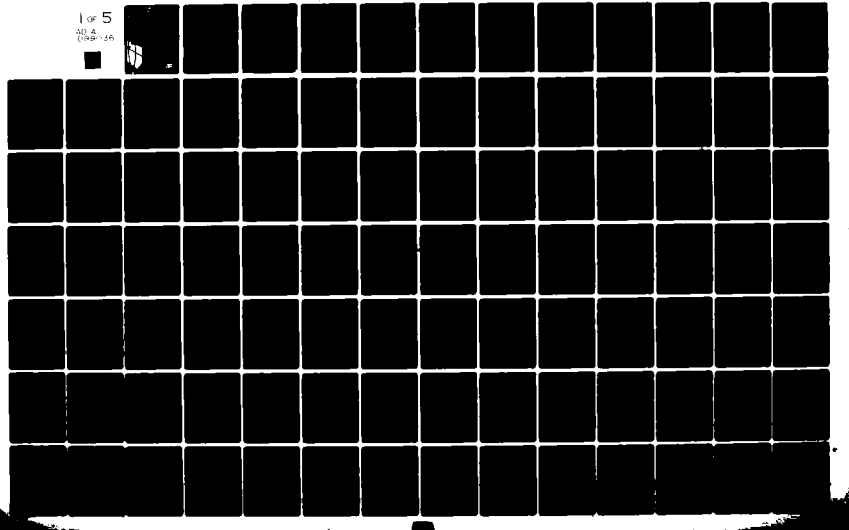
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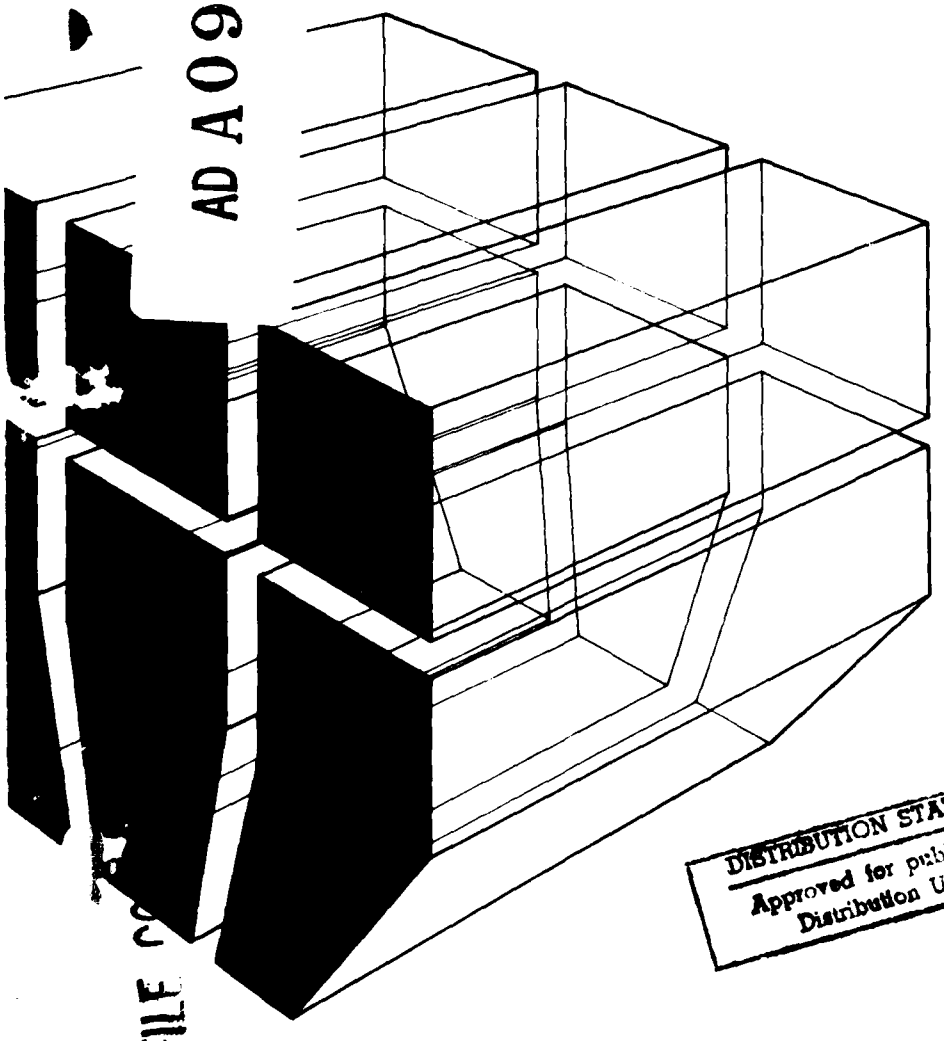
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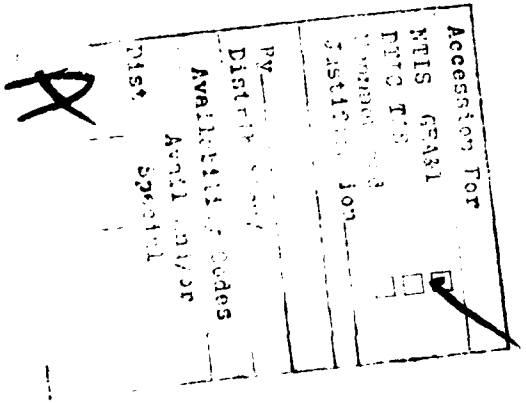
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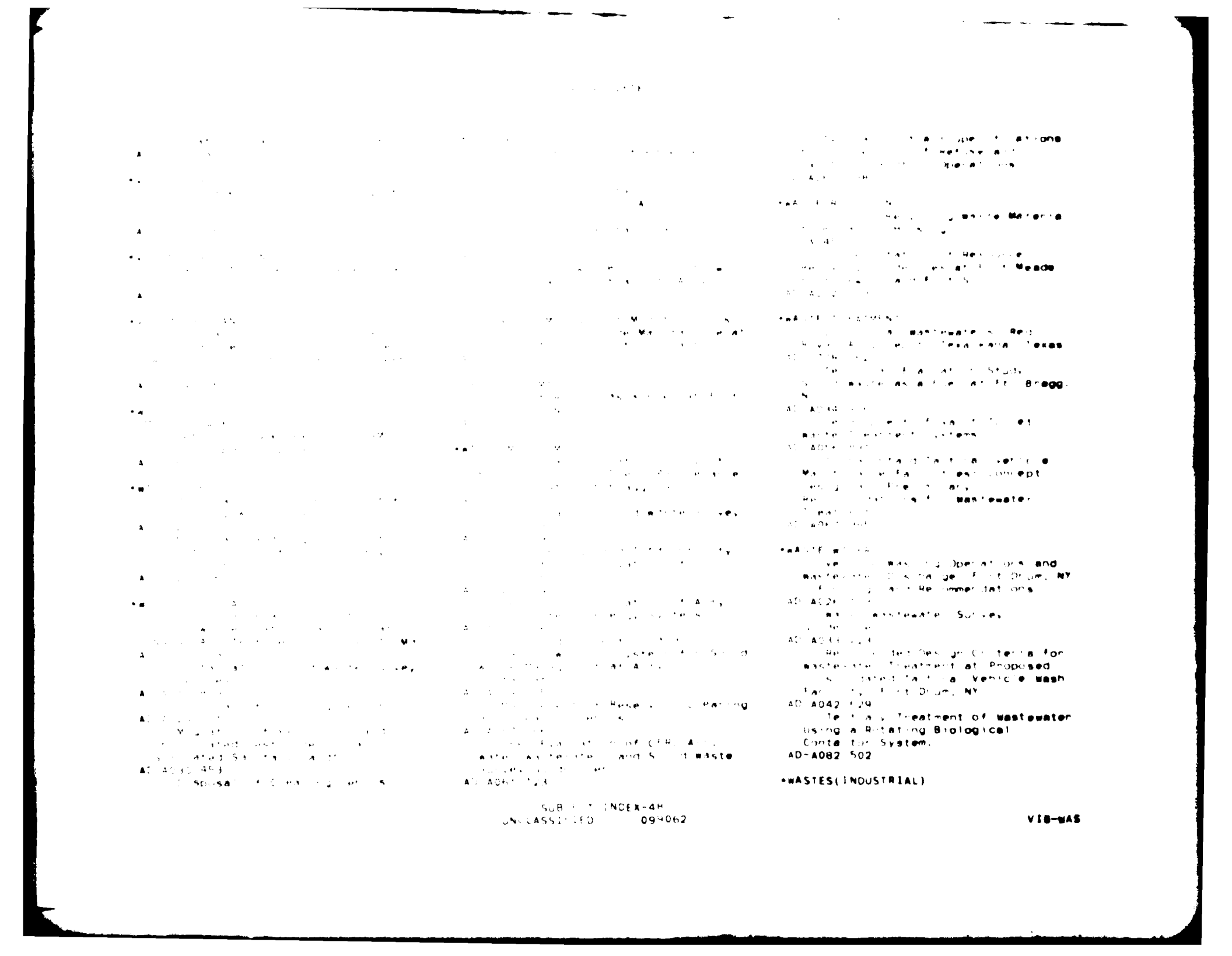
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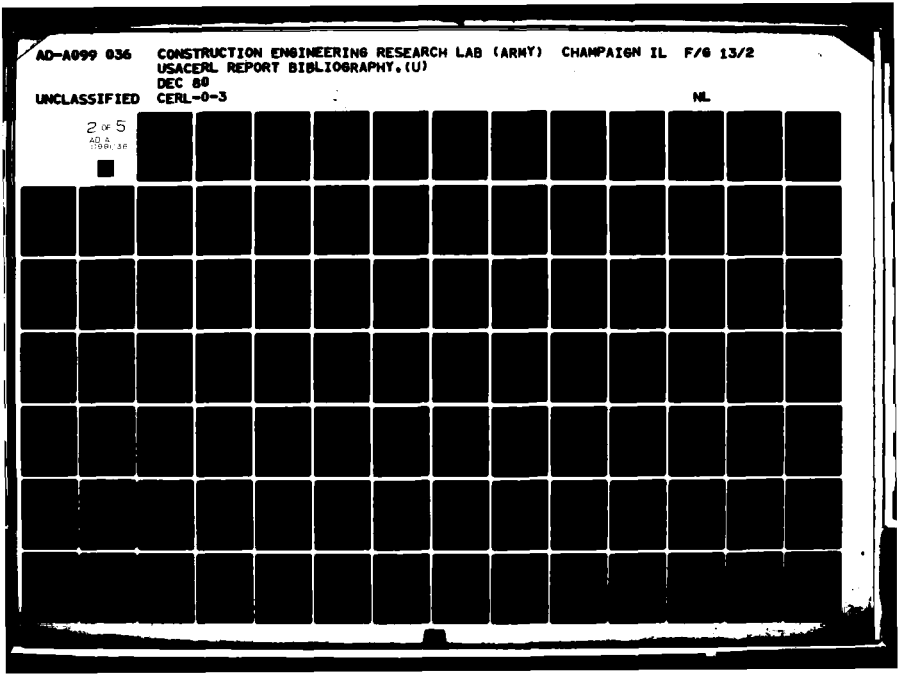
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CERL-TR-M-4
AD- 715 400

CERL-TR-M-5
AD- 880 626

CERL-TR-M-6
AD- 720 993

CERL-TR-M-8
AD- 729 661

CERL-TR-M-14
AD- 742 212

CERL-TR-M-15
AD- 742 213

CERL-TR-M-17
AD- 745 901

CERL-TR-M-18
AD- 745 408

CERL-TR-M-19
AD- 745 902

CERL-TR-M-22
AD- 749 458

CERL-TR-M-23
AD- 752 454

CERL-TR-M-24
AD- 749 459

CERL-TR-M-28
AD- 756 384

CERL-TR-M-31
AD- 767 531

CERL-TR-M-40
AD- 759 132

CERL-TR-M-43
AD- 773 716

CERL-TR-M-45
AD- 765 473

CERL-TR-M-49
AD- 762 194

CERL-TR-M-52
AD-A058 832

CERL-TR-M-60
AD-A009 667

CERL-TR-M-61-REV
AD-A012 110

CERL-TR-M-62
AD- 771 908

CERL-TR-M-67
AD- 774 847

CERL-TR-M-68
AD- 772 895

CERL-TR-M-75
AD-A008 997

CERL-TR-M-79
AD- 777 768

CERL-TR-M-80
AD- 780 800

CERL-TR-M-81
AD- 779 510

CERL-TR-M-86
AD- 780 802

CERL-TR-M-88
AD- 784 092

CERL-TR-M-92
AD- 781 944

CERL-TR-M-93
AD-A011 180

CERL-TR-M-94
AD-A021 774

CERL-TR-M-96
AD- 782 914

CERL-TR-M-106
AD-A003 833

CERL-TR-M-109
AD-A004 001

CERL-TR-M-114
AD-A012 728

CERL-TR-M-118
AD-A006 015

CERL-TR-M-120
AD-A008 996

CERL-TR-M-121
AD-A011 224

CERL-TR-M-122
AD-A007 742

CERL-TR-M-126
AD-B009 462L

CERL-TR-M-129
AD-A028 386

CERL-TR-M-131
AD-A029 410

CERL-TR-M-132
AD-A012 732

CERL-TR-M-134
AD-A012 731

CERL-TR-M-136
AD-A013 403

CERL-TR-M-138
AD-A013 387

CERL-TR-M-143
AD-A013 380

CERL-TR-M-147
AD-A015 469

CERL-TR-M-148
AD-A014 945

CERL-TR-M-151
AD-A017 045

CERL-TR-M-166
AD-A029 409

CERL-TR-M-169
AD-A018 951

CERL-TR-M-170
AD-A019 930

CERL-TR-M-171
AD-A019 931

CERL-TR-M-175
AD-A022 085

CERL-TR-M-177
AD-A022 697

CERL-TR-M-179
AD-A025 209

CERL-TR-M-180
AD-A024 910

CERL-TR-M-181
AD-A025 203

CERL-TR-M-185
AD-A028 605

CERL-TR-M-186
AD-A029 911

CERL-TR-M-188
AD-A032 569

CERL-TR-M-192
AD-A030 566

CERL-TR-M-193
AD-A033 757

CERL-TR-M-194
AD-A033 440

CERL-TR-M-195-VOL-1
AD-A035 763

CERL-TR-M-195-VOL-2
AD-A035 779

CERL-TR-M-196
AD-A034 662

CERL-TR-M-197
AD-A033 684

CERL-TR-M-198-VOL-1
AD-A035 687

CERL-TR-M-198-VOL-2
AD-A035 688

CERL-TR-M-199
AD-A035 258

CERL-TR-M-201
AD-A037 046

CERL-TR-M-203
AD-A037 047

CERL-TR-M-207
AD-A038 832

CERL-TR-M-212
AD-A039 120

CERL-TR-M-213
AD-A042 873

CERL-TR-M-214
AD-A040 741

CERL-TR-M-215
AD-A040 789

CERL-TR-M-217
AD-A041 339

CERL-TR-M-219
AD-A042 313

CERL-TR-M-220
AD-B020 359L

CERL-TR-M-221
AD-A043 558

CERL-TR-M-224
AD-A042 628

CERL-TR-M-225
AD-A044 992

CERL-TR-M-226
AD-A044 993

CERL-TR-M-228
AD-A045 186

CERL-TR-M-229
AD-B023 059L

CERL-TR-M-230
AD-A054 306

CERL-TR-M-231
AD-A053 272

CERL-TR-M-233
AD-A054 440

CERL-TR-M-235
AD-A054 307

CERL-TR-M-236
AD-A068 295

CERL-TR-M-237
AD-A054 309

CERL-TR-M-238
AD-A055 520

CERL-TR-M-239
AD-A057 957

CERL-TR-M-245
AD-A057 435

CERL-TR-M-246
AD-A056 300

CERL-TR-M-253-VOL-1
AD-A061 157

CERL-TR-M-253-VOL-2
AD-A067 691

CERL-TR-M-253-VOL-3
AD-A064 698

CERL-TR-M-258
AD-A072 054

CERL-TR-M-260
AD-B036 607L

CERL-TR-M-264
AD-A073 031

CERL-TR-M-267
AD-A073 619

CERL-TR-M-268-VOL-1
AD-A074 170

CERL-TR-M-268-VOL-2
AD-A074 171

CERL-TR-M-269
AD-A075 746

CERL-TR-M-270
AD-A075 204

CERL-TR-M-272-VOL-1
AD-A076 332

CERL-TR-M-272-VOL-2
AD-A076 310

CERL-TR-M-274
AD-B042 190L

CERL-TR-M-276
AD-A080 057

CERL-TR-M-278
AD-A085 342

CERL-TR-M-279
AD-A085 188

CERL-TR-M-280
AD-A087 266

CERL-TR-N-2
AD-A027 139

CERL-TR-N-4
AD-A027 431

CERL-TR-N-5
AD-A029 633

CERL-TR-N-6
AD-A028 921

CERL-TR-N-8
AD-A030 453

CERL-TR-N-11
AD-A033 223

CERL-TR-N-12
AD-A033 753

CERL-TR-N-13
AD-A033 475

CERL-TR-N-20
AD-A039 132

CERL-TR-N-21
AD-A040 005

CERL-TR-N-22
AD-A038 232

CERL-TR-N-28
AD-B031 260L

CERL-TR-N-29
AD-A045 421

CERL-TR-N-30
AD-A047 969

CERL-TR-N-35
AD-A057 936

CERL-TR-N-37
AD-A050 813

CERL-TR-N-38
AD-A051 999

CERL-TR-N-40
AD-A057 226

CERL-TR-N-41-VOL-1
AD-A060 958

CERL-TR-N-41-VOL-2
AD-A072 002

CERL-TR-N-41-VOL-3
AD-A083 320

CERL-TR-N-41-VOL-4
AD-A083 321

CERL-TR-N-42
AD-A055 565

CERL-TR-N-43
AD-A056 997

CERL-TR-N-49
AD-A055 561

CERL-TR-N-50
AD-A057 366

CERL-TR-N-53
AD-A059 176

CERL-TR-N-56
AD-A061 126

CERL-TR-N-57
AD-A064 356

CERL-TR-N-62
AD-A067 697

CERL-TR-N-63
AD-A067 253

CERL-TR-N-64
AD-A069 977

CERL-TR-N-66
AD-A069 374

CERL-TR-N-68
AD-A069 097

CERL-TR-N-69
AD-A073 667

CERL-TR-N-70
AD-A068 746

CERL-TR-N-71
AD-A072 003

CERL-TR-N-72
AD-A069 324

CERL-TR-N-74
AD-A073 032

CERL-TR-N-76
AD-A074 480

CERL-TR-N-78
AD-A073 894

CERL-TR-N-80
AD-A074 890

CERL-TR-N-81
AD-A079 441

CERL-TR-N-82
AD-A080 429

CERL-TR-N-85
AD-A082 502

CERL-TR-N-87
AD-A085 991

CERL-TR-N-89
AD-A086 526

CERL-TR-N-90
AD-A088 260

CERL-TR-N-92
AD-A089 976

CERL-TR-N-95
AD-A088 271

CERL-TR-N-96
AD-A089 136

CERL-TR-O-1-VOL-1
AD-A063 092

CERL-TR-O-1-VOL-2
AD-A061 647

CERL-TR-P-5
AD- 763 212

CERL-TR-P-6
AD- 758 447

CERL-TR-P-7
AD- 753 927

CERL-TR-P-9
AD- 768 098

CERL-TR-P-14
AD- 767 529

CERL-TR-P-15
AD- 771 909

CERL-TR-P-16
AD- 766 725

CERL-TR-P-18
AD- 770 927

CERL-TR-P-21
AD- 779 511

CERL-TR-P-22
AD- 782 912

CERL-TR-P-25
AD- 786 551

CERL-TR-P-26
AD-A000 710

CERL-TR-P-31
AD-A003 991

CERL-TR-P-36
AD-A009 522

CERL-TR-P-46
AD-A016 919

CERL-TR-P-47
AD-A018 716

CERL-TR-P-48
AD-A018 437

CERL-TR-P-49
AD-A018 438

CERL-TR-P-51
AD-A018 439

CERL-TR-P-52
AD-A016 788

CERL-TR-P-52-VOL-1
AD-A064 924

CERL-TR-P-52-VOL-2
AD-A064 925

CERL-TR-P-54
AD-A018 217

CERL-TR-P-65
AD-A024 141

CERL-TR-P-67
AD-A027 385

CERL-TR-P-68
AD-A027 386

CERL-TR-P-69
AD-A027 585

CERL-TR-P-76
AD-A033 476

CERL-TR-P-77
AD-A035 262

CERL-TR-P-80
AD-A040 742

CERL-TR-P-82
AD-A043 717

CERL-TR-P-83
AD-A044 454

CERL-TR-P-85
AD-A048 102

CERL-TR-P-89
AD-A057 146

CERL-TR-P-90
AD-A057 147

CERL-TR-P-94-VOL-1
AD-A061 127

CERL-TR-P-94-VOL-2
AD-A061 108

CERL-TR-P-95
AD-A061 091

CERL-TR-P-96
AD-A062 720

CERL-TR-P-97-VOL-1
AD-A065 827

CERL-TR-P-97-VOL-2
AD-A067 719

CERL-TR-P-98
AD-A066 384

CERL-TR-P-100
AD-A068 360

CERL-TR-P101
AD-A071 623

CERL-TR-P-102
AD-A071 637

CERL-TR-P-103
AD-A075 511

CERL-TR-P-106
AD-A080 609

CERL-TR-P-107
AD-A084 539

CERL-TR-P-108
AD-A083 683

CERL-TR-P-109
AD-A088 925

CERL-TR-P-110
AD-A088 634

CERL-TR-S-4
AD- 742 214

CERL-TR-S-9
AD- 751 172

CERL-TR-S-11
AD- 763 912

CERL-TR-S-12
AD- 907 397L

CERL-TR-S-14
AD- 755 526

CERL-TR-S-26
AD- 771 160

CERL-TR-S-27
AD- 773 715

CERL-TR-S-28
AD- 774 849

CERL-TR-S-30
AD-A048 250

CERL-TR-T-1
AD- 742 781

CPG-73-0029
AD- 753 925

DOD/DF-78-008
AD-A056 226

EPA/550/9-77-400
AD-A038 232

FAA-RD-77-148
AD-A054 309

GIDEP-E082-2659
AD-A042 313

LABORATORY
AD- 990 800

M-1
AD- 695 719

SAMSO-TR-69-294
AD- 867 374L

SBIE-AD-E400 190
AD-B031 260L

US ARMY
AD- 990 800

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-D418 086

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Investigation of Methods to Predict Thermal Stratification and its Effect on Solar Energy System Performance, (U)

MAY 80 30P Sliwinski,B. J. ;
REPT. NO. CERL-SR-E-160

UNCLASSIFIED REPORT

Approved for public release; distribution unlimited. Availability: National Technical Information Service, Springfield, VA. 22161. CERL-SR-E-160.

IAC ACCESSION NUMBER: PL-901660
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report describes a study to identify characteristics which induce thermal stratification in liquid thermal storage, and to evaluate solar energy system performance as a function of the degree of stratification. The mathematical correlations described in this report allow stratification occurrence to be predicted and can be used to estimate the sharpness of the thermocline based on tank inlet and outlet conditions, fluid properties, and storage tank geometry. (Author, modified). (U)

IAC SUBJECT TERMS: P--(U)Theory, Energy storage, Temperature profiles, Thermal storage, Stratification, Thermal conductivity, Solar heating systems, Storage tanks, ZZ MTDE, ZZ Unlimited.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-D402 631

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

THE EFFECTS OF DILUENTS ON THE PHYSICAL PROPERTIES OF EPOXY RESIN GROUT. (U)

FEB 72 1V Kemphues,R.F. ;
REPT. NO. CERL-M-11

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Unpublished report.

