference

Orlando, Florida
24 - 25 October 2000
POC: American Concrete Pavement
Association (ACPA), (847) 966-2272,
airports@pavement.com,
www.pavement.com

Asphalt Technology 2000

Austin, Texas
10 - 13 December 2000
POC: Sharon Campos, (512) 471-3396, fax (512) 471-
0831, scampos@mail.utexas.edu

Geosynthetics Conference 2001

Portland, Oregon
12 - 14 February 2001
POC: Danette Fettig or Janet Schneider, (651) 225-6959,
fax (978) 945-2654 or (651) 631-9334,
jmschneider@ifai.com

American Concrete Institute (ACI) Convention

Philadelphia, Pennsylvania
25 - 30 March 2001
POC: Conventions and Meetings, ACI, P.O. Box 9094,
Farmington Hills, MI 48333-9094, (248) 848-3795.

7th Intl Conference on Concrete Pavements

International Society for Concrete Pavements
Orlando, Florida
9 - 13 September 2001
POC: Shiraz Tayabji, (410) 997-0400, fax (410) 997-8480,
stayabji@ctlgroup.com

Transportation News

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**Bettyjo Wagner
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**Galnard Mattke
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**B.J. Skar
(402) 221-7262**

**Justin Watters
(402) 221-3340 (TTY)**

**FAX
(402) 221-7261**