IAC ACCESSION NUMBER: PL-017376
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
The objective of this study was to determine the effects of representative nonreactive and reactive diluents on the physical properties of uncured and cured epoxy resin grouts to indicate the desirability of using diluents to ease the application of Grade B GROUT IN THE FIELD. One nonreactive diluent, toluene, and two reactive diluents, butyl glycidyl ether and phenyl glycidyl ether were selected for testing. The physical properties of the epoxy grout system used to evaluate the diluents were viscosity, tensile strength, tensile elongation, and hardness as determined by standard ASTM TESTS, AND BOND STRENGTH AS DETERMINED BY A SPECIAL TEST DESIGNED BY THE AUTHOR. (P.S.-PL) (U)

IAC SUBJECT TERMS: P--(U)Grout-Epoxy, Curing-Epoxy, Diluent-Toluene, Diluent-Butyl glycidyl ether, Diluent-Phenyl glycidyl ether, Viscosity-Epoxy, Tensile strength-Epoxy, Bond strength-Epoxy, Hardness-Epoxy, Elongation-Epoxy, ZZ Unlimited;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-B046 908L 9/2 6/6 5/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Preliminary Analysis of Computer-Aided Environmental Baseline Information System (CEBIS). Phase I. System Requirements. (U)

DESCRIPTIVE NOTE: Interim rept.,
APR 80 32P Webster,Ron D. ;Putnam,Dan ;
REPT. NO. CERL-IR-N-88
PROJ: 2103
TASK: 9P

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only; Test and Evaluation; Apr 80. Other requests for this document must be referred to Commander, Air Force Engineering and Services Center, Attn: RDVA, Tyndall AFB, FL 32403.
SUPPLEMENTARY NOTE: DTIC Form 55 not necessary for document request.
DESCRIPTORS: *Environments, *Data bases, *Information processing, Base lines, Air Force facilities, Data storage systems, Input output processing, Machine coding, Standardization, Efficiency, Information retrieval, Pilot studies, Environmental impact statements (U)
IDENTIFIERS: CEBIS(Computer Aided Environmental Baseline Information System), PE63723F, WUCERL21039P39 (U)

This interim report summarizes progress on the joint U.S. Army Construction Engineering Research Laboratory (CERL)/Air Force project to develop a Computer-aided Environmental Baseline Information System (CEBIS) that will store and allow analysis of environmental information from sources such as the TAB A-1, Environmental Narrative. This report fulfills the requirement under Task 5 in the Statement of Work to document progress, results, conclusions, and recommendations based upon completion of phase I of a two-phase project. Phase I specified: (1) evaluate the TAB A-1 and other data sources for information storage characteristics, (2) isolate those characteristics suitable for computer storage and analysis with existing prediction system, (3) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-B046 844L 20/14 20/3 6/17

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Selection of Recommended Electromagnetic Interference/Radio Frequency Interference Shielding Effectiveness Test Procedures for Military Tactical Shelters. (U)

DESCRIPTIVE NOTE: Final rept. May 78-Sep 79,
JAN 80 50P McCormack,R. G. ;
REPT. NO. CERL-M-277
PROJ: 2104
TASK: 4S
MONITOR: AFESC/ESL TR-80-1

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only; Test and Evaluation; Jan 80. Other requests for this document must be referred to Commander, Air Force Engineering and Services Center, Attn: RDCF, Tyndall AFB, FL 32403.
DESCRIPTORS: *Electromagnetic shielding, *Radiofrequency interference, *Shelters, *Electromagnetic interference, Electric fields, Specifications, Test methods, Magnetic fields, Laboratory tests, Loop antennas (U)
IDENTIFIERS: Tactical shelters, Military shelters, PE63723F, WUESL21044S01 (U)

This report examines three test procedures for measuring electromagnetic interference/radio frequency interference (EMI/RFI) shielding effectiveness: MIL-STD-285, Institute of Electrical and Electronic Engineers (IEEE) 299, and National Security Agency (NSA) 65-6. The requirements of these specifications are compared; pertinent aspects of the specifications' procedures are evaluated. The study involved literature research, comparison of existing test specifications, laboratory testing, and summary of past experience. The laboratory testing compared equipment types and testing techniques and examined error possibilities resulting from commonly encountered inaccuracies in equipment setup. This report concludes that the test procedure representing the state of the art uses IEEE 299 practices (with some modification) and standard antennas and instrumentation. The accuracy and repeatability of (U)

AD-B042 190L 19/3 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Earthmoving, Lifting, and Pulling Requirements for the Combat Engineer Vehicle (CEV). (U)

DESCRIPTIVE NOTE: Final rept.,
OCT 79 99P Hahin ,Christopher ;Cunningham ,Walter J. ;Lindow ,Edward S. ;Weber,Robert A. ;
REPT. NO. CERL-TR-M-274
PROJ: 4A763734DT08
TASK: T8

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only; Test and Evaluation; Sep 79. Other requests for this document must be referred to Commandant, Army Engineer School, Fort Belvoir, VA 22060.
DESCRIPTORS: *Combat vehicles, *Military engineering, *Earth handling equipment, Performance(Engineering), Construction equipment, Tactical warfare, Hoists (U)
IDENTIFIERS: *Combat engineer vehicles, PE63734A, AST08, WU013 (U)

This report defines and quantifies the significant earthmoving, lifting, and pulling requirements of the armored combat engineer vehicle (CEV). Demolition requirements and overall policies of tactical employment were not investigated. A methodology for determining the relative frequencies of these requirements in battlefield scenarios was developed. This report discusses the capabilities of the present M728 CEV, as well as the advantages of adapting the new XM1 combat tank as a base for a CEV. Design-related information and recommendations for vehicle improvement are provided for possible incorporation into the anticipated modification of the XM1 tank. (Author) (U)

AD-B036 607L 17/9 9/1 11/4

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Advanced Development Tests of a Composite Material for Antenna Element Radomes. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 79 58P Smith,Alvin ;Ziegler,L. N. ;
REPT. NO. CERL-TR-M-260

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only; Test and Evaluation; 23 Aug 74. Other requests for this document must be referred to Director, Ballistic Missile Defense Advanced Technology Center, Attn: ATC-R, P.O. Box 1500, West Station, Huntsville, AL 35807.
DESCRIPTORS: *Radomes, *Antenna components, *Composite materials, Polyester plastics, Binders, Fillers, Silicon dioxide, Impact tests, Compression, Tensile strength, Adhesive bonding, Thermal stresses, Impulse loading, Nuclear explosion simulation, Flat plate models, Rupture (U)

IAC ACCESSION NUMBER: PL-032757
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report presents data obtained in the third phase of a study of materials for antenna element support domes. This phase was devoted to the advanced development of a silica-flour-filled polyester resin developed and evaluated during the first two phases of this study. Test results showed that the composite material is impact sensitive, behaves as expected in dynamic compression and tension loading, can be bonded adequately with selected adhesives, and suffers little structural alteration in thermal-impulse tests simulating nuclear blast conditions. The characteristics of flat-plate sections perforated by holes for antenna elements are compared to those of nonperforated plates, and the change in modulus of rupture of these plates is related to dome design considerations. (U)

IAC SUBJECT TERMS: P--(U)Design criteria, Stress Concentration, Composites, Radomes, Antennas, Testing, Compression strength, Adhesion, Flat plates, Tensile strength, Notch sensitivity, Joint strength, Impact tests, Hole effects, Flexural

AD-B031 260L 19/1 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Water Management Modifications for Acetic Anhydride Manufacture at Holston Army Ammunition Plant. (U)

DESCRIPTIVE NOTE: Final technical rept. 1974-1976, JUL 78 40P Gerdes,G. L. ;Mikucki,W. J. ;Freeman,Donald J. ;
REPT. NO. CERL-TR-N-28
MONITOR: ARLCD,SBIE TR-77073,AD-E400 190

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only; Test and Evaluation; Jul 78. Other requests for this document must be referred to Commander, Army Armament Research and Development Command, Attn: DRDAR-TSS, Dover, NJ 07801.
DESCRIPTORS: *Explosive ordnance disposal, *Waste disposal, *Acetic anhydride, Munitions industry, Military facilities, Water pollution abatement, Waste recycling, Energy conservation, Pilot studies, Industrial plants, Scrubbers, Seals(Stoppers), Vacuum pumps, Waste water, Waste gases (U)
IDENTIFIERS: Holston Army Ammunition Plant, LPN-ARRADCOM-5734114, LPN-ARRADCOM-5754114 (U)

The program evaluated, on a pilot scale, a proposed modification to the acetic anhydride facilities at Holston Army Ammunition Plant (HAAP). The modification includes eliminating the water scrubber, the steam jet ejector, the barometric seal, and the drain sump, and replacing these units with a liquid seal vacuum pump to provide vacuum service and to cool and compress the waste vapors and gases. The proposed modification would also recover condensables and acetic acid for reuse and noncondensables for use as supplementary fuel in the cracking furnace. The pilot scale evaluation of the proposed modification ascertained that implementing these methods would recover significant quantities of acetic acid; reduce fuel, steam, and water consumption; lower production costs; and eliminate pollution. (Author) (U)

AD-B023 059L 17/9 11/4

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Fabrication and Testing of a Composite Material Radome. (U)

DESCRIPTIVE NOTE: Final rept., SEP 77 105P Smith,Alvin ;Woratzeck, Michael ;
REPT. NO. CERL-TR-M-229

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only; Test and Evaluation; Sep 77. Other requests for this document must be referred to Director, Ballistic Missile Defense Advanced Technology Center, Attn: BMDATC-T, P.O. Box 1500, West Station, Huntsville, AL 35807.
DESCRIPTORS: *Radomes, *Composite materials, Polyester plastics, Silicon dioxide, Powders, Glass reinforced plastics, Molds(Forms), Fabrication, Castings, Test and evaluation, Models, Structural properties, Electrical properties, Construction materials, Shock, Loads(Forces) (U)

IAC ACCESSION NUMBER: PL-027695 GC-780237
IAC DOCUMENT TYPE: PLASTC -HARD COPY-- GACIAC -HARD COPY--
This report presents data obtained in the second phase of a study of materials for antenna element support domes. The phase described in this report involved the design, fabrication, and testing of a 5-ft (1.5-m) diameter radome model made of a filled polyester resin developed in the first phase of the study. The results show that a filled resin composite material system can be formulated, mixed, and fabricated into a structure capable of withstanding shock load environments. The material also possesses electrical properties required for use with some types of antenna elements. (Author) (U)

IAC SUBJECT TERMS: G--(U)Devices, Radomes, Composite filler/resin binder construction, Polyester resin binders, Silica fiber materials, Development, Design study, Test and evaluation, Electrical properties, Mechanical properties, Data.; P--(U)Design, Fabrication, Testing, Radomes, Polyesters, Modeling, Silica, Flour, Fillers,

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-B020 359L 11/4 17/9

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development of a Composite Material for Construction of Antenna Element Radomes. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 77 49P Smith,Alvin ;
REPT. NO. CERL-TR-M-220

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only; Test and Evaluation; Jul 77. Other requests for this document must be referred to Office of the Chief of Engineers (Army), Attn: DAEN-MCE-D. Washington, D. C. 20314.

DESCRIPTORS: *Composite materials, *Radomes, *Radar antennas, Fillers, Polyester plastics, Binders, Silicon dioxide, Powders, Structural properties, Electrical properties, Compressive properties, Tensile strength, Flexural strength, Dielectric properties, Test methods (U)

IAC ACCESSION NUMBER: PL-026805 GC-780180
IAC DOCUMENT TYPE: PLASTC -MICROFICHE-- GACIAC -HARD COPY--

This report presents the results of a study to determine whether a composite material of particulate filler and resin could be developed to meet the design criteria for use in radar antenna element radomes. Sixty-five formulations of 8 resins and 16 fillers were initially screened to determine which combinations should be selected for further study. Three polyester resins and one filler-silica flour were found to be most promising. The structural and electrical properties of these materials were then determined. The results indicated that a particulate-filled polyester resin system can be formulated to give satisfactory structural and electrical properties for use as a radome for antenna elements. (Author) (U)

IAC SUBJECT TERMS: G--(U)Devices, Radomes, Composite filler/resin binder construction, Polyester resin binders, Test and evaluation, Laboratory testing, Silica fiber materials, Electrical properties, Mechanical properties.;P--(U)Epoxy, Polyesters, Fillers, Formulations, Electrical properties, Comparisons, Antennas, Radomes, Tensile strength,

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-B009 462L 13/11 13/8

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Analysis of Leaks in the High Temperature Hot Water Piping System at Fort Gordon, GA. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 76 16P Honig,E. M. , Jr.;Weber, R. A. ;
REPT. NO. CERL-TR-M-126

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only; Contractor Performance Evaluation;1Nov 75. Other requests for this document must be referred to Commander, Army Training and Doctrine Command, Fort Monroe, Va. 23651.

DESCRIPTORS: (*Water pipes, Hot water), (*Welded joints, Leakage(Fluid)), Cracks, High temperature, Penetration, Misalignment, Thermal stresses, Fluid flow, Detection, Methodology, Repair, Visual inspection (U)

The problem of leaks at welded joints in the high temperature hot water (HTHW) piping system at Fort Gordon, GA was examined. Visual inspection of a sample weld from the HTHW system showed marked lack of penetration in the weld, which was typical of the entire system. Other investigations of weld properties revealed no other critical abnormalities. Analysis of the piping design showed that the system was subject to overstress due to the constraints imposed by the pipe supports on the thermal motion of the system. Recommendations are made with respect to weld procedure, nondestructive examination, piping design, and leak detection in HTHW piping. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-B003 456 13/2 21/4

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Use of Refuse as a Fuel at Fort Monmouth, NJ. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 44P Rigo,H. G. ;
REPT. NO. CERL-TR-E-55

UNCLASSIFIED REPORT

DESCRIPTORS: (*Solid Wastes, Waste disposal), (*Waste disposal, Recycled materials), (*Recycled materials, Fuels), Cost analysis, Economics, Facilities, Processing, Boilers, Modification, Efficiency, Costs, Schools, Urban areas, Pollution, Land use, Energy management (U)
IDENTIFIERS: Shredders, Refuse derived fuel (U)

IAC ACCESSION NUMBER: PL-900506
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
This report analyzes the feasibility of using refuse-derived fuel (RDF) in the school boiler plant at Fort Monmouth, NJ, and the desirability of modifying the Monmouth County shredder facility to produce RDF. The County can produce RDF by adding an air classifier to its existing shredding facility. Fort Monmouth can convert existing boilers to RDF firing by installing reciprocating grate stokers and a baghouse for air pollution control. Both the County and Fort Monmouth would make a profit. The County would also reduce the amount of land required for the aerobic disposal of shredded refuse. The project is ecologically sound since renewable fuel resources would be used at Fort Monmouth. Design criteria for the boiler plant modifications are included. Capital and life-cycle cost estimates for both RDF production and use are presented. (Author) (U)

IAC SUBJECT TERMS: P--(U)RDF-Boilers, Refuse-Fuel oils, Oils-Heat recovery, Costs-Solid waste disposal, Economics-RDF, Design-Boilers, RDF-Energy Resources, ZZ MTDE, ZZ Unlimited.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A089 976 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Guidelines for Review of EA/EIS Documents. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 80 77P Fittipaldi,John J. ;Novak, Edward W. ;
REPT. NO. CERL-TR-N-92
PROJ: 4A162720A896
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Environmental impact statements, Documents, Preparation, Military facilities, Environments, Surveys, Technical writing (U)
IDENTIFIERS: Review techniques, PE62720A, AS896, WU001 (U)

The Federal Government has mandated that its agencies write environmental assessments and environmental impact statements (EAs/EISs) incorporating environmental considerations into the planning of new projects. In the Department of the Army (DA), proposed Army Regulation (AR) 200-2, Environmental Considerations in the Department of the Army, has imposed stringent new requirements for compliance with the National Environmental Policy Act (NEPA). This means that hundreds of EA/EIS documents must be reviewed more closely than before; therefore, an efficient procedure is needed for comprehensive, uniform evaluation. To meet these new requirements, this report sets forth systematic procedures for a review and evaluation of EA/EIS documents for Administrative Compliance, General Document, and Technical Review; and outlines a procedure to prepare a review summary of EA/EISs, which will lead to an ultimate recommendation on the technical adequacy and completeness of those documents. It is recommended that this report be used in conjunction with revised DA Pamphlet 200-1, Handbook for Environmental Impact Analysis, AR 200-1, Environmental Protection and Enhancement, and AR 200-2 until this information is incorporated into revisions of these documents. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A089 406 13/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Parametric Analysis of Energy Consumption in Army Buildings by the Building Loads Analysis and System Thermodynamics (BLAST) Computer Program. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 80 41P Windingland,Larry M. ;
REPT. NO. CERL-TR-E-162
PROJ: 4A762731AT41
TASK: 06

UNCLASSIFIED REPORT

DESCRIPTORS: *Buildings, *Energy consumption, Army, Facilities, Heating, Cooling, Computerized simulation, Thermal insulation, Windows, Control systems, Parametric analysis (U)
IDENTIFIERS: BLAST computer program, AST41, PE62731A, WU023 (U)

This report describes the effects varying architectural, construction, and mechanical system features have on the energy consumption of three Army buildings: a barracks, an administration building, and a dental clinic. The three buildings were simulated for five climatological regions centered at Washington, DC; Charleston, SC; Los Angeles, CA; Columbia, MO; and Fort Worth, TX. Energy consumption simulations were done by the Building Loads Analysis and System Thermodynamics (BLAST) computer program. The report shows the percentage difference in annual heating and cooling energy use for three buildings and five locations when variations from the as built insulation levels, orientation, window areas, window types, infilitration levels, mechanical system, and system control strategies are used. It was concluded that insulation levels, window size and type, and infiltration/ventilation rates are the most important architectural and construction features affecting the degree of energy consumption, and that proper selection of mechanical system type and system control strategies can reduce annual energy consumption by up to 50 percent. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A089 136 6/6 9/2 5/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Environmental Information Acquisition and Maintenance Techniques: Reference Guide. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 80 41P Riggins,Robert E. ;Young, V. T. ;Goran,W. D. ;
REPT. NO. CERL-TR-N-96
PROJ: A4762720A896
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Environments, *Data acquisition, Environmental impact statements, Information systems, Data bases, Information retrieval, Ecology, Air, Ground water, Land use, Noise, Public health, Earth sciences, Economics, Sociology, Conservation, Transportation, Impact, Maps, Mathematical models, Military facilities (U)
IDENTIFIERS: Environmental impact, Army facilities, EICS(Environmental Impact Computer System), Surface water, PE62720A, AS896, WU035 (U)

This report provides a guide to techniques for collecting, using and maintaining data about each of the 13 environmental technical specialties in the Environmental Impact Computer System (EICS). The technical specialties are: (1) ecology, (2) environmental health, (3) air, (4) surface water, (5) ground water, (6) sociology, (7) economics, (8) earth science, (9) land use, (10) noise, (11) transportation, (12) aesthetics, and (13) energy and resource conservation. Acquisition techniques are classified by the following general categories: (1) secondary data, (2) remote sensing, (3) mathematical modeling, (4) field work, (5) mapping/maps and (6) expert opinion. A matrix identifies the most appropriate techniques for collecting information on the EICS technical specialties. After selecting a method, the user may read an abstract of the report explaining that technique, and may also wish to obtain the original document for detailed information about applying the technique. Finally, this report offers guidelines (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A088 925 5/1 5/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

The Wages of Risk: Determining Fair and Reasonable Profit Objectives. (U)

DESCRIPTIVE NOTE: Final rept. for period ending FY79, AUG 80 77P Deponai,John M. , III ; Grubb,Nancy ;
REPT. NO. CERL-TR-P-109

UNCLASSIFIED REPORT

DESCRIPTORS: *Profits, Contract administration, Risk, Determination, Numerical methods and procedures, Factor analysis, Algorithms, Graphs, Weighting functions, Calibration, Army Corps of Engineers, Contracts, Construction, Engineering (U)

This report documents development of procedures for determining fair and reasonable profit objectives on U.S. Army Corps of Engineers contracts. The report describes and critiques several procedures that were considered during the course of the study. Finally, the recommended procedures which evolved from these earlier proposals are described and evaluated. The report recommends that profit on Corps contracts be computed by evaluating certain factors that reflect the degree of risk associated with a particular contract and a factor that provides contractors a minimum profit. In addition, this report proposes a simpler graphical method for use on architect-engineer (A-E) contracts less than $100,000. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A088 634 5/1 5/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Zero Base Budget, Civil Works Operation and Maintenance System: Executive Summary. (U)

DESCRIPTIVE NOTE: Final rept., AUG 80 46P Deponai,John M. , III ;
REPT. NO. CERL-TR-P-110
CONTRACT: IAO-CWO-M-78-2, IAO-CWO-M-77-4

UNCLASSIFIED REPORT

DESCRIPTORS: *Management information systems, *Army budgets, Civil engineering, Operation, Maintenance, Data processing, Coding (U)
IDENTIFIERS: *Zero base budgeting, CWOM(Civil Works Operation and Maintenance) (U)

This report provides management level overview of the Zero Base Budget, Civil Works Operations and Maintenance (ZBB/CWOM) system, a tool to develop funded programs which reflect management objectives. The ZBB/CWOM system requires that work in support of each project be defined in terms of that base effort which is absolutely essential to the accomplishment of the most significant aspects of the project. Those efforts which go beyond this base effort are expressed in logical increments of work. The ZBB/CWOM system develops prioritization of the incremental work efforts, ranging in importance from the most needed to the least needed, thereby integrating the work increments of a single project with the work increments of other projects. A single listing of all work elements, regardless of project, is developed in priority order; i.e., decision packages (DPs) which describe the work increments are developed and ranked. This report, in addition to providing a management overview, serves as a guide to the ZBB/CWOM system codes. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A088 271 6/6 6/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Ecological Baseline, Fort Hood, Texas. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 80 209P Severinghaus,W. D. ;Baran, R. S. ;Riggins,R. E. ;
REPT. NO. CERL-TR-N-95

UNCLASSIFIED REPORT

DESCRIPTORS: *Ecology, *Aquatic animals, *Aquatic plants. Surveys, Vertebrates, Mammals, Birds, Reptiles, Amphibians, Vegetation, Phytoplankton, Zooplankton, Sampling, Tables(Data), Classification (U)

This report presents ecological baseline information on the biota of Fort Hood, TX. Surveys were conducted in fall 1978 and spring 1979 on the terrestrial and aquatic flora and fauna for the purpose of helping Fort Hood personnel more accurately determine the environmental impacts of their military training and related activities. Representative terrestrial communities were surveyed for vertebrates (mammals, birds, reptiles, and amphibians) and vegetation. Representative aquatic communities were sampled for periphyton, phytoplankton, zooplankton, macrophytes, macroinvertebrates, and fish. Data gathered are in the form of species lists, species composition, density, and/or relative abundance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A088 268 7/3 7/4

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Identification and Quantification of Hydrocarbon Products in Effluents. (U)

DESCRIPTIVE NOTE: Interim rept.,
MAY 80 62P Vogel,R. S. ;Mikucki,W. J. ;Fileccia,R. J. ;Lampo,R. G. ;
REPT. NO. CERL-IR-N-91
PROJ: 4A762720A896
TASK: 02

UNCLASSIFIED REPORT

DESCRIPTORS: *Hydrocarbons, *Effluents, *Quantitative analysis, *Identification, Army, Chemical composition, Liquid chromatography, Spectroscopy, Data reduction, Gas chromatography, Waste water, Sampling, Environments, Molecular structure, Military facilities, Standards (U)
IDENTIFIERS: Hydrocarbon products, Discriminant analysis, Reference samples, PE62720A, AS896, WU009 (U)

This report documents interim results of a study to (1) investigate the capability of infrared (IR) spectroscopy for the identification of specific hydrocarbon products in effluents from washracks and other vehicle serivce operations at Army installations, and (2) make a comparative evaluation of the Environmental Protection Agency's (EPA) gravimetric (STORET 00556) and IR (STORET 00560) methods of quantifying 'total hydrocarbons' in wastewater. Results have shown that IR spectroscopy can provide a basis for the identification of hydrocarbon products for which reference samples are available. In the initial phase of the work, a scheme of sequential discriminant analysis and pattern recognition was used with reference to a file of military specification (MIL SPEC) hydrocarbon products used in servicing wheel- and track-type Army vehicles. The complexity of IR data reduction was shown to increase rapidly with the number of hydrocarbon products present in a given sample -- a result of a similarity in the hydrocarbon components' molecular structure. The use of gas-liquid chromatography (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099052

AD-A088 261 5/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Local Economic Consequences Study (LECS) Preliminary User Manual. (U)

DESCRIPTIVE NOTE: Interim rept., JUL 80 74P Hamilton,J. W. ;Webster,R. D. ;
REPT. NO. CERL-IR-N-94

UNCLASSIFIED REPORT

DESCRIPTORS: *Military facilities, *Economic models, Impact, Economic analysis, Computerized simulation, Mathematical prediction, Data processing, Input, Handbooks (U)
IDENTIFIERS: *Economic impact, *LECS(Local Economic Consequences Study), LPN-CERL-F79-22 (U)

This study has developed and documented a subsystem of the Environmental Technical Information System (ETIS) which provides easy, systematic access to the U.S. Air Force Local Economic Consequences Study (LECS) methodology. The system has been further implemented and is now available to Air Force users as a pilot system until further modifications and extensions are made. This document provides user instructions and identifies sources of required data. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A088 260 13/2 6/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Hazardous Waste Surveys of Two Army Installations and an Army Hospital. (U)

DESCRIPTIVE NOTE: Final rept., AUG 80 63P Kraybill,D. ;Mullen,T. ; Donahue,B. ;
REPT. NO. CERL-TR-N-90
PROJ: 4A762720A896
TASK: B

UNCLASSIFIED REPORT

DESCRIPTORS: *Waste disposal, *Wastes(Industrial), *Wastes(Sanitary engineering), *Military facilities, *Army operations, Hazards, Pesticides, Insecticides, Hospitals, Lubricants, Paints, Sludge, Solvents, Surveys, Environmental impact statements (U)
IDENTIFIERS: Polychlorinated biphenyls, PE62720A, AS896, WU028 (U)

This study describes a preliminary assessment of Army hazardous waste production and disposal requirements, as defined by the Resource Conservation and Recovery Act of 1976 and the Environmental Protection Agency's Proposed Guidelines and Regulations and Proposal on Identification and Listing of Hazardous Waste. This study examined hazardous waste production at two military installations and a major Army hospital. Six major hazardous wastes were found: (1) waste oil/petroleum oil lubricant (POL) products, (2) solvent tank bottom sludges, (3) paint wastes, (4) pesticides and insecticides, (5) PCBs, and (6) medical/infectious wastes. Descriptions of the study surveys as they were conducted are given. A hazardous waste survey format, developed during this study for use by Facilities Engineers, is also provided. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A088 011 13/13 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Methods for Developing Habitability Design Criteria. (U)

DESCRIPTIVE NOTE: Interim rept.,
JUL 80 30P Brauer,Roger L. ;
REPT. NO. CERL-IR-P-111
PROJ: 4A762721AT41
TASK: A

UNCLASSIFIED REPORT

DESCRIPTORS: *Habitability, Management information systems, Standards, Research management, Military facilities, Construction, Pilot studies (U)
IDENTIFIERS: PE62721A, AST41, WU001 (U)

Habitability design criteria are concerned with the ability of facility users and occupants to perform their missions effectively, safely, and with satisfaction. The purpose of this study is to develop procedures that the Office, Chief of Engineers, Corps of Engineers division and district offices, and contractors can use to systematically prepare habitability design criteria. In the first phase of the study, reported here, a prototype procedure was developed and was pilot tested in preparation of an actual design criteria document. The major conclusion drawn from the pilot test is that the process for developing habitability design criteria is feasible, although improvements are necessary to make it more efficient and to increase the probability of quality in its application. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A087 266 13/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Selection of Cooling Water Treatment at Military Installations to Prevent Scaling and Corrosion. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 80 31P Lane,R. ;Kumar,A. ;
REPT. NO. CERL-TR-M-280

UNCLASSIFIED REPORT

DESCRIPTORS: *Cooling towers, *Water treatment, *Military facilities, Corrosion inhibition, Scaling factors, Air Force facilities, Alkalinity, Slime, Fouling, Evaporation, Chemicals, Sodium compounds, Rates, Blowdown, Microorganisms, Calcium compounds (U)
IDENTIFIERS: Scaling products, Scaling chemicals, Reciprocating cooling towers (U)

This report offers solutions for scaling, corrosion, and fouling problems in cooling tower systems at Army and Air Force installations. These problems are caused by dissolved minerals in the water and growth of algae or slime within the system. The scaling product (SP) of cooling tower water can be expressed as a product of the calcium hardness (Ca) and alkalinity (M) expressed as CaCO3. The SP of water at major U.S. Army Training and Doctrine Command and U.S. Army Forces Command installations varies from 504 to 45,640. The State of Illinois has tested recently developed treatment products made by commercial enterprises. The simplest method of cooling tower treatment is blowdown control. A reciprocating cooling tower evaporates 1.5 gallons of water per hour per ton (5.67 l/0.9 MT), while an absorber evaporates 3 gal/hr/ton (11.12 l/0.9 MT). The blowdown rate equals the evaporation rate divided by, cycles of concentration minus 1. The makeup water equals the amount of evaporation plus blowdown. The maximum cycles of concentration are limited by the scaling chemicals in the water; it is considered uneconomical to run less than 3 cycles of concentration. For cooling towers less than 20 tons (18.1 MT), the (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A086 526 6/6 6/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Guidelines for Terrestrial Ecosystem Survey. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 80 218P Severinghaus,William D. ;
REPT. NO. CERL-TR-N-89

UNCLASSIFIED REPORT

DESCRIPTORS: *Ecosystems, *Ecology, *Surveys, Data acquisition, Environmental impact statements, Vegetation, Animals, Estimates, Mammals, Birds, Bibliographies, Site selection, Tables(Data), Plants(Botany), Sampling (U)

This report provides guidelines that will enable Army installations to compile and maintain enough information on flora and fauna to produce satisfactory environmental impact assessments and statements. The report outlines a three-stage method for data acquisition and contains appendices listing literature resources and specialists. By completing Stage I, users create a series of maps, overlays, and tables that give an estimate of the amount of habitat, types of vegetation, and types of animals existing on the installation. Stage II involves a field verification of the information from Stage I. Stage III requires the explicit documentation of population densities and other ecological parameters of the various organisms on the installation. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A086 051 10/2 10/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Investigation of Methods to Predict Thermal Stratification and Its Effect on Solar Energy System Performance. (U)

DESCRIPTIVE NOTE: Special rept.,
MAY 80 33P Sliwinski,B. J. ;
REPT. NO. CERL-SR-E-160
PROJ: 4A761102AT23
TASK: B

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar energy, *Predictions, *Thermal conductivity, *Stratification, Physical properties, Performance(Engineering), Energy storage, Correlation techniques, Inlets, Velocity, Storage tanks, Geometry, Fluids, Liquids (U)
IDENTIFIERS: Thermal stratification, Solar energy systems, Outlet conditions, PE61102A, AST23, WU010 (U)

THIS REPORT DESCRIBES A STUDY TO IDENTIFY CHARACTERISTICS WHICH INDUCE THERMAL STRATIFICATION IN LIQUID THERMAL STORAGE, AND TO EVALUATE SOLAR ENERGY SYSTEM PERFORMANCE AS A FUNCTION OF THE DEGREE OF STRATIFICATION. It was determined that for efficient use of thermal stratification it was necessary to (1) introduce hot fluid at the top of the liquid storage tank and to add cold fluid at the bottom of the tank, (2) with a cylindrical tank, have a length/diameter ratio equal to or greater than 2.0, (3) use mathematical correlations to determine allowable fluid inlet velocities and temperatures, and (4) use storage tank material that has a thermal conductivity less than that of the storage fluid. The mathematical correlations described in this report allow stratification occurrence to be predicted and can be used to estimate the sharpness of the thermocline based on tank inlet and outlet conditions, fluid properties, and storage tank geometry. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A085 991 5/1 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Interagency/Intergovernmental Coordination for Environmental Planning (IICEP): Systems Considerations. (U)

DESCRIPTIVE NOTE: Technical rept., MAY 80 107P Webster,Ronald Dwight ; Putnam,D. E. ;
REPT. NO. CERL-TR-N-87

UNCLASSIFIED REPORT

Availability: Document partially illegible.
DESCRIPTORS: *Environmental management, *Information systems, Air Force planning, Cooperation, State government, United States Government, Directories, Computer applications, Computer programs (U)

The primary purpose of this report is to document the organization and command structure of a computerized system for providing access to information necessary for the Interagency/ Intergovernmental Coordination for Environmental Planning (IICEP) requirements as set forth in Air Force Environmental Planning Bulletin 14. A secondary objective is to identify problems associated with the IICEP system's implementation and to recommend pertinent solutions. Preliminary data acquired by Air Force contractors were obtained and used as a basis for developing the software structure necessary to handle these data. This report describes IICEP and explains the development of the organization, structure, and software of the pilot computerized system. It will form the basis for evaluating the system and further clarifying the need for data refinement and update. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A085 573 13/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Comparison of Building Loads Analysis and System Thermodynamics (BLAST) Computer Program Simulations and Measured Energy Use for Army Buildings. (U)

DESCRIPTIVE NOTE: Interim rept., MAY 80 43P Herron,Dale ;Windingland, Larry M. ;Hittle,Douglas C. ;
REPT. NO. CERL-IR-E-161
PROJ: 4A762731AT41

UNCLASSIFIED REPORT

DESCRIPTORS: *Buildings, *Energy consumption, Military facilities, Office buildings, Clinical medicine, Dentistry, Electric power, Measurement, Computerized simulation, Comparison (U)
IDENTIFIERS: BLAST(Building Loads Analysis and Systems Thermodynamics), Dental clinics, PE62731A, AST41, WU001 (U)

This report describes an analysis of actual measured energy consumption vs energy consumption simulated by the Building Loads Analysis and System Thermodynamics (BLAST) computer program. A dental clinic and a battalion headquarters and classroom building were modeled; comparisons of the BLAST output using onsite weather and measured energy consumption data are made for the two buildings. The report includes tables and figures describing how well the BLAST program calculates the building's internal electrical load and, by comparing simulation results with measured values, predicts the building's cooling load and chiller performance as described by the chiller electrical energy consumption. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A085 342 11/6 13/8

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Determination of the Effect of Current and Travel Speed of Gas Metal-Arc Welding on the Mechanical Properties of A36, A516, and A514 Steels. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 80 42P Weber,R. ;
REPT. NO. CERL-TR-M-278
PROJ: 4A762731AT41

UNCLASSIFIED REPORT

DESCRIPTORS: *Carbon steels, *Gas metal arc welding, *High strength, *Mechanical properties, Weldments, Tensile properties, Velocity, Butt welding, Pressure vessels, Joints, Dynamic tests, Yield strength, Heat, Impact tests, Electrical conductivity, Tearing, Transition temperature, Welds, Technology transfer, Cooling (U)
IDENTIFIERS: Steels A514, Steels A516, Steels A36, Nugget area, Plate materials, Travel speed, Test specimens, PE62731A, AST41, WU005 (U)

This study was performed to determine the limits on current and travel speed-in particular, nugget area-as defined by the results of tests to determine tensile and impact properties of butt joint welds produced by fully automatic gas metal-arc welding (GMAW) in carbon steel (A36), pressure-vessel steel (A516), and high-strength, low-alloy steel (A514). (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A085 298 9/3 13/1 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

An Analysis of Electrical Consumption at Representative Army Installations. (U)

DESCRIPTIVE NOTE: Interim rept.,
MAY 80 81P Windingland,L. M. ;
REPT. NO. CERL-IR-E-163
PROJ: 4A762731AT41

UNCLASSIFIED REPORT

DESCRIPTORS: *Military facilities, *Electric power, *Consumption, Variations, Army operations, Buildings, Colorado, Virginia, Measurement, Meteorological phenomena, Energy conservation, Inspection (U)
IDENTIFIERS: *Fort Carson, *Fort Belvoir, PE62731A, AST41, WU004 (U)

This report describes analysis of monthly and daily electrical energy consumption data collected over 2 years from 8 electrical feeders at Fort Carson CO, and 20 different Army buildings at Fort Carson and at Fort Belvoir, VA. The work was conducted to determine why electrical energy consumption has been increasing at Army installations, and to provide a basis for determining methods to reduce consumption. It was determined that many Army buildings have a high minimum electrical usage (minimum demand) that amounts to up to 75 percent of total annual consumption. Tables and graphs are provided which amplify the significance of this minimum demand. It was concluded that a shift from emphasizing a reduction in occupant usage of electrical energy to a concentrated effort to minimize the continuous electrical usage caused by building operation and heating, ventilating, and air-conditioning (HVAC) systems should reduce electrical consumption at Army installations. (author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A085 188 11/10 11/3 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Roofing Repair Materials for Korean Relocatable Buildings - Test and Evaluation. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 80 17P Muncy,Robert E. ;
REPT. NO. CERL-TR-M-?

UNCLASSIFIED REPORT

DESCRIPTORS: *Roofs, *Repair, *Neoprene, South Korea, Barracks, Panels, Sealing compounds, Failure(Mechanics), Leakage(Fluid), Rubber seals, Cyclic tests, Loads(Forces), Tensile strength, Elongation, Hardness, Adhesion, Exposure(General), Ultraviolet radiation, Condensation, Test methods (U)

This report presents the results of tests of two commercial roof repair materials, Contourflash and Polyseal, to determine how they would perform in the roof repair of Army relocatable barracks in Korea. All tests were conducted with the existing roof sealant in place. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A084 717 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Developing Facility Information for Combat Equipment Group -- Europe (CEGE) Sites. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 80 25P Porter,Robert ;
REPT. NO. CERL-TR-E-165
PROJ: 4A762731AT41
TASK: F

UNCLASSIFIED REPORT

DESCRIPTORS: *Military facilities, West Germany, Army operations, Army equipment, Warehouses, Construction, Military requirements, Military planning, Sites, Storage (U)
IDENTIFIERS: *CEGE storage, PE62731A, AST41, WU006 (U)

This report presents the methodology and the information sources used to generate comprehensive, generic facility information for the design and construction of future Combat Equipment Group - Europe (CEGE) installations. Three types of information were collected and documented: (1) POMCUS (Prepositioned Materiel Configured to Unit Sets) related supply and equipment data for 81 military units that potentially could be assigned to future CEGE installations, (2) narrative extracts of articles and research reports written to improve POMCUS system facilities, and (3) specific space and work station information from regulation documents and current CEGE facility occupants. The information document developed is entitled, Type II Forward Storage Site Facilities-- POMCUS System (September 1979). (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A084 539 13/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Housing Maintenance Contract guide. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 80 246P Nay,Joyce L. ;Blakey-Smith,Martha A. ;Brown,David W. ;Reesor, Doris J. ;Blackmon,Robert B. :
REPT. NO. CERL-TR-P-107

UNCLASSIFIED REPORT

DESCRIPTORS: *Housing(Dwellings), Maintenance, Contracts, Preparation, Army, Military facilities (U)
IDENTIFIERS: *Family housing (U)

This report describes how to prepare family housing maintenance contracts for U.S. Army installations. Guidance for developing and preparing each section of the contract and specifications which the reader may use to reduce contract preparation time are provided. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A084 188 5/9 5/1 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Directory of Construction Engineering Programs in Organization and Management of Construction. (U)

APR 80 27P

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Management, *Education, Civil engineering, Surveys (U)
IDENTIFIERS: *Construction management (U)

This first edition of a directory of education programs in engineering and management covers 20 programs in 11 countries. CIB Working Commission 65, Organization and Management of Construction, plans to update the directory periodically. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A083 683 13/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Facility Information for: U.S. Army Tactical Vehicle Organizational and Support Maintenance. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 80 158P Porter,Robert ;Brauer,Roger ;Dressel,David ;Fileccia,Robert ;Kloster,Sharen ;
REPT. NO. CERL-TR-P-108
PROJ: 4A762731AT41, 4A762720A896
TASK: D, T2

UNCLASSIFIED REPORT

DESCRIPTORS: *Military vehicles, *Maintenance management, Repair shops, Army planning, Workplace layout, Maintenance equipment (U)
IDENTIFIERS: PE62720A, AS896, WU027, PE62731A, AST41, WU041 (U)

This document provides a comprehensive set of planning concepts pertinent to tactical vehicle maintenance construction projects. These concepts are applicable to all generic functions associated with both Organizational and Direct Support maintenance for most Army vehicles. The categories of information contained in this document relate Army policies to the activities, personnel, and equipment required to accomplish a specific function. The information in this document has been integrated into a four-page format, so that all information related to a particular function can be viewed together. Eight types of information are provided: function, policy, issues, assumptions, activities/personnel/equipment, requirements, criteria, and guidance. The document was organized in this manner to permit ready incorporation of applicable information into appropriate Design Guides, Technical Manuals, and standardized design criteria. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A083 321 20/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

True-Integrating Environmental Noise Monitor and Sound-Exposure Level Meter. Volume IV. Mechanical Construction and Electrical Check Out. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 80 57P Averbuch,A. J. ;Brown,R. ;
REPT. NO. CERL-TR-N-41-VOL-4
PROJ: 4A762720A896
TASK: 03

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A060 958.
DESCRIPTORS: *Acoustic measurement, Noise(Sound), Monitors, Sound, Exposure(General), Level(Quantity), Measuring instruments, Assembly, Checkout procedures (U)
IDENTIFIERS: WU001, AS896, PE62720A (U)

This volume gives the assembly, adjustment, and checkout procedures necessary to construct a U.S. Army Construction Engineering Research Laboratory (CERL) True-Integrating Environmental Noise Monitor and Sound-Exposure Level Meter. It describes the monitor's mechanical layout, wiring guidelines, adjustments to components to bring various circuits into tolerance, and steps for verifying the correct operation of the monitor. Also included are test programs to be executed by the internal microprocessor to exercise the internal circuit to help checkout or repair. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A083 320 20/1 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

True-Integrating Environmental Noise Monitor and Sound-Exposure Level Meter. Volume III. Microprocessor Program and Data Interface Description. (U)

DESCRIPTIVE NOTE: Final rept., MAR 80 178P Averbuch,A. J. ;Little,L. M. ;
REPT. NO. CERL-TR-N-41-VOL-3
PROJ: 4A762720A896
TASK: 03

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 4, AD-A083 321.
DESCRIPTORS: *Acoustic measurement, *Microprocessors, *Computer programs, Noise(Sound), Monitors, Sound, Exposure(General), Level(Quantity), Measuring instruments, Microprogramming, Input output devices (U)
IDENTIFIERS: WU001, AS896, PE62720A (U)

This report describes the internal microProcessor program used to operate the U.S. Army Construction Engineering Research Laboratory (CERL) True-Integrating Environmental Noise Monitor and Sound-Exposure Level Meter. Several data interface accessories are also described; complete program listings are included. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A083 317 10/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Densified Biomass as an Alternative Army Heating and Power Plant Fuel. (U)

DESCRIPTIVE NOTE: Final rept., MAR 80 87P Hathaway,S. A. ;Lin,J. S. ;Mahon,D. ;Magnino,T. ;Duster,K. ;
REPT. NO. CERL-TR-E-158

UNCLASSIFIED REPORT

DESCRIPTORS: *Wood, *Pellets, *Biodeterioration, *Heating, *Electric power plants, Fuels, Wood pulp, Economic analysis, State of the art, Literature surveys, Storage, Environments, Army, Production (U)
IDENTIFIERS: Biomass energy, Densified biomass, Experimental study, Wood pellets, Densification, LPN-CERL-79-1 (U)

This investigation evaluated the technical and economic potential of using densified biomass (principally wood pellets) as a coal substitute Army heating and power plants. The report reviews Department of Defense (DOD) experience with and tests of wood pellets; production of wood pellets (excluding silvicultural aspects); handling, storing, and feeding; combustion; major environmental considerations; and economics of use. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A082 773 13/2 10/2 21/4

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Production and Use of Densified Refuse-Derived Fuel (DRDF) in Military Central Heating and Power Plants. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 80 104P Hathaway,S. A. ;Lin,J. S. ;Mahon,D. L. ;west,B. ;Marsh,R. ;
REPT. NO. CERL-TR-E-159
CONTRACT: MIPR-FY8952-78-65012

UNCLASSIFIED REPORT

DESCRIPTORS: *Solid wastes, *Fuels, Military facilities, Heating plants, Electric power plants, Military applications, Combustion, Waste disposal, Refuse collection, Compacting, Resource management, Costs, State of the art, Risk (U)
IDENTIFIERS: DRDF(Densified Refuse Derived Fuels) (U)

IAC ACCESSION NUMBER: PL-901642
IAC DOCUMENT TYPE: PLASTIC -HARD COPY--
This study appraises the state of the art of production and use of densified refuse-derived fuel (DRDF) in military-scale (25 to 200 MBtu per hour) central heating and power plants. It found that few performance and economic data exist for military-scale DRDF production unit operations. Although theoretical modeling of some operations (shredding, air classifying, pelleting) is generally well developed, field verification of the models is beleaguered by continued alterations of in-place equipment design to improve performance, lack of a uniform method to characterize refuse input to processes, and absence of an industry-wide commitment to monitor equipment performance. Although nearly two dozen DRDF tests have been conducted, they have been short-term experiments that have not followed the scientific method and have been inconclusive regarding long-term DRDF use in military heating and power plants. As a result, proper and realistic specification of DRDF for military procurement cannot be made. The study also found that lack of operating data, standard analytical procedures, and experience in military-scale DRDF systems engender (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A082 502 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Tertiary Treatment of Wastewater Using a Rotating Biological Contactor System. (U)

DESCRIPTIVE NOTE: Final rept.,
FEB 80 43P Smith,Edgar D. ;Poon,C. P. C. ;Mikucki,Walter ;Bandy,John T. ;
REPT. NO. CERL-TR-N-85
PROJ: 4A762720A896

UNCLASSIFIED REPORT

DESCRIPTORS: *Sewage treatment, *Waste water, Operational effectiveness, Costs, Reliability, Army, Army equipment, Ammonia, Nitrogen, Quality, Standards (U)
IDENTIFIERS: Rotating biological contactors, PE62720A, AS896, WU017 (U)

The use of rotating biological contactors (RBCs) to upgrade sewage treatment plants is relatively new in the United States, and only a few full-scale RBC secondary plants have been in operation for more than 1 year. RBCs appear to be simple to operate and maintain, cost competitive, reliable, economical, and compatible for retrofitting existing Department of Army (DA) sewage treatment plants without extensive renovation. However, data are scarce regarding RBC retrofitting strategies for upgrading existing secondary trickling-filter sewage treatment plants for additional biochemical oxygen demand (BOD) and nitrogen removal to meet current and anticipated National Pollution Discharge Elimination System (NPDES) requirements. In addition, because of differences in manufacturers' inherent design philosophies, nowell-defined theory of design and operation is accepted by all manufacturers. The overall objective of this investigation was to evaluate the performance of an RBC wastewater treatment process as an upgrading-retrofit unit process for BOD reduction and nitrification. Using a 0.5-m RBC plant at an existing full-scale trickling-filter plant, the flexibility, feasibility, and characteristics for BOD reduction and nitrification potential were determined under a variety of hydraulic, organic, an (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A080 609 5/1 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Total Contract Maintenance for Mannheim Family Housing. (U)

DESCRIPTIVE NOTE: Final rept. Jul 78-Sep 79,
JAN 80 126P Kay,Jerice L. ;Brown,David W. ;
REPT. NO. CERL-TR-P-106

UNCLASSIFIED REPORT

DESCRIPTORS: *Maintenance management, *Housing dwellings, Contracts, Army, Germany(East and West), Buildings, Construction, Europe, Engineering, Cost estimates (U)
IDENTIFIERS: LPN-DA-89-4510-7-TR (U)

This report documents a U.S. Army Construction Engineering Research Laboratory (CERL) evaluation of a family housing maintenance contract used as a test case by the U.S. Army Installation Support Activity Europe (USAISAE) the total maintenance contract for Berry Barracks, Mannheim, Germany was compared to traditional in-house and Wehrbetreuung maintenance at Mannheim, Germany resident costs. The analysis performed by the contractors was used as a starting basis for comparisons. A direct dollar-for-dollar comparison of Family Housing Maintenance Account (FHMA) expenditures was not possible because all service costs could not be identified. The results of the CERL analysis indicate that contracting is feasible and that the FY78 contracting cost savings in the Mannheim Heide brig contracts was 4.2%. It was determined that the Government must have both a good contract document and adequate monitoring of contract performance to realize maintenance cost savings. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A080 429 13/2 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Compilation of Operational Blast Noise Data. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 80 111P McBryan,J. ;
REPT. NO. CERL-TR-N-82
PROJ: 4A762720A896
TASK: A01

UNCLASSIFIED REPORT

DESCRIPTORS: *Combat noise, *Noise pollution, *Blast, *Military facilities, Maps, Overlays, Mapping, Land use, Population, Density, Contours, Army operations, Army planning (U)
IDENTIFIERS: Noise zone maps, AS896, PE62720A (U)

This report presents the means for acquiring operational blast noise information to produce LCdn annoyance contours. Forms introduced and explained to facilitate the compilation of data include the Target Data Sheet, Firing Point Data Form, and Attachment Sheet. Overlays to be constructed in order to evaluate the contours consist of generalized land-use and population density map overlays. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A080 057 13 B 13 13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Cathodic Protection of Navigation Structures (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 79 77P Kumar,Ashok ;Lamb,R. ;
Kearney,F. ;
REPT. NO. CERL-TR-M 276

UNCLASSIFIED REPORT

DESCRIPTORS: *Cathodic protection, *Corrosion, Analysis, Navigation, Hydraulic equipment, Velocity, Surveys, Army Corps of Engineers, Surveys, Water flow, Dams (U)
IDENTIFIERS: LPN-*CERL-77-004 (U)

The report presents considerations for cathodic protection systems, and provides several examples of such systems. It also contains the results of field tests of the Army Corps of Engineers (ACE) platinized anodes which have used on navigation structures and hydraulic structures. These tests indicate that (1) platinized titanium anodes resist corrosion and (2) platinized titanium anodes examined during the survey were still performing well after 10 years of service. In addition, it was determined that the current requirement for cathodic protection of bare steel (0.092 mA/sq ft) is the same as that for bare steel in ambient water (2 mA/sq ft (22 mA/sq m)). However, since calcareous deposits form on the steel surface in seawater, the current requirements with water velocity. A square root depolarization was measured using a cylindrical specimen rotating at a surface velocity of up to 4 ft/s (1.2 m/s). Finally, it was determined that platinized anodes have a good potential for application in impressed-current cathodic protection systems. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A079 441 5/1 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Modification and Extension of the Environmental Technical Information System (ETIS) for the Air Force. (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 79 38P Webster,Ronald Dwight ;
Patzer,J. G. ;Von Weringh,J. ;
REPT. NO. CERL-TR-N-81

UNCLASSIFIED REPORT

DESCRIPTORS: *Environmental engineering, *Environmental impact statements, *Information systems, *Air Force, *Army, Joint military activities, Legislation, Environmental management, Military operations, Redundancy, Modification (U)
IDENTIFIERS: LPN-CERL-77-006 (U)

This report identifies relationships between Air Force and Army work dealing with environmental impact analysis and information system development. In addition, it makes recommendations for modifying and extending the Army's Environmental Technical Information System (ETIS) to provide coordinated research efforts that will satisfy the Air Force's environmental analysis requirements. Study of ETIS subsystems revealed several overlaps in their computer system designs and in their usage and system maintenance requirements. Three ETIS subsystems (Land Use Compendium (LUC), Computer-Aided Environmental Legislative Data System (CELDS), and Baseline Information System (BLIS)) and one Air Force system, Interagency/ Intergovernmental Coordination for Environmental Planning (IICEP) are functionally similar enough to warrant coordinating them to avoid redundancy. However, the Air Force's TAB A-1 System and the Army's Clearinghouse Information System (CHIS) should remain separate entities. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A078 626 13/13 11/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Corrosion of Steel Pilings in Seawater: Buzzards Bay, MA, 1975-1978. (U)

DESCRIPTIVE NOTE: Interim rept.,
NOV 79 155P Kearney,F. ;
REPT. NO. CERL-IR M-275

UNCLASSIFIED REPORT

DESCRIPTORS: *Pile structures, *Sea water corrosion, Steel, Coastal regions, Oxidation, Data acquisition, Electrical measurement, Test methods, Corrosion, Cathodic protection (U)
IDENTIFIERS: Buzzards Bay, LPN-CWIS-31204 (U)

To determine the effect of geography and temperature on corrosion of pilings that support various types of structures in coastal areas, a 5-year study is being conducted at Dam Neck, VA, LaCosta Island, FL, and Buzzards Bay, MA. This report (1) summarizes the results of annual inspections between 1975 and 1978 of the pilings at Buzzards Bay, (2) compares these results with the results of the Dam Neck and LaCosta inspections, and (3) provides electrochemical field test data that will be useful to researchers concerned with coastal structural design. The electrical measurements of corrosion at Buzzards Bay were found to differ drastically from LaCosta and Dam Neck results. These differences were attributed to site-specific factors, and have tentatively been attributed to the high degree of marine life fouling noted on pilings at the Buzzards Bay test sites. It is recommended that further inspections include examinations of the pilings by marine biologists. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A078 422 13/10

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Habitability Improvements for Aircraft Carrier Messdecks. (U)

DESCRIPTIVE NOTE: Final rept.,
OCT 79 77P Porter,Robert L. ;
REPT. NO. CERL-TR-E-156

UNCLASSIFIED REPORT

DESCRIPTORS: *Aircraft carriers, Habitability, Modification, Perception(Psychology), Crews (U)
IDENTIFIERS: CV 60 Vessel (U)

This report discusses the design and evaluation of improvements to messdeck layouts and other physical components on the U.S. Navy carrier ship, U.S.S. Saratoga. These components were designed to minimize the increased negative impacts of three 'given' conditions that result from a substantial addition of crew and equipment to a fixed-space environment. The 'given' conditions are: (1) high density, (2) multi-use of spaces, and (3) nondiner circulation through messdeck areas. This research also considered possible applications of the improvements to other U.S. Navy Carriers. The components were designed to improve the crew's perception of privacy, efficiency, comfort, and dining area image. Surveys of the crew after these improvements had been implemented indicated positive user response to the modifications. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A076 552 5/9

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

An Analysis of Military Migration in the United States. (U)

DESCRIPTIVE NOTE: Special rept., OCT 79 44P Becker ,D. G. ;Webster,R. D. ;
REPT. NO. CERL-SR-N-79
PROJ: ILIR

UNCLASSIFIED REPORT

DESCRIPTORS: *Migration, Military personnel, Military facilities, Civilian population, United States, Department of Defense (U)
IDENTIFIERS: Military migration, Civilian migrants, Army-induced migration, PE61101F (U)

The data in this report describe a positive relationship between military migration and civilian migration in communities surrounding Army installations. This relationship is determined by the size of the military labor force in relation to the size of the civilian labor force. The number of civilian migrants into or out of a county between 1965 and 1970 can be estimated from data reflecting the size of the military labor force and the number of military migrants involved. The data used in this research are too outdated to be of real significance to accurate population projections for Army-induced migration, but they do support the contention that civilian migration is directly related to military migration and that the relationship in many areas in the United States is quite strong. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A076 332 11/9 11/7 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Investigation of Rapidly Deployable Plastic Foam Systems. Volume I. System Development. (U)

DESCRIPTIVE NOTE: Final rept., OCT 79 41P Smith,Alvin ;
REPT. NO. CERL-TR-M-272-VOL-1
CONTRACT: MIPR-FY1456-78-00006, MIPR-FY1456-79-00002

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A076 310.
DESCRIPTORS: *Polyurethane resins, *Foam, *Construction materials, Deployment, Shock absorbers, Time, Systems engineering, Aviation safety (U)
IDENTIFIERS: RPRV(Remotely Powered Recoverable Vehicle) (U)

IAC ACCESSION NUMBER: PL-034401
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
Volume I of this report (1) presents the findings of a study conducted to develop a low-density polyurethane foam system that is deployable within 5 seconds, and (2) documents a study of foam/fabric deployable shapes. An especially fast-reacting foam formulation was devised, hardware for delivery and mixing of foam chemicals was designed and evaluated, various geometric shapes of constant volume that the foam could be formed into were investigated, and the impact loading characteristics of the foam at various times soon after generation were studied. Fabrication of fabric foam cylinders was also studied. Volume II documents a study of fabric-skinned, foam-filled cylindrical beams and an analytical/experimental study of their bending properties. Results of the studies show that a low-density polyurethane foam system that will deploy within 5 seconds is practical to generate and to form into geometrically shaped lightweight fabric bags. The foam exhibits good impact absorption properties very quickly after formation; these properties can be used to attenuate rapidly applied loads of low to (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A076 310 11/9 11/7 13/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Investigation of Rapidly Deployable Plastic Foam Systems. Volume II. Nonlinear Deformation and Local Buckling of Kevlar Fabric/Polyurethane Foam Composites. (U)

DESCRIPTIVE NOTE: Final rept.,
OCT 79 49P Smith ,Alvin ;Wang ,S. S. ;Kuo,A. Y. ;
REPT. NO. CERL-TR-M-272-VOL-2
CONTRACT: MIPR-FY1456-78-00006, MIPR-FY1456-79-00002

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A076 332.
DESCRIPTORS: *Polyurethane resins, *Foam, Construction materials, Cylindrical bodies, Buckling, Deformation, Physical properties, Civil engineering, Beams(Structural) (U)
IDENTIFIERS: Kevlar (U)

IAC ACCESSION NUMBER: PL-034400
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
Volume I of this report (1) presents the findings of a study conducted to develop a low-density polyurethane foam system that is deployable within 5 seconds, and (2) documents a study of foam/fabric cylinders as potential structural members. An especially fast-reacting foam formulation was devised, hardware for delivery and mixing of foam chemicals was designed and evaluated, various geometric shapes of constant volume that the foam could be formed into were investigated, and the impact loading characteristics of the foam at various times soon after generation were studied. Fabrication of fabric foam cylinders was also studied. Volume II of this report documents a study of fabric-skinned, foam-filled cylindrical beams and an analytical/experimental study of their bending properties. Results of the studies show that a low-density polyurethane foam system that will deploy within 5 seconds is practical to generate and to form into geometrically shaped lightweight fabric bags. The foam exhibits good impact absorption properties very(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A075 801 5/3 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Ireland/United Kingdom-Research Consortium. Report Number 1. The Construction Industry-A Perspective, (U)

FEB 79 78P Boland,Thomas F. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Industries, Construction, Great Britain, Ireland, Resource management (U)
IDENTIFIERS: *Construction industry (U)

This report identifies the construction industry as an entity in the sociocultural realm and develops a perspective of it by: describing it in general; developing of it a notational physical structure and form; identifying the purpose for which it and its component entities exist; describing parameters that may be used to assess the degree to which it and its entities fulfill their purpose; identifying it and its component resource requirements and the outputs expected of them; and examining its ability to monitor and adapt in response to internal and external influences. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A075 746 16/1 13/13 11/9 16/4.2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Foam Overhead Cover Support (FOCOS) System for Dismounted and Mounted TOW Positions. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 79 56P Smith,Alvin ;
REPT. NO. CERL-TR-M-269
PROJ: 4A762619AT41
TASK: 08

UNCLASSIFIED REPORT

DESCRIPTORS: *Protective coverings, *Foam, *Polyurethane resins, *Ground support equipment, *Surface to surface missiles, Soils, Support, Survival(General), CONSTRUCTION, Kits, Field equipment, Field tests, Guided missile Personne (U)
IDENTIFIERS: TOW missiles, FOCOS(Foam Overhead Cover Support Systems), PE62619A, AST41, WU002 (U)

IAC ACCESSION NUMBER: PL-033921
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report presents the results of a concept development study of the use of polyurethane foam in constructing protective overhead cover support for TOW fighting positions. Two principal methods of cover support fabrication were considered: 1. A two component spray polyeurethane fabrication foam applied on a prepared form. 2. Hand-mixed polyurethane foam expanded within a fabric form. In both cases, an arch-shaped support with a 4-ft (1.2-m) radius and a 5-ft(1.5-m) length was made. The foam-filled fabric form was selected as having the highest potential for successful application by weapon crews. Subsequent field tests of the selected system demonstrated that a TWO weapon crew can erect an effective cover support system in field without special tools or equipment. (Author) (U)

IAC SUBJECT TERMS: P--(U)Rigid foam, Urethanes, Protective coatings, Coverings, Testing, Spray applications, Temperature effects, Military applications, Shelters, Low temperature effects, Fabrics, Foam density, Missiles, Domes, ZZ Unlimited.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A075 607 13/1 13/2 14/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Shock Resistance of Air-Conditioning Units Test Report for Ellis and Watts Company, Cincinnati, Ohio. (U)

DESCRIPTIVE NOTE: Special rept.,
SEP 79 92P Gambill ,James B. ;Fisher, Walter E. ;
REPT. NO. CERL-SR-M-273

UNCLASSIFIED REPORT

DESCRIPTORS: *Air conditioning equipment, *Earthquake engineering, *Environmental tests, Seismic data, Vibration, Shock resistance, Accelerometers, Test methods, Instrumentation, Commercial equipment, Specifications (U)

This report presents the results of seismic qualification tests performed on air-conditioner units manufactured by the Ellis and Watts Company, Cincinnati, Ohio, to evaluate the units' capability to meet Tennessee Valley Authority seismic design requirements. Two units were tested on the CERL Biaxial Shock Test Machine. Functional performance remained normal for all units during the test run. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A075 511 13/13 5/1 15/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Real Estate Cost Estimating Techniques for PL 91-646 Relocation Costs. (U)

DESCRIPTIVE NOTE: Final rept.,
SEP 79 191P Poskus ,U. R. ;Stamas ,G. D. ;Stawarz,S. P. ;
REPT. NO. CERL-TR-P-103
CONTRACT: IAO-RE-7T-1, IAO-RE-77-1

UNCLASSIFIED REPORT

DESCRIPTORS: *Housing(Dwellings), *Cost estimates, *Army Corps of Engineers, Relocation, Least squares method, Computer programs, Military engineering, Public relations, Construction Benefits (U)
IDENTIFIERS: Real estate (U)

This report documets the development of a predicting model which would better estimate the amount of money required by Districts to compensate individuals relocated from their residences, businesses, or farms as a result of U. S. Army Corps of Engineers construction. The predictions are the result of applying the least squares method to previous District and state payment data. Three different approaches for developing the model were attempted. The approach which used Docket Sheet data broken out by Fiscal Years 72 through 76 was selected as having the highest probability for success. Using the information from these Docket Sheets, average total payments were computed by state and by District, and average values were found for each of 15 payment categories. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A075 204 13/13 8/11

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Current and Tentative Seismic Design Provisions for Buildings: Preliminary Comparisons. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 79 57P Prendergast ,James D. ;
Fisher,Walter E. ;
REPT. NO. CERL-TR-M-270
PROJ: 4A762731AT41
TASK: 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Earthquake resistant structures, *Seismic data, Structural engineering, Earthquake engineering, Experimental design, California, Requirements, Buildings, Army Corps of Engineers, Construction, Strength(General) (U)
IDENTIFIERS: Building codes, PE62731A, AST41, WU003 (U)

This report compares current and tentative seismic design provisions for two types of buildings: (1) Letterman Army Hospital, an existing 10-story, reinforced concrete building located in the Presidio of San Francisco, CA, whose design was based upon the 1964 Uniform Building Code (UBC), and (2) a three-story, ductile moment resistant steel frame building located in a region of high seismicity and designed as an essential building. The comparisons for Letterman Hospital include the magnitude and distribution of the seismic story shears and lateral deflections for the 1964 UBC, the 1975 Structural Engineers Association of California (SEAOC) provisions the 1978 Applied Technology Council's tentative design provisions (ATC-3) the TM 5-809-10 Appendix proposed design provisions, Agababian Associates' (AA) two-dimensional time history modal analysis, U.S. Army Construction Engineering Research Laboratory's (CERL) three-dimensional response spectrum modal analysis and PMB Systems Engineering Incorporated's (PMB) three-dimensional response spectrum modal analysis. The comparisons for the three-story, (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A074 902 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Decor Guide for Enlisted Personnel Dining Facilities. (U)

DESCRIPTIVE NOTE: Technical rept., JUL 79 146P Porter,Robert L. ;Bershad, Blaine D. ;Hintz,Norman ;Mark,Jeffrey S. ;
REPT. NO. CERL-TR-E-150
CONTRACT: IAO-DRXNM-76-174

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Original contains color plates: All DTIC and NTIS reproductions will be in black and white.
DESCRIPTORS: *Dining halls, Design to cost, Enlisted personnel, Marine Corps, Military facilities, Food service, Furniture, Military budgets (U)

This guide presents coordinated interior design concepts and criteria for Army Food Service Officers and Facilities Engineers. The implementation of these concepts and criteria is illustrated with a renovation case study of a Marine Corps dining facility at Marine Corps Base, 29 Palms. The design information in the guide is intended to improve dining facility environments by eliminating drabness, noise, the appearance of crowdedness, and lack of privacy. Included in this guide are: (1) Example dining facility modernization floor plan layouts, including a renovation case study at Marine Corps Base, 29 Palms. (2) Typical design packages with perspective renderings, color options, and implementation worksheets. (3) Furniture and accessory index with discussions, photos and specific listings of materials. (4) Worksheets and cost data with contract information. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A074 890 9/2 5/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Interactive Environmental Impact Computer System (EICS) User Manual. (U)

DESCRIPTIVE NOTE: Final rept., SEP 79 27P Baran,Robert ;Webster,R. D. ;
REPT. NO. CERL-TR-N-80
PROJ: 4A762720A896
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Computer applications, *Environmental impact statements, Management information systems, Information retrieval, Computer aided design, Environmental protection (U)
IDENTIFIERS: EICS(Environmental Impact Computer System), WU002, AS896, PE62720A (U)

This report describes the Environmental Impact Computer System (EICS) and provides instructions for obtaining and using output for the current interactive version of the system. It is recommended that the instructions be used to obtain the most efficient use of the system. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A074 480 20/1 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Mitigation of Noise Impact via Operational Changes. (U)

DESCRIPTIVE NOTE: Final rept.,
SEP 79 26P Raspet,Richard ;
REPT. NO. CERL-TR-N-76
PROJ: 4A762710A896

UNCLASSIFIED REPORT

DESCRIPTORS: *Noise reduction, *Army operations, *Artillery fire, Demolition, Impulse noise, Military facilities, Contours, Acoustic measurement, Public relations (U)
IDENTIFIERS: Environmental impact, WU023, AS896, PE62710A (U)

This report presents three case studies which can serve as a guide for using operational changes of artillery and demolition to reduce noise impacts at Army installations. In each case study, the initial and final noise impact is documented by computer-generated equal noise contours. The operational changes which produced the reduction or shift in contours are described and their impact estimated. The case studies demonstrate, respectively: a general reduction in operations; a shift in operations away from noise sensitive areas; and a concentration of operations toward the center of the installation. The large effect night operations have on the C-weighted day and night average sound level is clearly shown by the examples. The relative importance of the larger weapons is also shown. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A074 467 13/13 5/1 6/11

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Developing Habitability Information for the Design of Office Environments. (U)

DESCRIPTIVE NOTE: Final rept. Jun 76-Jul 77,
JUL 79 157P Lozar,Charles C. ;Porter, Robert L. ;
REPT. NO. CERL-TR-E-142
CONTRACT: DOT-FA78NA-AP-8

UNCLASSIFIED REPORT

DESCRIPTORS: *Office buildings, *Environmental management, *Habitability, Industrial engineering, User needs, Performance(Human), Workplace layout, Architecture, Experimental design, Army Corps of Engineers (U)

Habitability research deals with efforts to discover the impact of the environment on the behavior of the user/occupants in terms of their welfare, task performance, and satisfaction. In administrative facilities such as offices, data from users can be used to discover factors of habitability, such as privacy, space, view, noise, or image. Information about these environment factors can then be applied to interior design solutions to improve the habitability for other office occupants. The methodology of this type of field research is to: (1) analyze results from before-and-after evaluations of renovations, and (2) use the analysis to generate design guidance for the layout and design of generic workstation configurations. Interpretation of the research results yielded three kinds of applicable information: (1) understanding of office layouts and workstation evaluations for purposes of possible revision of the existing NAFEC design, (2) the possible development of generic guidance for office design relating to generalizable factors of habitability, and (3) development of quantitative methods of relating habitability factors to environmental components in terms of stimulus-response interactions. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A074 175 5/9

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

The Job Activities Description (JAD) Questionnaire: An Analysis of Time Spent on and Importance of Managerial Duties. (U)

DESCRIPTIVE NOTE: Interim rept., SEP 79 47P Ellison,Robert L. ;Abe, Clifford ;Fox,David G. ;Veneklasen,Wayne D. ;
REPT. NO. CERL-IR-E-157
PROJ: 4A761102AT23
TASK: A1

UNCLASSIFIED REPORT

DESCRIPTORS: *Job analysis, *Personnel management, Army Corps of Engineers, Manpower utilization, Careers, Questionnaires, Management, Tables(Data) (U)
IDENTIFIERS: PE61102A, AST23, WU007 (U)

The Job Activities Description (JAD) was administered to 394 U.S. Army Corps of Engineers employees at GS levels 11 through 16 to examine the nature of job activities for these personnel. The JAD focused on management practices that were generally characteristic of key position within the Corps. Personnel at the lower levels (GS 11 and 12) spend much more time in Use Knowledge and Skills in a Technical Capacity--those activities for which an engineer is trained. Personnel at these levels can remain specialists. Personnel at higher levels (GS 15 and 16) spread their time over all nine of the categories studied, thus assuming the role of a manager and generalist, so that engineering duties become less important. This study resulted in a better understanding of the job activities rated as being of greater importance at the mangerial levels of the Corps. The analyses indicated that the selection process should concentrate on an applicant's ability to perform those duties required at the higher level--not on past demonstrated ability in activities that may not be relevant at the higher level. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A074 171 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Development of a Pavement Condition Rating Procedure for Roads, Streets, and Parking Lots. Volume II. Distress Identification Manual. (U)

DESCRIPTIVE NOTE: Final rept., JUL 79 120P Shahin,Mohamed Y. ;Kohn, Starr D. ;
REPT. NO. CERL-TR-M-268-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A074 170 and Rept. nos. AFCEC-TR-76-22 and CEEDO-TR-77-44.
DESCRIPTORS: *Pavements, *Roads, *Civil engineering, Military engineering, Asphalt, Concrete, Spallation, Pavement bases, Maintenance management, Cracking(Fracturing), Army Corps of Engineers (U)
IDENTIFIERS: PCI(Pavement Condition Index) (U)

Volume I describes the development and verification of a pavement condition index (PCI) for rating jointed concrete (plain and reinforced) and asphalt surfaced roads, streets, parking lots, and hardstands subjected to pneumatic tired and tracked vehicular traffic. A similar method for air fields has been developed and officially adopted by the U.S. Air Force. The PCI, which measures pavement structural integrity and surface operational condition, is calculated based on measured pavement distress types, severities, and densities obtained during pavement inspection. Volume II describes types and severity levels, and the measurement criteria to use when collecting data for the PCI calculation. Field tests indicate that the PCI closely agrees with the collective judgment (mean rating) of experienced pavement engineers. The PCI was found to be much more consistent than ratings by individual engineers since it is based on measured distress data, and not on subjective judgment. (U)

AD-A074 170 13/2 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Development of a Pavement Condition Rating Procedure for Roads, Streets, and Parking Lots. Volume I. Conditions Rating Procedure. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 79 92P Shahin,Mohamed Y. ;Kohn, Starr D. ;
REPT. NO. CERL-TR-M-268-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A074 171 and Rept. nos. AFCEC-TR-76-22 and CEEDO-TR-77-44.
DESCRIPTORS: *Pavements, *Roads, *Maintenance management, Civil engineering, Ratings, Concrete, Construction materials, Repair, Tables(Data), Military engineering (U)
IDENTIFIERS: PCI(Pavement Condition Index), *Pavement condition rating (U)

Volume I describes the development and verification of a pavement condition index (PCI) for rating jointed concrete (plain and reinforced) and asphalt surfaced roads, streets, parking lots, and hardstands subjected to pneumatic tired and tracked vehicular traffic. A similar method for air fields has been developed and officially adopted by the U.S. Air Force. the PCI, which measures pavement structural integrity and surface operational condition, is calculated based on measured pavement distress types, severities, and densities obtained during pavement inspection. Volume II describes the distress types and severity levels, and the measurement criteria to use when collecting data for the PCI calculation. Field tests indicate that the PCI closely agrees with the collective judgment (mean rating) of experienced pavement engineers. The PCI was found to be much more consistent than ratings by individual engineers since it is based on measured distress data, and not on subjective judgment. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A074 050 20/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

The Blast Noise Prediction Program: User Reference Manual. (U)

DESCRIPTIVE NOTE: Interim rept.,
AUG 79 78P Pawlowska,V. ;Little,L. ;
REPT. NO. CERL-IR-N-75
PROJ: 4A762720A896
TASK: 03

UNCLASSIFIED REPORT

DESCRIPTORS: *Noise(Sound), *Noise pollution, *Computer programs, Military engineering, Manuals, Blast waves, Data acquisition, Environmental protection, FORTRAN (U)
IDENTIFIERS: *Blast noise, AS896, PE62720A, WU001 (U)

This report provides user instructions for the U.S. Army Construction Engineering Research Laboratory's (CERL's) Blast Noise Prediction computer program, BNOISE 1.0, which is designed to predict the noise impacts of Army blast-noise operations. This report is designed to serve as a reference manual and describes the manipulation of the modules used by the Blast Noise program, provides a sample run, and gives a list of module error messages. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A073 894 13/3 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Simplified Sanitary Landfill Design. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 79 43P Gerdes,G. L. ;Donahue,B. A. ;
REPT. NO. CERL-TR-N-78
PROJ: 4A762720A896
TASK: T2

UNCLASSIFIED REPORT

DESCRIPTORS: *Earth fills, *Waste disposal, Simplification, Sanitation, Land use, Army Corps of Engineers, State of the art, Site selection, Waste management, Environmental protection (U)
IDENTIFIERS: *Sanitary landfills (U)

This report surveys and summarizes state-of-the-art practices in the design and operation of sanitary landfills. This information is intended to be used as guidelines for Facilities Engineers at Army installations. All aspects of sanitary landfills are covered, including site selection, design, pollution control, operation, and final closure. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A073 802 13/2 13/12

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Probabilistic Concept for Gravity Dam Analysis. (U)

DESCRIPTIVE NOTE: Special rept.,
AUG 79 70P Prendergast,James D. ;
REPT. NO. CERL-SR-M-265
PROJ: 4A761101A91D

UNCLASSIFIED REPORT

DESCRIPTORS: *Dams, *Safety, Structural analysis, Earthquake engineering, Concrete, Reliability, Rock mechanics, Army Corps of Engineers, Seismic data, Civil engineering, Pressure (U)
IDENTIFIERS: Gravity Dams, AS91D, PE61101A (U)

This report describes a probabilistic concept for evaluating the safety of concrete dams against sliding and overturning failures in terms of the various sources of uncertainty underlying the design parameters. This concept is used to compute the probability of sliding and overturning failures of two moderately low nonoverflow gravity dams designed using conventional design procedures for reservoir water loadings, and in one instance, earthquake loadings. The results show that it is possible to quantify the safety of a dam in a probabilistic sense. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A073 782 6/6 19/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Effects of Tracked Vehicle Activity on Terrestrial Mammals,Birds, and Vegetation at Fort Knox, KY. (U)

DESCRIPTIVE NOTE: Special rept., JUL 79 66P Severinghaus,W. D. ;Riggins, R. E. ;Goran,W. D. ;
REPT. NO. CERL-SR-N-77

UNCLASSIFIED REPORT

DESCRIPTORS: *Environmental impact statements, *Tracked vehicles, *Environmental tests, Mammals, Birds, Vegetation, Surveys, Ecology (U)

A field study was conducted at Fort Knox, KY, to investigate the effects of Army tracked vehicle training on terrestrial birds, mammals, and vegetation. Intensive studies were conducted at three sites representative of a long-term training area, a short-term training area, and a control area. This report describes the survey procedures used and provides preliminary indications of ecological differences between Army tracked vehicle training areas and areas representing pre-training (no training) conditions. (Author) (U)

AD-A073 667 9/2 5/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Economic Impact Forecast System, Version 2.0: User's Manual. (U)

DESCRIPTIVE NOTE: Final rept., JUL 79 87P Hamilton,Joseph Wayne ; Webster,Ronald Dwight ;
REPT. NO. CERL-TR-N-69
PROJ: 4A762720A896
TASK: 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Rept. no. CERL-TR-N-2, AD-A027 139.
DESCRIPTORS: *Computer aided instruction, *Economic analysis, Military planning, Information systems, Systems analysis, Department of Defense, Data bases, Time sharing, Data processing terminals, Computer programs (U)
IDENTIFIERS: EIFS(Economic Impact Forecast System), PE62720A, AS896, WU002 (U)

The Economic Impact Forecast System (EIFS) is a computer system which provides information useful for estimating the socioeconomic impacts caused by new military projects and activities. After the initial development of EIFS, the U.S. Army Construction Engineering Research Laboratory (CERL) encouraged leading economists and scientists to review the model and provide comments and suggestions for ways to improve it. These suggestions were then incorporated into an updated version of the system. In addition, interaction with users identified problems associated with the logistics of using a truly interactive computer system. Coupled with the need to provide for some systematic update or modification of EIFS (free of the need for frequent revision of the user manual), it became clear that a more general and logistically oriented user's manual was necessary. This report provides information for obtaining and initially interpreting output from current and future versions of EIFS. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A073 619 13/13 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Built-Up Roof Construction Quality Control. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 79 43P Lindow,edward S. ;Marvin,E. ;Rosenfield,M. J. ;Blair,J. ;
REPT. NO. CERL-TR-M-267
PROJ: 4A762731AT41
TASK: T7

UNCLASSIFIED REPORT

DESCRIPTORS: *Roofs, *Quality control, *Quality assurance, Military facilities, Army, Army Corps of Engineers, Contract administration (U)
IDENTIFIERS: *Built up roofs, PE62731A, AST41, WU009 (U)

This report recommends ways to improve the performance of built-up roofing in Army facilities by advancing roof construction quality control and quality assurance. This study assessed the state of the art in roofing quality control; evaluated existing Army Corps of Engineers quality control/quality assurance requirements related to roofing; examined the Corps' current roofing practices to determine compliance with the state of the art and Corps requirements; and provided the recommendations based on assessments of current performance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A073 032 6/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Aquatic Rational Threshold Value (RTV) Concepts for Army Environmental Impact Assessment. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 79 41P Riggins,Robert E. ;Smith, Edgar D. ;
REPT. NO. CERL-TR-N-74
PROJ: 4A762720A896
TASK: A

UNCLASSIFIED REPORT

DESCRIPTORS: *Environmental impact statements, Ecology, Models, Water quality, Predictions, Correlation techniques, Indexes, Toxicity, Pollutants, Fishes, Algae, Population, Equations (U)
IDENTIFIERS: PE62720A, AS896, WU006 (U)

This report presents the results of a study undertaken to develop practical techniques for evaluating the 'significance' of predicted water quality impacts. Issues concerning the definition and use of the term 'significant' are discussed at length. Existing aquatic ecosystem models are reviewed, potential criteria for measuring significance are examined, and a concept framework is presented. The result is a Rational Threshold Value (RTV) concept for measuring the significance of impacts on aquatic features. Initial development of an aquatic RTV involves determination of toxicity levels resulting from the introduction of pollutants into aquatic ecosystems, and expression of the effects of these toxicants on population levels of selected fish species. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A073 031 13/11 11/9

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Durability and Fire-Spread Aspects of Plastic Pipe Systems. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 79 68P Smith,Alvin ;Williamson,R. Brady ;
REPT. NO. CERL-TR-M-264
PROJ: A4762731AT41
TASK: T7

UNCLASSIFIED REPORT

DESCRIPTORS: *Pipes, *Plastics, *Fire safety, *Strength(General), Performance tests, Failure(Mechanics), Fire resistance, Test and evaluation, Materials laboratories, Test methods (U)
IDENTIFIERS: *Plastic pipes, PE62731A, AST41, WU008 (U)

IAC ACCESSION NUMBER: PL-033104
IAC DOCUMENT TYPE: PLASTC -HARD COPY--

This report presents the findings of the two studies of commercially available thermoplastic pipe now in widespread use for water distribution, drain-waste-vent (DWV), sewage, and plumbing systems. One study dealt with the long-term performance of plastic pipe and drew information from users' experience. The other study concerned accumulation of test data on fire spread in structures having plastic pipe in interior plumbing and DWV systems. Results of the two studies indicate that plastic pipe is very durable in long-term service as predicted by short-term tests and that while most plastic pipe will burn in established building fires, the fire spread potential is not great. Designs that further limit fire spread are given. (Author) (U)

IAC SUBJECT TERMS: P--(U)Test methods, Durability, Pipe, Thermoplastics, Flammability, Failure mechanics, Fire tests, ABS, PVC, Buildings, ZZ Unlimited.;

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A072 986 3/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Investigation of the Interrelationship between Direct, Diffuse, and Total Solar Radiation. (U)

DESCRIPTIVE NOTE: Special rept.,
JUL 79 25P Walton,George ;
REPT. NO. CERL-SR-E-155
PROJ: 4A161101A91D
TASK: 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar radiation, Diffusion, Solar heating, Experimental data, Pyranometers, Thermal diffusion, Algorithms, Solar energy, Data acquisition, Horizontal orientation (U)
IDENTIFIERS: PE61101A, WU058, AS91D (U)

This report describes an investigation of the relationship between total solar radiation on a horizontal surface and its direct and diffuse components. It is based on radiation measurements taken in Champaign, IL in 1978. Good agreement was found between the observed data and the SOLMET correlation, which was published after this study was begun. This report recommends use of the SOLMET correlation for solar simulation programs. (Author) (U)

AD-A072 435 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

The Building Loads Analysis System Thermodynamics (BLAST) Program, Version 2.0: Input Booklet. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 79 116P Sowell,E. ;
REPT. NO. CERL-TR-E-154

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Errata sheet inserted. See also AD-A072 272 and AD-A072 273.
DESCRIPTORS: *Subroutines, Data processing, Energy consumption, Data acquisition, Buildings, Thermodynamics, Meteorological data, User needs, Instruction manuals (U)

The Building Loads Analysis and System Thermodynamics (BLAST) program is a comprehensive set of subprograms for predicting energy consumption in buildings. There are three main subprograms: (1) the space load prediction subprogram, which computes hourly space loads in a building zone based on user input and weather data; (2) the air distribution system simulation subprogram, which uses the computed space loads and user inputs describing the building air and fluid system to calculate hot water or steam, chilled water, and electric energy demands; and (3) the central plant simulation program, which simulates boilers, chillers, onsite power generation equipment and solar energy systems and computes monthly and annual fuel and electrical power consumption and plant life cycle cost. (U)

AD-A072 397 13/2 5/5 15/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Concept Definition for the Problems Data Base Component of the Water Pollution Abatement Subsystem of the Pollution Abatement Management System (PAMS). (U)

DESCRIPTIVE NOTE: Interim rept.,
JUN 79 58P Smith,Edgar D. ;Webster,R. D. ;
REPT. NO. CERL-IR-N-73
PROJ: 4A762720AH96
TASK: T2

UNCLASSIFIED REPORT

DESCRIPTORS: *Water pollution, *Environmental protection, *Military facilities, Water pollution abatement, White water, Army corps of engineers, Waste treatment, Statutes, Data bases, Federal law (U)
IDENTIFIERS: [illegible], PE62720A (U)

Recent federal legislation on water pollution, [illegible] Water Act of 1977, requires Army [illegible] their [illegible] some of the [illegible] penalties for [illegible] DA [illegible] the high [illegible] of the Army (OA) [illegible] management [illegible] a system [illegible] abatement efforts. [illegible] S A [illegible] Research Laboratory [illegible] Problems [illegible] water [illegible] [illegible] [illegible]

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AD-A014 734 Errata
Volume 2, AD-A072 273.
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weather data, (2) the
simulation program, which
and user inputs
a heating system to
team, hot water, and
and (3) the central plant
simulates boilers,
generating equipment and solar
energy systems and computes monthly and annual fuel
and electrical power consumption and plant life cycle
cost.
(U)

AD-A072 054 11,6 20/11

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Fracture Characteristics of Structural Steels: Reference Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 79 326P Aleszka,J. ;Kim,Y. ;Scott, J. ;Kumar,A. ;
REPT. NO. CERL-TR-M-258
PROJ: 4A761102AT23
TASK: A2

UNCLASSIFIED REPORT

DESCRIPTORS: *Structural steel, *Fracture(Mechanics), *Microstructure, *Weldments, Tensile properties, Fatigue(Mechanics), Impact, Electron microscopy, Electronic scanners, Embrittlement, Hydrogen embrittlement, Welds, Defects(Materials) (U)
IDENTIFIERS: Steel A-36, Steel A-514, Steel AX-110, Steel HY-130, Steel A-588, Steel A-242, Steel 416, Steel 17-4 PH, Steel A-58, Steel A-607, AST23, PE61102A, WU002 (U)

IAC ACCESSION NUMBER: MCIC-108908
IAC DOCUMENT TYPE: MCIC -HARD COPY--
This report presents the findings of a scanning electron microscope (SEM) study of tensile, fatigue, and impact fracture characteristics of structural steels used in Army Corps of Engineers facilities and components. Steels investigated were ASTM A-36, ASTM A-514 AX-110 weld, HY-130, ASTM A-588, ASTM A-242, AISI 416, 17-4 PH, ASTM A-514, and ASTM A-607. Specimens were tested in as-received, hydrogen-embrittled, and temper-embrittled conditions. The failure mode of embrittled and unembrittled AX-110 weldments containing induced weld defects was also studied. The information contained in this reference manual will provide a basis for comparison of fracture characteristics to determine the mode of failure in analysis of components failure. Four examples of inservice failures in which the SEM provided valuable information are also presented. (Author) (U)

IAC SUBJECT TERMS: M--(U)A36, A514, AX-110,
AD-A072 054

AD-A072 003 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Implementation of Resource Recovery Guidelines at Fort Meade, Fort Lewis, and Fort Sill. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 79 114P Donahue,Bernard A. ;
Kraybill,Daniel D. ;Mitchell,G. ;Smith,M. ;
Deminco,P. ;
REPT. NO. CERL-TR-N-71
PROJ: 4A762720A896
TASK: 02

UNCLASSIFIED REPORT

DESCRIPTORS: *Waste recycling, *Paper, *Military facilities, Army operations, Refuse collection, Material separation, Marketing, Public relations, Maryland, Washington(State), Oklahoma, Economics, Cost analysis (U)
IDENTIFIERS: Fort Meade, Fort Lewis, Fort Sill, Newsprint, Cardboard, PE62720A, AS896, WU007 (U)

This report documents the attempt to implement requirements of the 'Source Separation for Materials Recovery Guidelines' at Fort Meade, MD. These guidelines, one of six U.S. Environmental Protection Agency Solid Waste Management Guidelines, are primarily concerned with the source separation of high-grade paper, newspaper, and corrugated paper. The information obtained from the implementation at Fort Meade was compared with voluntary recycling programs at Fort Sill, OK, and Fort Lewis, WA. Extensive economic analysis at Fort Meade indicated that 'full' implementation of the program for cardboard at points of high generation was deemed economically feasible. The investigations at Fort Sill and Fort Lewis indicated that two key items are essential for successfully implementing voluntary resource recovery programs at installations: (1) interest in and understanding of the program by installation personnel at a meaningful level, and (2) public interest and motivation, maintained through an innovative incentive program. (U)

AD-A072 003

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A072 002 13/2 17/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

True-Integrating Environmental Noise Monitor and Sound Exposure Level Meter. Volume II. Wiring and Parts Lists, Parts Layouts, and Schematics. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 79 175P Averbuch,Aaron J. ;Schomer, Paul D. ;Weisberg,M. W. ;
REPT. NO. CERL-TR-N-41-VOL-2
PROJ: 4A762720A896
TASK: 03

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A060 958.
DESCRIPTORS: *Acoustic detectors, *Noise pollution, *Monitoring, Data acquisition, Environmental tests, Noise(Sound), Maintenance, Wiring diagrams, Schematic diagrams, Parts, Printed circuit boards, Electric connectors (U)
IDENTIFIERS: Sound level meters, PE62720A, AS896, WU001 (U)

This report provides the complete hardware construction of the CERL environmental noise monitor. Included are: a task block diagram of the unit, a parts list and diagram of the front panel, a parts list and diagram of the power supply circuit, a list of the back plane wiring, parts list, layout, and schematics of the PC boards, and wiring list for cables and connectors. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A072 001 5/2 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Engineer Unit Days Computer Program (UNDAY) - User's Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 79 75P Kim,Seung Jai ;Nelson,R. ; Kao,Anthony M. ;
REPT. NO. CERL-TM-M-266
PROJ: 4A763734DT34
TASK: 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Instruction manuals, User needs, Computer programs, Scheduling, Construction, Theater level operations, Manpower utilization, Data processing (U)
IDENTIFIERS: UNDAY(Engineer Unit Days Computer Program), AFCS(Army Facilities Components System), PE63734A, AST34, WU004 (U)

This report describes the Engineer Unit Days Computer Program (UNDAY) and provides the user with information to operate the program. UNDAY was developed to facilitate rapid scheduling of military construction projects using the Army Facilities Components System (AFCS) in the theater of operations. The program selects the engineer construction unit or combination of units that most efficiently meets the resource requirements of a given project and calculates the number of work days it requires to complete the facilities. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A071 637 6,3 11/12 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Development of Guidelines for the Army Timber Harvesting Program. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 79 170P Moore,A. W. ;Parsons,Guy A. ;Ramsson,R. E. ;
REPT. NO. CERL-TR-P-102

UNCLASSIFIED REPORT

DESCRIPTORS: *Trees, *Lumber, *Army planning, *Management planning and control, Wood, Natural resources, Land use, Army Corps of Engineers, Efficiency (U)
IDENTIFIERS: *Army Timber Harvesting Program (U)

This report presents (1) guidelines for the Army Timber Harvesting Program's timber harvesting activities; (2) a suggested contract format to promote uniformity of timber harvesting contracts throughout the Army; and (3) an examination of timber harvesting activities and their relation to timber management functions to determine recommendations for improvements in the Army's timber harvesting service. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A071 623 13/13 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Construction Contract Risk Assignment. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 79 70P Erikson,Carl A. ;O'Connor, Michael J. ;
REPT. NO. CERL-TR-P101
PROJ: 4A161102AT23
TASK: A2

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Contract administration, Risk, Cost overruns, Cost models, Litigation, Cost estimates, Penalties, Government procurement, Contracts, Insurance (U)
IDENTIFIERS: WU005, PE61102A (U)

This report presents the results of an investigation to determine the cost effects of varying the assignment of risk between the owner and contractor in firm fixed-price contruction contracts. Among the topics included are a working definition of risk, a risk classification upon which a construction process risk model is based, a discussion of techniques for contractually assigning risk, a discussion of the applicability of utility theory for analyzing the assignment of risk in construction, an example which models the cost effects of varying the assignment of risks, and implementation considerations. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A071 578 13/13 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Evaluation of Alternative Reroofing Systems. (U)

DESCRIPTIVE NOTE: Interim rept.,
JUN 79 45P Marvin,E. ;Middleton,G. ;
Eubanks,L. ;Rosenfield,M. ;Blair,J. ;
REPT. NO. CERL-IR-M-263
PROJ: 4A762731AT41

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Roofs, *Military facilities, Life cycle costs, Maintenance, Lightweight, Army research laboratories, Construction materials, Plywood, Aluminum, Experimental design (U)
IDENTIFIERS: *Army installations, *Reroofing systems, WU031, AST41, PE62731A (U)

IAC ACCESSION NUMBER: PL-034433
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This reprot documents the first phase of a study which evaluates commercially available roofing systems and materials for use in reroofing work at Army installations to determine alternatives to conventional built-up roofing (BUR) that can improve Army roof performance and reduce life-cycle costs. (Author) (U)

IAC SUBJECT TERMS: --(U)Spray applications, Seals, Acrylic, Butyl rubber, PE, Hypalon, EPR, Roofing, Neoprene, P\ Silicone rubber, Vulcanizates, Elasto , Urethanes, Flammability, Foam in place, Inst tion, Maintenance, Buildings, Asphalt coflex N35, Rhenofol C34, Polyurethanes, Che cal resistance, Weathering, Protective coatings, ZZ Unlimited.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A071 539 13/2 13/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Application of the Package Controlled-Air, Heat-Recovery Solid Waste Incinerator on Army Fixed Facilities and Installations. (U)

DESCRIPTIVE NOTE: Final technical rept.,
JUN 79 49P Hathaway,S. A. ;
REPT. NO. CERL-TR-E-151
PROJ: 4A763734DT09
TASK: T1

UNCLASSIFIED REPORT

DESCRIPTORS: *Incinerators, *Heat recovery, Military facilities, Army, Solid wastes (U)
IDENTIFIERS: Army facilities, *Controlled air incinerators, *Package incinerators, WU002, AST09, PE63734A (U)

This investigation evaluated use of the controlled-air, heat-recovery solid waste incinerator at Army fixed facilities and installations. Major equipment and unit operations, technical limitations, and implementation risks are discussed. The study recommends that Army use of the controlled-air system be accompanied by a thorough instrumentation and performance monitoring effort in order to better define expected technical and economic system parameters. This report furnishes technical and economic guidance that Facilities and District Engineers can use to develop projects using the controlled-air system. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A069 977 8/8 6/6 5/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Basic Analytical Model for Environmental Impact Assessment of Surface Water Resources--DOSAG User Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 79 41P Riggins,Robert E. ;
Kothandaraman,V. ;Goettel,Bruce C. ;
REPT. NO. CERL-TR-N-64
PROJ: 4A762720A896
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Surface waters, *Environmental protection, *Manuals, Computerized simulation, Water quality, Water pollution, Hydraulic models, Streams, Army operations (U)
IDENTIFIERS: EICS(Environmental Impact Computer System), WU006, AS896, PE62720A (U)

This report discusses and provides user instructions for a computerized water quality model that will help satisfy the Army environmental planner's need for quantitative information on dissolved oxygen resources in a stream caused by new Army projects or activities. The information provided by output from this model will be useful for providing data for impacts on the dissolved oxygen content of a stream for a single-reach, single-point-source pollutant inflow situation with steady-flow conditions. Three subprograms within the model are used to calculate the impact of carbonaceous and nitrogenous waste discharges on the oxygen resources in a receiving water body, the ultimate biological oxygen demand and deoxygenation coefficients for both carbonaceous and nitrogenous waste discharges, and annual variations in temperature of a water body. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A069 878 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Inflation/Foam/Shotcrete System for Rapid Construction of Circular Arches. (U)

DESCRIPTIVE NOTE: Special rept.,
MAY 79 67P Woratzeck,M. ;
REPT. NO. CERL-SR-M-262
PROJ: 4A162719AT41
TASK: T8

UNCLASSIFIED REPORT

DESCRIPTORS: *Inflatable structures, *Shelters, Polyurethane resins, Military facilities, Foam, Arches, Construction, Concrete (U)
IDENTIFIERS: IFS(Inflation/Foam/Shotcrete), Arch-Shaped structures, AST41, WU001, PE62719A (U)

IAC ACCESSION NUMBER: PL-032787
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
This study analyzed, designed, and fabricated a semicircular arch structure 32 ft (9.8 m) long by 13 ft (4 m) high using the inflation/foam/shotcrete (IFS) system. Equipment cost, man-hours, skill levels, and time required for construction were monitored. The test results indicate that the IFS system can be used to construct arch-shaped structures. Skills required to operate the foam and shotcrete equipment are consistent with those available in the Army. The structural failure of the urethane foam arch indicated that creep is a significant factor in the behavior of the polyurethane foam arch and can cause instability and collapse. (Author) (U)

IAC SUBJECT TERMS: P--(U)Testing, Design analysis, Fabrication, Inflatable structures, Military applications, Concrete, Shelters, Production costs, Cost tracking, Urethanes, Mechanical properties, Spray application, Stress analysis, ZZ Unlimited.;

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A069 841 13/2 13/13 5/9

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

1978 Directory of Experts on Organization and Management of Construction. (U)

MAY 79 128P

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, Specialists, Biographies (U)

This directory identifies 73 experts located in 20 countries. The biographic information on each expert includes his major areas of research interests in priority order, a description of his professional experience, his publications and honors. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A069 586 13/13 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Blocks to Effective Technology Transfer in Construction. (U)

DESCRIPTIVE NOTE: Special rept., DEC 78 21P Ryan,T. C. ;
REPT. NO. CERL-SR-O-2

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Technology transfer, *Management planning and control, Management information systems, Computer programs, Problem solving, Army Corps of Engineers (U)

This report documents the findings of an investigation of the difficulties of implementing research results affecting management techniques in construction. Several civilian and military organizations dealing with construction were contacted and studied. The initial approach was to attempt actual implementation with 'off the shelf' management tools, studying the problems of technology transfer as they occurred. The approach was changed to a 'case study' in which the problems of implementation were observed. Results show that the technology transfer process is severely impeded by problems of a behavioral nature and hinges critically on the interaction of personalities along the transfer chain. This report documents the blocks to effective transfer, which include lack of effective communication, lack of an innovative environment, and the resistance of personnel to change. Suggested ways to reduce the effects of these blocks are offered. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A069 374 13/2 13/1 21/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Evaluation of Alternatives for Restoring the South Boiler House at Joliet AAP to High-Sulfur-Coal Burning Capability. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 79 43P Donahue,Bernard A. ; Hathaway,S. A. ;Schanche,G. ;Struss,S. ;
REPT. NO. CERL-TR-N-66

UNCLASSIFIED REPORT

DESCRIPTORS: *Boilers, *Coal, *Sulfur, *Air pollution control equipment, *Pollution abatement, Munitions industry, Industrial plants, Desulfurization, Flue gases, Particulates, Scrubbers, Cost effectiveness, Waste disposal, Air pollution (U)
IDENTIFIERS: Joliet Army Ammunition Plant (U)

This report evaluates alternatives for restoring the south boiler house at the Joliet Army Ammunition Plant to burn high-sulfur coal in an environmentally acceptable manner. The boiler house was examined to assess its coal handling and burning capability. Various flue-gas cleaning devices were then field evaluated to determine their potential application at the Joliet plant for particulate removal and for flue-gas desulfurization. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A069 324 9/2 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

The Baseline Information System--User's Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 79 22P Griffin,B. A. ;Webster,R. D. ;
REPT. NO. CERL-TR-N-72
PROJ: 4A762720A896
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Environmental impact statements, *Information systems, Computer files, Data bases, Manuals (U)
IDENTIFIERS: *BLIS(Baseline Information System), ETIS(Environmental Technical Information System), EICS(Environmental Impact Computer System), Interactive systems, PE62720A, AS896, WU002 (U)

The Baseline Information System (BLIS) is an extension of the Environmental Impact Computer System (EICS) and a subsystem of the Environmental Technical Information System (ETIS). BLIS was developed to provide EICS users with site-specific data or to identify for EICS users possible sources of such data. This BLIS data base was developed by: Aggregating EICS attribute identifications with common technological bases into search terms; Compiling and analyzing directories of regional experts and conservationists, universities, and existing data management systems: Developing a data file which identifies the aggregate keyword designation, the EICS attributes pertaining to the keyword, points of contact and appropriate geographic/political references; Developing a user-oriented software package for inclusion into ETIS. This report provides BLIS user instructions and serves as a guide for the retrieval and use of appropriate points of contact or consultation for environmental baseline data . (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099052

AD-A069 097 8/2 14/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Graphic Materials to Support Biophysical Quantitative Environmental Impact Analysis-- Sources of Existing Materials. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 79 82P Goran,W. D. ;Riggins,R. E. ;
REPT. NO. CERL-TR-N-68
PROJ: 4A762720A896
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Topographic maps, *Hydrographic surveying, Environmental tests, Military facilities, Biophysics, Quantitative analysis, Land use, Graphics, Soil surveys, Terrain models, Aerial photography, Army Corps of Engineers (U)
IDENTIFIERS: *Photographic tests, PE62720A, AS896, WU006 (U)

This report identifies and describes resource materials (maps and imagery) currently available for environmental impact analysis on U.S. Army military installations. Only materials that relate to the biophysical and land use elements of the environment are considered. The report describes procedures for obtaining these materials and lists specific materials relevant to major U.S. Army military installations. This report also provides some tables, formulas, and procedures for quantitatively analyzing these graphical representations of environmental information. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A068 746 15/5 5/2 6/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Computer-Aided Environmental Impact Analysis for Army Real Estate Actions: User Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 79 82P Fittipaldi,John J. ;Thomas, S. E. ;Novak,E. W. ;
REPT. NO. CERL-TR-N-70
PROJ: 4A762720A896
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Military facilities, *Manuals, *Environmental protection, Computer aided diagnosis, User needs, Military engineering, Construction, Land use, Army planning, Environmental impact statements (U)
IDENTIFIERS: *EICS(Environmental Impact Computer System), Real estate, WU001, AS896, PE62720A (U)

The Federal government has mandated that its agencies incorporate environmental considerations into the planning of new projects, activities, and decisions. Environmental Impact Assessments and Statements (EIAs/EISs) provide a basis for review and analysis of any proposed action's environmental consequences. The Environmental Impact Computer System (EICS), developed by the U.S. Army Construction Engineering Research Laboratory, helps planners and decision-makers efficiently identify primary and secondary impacts of their proposed projects or activities and suggests ways to mitigate these impacts. This report discusses the philosophy behind the environmental impact assessment process; defines the EICS components; discusses the criteria and general approach for using the EICS; provides detailed instructions for assessing the Real Estate Functional Area; and provides detailed procedures necessary to use the EICS output in the environmental impact assessment process and in preparing a formal EIA/EIS. The EICS will save its users time and money by eliminating unnecessary library and field research. It is recommended that (U)

AD-A068 360 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CchampaIGN IL

Analysis of Real Property Inventory Reporting Procedures. (U)

DESCRIPTIVE NOTE: Final rept., APR 79 165P Altheide,C. P. ;Ganus,S. S. ;
REPT. NO. CERL-TR-P-100

UNCLASSIFIED REPORT

DESCRIPTORS: *Inventory, *Reports, Information systems, Information processing, Military facilities, Army, Data processing, Tables(Data), Costs (U)
IDENTIFIERS: *Real property, *Real estate, Civil Works (U)

This report presents the results of an analysis of three systems for real property inventroy (RPI) reporting: Civil Works, military installations not using the Integrated Facilities System (IFS), and military installations using IFS. Included are details of the existing procedures; a description of the information flows between military installations or U.S. Army Corps of Engineers Districts and the Office of the Chief of Engineers, Directorate of Real Estate (DAEN-RE); analysis of affected reports; and system analyses. Recommendations for streamlining these procedures to improve the timeliness of information, reduce manual effort, increase accuracy of reporting, and eliminate redundant or unnecessary data reporting are given for the systems both individually and collectively. (Author) (U)

AD-A068 295 14/2 8/11

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development and Use of Seismic Shock Test Criteria for Essential Equipment in Critical Facilities. (U)

DESCRIPTIVE NOTE: Final rept., APR 79 99P Sonnenburg,P. N. ; Prendergast,J. D. ;
REPT. NO. CERL-TR-M-236
PROJ: 4A762731AT41
TASK: 04

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Earthquake Design Criteria for Interior Utility and Lifeline Systems.
DESCRIPTORS: *Test methods, *Seismic waves, Commercial equipment, Simulation, Waveforms, Shock tests, Facilities (U)
IDENTIFIERS: *SG/TSE(Safeguard/Tactical Support Equipment), *Essential equipment, *Critical facilities, *Seismic qualification testing, PE62731A, AST41, WU002 (U)

This report provides procedures for establishing seismic qualification test criteria for essential equipment in critical facilities and presents guidance for interpretation of the test results. Since equipment representative of that used in the essential systems of critical facilities was observed to be closely related to many items of tactical support equipment used at missile sites, existing data from proof and fragility tests on tactical support equipment were reviewed to analyze failure characteristics. The failure data were organized so they could be statistically analyzed to provide estimates of the probability of failure. The major tasks in the seismic test qualification of equipment are summarized; these tasks include test criteria formulation, test facility selection, test unit formulation, establishment of test qualification requirements, and interpretation of test results. Test criteria were developed by: (1) test axis selection, (2) statement of operating configuration, (3) definition of expected failure modes, and (4) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A068 025 10/1 8/7 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Project Development Guidelines for Converting Army Installations to Coal Use. (U)

DESCRIPTIVE NOTE: Interim rept., MAR 79 41P Hathaway,S. A. ;Tseng,M. ; Lin,J. S. ;
REPT. NO. CERL-IR-E-148
PROJ: 4A762731AT41
TASK: 06

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy conversion, *Coal, *Military facilities, Army planning, National energy crisis, Fuel consumption, Electric power, Cost analysis, Heating, Army Corps of Engineers (U)
IDENTIFIERS: WU016, AST41, PE62731A (U)

IAC ACCESSION NUMBER: PL-901288
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report provides technical and economic information to help Army Facilities and District Engineers develop projects for converting installation heating and power systems to using coal as a primary fuel. The report includes a general overview of the coal conversion and supply problem; coal delivery, handling, and storage; boiler conversion; boiler replacement; salvage fuels; coal gasification; and air pollution control. (Author-PL). (U)

IAC SUBJECT TERMS: P--(U)Equipment, Military applications, Guides, Coal, Handling, Gasification, Energy conversion, Combustors, Emission control, RDF, Bibliographies, Design, Cost analysis, Cyclone combustors, Petroleum, ZZ MTDE, ZZ Unlimited.;

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A068 024 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The Role of Habitability Information in Post-occupancy Evaluation. (U)

DESCRIPTIVE NOTE: Interim rept., MAR 79 47P Veneklasen,W. D. ;
REPT. NO. CERL-IR-E-146
PROJ: 4A762731AT41
TASK: T3

UNCLASSIFIED REPORT

DESCRIPTORS: *Habitability, *Military facilities, *Inspection, Test and evaluation, Data acquisition, Buildings, Questionnaires, Interviewing, Quality assurance, Army, Construction (U)
IDENTIFIERS: WU010, AST41, PE62731A (U)

This report investigates the data-gathering phase of post-construction evaluations of military facilities. The principal objective was to develop a procedure to identify physical components of a constructed environment which affect occupants using the facility. Field installation master planners and inspectors were interviewed to find out what evaluation procedures are being used and to find out when the post-completion inspections were conducted. Then a questionnaire for facility occupants was developed, using a set of 13 predetermined occupant behavior factors; the questions dealt with the facility's physical components. This procedure tested the applicability and validity of the current post construction/completion evaluation methods as habitability evaluation measures. It has been concluded that the behavior factors were useful for (1) showing the importance of various environmental factors to the individual occupant, and (2) evaluating the appropriateness of a specific setting to individuals and organizations. Continued refinement of the data collection techniques will contribute to a data file on facility types. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A067 985 13/2 13/6 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

In-Hardstand Tactical Vehicle Maintenance Facilities--Concept Design and Preliminary Recommendations for Wastewater Treatment. (U)

DESCRIPTIVE NOTE: Interim rept., MAR 79 31P Fileccia,Robert ;Benson,J. ; Matherly,J. :
REPT. NO. CERL-IR-N-67
PROJ: 4A762720A896
TASK: 02

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Oil Pollution Control at Military Installations.
DESCRIPTORS: *Waste treatment, *Vehicles, *Military facilities, Maintenance management, Oil pollution, Waste disposal, Army equipment, Waste water, Environmental protection (U)
IDENTIFIERS: *Motor pools, Waste oil, WU009, AS896, PE62720A (U)

Maintenance performed on Army tactical equipment -- defined in terms of oil changing and vehicle cleaning -- was reviewed and several alternative plans for controlling waste discharge from Army motor pool vehicle washing and cleaning were considered. (1) Pretreatment of waste discharges from existing washracks and motor pool shop drains with effluent discharge to sanitary sewers. (2) Provision of a separate, industrial waste-collection system with centralized treatment of collected wastewater. (3) Replacement of the existing washrack system with one or two consolidated tactical vehicle wash facilities that have centralized wastewater treatment for discharge or recycle. Alternative 3 was selected as having the most potential for providing an efficient means to regulate effluent discharge. Based on this consideration, concept designs for in-hardstand maintenance facilities were developed. In addition, preliminary recommendations for the design of wastewater pretreatment units were developed, under the assumed condition that gravity separation alone would be sufficient to regulate effluent discharge t(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A067 829 21/4 13/2 7/4

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Thermogravimetric Analysis of Solid Refuse-Derived Fuels and Coal. (U)

DESCRIPTIVE NOTE: Technical rept., MAR 79 28P Hathaway,S. A. ;Lin,J. S. ;
REPT. NO. CERL-TR-E-149
PROJ: 4A761102AT23
TASK: A2

UNCLASSIFIED REPORT

DESCRIPTORS: *Fuels, *Solid wastes, *Thermogravimetric analysis, Coal, Energy conservation, Ignition, Combustion, Burning rate, Efficiency, Temperature, Savings (U)
IDENTIFIERS: *Densified refuse derived fuels, WU011, AST23, PE61102A (U)

IAC ACCESSION NUMBER: PL-901329
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
The ignition and combustion rates of three types of densified refuse-derived fuel (DRDF) and low-volatile Illinois bituminous coal were investigated at temperatures ranging from 600 C to 1000 C and residence times ranging up to 120 sec. It was found that DRDF ignition time is up to 12 times less than that of coal, that the temperature required for coal ignition at a given residence time is greater than that needed for DRDF ignition, and that the DRDF:coal time to ignition ratio is expressible as a linear function of furnace temperature. It was also found that DRDF produced from mixed municipal-residential solid waste has a slower combustion rate than that produced from homogeneous heavy paper stock, and that the combustion rates of all types of DRDF are significantly greater than that of the coal tested at a 99.9 percent level of confidence. (Author) (U)

IAC SUBJECT TERMS: P--(U)Cellulosics, Solid wastes, Municipal wastes, TGA, RDF, Combustion rates, Coal, Mixed RDF, Blends, Densification, Burning rates, ZZ MTDE, ZZ Unlimited.;

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A067 719 13/2 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Computer-Aided Engineering and Architectural Design System (CAEADS). Volume II. Concise Review. (U)

DESCRIPTIVE NOTE: Final rept., JAN 79 128P Daniel,;Mann,;Johnson,; Mendenhall,;
REPT. NO. CERL-TR-P-97-VOL-2
CONTRACT: DACA87-77-C-0009
PROJ: 4A762731A741
TASK: T1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A065 827.
DESCRIPTORS: *Civil engineering, *Computer aided design, Architecture, Army Corps of Engineers, Integrated systems, Automation, Construction, Computer programs, Research facilities, Systems analysis (U)
IDENTIFIERS: *CAEADS(Computer-Aided Engineering and Architectural Design System), WU020, AS741, PE62731A (U)

The Computer-Aided Engineering and Architectural Design System (CAEADS) is being developed for the U.S. Army Corps of Engineers by the Construction Engineering Research Laboratory (CERL) in Champaign, Illinois. CAEADS will be an integrated system of computer aids to the design process for military construction, supporting the design and review activities of Corps District Offices and the design activities of private Architect/Engineer firms under contract to the Corps. This report presents a concise review of the work accomplished to further develop the CAEADS concept and to prepare system documents as required by AR 18-1. This concise review covers the purpose, guidelines, and scope of the study, and the scope and background of CAEADS. It reviews the MC process as it currently exists, discusses CAEADS requirements, system concepts, the CAEADS Economic Analysis, the proposed Project Master Plan, and a (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A067 708 11/3 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Preliminary Selection of Compatible Solvents for Vinyl Paints. (U)

DESCRIPTIVE NOTE: Special rept., MAR 79 36P Beitelman,Alfred ;Lampo, Richard ;
REPT. NO. CERL-SR-M-261

UNCLASSIFIED REPORT

DESCRIPTORS: *Plastic paints, *Organic solvents, *Pollution abatement, *Formulations, Protective coatings, Steel, Inland waterways, Underwater structures, Air pollution, Ketones, Toluenes, Vinyl plastics, Compatibility (U)
IDENTIFIERS: LPN-CWIS-31205 (U)

The Corps of Engineers uses two types of vinyl coatings extensively to protect immersed steel in inland waterways: one meets restrictive air pollution regulations and the other uses a vinyl zinc primer to extend coating life. This study examined alternate solvent systems which would meet the requirements of the air pollution regulations and would be compatible with the vinyl zinc primer. A solvent combination of methyl propyl ketone (MPK), methyl amyl ketone (MAK), and toluene in a vinyl formulation was used. The viscosity, water permeability, tensile strength, and retained solvents of this new formulation were compared with existing vinyl formulations. It was concluded that although the new formulation has properties very similar to the existing formulations, the MAK must be stabilized for the coating to have an acceptable shelf life. (Author) (U)

AD-A067 697 13/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Sanitary Landfill Compactor Evaluation. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 79 24P Kraybill,Dan ;Donahue, Bernard ;
REPT. NO. CERL-TR-N-62
PROJ: 4A762720A896
TASK: T2

UNCLASSIFIED REPORT

DESCRIPTORS: *Earth fills, *Compactors, *Earth handling equipment, Bulldozers, Tracked vehicles, Test and evaluation, Land use, Comparison, Performance(Engineering), Cost analysis, Maintenance, Selection (U)
IDENTIFIERS: Sanitary landfills, WU007, AS896, PE62720A (U)

This research has (1) determined the relative advantages and disadvantages of specialized landfill compactors, (2) examined some of the various types and brands of compactors available, and (3) provided criteria useful for the selecting sanitary landfill compactors. Three major types of compaction equipment were studied: tracked vehicles, rubber-wheeled vehicles, and steel-wheeled vehicles. It has been found that each type has specific advantages and disadvantages when applied to a sanitary landfill. Various studies on compacting machinery considered in this report have produced varying results. Research available now indicates that specialized compaction equipment is better than tracked vehicles; however, these compactors usually require an extensive amount of support equipment. Selection of compaction equipment for a military facility will be site-specific, but will depend mostly on the equipment's economic feasibility and the size of the landfill. (Author) (U)

AD-A067 691 13/2 5/3 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Systems Approach to Life-Cycle Design of Pavements. Volume II. LIFE2 System Documentation. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 79 458P Lindow,Edward S. ;
REPT. NO. CERL-TR-M-253-VOL-2
PROJ: 4A763734DT08
TASK: 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3, AD-A064 698.
DESCRIPTORS: *Pavements, *Life cycle costs, *Systems approach, *Computer programs, Maintenance management, Runways, Civil engineering, Flow charting, Construction, Army Corps of Engineers, Roads, Subroutines (U)
IDENTIFIERS: LIFE2 Automated System, WU001, AST08, PE63734A (U)

This report is the second of a three volume final report which documents an automated system, LIFE2, for analyzing pavement designs and maintenance and repair strategies based on life-cycle costs. LIFE2 models existing Corps of Engineers criteria for designing both rigid and flexible pavements for airfields, roads, and streets. The program also includes analytical procedures for evaluating earthwork, drainage, and frost protection requirements in addition to maintenance costs. The resulting combinations of design schemes and maintenance strategies are ranked by total cost over the design life of the pavement. Volume I is the LIFE2 User Manual, Volume II is the LIFE2 System Documentation, and Volume III is the LIFE2 Program Listing. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099052

AD-A067 253 13/2 6/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Water Quality Data for Army Military Installations. (U)

DESCRIPTIVE NOTE: Final rept.,
FEB 79 148P Goran,W. D. ;Riggins,R. E. ;
REPT. NO. CERL-TR-N-63
PROJ: 4A762720A896
TASK: 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Original contains color plates: All DDC reproductions will be in black and white.
DESCRIPTORS: *Water quality, *Models, *Army planning, *Information systems, Decision making, Environmental impact statements, Measurement, Standards, Information retrieval, Sampling, Tables(Data) (U)
IDENTIFIERS: STORET(Storage and Retrieval of Water Quality Data), NAWDEX(National Water Data Exchange), WATSTORE(Water Data Storage and Retrieval Systems), WU006, AS896, PE62720A (U)

Water quality models are being developed to assist planners and decision-makers at Army military installations to perform environmental impact analysis. Successful application of models depends on the existence and availability of water quality data. This report identifies major sources of water quality data and describes the location of sampling stations at or near selected Army military installations. The parameters measured are described and the dates and methods of measurement are provided. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A067 203 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The Automated Documentation System--User Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
FEB 79 87P Lawrie,Linda ;
REPT. NO. CERL-TR-E-147
PROJ: 4A762725AT11
TASK: 02

UNCLASSIFIED REPORT

DESCRIPTORS: *Computer program documentation, Programming manuals, Computer programs, Fortran, Flow charting, Subroutines, Compilers, Computer files (U)
IDENTIFIERS: PE62725A, A T11 (U)

The Automated Documentation System (ADS) is a computer program and user procedure designed to facilitate management of the development of software and the production of final documentation of FORTRAN Programs. The ADS System can be used in two ways. (1) At any point during development of the software, the status of the development process can be determined by application of the program to the source code under development. Flow charts and internal documentation are summarized for the program manager. (2) After the software is complete, external documentation can be produced from the internal documentation and compilation maps by running the ADS program. The ADS program is written in Control Data Corporation (CDC) FORTRAN extended, version 4.6 and can be used on CDC 6000,7000 series computers with few or no modifications. This report provides detailed user instructions for ADS. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A066 699 13/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The Performance of an Experimental Solar Heating System. (U)

DESCRIPTIVE NOTE: Interim rept., FEB 79 26P Joncich,D. M. ;Leverenz,D. J. ;Johnson,D. L. ;
REPT. NO. CERL-IR-e-144
PROJ: 4A762731AT41
TASK: T6

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar heating, *Performance(Engineering), Solar energy, Energy conversion, Heat transfer, Experimental design, Test facilities, Collecting methods, Army Corps of Engineers, Residential section, Housing(Dwellings) (U)
IDENTIFIERS: PE62731A, WU021, AST41 (U)

This report describes the performance of a residential-scale, completely instrumented solar heating system located at the U.S. Army Construction Engineering Research Laboratory (CERL), Champaign, IL. The investigation was made between January 1977 and April 1978. In addition, a daily profile of the performance of the system and its components is presented for a representative sunny winter day. An analysis of the solar system operation indicated that the collector array is by far the most inefficient component in the system for converting incident solar energy into useful heat. The solar system consists of 20 sq m (220 sq ft) of flat-plate, selective surface, singly glazed solar collectors and a 7.6 cu m (2000 gal) equivalent hot water storage tank. The storage system supplies hot water for heating a 50 sq m (540 sq ft) building used by CERL as office space. There is no domestic hot water in the building. Auxiliary energy is supplied by an electric, flow-through hot water heater. The results of this research are presented in terms of mean daily averages for each month during the heating season and include instantaneous solar radiation (horizontal and in the plane of the collector), useful heat acquired(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A066 513 10/2 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Fixed Facilities Energy Consumption Investigation -- Data Analysis. (U)

DESCRIPTIVE NOTE: Interim rept., FEB 79 46P Sliwinski,B. J. ;Leverenz, D. ;Windingland,L. ;Mech,A. R. ;
REPT. NO. CERL-IR-E-143
PROJ: 4A762731AT41
TASK: 06

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Errata sheet inserted.
DESCRIPTORS: *Energy consumption, *Military facilities, Maintenance management, Air conditioning equipment, Data acquisition, Heating, Energy conservation, Statistical analysis, Efficiency, Savings, Army Corps of Engineers (U)
IDENTIFIERS: WU007, AST41, PE62731A (U)

This report describes the analysis of energy consumption data collected between September 1976 and February 1978 for selected Army buildings at Fort Belvoir, VA, Fort Carson, CO, and Fort Hood, TX. These buildings represent seven major energy consumer groups found on Army installations: family housing, troop housing, administration/training, production/maintenance, medical/dental, storage, and community support facilities. Results of analyses of building energy consumption vs. building floor area and weather parameters are presented in Btu/sq/ft/heating degree days (HDD) and kWh/sq ft/cooling degree days (CDD) for each consumer group. Comparisons between consumer groups are shown graphically on bar charts; energy use data for each consumer group are used to develop charts showing installation energy use by consumer groups. (Author) (U)

AD-A066 384 15/5 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CchampaIGN ILL

Construction Contract Type Selection Procedures. (U)

DESCRIPTIVE NOTE: Final rept., FEB 79 75P Benson,Lee B. ;Colwell, Glenn E.;
REPT. NO. CERL-TR-P-98

UNCLASSIFIED REPORT

DESCRIPTORS: *Contract administration, *Army procurement, *Construction, Selection, Vendors, Flow charting, Price index, Specifications, Military requirements, Decision making, Contract proposals, Lead time, Management planning and control (U)

This report presents the results of research to produce guidance for contract type selection for construction procurement actions. A flow diagram and coordinated text are used to explain the various contracting methods available, describe the situations where each method could be appropriate, and indicate the advantages/disadvantages of each. (Author) (U)

AD-A066 223 20/1 19/4 19/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Acoustic Directivity Patterns for Army Weapons. (U)

DESCRIPTIVE NOTE: Interim rept., JAN 79 125P Schomer,P. D. ;Little,L. M. ;Hunt,A. B. ;
REPT. NO. CERL-IR-N-60
PROJ: 4A762720A896
TASK: 03

UNCLASSIFIED REPORT

DESCRIPTORS: *Noise(Sound), Blast waves, Artillery fire, Acoustic emissions, Sound pressure, Patterns, Demolition, Howitzers, Muzzle brakes, Acoustic absorption, Patterns, Contours (U)
IDENTIFIERS: Acoustic directivity, PE62720A, WU001 (U)

This report describes tests conducted by this investigation on 12 types of Army heavy weapons at Fort Sill, OK, and the development of precise sound-pressure level contours (directivity patterns) for Army weapons currently in use. The data obtained during these tests was also used to compile tables relating the charge weight to an equivalent weight of C-4 plastic explosive. In addition, this investigation determine that elevation has little influence on weapon directivity patterns; the major factor affecting weapon directivity patterns was the muzzle brake, which causes directivity patterns to become almost circular. The exceptions were recoilless rifles. Weight equivalency tables were found to be a function of tube size, with the longest tubes being the quietest, since the charges within them are the most contained. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A066 112 5/3 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Profit Primer: An Evaluation of Alternate Profit Determination Models. (U)

DESCRIPTIVE NOTE: Interim rept., MAY 79 86P Deponai,John M. , III; Adiguzel,Ranim Ilker ;
REPT. NO. CERL-IR-P-99
CONTRACT: IAO-MCC-E-78-02

UNCLASSIFIED REPORT

DESCRIPTORS: *Contract administration, *Profits, *Econometrics, Trade off analyses, Costs, Risk, Regulations, Department of Defense, Contracts (U)

This report evaluates six profit determination models as candidates for selection as the official profit determination procedure for the U.S. Army Corps of Engineers. In addition, it provides a summary of current profit theory; profit regulatory requirements; Government profit policy; and 13 profit factors, including the four major categories which comprise the weighted guideline (WGL) method of the Defense Acquisition Regulation (DAR). Of the six profit determination models considered, one will be selected for further development and calibration. This report documents the first phase of a study which will define fair and reasonable profit on construction contracts, change orders, and architect-engineer (A-E) contracts, provide a procedure for computing a fair and reasonable profit objective on Corps contracts, and facilitate the implementation of a selected profit procedure. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A065 827 13/13 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Computer-Aided Engineering and Architectural Design System (CAEADS). Volume I. Summary. (U)

DESCRIPTIVE NOTE: Final rept., JAN 79 55P Daniel,;Mann,;Johnson,; Mendenhall,;
REPT. NO. CERL-TR-P-97-VOL-1
PROJ: 4A762731A741
TASK: T1

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Military engineering, *Computer aided design, Computer programs, Computerized simulation, Military facilities (U)
IDENTIFIERS: CAEADS(Computer Aided Engineering and Architectural Design System), WU020, AS741, PE62731A (U)

The Computer-Aided Engineering and Architectural Design System (CAEADS) is being developed for the U.S. Army Corps of Engineers by the Construction Engineering Research Laboratory (CERL) in Champaign, Illinois. This report summarizes the system requirements, preliminary hardware/software systems design, anticipated costs and benefits, project master plan for system development, and study results, conclusions, and recommendations. It also serves as an introduction to Volumes II through VIII. CAEADS is an integrated system of computer aids to the design process for military construction, supporting the design and review activities of Corps District Offices and the design activities of private Architect/Engineer firms under contract to the Corps. CEADS objectives are to improve the quality of facility design, enhance the responsiveness of MC design processes to project needs, improve the productivity of Corps design staff, facilitate design review, and thus reduce the costs of constructing and operating military facilities. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A065 659 13/13 11/12

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Family of Components for the Wood Panelized Prefabricated Building System. (U)

DESCRIPTIVE NOTE: Special rept., JAN 79 69P Kao,A. M. ;Whiteside,T. M. ;
REPT. NO. CERL-SR-M-255
PROJ: 4A763734DT08
TASK: 06

UNCLASSIFIED REPORT

DESCRIPTORS: *Prefabricated buildings, *Panels, *Wood, Structural engineering, Theater level operations, Military facilities, Concrete, Floors, Tropical regions, Deserts, Field tests, Foam, Technology transfer (U)
IDENTIFIERS: PE63734A, AST08, WU002 (U)

IAC ACCESSION NUMBER: PL-033612
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report presents the design of a prefabricated, panelized wood building system capable of housing a large percentage of facilities required in the Theater of Operations. Configurations of the building structural system include 24-, 36-, and 48-ft (7.3-, 10.9-, and 14.6-m) widths and 8- and 12-ft (2.4- and 3.7-m) eave heights. Optional components include raised wood and concrete floors as well as modifications for temperate, tropical, and desert climates. This report also presents the results of a field test on a foam/wood panelized building system conducted at Fort Bucker using military personnel. The result indicates the competitiveness of the system in comparison with AFCS Facility 3403; up to 40 percent reduction in labor requirements can be reached. (Author) (U)

IAC SUBJECT TERMS: P--(U)Shelters, Spray applications, Urethanes, Roofing, Panels, Buildings, Flame retardants, Insulation, Flooring, Wall panels, Prefabricated structures, Material costs, Cost comparisons, Military applications, Wood, Laminates, ZZ Unlimited. ;

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A065 457 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Prototype Procedure for Facility Design Reviews. (U)

DESCRIPTIVE NOTE: Interim rept., FEB 79 36P Brauer,Roger L. ;Dressel, David L. ;
REPT. NO. CERL-IP-E-145
PROJ: 4A762719AT41
TASK: 03

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Facilities, Military requirements, Army, Experimental design, Prototypes, Value engineering (U)
IDENTIFIERS: PE62719A, AST41, WU004 (U)

This report covers the initial phase of a study to develop a prototype procedure for the review of the facility designs that will insure that the facility is fully functional when constructed. This report decribes who would be involved in the review process, the responsibilities that each party would bear, how the process activities should be ordered, and how major parties would conduct their portions of the review. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A064 925 13/3 5/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Construction Equipment Cost Guide. Volume 2. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 77 907P Neely,E. ;
REPT. NO. CERL-TR-P-52-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A064 924. Supersedes report dated Oct 75, AD-A016 910.
DESCRIPTORS: *Construction equipment, *Costs, Loaders, Trucks, Cost analysis, Diesel engines, Bulldozers, Generators, Tables(Data), Cost estimates, Manuals, Army equipment (U)
IDENTIFIERS: *Construction Equipment Cost Guides (U)

This guide presents a systematic approach for Department of the Army field pricing support personnel (estimators, negotiators, price analysts auditors, etc.) to use in estimating hourly ownership and operating rates for construction equipment. The guide is intended for use in negotiated construction procurements which require an independent government estimate by regulation. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A064 924 13/3 5/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Construction Equipment Cost Guide. Volume 1. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 77 811P Neely,E. ;
REPT. NO. CERL-TR-P-52-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A064 925. Supersedes report dated Oct 75, AD-A017 271.
DESCRIPTORS: *Construction Equipment, *Costs, Loaders, Trucks, Tables(Data), Cost estimates, Bulldozers, Army procurement, Operation, Hoists, Army equipment, Rubber, Steel (U)
IDENTIFIERS: *Construction equipment cost guides (U)

This guide presents a systematic approach for Department of the Army field pricing support personnel (estimators, negotiators, price analysts auditors, etc.) to use in estimating hourly ownership and operating rates for construction equipment. The guide is intended for use in negotiated construction procurements which require an independent government estimate by regulation. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099052

AD-A064 813 11/12 11/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CchampaIGN ILL

Investigation of Techniques for the Rapid Preparation of Painted Wood Surfaces. (U)

DESCRIPTIVE NOTE: Special rept., JAN 79 32P Howdyshell,P. A. ;Olsson, T. ;
REPT. NO. CERL-SR-M-257
PROJ: 4A762731AT41
TASK: T9

UNCLASSIFIED REPORT

DESCRIPTORS: *Wood, *Paints, Surface finishing, Removal, Layers, Test and evaluation, Microwaves, Heating, High pressure, Water jets, Sand, Blast, Steam cleaning, Hot gases, Torches (U)
IDENTIFIERS: PE62731A, AST41, WU028 (U)

The major contributing factor to paint failure is excessive buildup of multiple coats of paint applied over a period of years. Although old paint can be removed adequately before repainting, the classical removal processes are costly and impractical. This study examines equipment which, according to the claims of the manufacturers, removes paint easily and inexpensively from wooden surfaces. In addition, tests were conducted to determine the feasibility of developing equipment to remove paint through microwave heating. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A064 731 11/2 13/8

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Investigation of Materials for Waterproofing Leaky Concrete Ammunition-Storage Bunkers from the Inside. (U)

DESCRIPTIVE NOTE: Special rept., JAN 79 65P Kanarowski,Stanley M. ;
REPT. NO. CERL-SR-M-256

UNCLASSIFIED REPORT

DESCRIPTORS: *Concrete, *Weatherproofing, Ammunition, Storage, Leakage(Fluid), Construction materials, Military facilities, Waterproofing, Cracks, Repair, Hydrostatic pressure, Test and evaluation (U)

This investigation is concerned with the problem of water seepage in concrete ammunition-storage bunkers and the findings of an evaluation of crack-waterproofing materials to be used for such repairs inside bunkers. The study included: (1) a survey of military installations to determine the nature of the seepage and remedial methods, (2) a survey of manufacturers for material recommendations and samples, and (3) a testing program involving the waterproofing and hydrostatic testing of cracked concrete slabs. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A064 698 13/2 5/3 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Systems Approach to Life-Cycle Design of Pavements. Volume III. LIFE2 Program Listing. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 79 453P Lindow,Edward S. ;
REPT. NO. CERL-TR-M-253-VOL-3
PROJ: 4A763734DT08
TASK: 01

UNCLASSIFIED REPORT

Availability: Document partially illegible.
SUPPLEMENTARY NOTE: See also Volume 1, AD-A061 157.
DESCRIPTORS: *Pavements, *Life cycle costs, *Computer programs, *Systems approach, Civil engineering, Runways, Roads, Subroutines, Materials laboratories, Maintenance management, Statistical data, Construction materials, Road building equipment (U)
IDENTIFIERS: LIFE2 Automated system, PE63734A, AST08, WU001 (U)

This report is the third volume of a three-volume report which documents an automated system (LIFE2) for analyzing pavement designs and maintenance and repair strategies based on life-cycle costs. LIFE2 models existing Corps of Engineers criteria for designing rigid and flexible pavements for airfields, roads, and streets. The program includes analytical procedures for evaluating earthwork, drainage, and frost protection requirements in addition to maintenance costs. The resulting combinations of design schemes and maintenance strategies are ranked by total cost over the design life of the pavement. Volume I is the LIFE2 Users Manual, Volume II is the LIFE2 System Documentation, and Volume III is the LIFE2 Program Listing. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A064 657 5/2 13/2 9/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Procedures for Collection of Reliability, Availability, and Maintainability Data on Electrical and Mechanical Systems. (U)

DESCRIPTIVE NOTE: Special rept.,
JAN 79 60P Takemori,Edward M. ;Pollock, M. J. ;
REPT. NO. CERL-SR-E-137
PROJ: 4A763734DT08
TASK: 07

UNCLASSIFIED REPORT

DESCRIPTORS: *Data management, *Information systems, Collecting methods, Army Corps of engineers, Reliability, Maintainability, Data bases, Automation, Management information systems, Electrical engineering, Mechanical engineering (U)
IDENTIFIERS: PE63734A, AST08, WU003 (U)

This report presents the results of a study of methods to acquire and store data on the reliability, availability, and maintainability (RAM) of electrical and mechanical systems. Data acquisition methods previously used by the Corps of Engineers were reviewed and new methods and equipment now being developed were evaluated. Forms are proposed to aid in the collection and handling of information in a logical manner. Methods for storing data either manually or by computer are also PRESENTED. The results show that new computer systems, together with available communications equipment and the proposed forms, can be combined to provide an efficient and economical means of acquiring and storing RAM data. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A064 650 13/3 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

First Annual Summary of CAEADS Development Activities. (U)

DESCRIPTIVE NOTE: Interim rept.,
MAR 78 53P Kim,Seung-Jai ;Larson,R. A. ;
REPT. NO. CERL-IR-P-93
PROJ: 4A763734DT03
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Military engineering, *Computer aided instruction, Construction, Research facilities, Integrated systems, Architecture, Computer applications, Operations research, Reports, Computers (U)
IDENTIFIERS: CAEADS(Computer Aided Engineering and Architectural Design System), Computer aided engineering and architectural design system, PE63734A, AST03, WU005 (U)

This report presents a status summary on Computer Aided Engineering and Architectural Design System (CAEADS) development activities for FY77. The report highlights accomplishments to date, planned research activities, and challenges to progress that require consideration by management. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A064 356 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Simplified Sanitary Landfill Design and Operation Analysis. (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 78 55P Gerdes,G. L. ;Donahue,B. A. ;
REPT. NO. CERL-TR-N-57
PROJ: 4A762720A896
TASK: T2

UNCLASSIFIED REPORT

DESCRIPTORS: *Land use, *Waste disposal, *Sanitary engineering, Military facilities, State of the art, Site selection, Solid wastes, Pollution abatement, Environmental engineering, Soil classification (U)
IDENTIFIERS: Landfills, PE62720A, AS896, WU007 (U)

This report surveys and summarizes state-of-the-art practices in the design and operation of sanitary landfills. It was written at the request of the Office of the Chief of Engineers to be used as guidance for the Facility Engineers at Army military installations. All aspects of sanitary landfills are covered, including site selection, design, pollution control, operation, and final closure. Special attention is given to the U.S. Environmental Protection Agency's 'Guidelines for the Land Disposal of Solid Waste,' which are mandatory for Federal agencies. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A063 936 9/2 13/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Recommended Interface Standards for an Army Standard Energy Monitoring and Control System. (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 78 37P Hall,James L. ;
REPT. NO. CERL-TR-E-140
PROJ: 4A762721AT41
TASK: T6

UNCLASSIFIED REPORT

DESCRIPTORS: *Data transmission systems, *Standards, Interfaces, Monitors, Acceptability, Energy management, Monitoring, Energy consumption, Control systems, Decentralization, Modules(Electronics), Compatibility, Army, Computer communications, Parallel processors, Serial processors, Bus conductors (U)
IDENTIFIERS: EMCS(Energy Monitoring and Control System), WU010, AST41, PE62721A (U)

This report evaluated existing interfacing standards for use with an Army Standard Energy Monitoring and Control System (EMCS). The interfacing requirements for the Army Standard EMCS and the criteria for making the required evaluations are presented. Descriptions of the existing standards which were found to be candidates for evaluation are presented, along with the results of the evaluations. This report recommends that for the Army Standard EMCS, a concept similar to IEEE standard 583 be used for parallel data interface and that the EIA R232-C standard be used for serial data interfaces. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A063 239 21/4 13/9

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Fuels: State of the Art in Industrial Utilization. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 78 146P Kong,P. ;Lee,M. ;Hathaway, S. ;
REPT. NO. CERL-TR-E-135
CONTRACT: MIPR-N00025-4-1041

UNCLASSIFIED REPORT

DESCRIPTORS: *Fuels, *Industrial equipment, Coal, Refuse collection, Fuel oil, Petroleum products, Energy conversion, Boilers, State of the art, Handling, Storage, Industrial research, Technology transfer (U)

This study reviews the state of the art of industrial-scale boiler fuel use for supervisory personnel. Fuels considered were coal, petroleum fuel oil, and refuse. The sections on coal and oil deal with the basics of selection, equipment and technology for handling and storage, and equipment and technology of combustion. In addition, coal gasification processes are discussed. The section on refuse discusses the technology of converting refuse to energy (CRE). It describes in detail current major package CRE systems and considerations for co-firing refuse in boilers currently designed for firing coal. (Author) (U)

AD-A063 213 11/6 13/8

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Determination of the Effect of Current and Travel Speed of Shielded Metal-Arc Welding on the Mechanical Properties of A36, A516, and A514 Steels. (U)

DESCRIPTIVE NOTE: Interim rept.,
NOV 78 54P Weber,R. A. ;
REPT. NO. CERL-IR-M-248
PROJ: 4A762731AT41
TASK: T7

UNCLASSIFIED REPORT

DESCRIPTORS: *Steel, *Arc welding, Mechanical properties, Electric current, Velocity, Shielding, Tensile properties, Impact strength, Butt welding, Joints, Pressure vessels, Carbon steels (U)
IDENTIFIERS: Steel A35, Steel A516, Steel A514, WU007, AST41, PE62731A (U)

IAC ACCESSION NUMBER: MCIC-106352
IAC DOCUMENT TYPE: MCIC -HARD COPY--
This study was performed to determine the limits on current and travel speed -- in particular nugget area -- as defined by the results of tensile and impact properties of butt joint welds produced by manual shielded metal-arc welding in carbon steel (A36), pressure-vessel steel (A516), and high-strength, low-alloy steel (A514). (Author) (U)

IAC SUBJECT TERMS: M--(U)Engineering Steel, A36, A516, A514, Shielded Metal Arc Welding, Welds, Butt Welds, Charpy Impact, Ultimate Tensile Strength, Tensile Yield Strength, True Stress-True Strain, HAZ, Notch Impact Strength, Tear Test.;

AD-A063 092 17/2 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Survey of the Properties of Computer Communication Protocols. Volume I. The Function, Properties, Specification, and Analysis Methods of Computer Communication Protocols. (U)

DESCRIPTIVE NOTE: Final rept.,
SEP 78 44P Itzkowitz,Avrum E. ;
REPT. NO. CERL-TR-D-1-VOL-1
PROJ: 4A762725AT11
TASK: 02

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A061 647.
DESCRIPTORS: *Computer communications, Network flows, Functional analysis, Computer graphics, Programming languages, Communications networks, Data processing terminals, Message processing, Three terminal networks, Remote terminals (U)
IDENTIFIERS: PE62725A, AST11, WU209 (U)

This report is a two-part study on the properties of computer communication protocols. This volume focuses on the function and properties of current computer communication protocols. Many different approaches to the specification and analysis problem, ranging from textual description to formal graphical techniques, are presented and discussed. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A062 720 5/3 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Analysis of Real Estate Status Reporting Procedures. (U)

DESCRIPTIVE NOTE: Final rept.,
OCT 78 91P Altheide,Carl P. ;Polin,G. M. ;
REPT. NO. CERL-TR-P-96

UNCLASSIFIED REPORT

DESCRIPTORS: *Economics, *Data processing, Information processing, Army planning, Management planning and control, Acquisition, Disposal, Flow charting, Reports (U)
IDENTIFIERS: *Real estate status, Homeowners assistance (U)

This report presents the results of analysis of six automated data processing (ADP) systems used for status reporting of real estate activities. Details of the existing procedures, information flow between Corps of Engineers Districts and the Directorate of Real Estate at the Office of the Chief of Engineers, and system analyses are included for the real estate status reporting procedures in the acquisition, disposals, inleasing, and outgranting activities, and the relocation and homeowner's assistance programs. Interim recommendations for streamlining the six ADP systems to improve the timeliness of information, reduce manual effort, and eliminate redundant or unnecessary data reporting are given for the systems both individually and collectively. Recommendations for analyzing additional ADP systems with which real estate personnel are involved are also presented. Finally, preparation of the functional requirements and preliminary design of upgraded, consolidated real estate status reporting system is recommended. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A062 719 13/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Design of Solar Heating and Cooling Systems. (U)

DESCRIPTIVE NOTE: Final rept.,
OCT 78 57P Joncich,David M. ;Leverenz, Donald James ;Hittle,Douglas C. ;Walton, George N. ;
REPT. NO. CERL-TR-E-139
PROJ: 4A762731AT41
TASK: T6

UNCLASSIFIED REPORT

Availability: Document partially illegible.
DESCRIPTORS: *Solar heating, *Cooling, *Solar energy, *Cost analysis, *Computerized simulation, Computer aided design, Solar collectors, Buildings (U)
IDENTIFIERS: BLAST(Building Loads Analysis and Systems Thermodynamics) Program, WU021, AST41, PE62731A (U)

This report presents a method for making an energy and an economic cost/benefit analysis of solar energy systems. A graphical method is presented for evaluating the performance of solar domestic hot water systems, solar heating systems, and solar heating and cooling systems. Methods for selecting the optimum collector area based on benefit-to-cost ratio and for systemtically making detailed design calculations using the Building Loads Analysis and System Thermodynamics (BLAST) computer simulation program are also presented. Practical considerations for solar system designs are discussed. The methods presented provide the required accuracy for both initial evaluations and final design calculations. Examples are provided throughout the text to aid in using the methods described. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A062 718 20/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Predicting Noise Impact in the Vicinity of Small-Arms Ranges. (U)

DESCRIPTIVE NOTE: Interim rept.,
OCT 78 22P McBryan,Joseph ;
REPT. NO. CERL-IR-N-61
PROJ: 4A762720A896
TASK: 03

UNCLASSIFIED REPORT

Availability: Document partially illegible.
DESCRIPTORS: *Noise(Sound), *Small arms, Ranges(Facilities), Predictions, Data reduction, Army Operations, Tables(Data), Measurement (U)
IDENTIFIERS: WU005, AS896, PE62720A (U)

This report describes the data collection and reduction methods used to determine equations to provide sound-exposure level (SEL) vs distance curves for impulsive noise at Army small-arms ranges. It also describes (1) the method for calculating SEL per round at any distance for M14 and M16 rifles, a .45 caliber pistol, and a M60 machine gun, and (2) the tabular procedure for predicting the day/night average sound level (Ldn) at Army small-arms ranges. This in turn allows for prediction of noise impacts on or adjacent to Army installations. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A062 653 13/2 10/2 15/5 8/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Technical Evaluation Study: Engery Recovery from Solid Waste at Fort Dix, NJ and Nearby Civilian Communities. (U)

DESCRIPTIVE NOTE: Final rept.,
OCT 78 57P Collishaw,A. N. ;Hathaway, S. A. ;
REPT. NO. CERL-TR-E-136

UNCLASSIFIED REPORT

DESCRIPTORS: *Solid wastes, *Energy conversion, *Military facilities, *New Jersey, Economics, Feasibility studies, Savings, Waste management, Communities, Steam, Heating (U)
IDENTIFIERS: *Landfills (U)

This study investigated the technical and economic feasibility of energy and materials recovery from solid waste presently landfilled at Fort Dix, NJ. The waste stream consists of conventional mixed solid waste generated at Fort Dix and adjacent McGuire Air Force Base(AFB). The available energy content of the waste stream is approximately 21.4 x 1,000,000 Btu/year from 18,600 tons/year mixed solid waste. Combining civilian waste from nearby communities with the military waste stream was considered. A total of 73,900 tons/year could be processed and the heat energy utilized. (Author) (U)

AD-A062 599 5/2 15/3 2/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CchampaIGN ILL

Data Requirements for Army Land Use Planning and Management. (U)

DESCRIPTIVE NOTE: Interim rept.,
NOV 78 88P Lozar,Robert C. ;Anderson, J. Robert ;Balbach,Harold ;
REPT. NO. CERL-IR-N-55
PROJ: 4A762720A896
TASK: 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Resource management, *Military facilities, *Army planning, *Land use, Data acquisition, Military requirements, Mathematical models, Soil erosion, Flood control, Ground water, Water pollution, Watersheds, Wildlife, Agriculture, Forestry, Air quality, Water quality, Noise (U)
IDENTIFIERS: Analytical models, WU001, AS896, PE62720A (U)

Data needed for Department of the Army (DA) installation natural resources management and planning were surveyed and analyzed to aid compliance with existing and projected Army policies. The methodology used included a survey of the data requirements of 32 currently available analytical models and a subsequent survey of existing data sources to supply input into those models. The analytical models surveyed covered areas such as soil erosion, flood susceptibility, groundwater pollution, watershed runoff, wildlife management, visual impact, agricultural productivity, forest management, air quality, water quality, and noise levels. Criteria for analytical models and data sources are suggested. Five data sources selected from among 16 surveyed, are reviewed in detail, and their performance as input sources to the surveyed analytical models is evaluated. (Author) (U)

AD-A061 647 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Survey of the Properties of Computer Communication Protocols. Volume II. Future Developments of Computer Network Protocols. (U)

DESCRIPTIVE NOTE: Technical rept.,
SEP 78 37P Liu,J. W. S. ;Mickunas, M. D. ;
REPT. NO. CERL-TR-0-1-VOL-2
PROJ: 4A762725AT11
TASK: 02

UNCLASSIFIED REPORT

DESCRIPTORS: *Computer communications, Information processing, Communications networks, Message processing, Access, Switching logic, Electronic switching, Transfer switches, Control systems, Network flows (U)
IDENTIFIERS: Protocols, PE62725A, WU209 (U)

This report is the second part of a two-part study on the properties of computer communication protocols. It is concerned primarily with the future development of protocols, particularly a projection of the state of the art of protocols of different levels. The packet switching network is explained, and the possible future developments in low-level protocols are discussed, including end-to-end protocols and user-level protocols that support functions such as file transfer and remote job entry. (Author) (U)

AD-A061 638 13/2 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Typical Contract Specifications for Collection of Refuse and Sanitary-Landfill Operations. (U)

DESCRIPTIVE NOTE: Special rept., SEP 78 36P Donahue,Bernard A. ;Cannon, John ;Becker,Harry ;
REPT. NO. CERL-SR-N-59
PROJ: 4A762720A896
TASK: 02

UNCLASSIFIED REPORT

DESCRIPTORS: *Refuse collection, *Solid wastes, *Waste management, *Contract administration, Specifications, Military facilities, Conservation, Resource management, Pollution, Environmental protection (U)
IDENTIFIERS: Sanitary landfills (U)

This report presents the results of an investigation to determine guide specifications for solid waste collection and disposal. The investigators reviewed existing TRADOC solid-waste contracts with respect to their legal correctness, completeness, simplicity, and ability to address the most recent resource recovery requirements. A single model contract, which addresses the requirements of the Resource Conservation and Recovery Act of 1976, was written from the best of the existing contracts. This general solid-waste management contract contains pertinent information on solid-waste collection, resource recovery, and sanitary-landfill operation. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A061 158 5/2 13/2 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

System Documentation for Computer-Aided Environmental Legislative Data System. (U)

DESCRIPTIVE NOTE: Final rept., SEP 78 159P Welsh,Rikki L. ;
REPT. NO. CERL-SR-N-31
PROJ: 4A762720A896
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Legislation, *Environmental engineering, *Computer program documentation, *Information processing, Regulations, Standards, Vocabulary, Subject indexing, Information retrieval, State law, Federal law, Data acquisition, Data storage systems, Management information systems, Data processing, Military engineering, Army planning, Subroutines (U)
IDENTIFIERS: *CELDS(Computer Aided Environmental Legislative Data System), Keywords, PE62720A, AS896, WU002 (U)

This report presents the total system documentation for the Computer-Aided Environmental Legislative Data System (CELDS). All information necessary for the maintenance, update, and modification of the CELDS software is presented. See also AD-A061 126. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A061 157 13/2 5/1 5/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Systems Approach to Life-Cycle Design of Pavements. Volume I. LIFE2 User's Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
SEP 78 93P Lindow,E. S. ;
REPT. NO. CERL-TR-M-253-VOL-1
PROJ: 4A763734DT08
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Pavements, *Life cycle costs, *Manuals, User needs, Experimental design, Runways, Roads, Computer programs, Maintenance, Pavement bases, Construction, Civil engineering, Concrete (U)
IDENTIFIERS: PE63734A, AST08, WU001 (U)

This report is the first of a three-volume report which documents an automated system (LIFE2), for analyzing pavement designs and maintenance and repair strategies based on life-cycle costs. LIFE2 models existing Corps of Engineers criteria for designing both rigid and flexible pavements for airfields, roads, and streets. The program also includes analytical procedures for evaluating earthwork, drainage, and frost protection requirements, as well as maintenance costs. The resulting combinations of design schemes and maintenance strategies are ranked by total cost over the design life of the pavement. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A061 127 13/2 14/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Engineering and Design Cost/Rate Forecasting System. Volume I. Model Development and Data Analysis. (U)

DESCRIPTIVE NOTE: Final rept.,
SEP 78 67P Neathammer,Robert D. ;
REPT. NO. CERL-TR-P-94-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A061 108.
DESCRIPTORS: *Construction, *Cost estimates, Mathematical models, Forecasting, Rates, Computer programs, Army Corps of Engineers, Military facilities, Buildings, Computer graphics, Costs, Engineering, Mathematical prediction, Confidence limits (U)
IDENTIFIERS: TEKTRONIX 4051 graphics system, Military construction, Design (U)

This report discusses the development of statistically based models for forecasting engineering and design (E/D) costs in order to establish military construction cost targets for Corps of Engineers Districts and Divisions. The model developed is programmed on the TEKTRONIX 4051 graphics system in the Office of the Chief of Engineers (OCE). When the model was verified, only one of 18 predictions was outside the prediction limits (95% confidence). The model is best used to project E/D costs 1 year in advance, and it is recommended that it be used to help establish cost targets for applicable Corps Divisions/Districts. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A061 126 5/2 13/2 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Computer-Aided Environmental Legislative Data System (CELDS). User Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
SEP 78 116P VAN Weringh,J. ;Patzer,J. ; Welsh,R. ;Webster,R. ;
REPT. NO. CERL-TR-N-56
PROJ: 4A762720A896
TASK: 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Supersedes Rept. no. CERL-TR-E-78, dated Nov 75, AD-A019 018.
DESCRIPTORS: *Legislation, *Environmental engineering, *Information processing, Abstracts, Computer applications, Regulations, Standards, Vocabulary, Subject indexing, Information retrieval, Data acquisition, State law, Federal law, Data storage systems, Management information systems, Data processing, Military engineering, Army planning (U)
IDENTIFIERS: CELDS(Computer Aided Environmental Legislative Data System), Keywords, Users manuals, WU002, AS896, PE62720A (U)

The Computer-Aided Environmental Legislative Data System (CELDS) is a collection of current federal and state environmental laws, regulations, and standards. Abstracts of the legislation provide the system user with quick access to current controls on activities that may influence the environment. In addition, these abstracts supply data for environmental impact analysis and environmental quality management. This report provides a cursory description of CELDS data fields and user instructions for accessing CELDS, formulating searches, and displaying the selected laws. This report contains copies of the current list of CELDS attributes, keywords, and state abbreviations. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A061 123 13/2 14/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

User Evaluation of CERL Air, Water/ Wastewater, and Solid Waste Survey Guidelines. (U)

DESCRIPTIVE NOTE: Special rept.,
SEP 78 43P Singh,Vinod V. ;Donahue,B. A. ;
REPT. NO. CERL-SR-N-58
PROJ: 4A162121A896
TASK: 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Rept. nos. CERL-TR-N-5, AD-A029 633, CERL-TR-N-11, AD-A033 223, and CERL-TR-E-75, AD-A018 879.
DESCRIPTORS: *Surveys, *Waste management, Water pollution, Waste water, Environmental protection, User needs, Emission, Solid wastes, Pollution abatement, Sanitary engineering, Data acquisition (U)
IDENTIFIERS: AS896, WU004, PE62121A (U)

This report presents a user evaluation of three installation pollution survey guidelines published by the Construction Engineering Research Laboratory for the areas of air, water/wastewater, and solid waste. The three guidelines are: (1) Air Pollution Survey Guidelines (CERL-TR-N-5/AD-A029 633), (2) Water/Wastewater Survey Guidelines (CERL-TR-N-11/AD-A033 223), and (3) Installation Solid Waste Survey Guidelines (CERL-TR-E-75/AD-A018 879). These guidelines were evaluated by users to such quality parameters as comprehensiveness, practicality, and Army relevance. The user evaluation revealed that the overall rating of these guidelines was generally 'excellent' to 'good.' Suggested areas of improvement were: (1) simplifying or eliminating the highly technical areas, (2) expanding information and coverage of emission factors, (3) providing more detailed information on state pollution regulations, (4) providing more examples on principles presented in the (U)

AD-A061 108 13/2 14/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Engineering and Design Cost/Rate Forecasting System. Volume II. User's Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
SEP 78 24P Neathammer,Robert D. ;
REPT. NO. CERL-TR-P-94-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A061 127.
DESCRIPTORS: *Construction, *Cost estimates, Computer programs, Mathematical models, Rates, Forecasting, Linear regression analyses, Army Corps of Engineers, Military facilities, Buildings, Computer graphics, Costs, Engineering, Mathematical prediction (U)
IDENTIFIERS: TEKTRONIX 4051 graphic system, Military construction, D[illegible]n, User manuals, BASIC programming lang[illegible] (U)

This volume describes the use of the Engineering and Design (E/D) Cost/Rate Forecasting System to maintain E/D data, to update the E/D forecasting model, and to forecast future E/D costs and rates. Volume I provides information on the model development and data analysis. (Author) (U)

AD-A061 108 UNCLASSIFIED

AD-A061 091 15/5 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Management Summary. Facilities Engineering Equipment Maintenance System (FEEMS). (U)

DESCRIPTIVE NOTE: Final rept.,
SEP 78 54P Brown,David W. ;
REPT. NO. CERL-TR-P-95
PROJ: 4A762719AT41
TASK: T9

UNCLASSIFIED REPORT

DESCRIPTORS: *Maintenance management, *Military facilities, Army, Army equipment, Maintenance, Scheduling, Management information systems, Integrated systems (U)
IDENTIFIERS: FEEMS(Facilities Engineering Equipment Maintenance System), PE62719A, AST41, WU030 (U)

This report is a management summary of the capabilities provided by the Facilities Engineering Equipment Maintenance System (FEEMS). FEEMS, a subsystem of the Integrated Facilities System (IFS), was developed for use by the installation-level Directorate of Facilities Engineering to support recurring maintenance activities on critical equipment and systems in Army facilities. FEEMS is designed to operate with IFS and uses code structures common to IFS. The interface of FEEMS and IFS will eliminate the need to use separate work order, labor, equipment, and material reporting systems; however, it is imperative that the Facilities Engineer (FE) develop a thorough plan for recurring maintenance before implementing the system. This report provides an overview of the FEEMS functions, implementation procedures, and benefits and costs related to the system. The FE can use this report to evaluate the potential application of FEEMS to a given situation and to evaluate the requirements for such an application. (Author) (U)

AD-A060 958 20/3 20/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

True-Integrating Environmental Noise Monitor and Sound Exposure Level Meter. Volume I. User's Guide. (U)

DESCRIPTIVE NOTE: Final rept., MAY 78 23P Schomer,P. D. ;Averbuch,A. J. ;Weisberg,M. W. ;
REPT. NO. CERL-TR-N-41-VOL-1
PROJ: 4A762720A896
TASK: 03

UNCLASSIFIED REPORT

DESCRIPTORS: *Impulse noise, *Noise(Sound), Noise pollution, Monitoring, User needs, Measurement, Data acquisition, Environmental tests (U)
IDENTIFIERS: PE62720A, WU001 (U)

This report summarizes desirable features and factors in environmental noise monitors, in general, and in particular, monitors which measure the impulsive noise created by military sources. Particular emphasis is placed on the need to have a true-integrating detector to properly measure these impulsive sources. Based on these needs, a noise monitor has been designed and constructed. This report summarizes the operations and components of this monitoring unit. Volume II describes the construction, parts lists, layouts, and schematics of the monitoring unit. (Author) (U)

AD-A060 883 13/2 1/5 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development of a Pavement Maintenance Management System. Volume IV. Appendices A through I. Maintenance and Repair Guidelines for Airfield Pavements. (U)

DESCRIPTIVE NOTE: Final rept. Jul 76-Sep 77, SEP 77 160P Shahin,Mohamed Y. ;Darter, Michael I. ;Kohn,Starr D. ;
REPT. NO. CERL-TR-C-76-VOL-4
PROJ: 2104
TASK: 3M
MONITOR: CEEDO TR-77-44-VOL-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 5, AD-A058 860.
DESCRIPTORS: *Pavements, *Runways, *Maintenance management, Concrete, Repair, Airports, Materials laboratories, Civil engineering, Environments, Temperature, Soil mechanics, Precipitation, Cracking(Fracturing) (U)
IDENTIFIERS: LPN-CEEDO-77-014, WUCEEDO21043M01, PE63723F (U)

This volume presents the Appendices A through I. Appendix A contains the feasibility study of the consequences of maintenance and repair. Appendix B is an input guide to and flow chart of the PCI-1 computer program which calculates the pavement condition index (PCI). Appendix C contains the development of the environmental zones. Appendix D shows the questionnaires used on visits to Air Force Bases. Appendix E summarizes all PCI data collected in FY77. Appendix F presents the correlation study of PCI and profile roughness. Appendix G contains the information concerning maintenance and repair of features presented to the engineers attending the workshop. Appendix H describes an economic analysis procedure considering pavement performance. Appendix I contains the weighted performance questionnaires also presented at the workshop. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A059 176 9/2 5/5 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Clearinghouse Information System: Description and User Instructions. (U)

DESCRIPTIVE NOTE: Final rept., AUG 78 17P Webster,Ronald D. ;Griffin, Brenda ;
REPT. NO. CERL-TR-N-53
PROJ: 4A762720A896
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Management information systems, *Environmental impact statements, *Environmental management, Planning programming budgeting, Data bases, Computer files, Computer communications, Information retrieval, Instruction manuals, Directories, State Government, Organizations, Regions (U)
IDENTIFIERS: PE62720A, AS896, WU002 (U)

This report documents the development of the Clearinghouse Information System (CHIS), a computerized subsystem of the Environmental Technical Information System (ETIS). CHIS provides ETIS users with up-to-date listings of state, regional, or local clearinghouse agencies with which Federal agencies must coordinate new projects or activities. The information provided by these clearinghouses will prevent duplication of Federal and local efforts and insure compatibility of project planning. This report provides user instructions and guidance for retrieving and using appropriate information to coordinate Department of the Army Environmental Impact Assessments and Environmental Impact Statements with state and local agencies. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A059 058 13/13 5/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Literature Research on Living, Working, and Training Facility Environments. (U)

DESCRIPTIVE NOTE: Special rept., AUG 78 60P Burgess,John H. ;Veneklasen, W. D. ;
REPT. NO. CERL-SR-E-133
PROJ: 4A762719AT41
TASK: T3

UNCLASSIFIED REPORT

DESCRIPTORS: *Habitability, *Facilities, *Personnel, *Architecture, *Military facilities, Environments, Training, Data bases, Human factors engineering (U)
IDENTIFIERS: Man-environment criteria, Bachelor housing, Academic facilities, Training facilities, Office facilities, PE62719A, AST41, WU003 (U)

This report discusses a manually accessible article file on habitability that has the capability of later being adapted to a semi-automatic or computerized terminal access system. Development of the article file, filing and accession methods, and sources of the literature searches are described. An example summary for one area of interest is presented. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A058 860 5/1 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development of a Pavement Maintenance Management System. Volume V. Proposed Revision of Chapter 3, AFR 93-5. (U)

DESCRIPTIVE NOTE: Final rept. Jul 76-Sep 77, OCT 77 193P Shahin,Mohamed Y. ;Darter, Michael I. ;Kohn,Starr D. ;
REPT. NO. CERL-TR-C-76-VOL-5
PROJ: 2104
TASK: 3M
MONITOR: CEEDO TR-77-44-VOL-5

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A048 884.
DESCRIPTORS: *Pavements, *Runways, *Airports, Maintenance management, Air force facilities, Test and evaluation, Symposia, Air force research, Regulations, Surveys (U)
IDENTIFIERS: Pavement maintenance management system, Airfield pavement condition index, LPN-CEEDO-77-014, WUCEED021043M01, PE63723F (U)

The Air Force has for several years been actively engaged in the development of a Pavement Maintenance Management System. The first accomplishment of this study was the development of improved procedure for determining the relative condition of airfield pavements. These improved procedures are presented in detail in this report. These procedures were developed during FY 75 and 76 and validated by field tests during FY 76 and 77. Two conferences, attended by Command Pavement Engineers from all Major Commands, have been held at Tyndall AFB, Florida (30 Nov - 2 Dec 1976, 18 - 20 October 1977), to discuss and revise these procedures. It was the consensus of the attendees at these conferences that these procedures provided vastly improved methods for determining the relative condition of airfield pavements. Thus, CEEDO was requested, during the conference held in October 1977, to publish, in some form, instructions for the use of these procedures as soon as possible. As a result this (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A058 832 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Recommendations for Concrete Forming Kit for Theater of Operations Applications. (U)

DESCRIPTIVE NOTE: Final technical rept., AUG 78 40P Knab,L. I. ;
REPT. NO. CERL-TR-M-52

UNCLASSIFIED REPORT

DESCRIPTORS: *Kits, *Concrete, *Construction equipment, Material forming, Army equipment, Construction, Construction materials, Theater level operations, Military engineering (U)

This study recommends components to be included in a kit for concrete forming to be used in Theater of Operations construction. The kit will provide versatile materials and equipment for rapid construction of concrete formwork. Appropriate components are recommended for inclusion in the kit based on efficiency, cost, versatility, logistics, simplicity, and erection time. Specific recommendations are made for concrete form-fastening systems; rebar cutting, bending, support, tying, and splicing; curing compounds; form release agents; and air-entraining agents. The report provides a brief background and description of the rationale used to choose the components, as well as literature describing the items comprising the kit. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099052

AD-A058 825 5/1 5/11 5/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Tract Level Socioeconomic Data System (TRACT) User Manual. (U)

DESCRIPTIVE NOTE: Special rept., AUG 78 36P Webster,Ronald D. ;Moy,A. B. ;
REPT. NO. CERL-SR-N-48
CONTRACT: MIPR-8952-76-65012
PROJ: 2103
TASK: 9P

UNCLASSIFIED REPORT

DESCRIPTORS: *Environmental impact statements, *Sociology, *Economics, Statistical data, Construction, Army research, Data acquisition, Urban planning, Land use (U)
IDENTIFIERS: WUCERL21039P02, PE63723F (U)

The purpose of this study was to develop and document a system for providing sub-county updated estimates for specified socioeconomic statistics to be used in the preparation of environmental impact studies. The data were acquired, a system configuration was designed and implemented, and the system is currently available for DOD usage as a supplement to other Environmental Technical Information System (ETIS) components. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A058 824 13/13 13/12

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development of a Prototype Habitability Data Base. (U)

DESCRIPTIVE NOTE: Special rept., AUG 78 73P Davis,Thomas A. ;
REPT. NO. CERL-SR-E-134
PROJ: 4A762719AT03
TASK: C1

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Habitability, *Data bases, *Military engineering, *Architecture, Prototypes, Information processing, Information retrieval, Military requirements, Telephone systems, Coding, Space(Room), Health, Safety (U)
IDENTIFIERS: AST03, WU001, PE62719A (U)

This report discusses the development, operation, and field testing of a prototype Habitability Data Base (HDB). The HDB is designed to be used for technical guidance in the Military Construction, Army (MCA) facility delivery processes. Occupant activity needs, space requirements, and habitability criteria are excerpted from Army documents and the general literature and coded into the HDB. Research data in support of needs, requirements, and criteria care also excerpted, coded, and entered. Retrieval codes are included to classify types of occupant, occupant needs, occupant activities, facility settings, facility environments, Army facility type, and kinds of statement. Information can also be retrieved using natural language requests. The prototype HDB can be accessed on-line via telephone using any low-speed computer terminal. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A058 727 15/5 11/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Effects of Corrosion on Military Facilities of the Presidio of San Francisco. (U)

DESCRIPTIVE NOTE: Interim rept.,
AUG 78 32P Hahin,Christopher ;
REPT. NO. CERL-IR-M-254
PROJ: 4A762731AT41
TASK: T7

UNCLASSIFIED REPORT

DESCRIPTORS: *Military facilities, *Atmospheric corrosion, Ocean environments, Salts, Deterioration, Maintenance, Military equipment, Coastal regions, Preventive maintenance, Environmental engineering (U)
IDENTIFIERS: WU001, PE62731A (U)

The effects of atmospheric corrosion on military facilities at the Presidio of San Francisco induced by airborne salt fall are described. Problem areas include deterioration of galvanized sheet metal, building hardware, refrigeration and air conditioning components, and exterior electrical distribution lines. Recommendations to decrease deterioration rates are made, along with suggested revisions to Technical Manuals 5-551K and 5-680C. An information exchange mechanism between design engineers (Corps of Engineers Districts) and maintenance engineers (Facility Engineers) to improve facility longevity is proposed. Other measures to decrease life-cycle costs, consistent with military priorities, are also recommended. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A058 570 13/13 12/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Use of 'Ideal' Ratings as a Standard for Evaluating Facilities. (U)

DESCRIPTIVE NOTE: Special rept.,
AUG 78 39P Veneklasen,Wayne D. ;Brauer, Roger L. ;Sevy,Bruce ;
REPT. NO. CERL-SR-E-132
PROJ: 4A161102AT23
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Military facilities, *Dining halls, Standards, Ratings, Scaling factors, Semantics, Questionnaires, Test and evaluation, Comparison, Statistical analysis, Statistical data, Reliability (U)
IDENTIFIERS: PE61102A, AST23, WU002 (U)

This report presents the results of a study conducted to determine the reliability and validity of using 100-mm bipolar semantic scales to establish an ideal which can be used as a standard for subjectively evaluating facilities. Such an ideal standard would permit all facilities to be evaluated by looking at the difference between the profiles of ratings of existing and ideal facilities. Data were obtained through questionnaires administered to Air Force enlisted personnel, Army officers, and civilian Army office workers. Items rated using the 100-mm scales were existing and ideal dining facilities, existing and ideal Bachelor Officers' Quarters (BOQs), an ideal BOQ entrance, and an ideal wristwatch. Additional data were obtained through interviews. Results indicate that the 100-mm bipolar rating scales could be a viable evaluation tool with one qualification: to provide any meaningful evaluation, the ideal scales must be paired with some dependent measure, such as existing scales. Without such a basis for comparison, there is very little differentiation between ideal ratings of various objects. The data indicate, in fact, that the 100-mm technique itself may influence a person's response to a greater extent than the type of object being rated does. (Author) (U)

AD-A058 569 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

AIRMOD--A General Program for the Rapid Assessment of Airborne Pollutants. (U)

DESCRIPTIVE NOTE: Interim rept., AUG 78 35P Webster,R. D. ;Welsh,R. L. ;Terkonda,P. K. ;
REPT. NO. CERL-IR-N-52
PROJ: 4A762720A896
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Air pollution, Air quality, Environmental protection, pollutants, Contaminants, Test and evaluation, Atmosphere models, Meteorological data, Wind velocity, Airborne, Smoke stacks, Hydrocarbons, Particles (U)
IDENTIFIERS: Program assessment, PE62720A, AS896, WU006 (U)

This report describes the initial design of a general program for the rapid assessment of airborne pollutants (AIRMOD). The system includes procedures for (1) long-term and short-term evaluations, (2) the determination of point and line source emitters, (3) limited mixing conditions, and (4) corrections for major topographic features. AIRMOD output is presented as a table of pollutant concentration estimates for all possible weather conditions. The basic model is Gaussian plume dispersion of conservative pollutants. Its primary application is for sulfur oxides, carbon monoxide, and particulates less than 10 microns in diameter. Models for other types of pollutants are still under consideration. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A058 559 15/3 12/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Methodology for Establishing Equipment Utilization Standards. (U)

DESCRIPTIVE NOTE: Interim rept., JUL 78 83P Lindow,Edward S. ; Chovichien,V. ;
REPT. NO. CERL-IR-M-247
PROJ: 4A762731AT41
TASK: 09

UNCLASSIFIED REPORT

DESCRIPTORS: *Army equipment, *Mathematical models, Utilization, Management, Standards, Economic analysis, Costs, Automation, Sensitivity, Optimization (U)
IDENTIFIERS: Model parameters, Ownership costs, Operating costs, WU031, AST41, PE62731A (U)

This report describes the first phase of a project designed to aid Army Facilities Engineers in improving equipment management. A rational basis for establishing equipment utilization standards was developed based on economic analyses of owning and operating costs. Mathematical models and automated procedures for their application are presented to compute minimum and objective utilization standards for equipment categories. Sample results are provided and the sensitivity of the model parameters is evaluated. Recommendations for implementing the utilization standards are also given. Results can be used in an equipment management program to establish uniform criteria for justifying equipment ownership and for gauging optimal equipment utilization. (Author) (U)

AD-A058 545 10/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Noise Levels in U.S. Army Corps of Engineers Powerhouses. (U)

DESCRIPTIVE NOTE: Interim rept.,
AUG 78 55P Averbuch,A. ;Schomer,P. ;
REPT. NO. CERL-IR-N-51
CONTRACT: IAO-WESRF-77-134

UNCLASSIFIED REPORT

DESCRIPTORS: *Noise(Sound), *Power equipment, Level(Quantity), Army equipment, Electric generators, Turbines, Damage, Risk (U)
IDENTIFIERS: Powerhouses (U)

Noise level data were gathered for U.S. Army Corps of Engineers (CE) powerhouses including most of the larger powerhouses, in order to determine (1) the nature and extent of excessive noise levels (in excess of hearing conservation criteria) in CE powerhouses and (2) which noise sources were common to most CE powerhouses. The results indicate numerous areas in CE powerhouses where noise levels are excessive. The general noise sources are the turbines, the generators, and various auxiliary pumps, such as fish pumps or air conditioning chiller pumps. This investigation also determined that the 120 Hz pure tone radiated by the main electrical generators at CE powerhouses may constitute more of a hazard than current hearing conservation standards indicate. (Author) (U)

AD-A058 344 8/11 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Methods for Seismic Strengthening of Buildings. (U)

DESCRIPTIVE NOTE: Interim rept.,
JUL 78 30P Lybas,John M. ;
REPT. NO. CERL-IR-M-249
PROJ: 4A762731AT41
TASK: 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Buildings, *Resistance, *Reinforcement(Structures), *Seismic waves, Strength(General), Methodology, Army research, Epoxy compounds, Concrete (U)
IDENTIFIERS: Pneumatic application, PE62731A, AST41, WU003 (U)

IAC ACCESSION NUMBER: PL-031212
IAC DOCUMENT TYPE: PLASTC -HARD COPY--

This report provides guidance for engineers to use in strengthening buildings found to be deficient in seismic resistance. The guidance is intended to serve as the basis for criteria for determining the suitability of specific strengthening schemes for a building and applying specific strengthening methods. Various strengthening methods which have been used in the past are reviewed, with emphasis given to those most applicable to Army needs. Detailed guidelines for the application of two methods-pneumatic application of concrete and use of epoxy compounds-are provided, along with advantages and disadvantages of each. (Author) (U)

IAC SUBJECT TERMS: P--(U)Adhesives, Repair, Earthquake effects, Buildings, Design criteria, Concrete, Epoxy, Material comparisons, Hardeners, Compression strength, Construction, Polymer concrete, Formulations, Bond strength, Filler effects, Mechanical properties, Bridges, Pneumatic systems, Test methods, Standards, ZZ Unlimited.;

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A058 129 13/5 13/8 14/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CchampaIGN ILL

Nondestructive Testing for Field Welds: Real Time Weld Quality Monitor. (U)

DESCRIPTIVE NOTE: Interim rept., AUG 78 23P Kearney,Frank ;
REPT. NO. CERL-IR-M-251
PROJ: 4A762719AT41
TASK: 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Welds, *Nondestructive testing, Quality assurance, Portable equipment, Monitoring, Defects(Materials), Inspection, Real time, Field tests, Arc welding (U)
IDENTIFIERS: AST41, WU009, PE62719A (U)

IAC ACCESSION NUMBER: NT-016929
IAC DOCUMENT TYPE: NTIAC -MICROFICHE--
This report describes part of a study to develop a field portable weld quality monitor. A real time weld quality monitor was configured and subjected to laboratory and field tests. Based on the tests, it was determined that the WQM design is adequate and has field applicability. (Author) (U)

IAC SUBJECT TERMS: N--(U)WELDS, WELD INTEGRITY, QUALITY CONTROL, MONITORING, DEFECTS(MATERIALS), TEST EQUIPMENT, PORTABLE EQUIPMENT, REAL TIME, FIELD TESTS, PROTOTYPES, AUTOMATION, VOLTAGE;

AD-A058 129 UNCLASSIFIED

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A057 957 13/13 13/2 8/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Material, Design, and Construction Guidelines for Vertical Construction in Desert and Tropical Regions. (U)

DESCRIPTIVE NOTE: Final rept., JUL 78 109P Kao,Anthony M. ;Krumdieck, Kevin ;
REPT. NO. CERL-TR-M-239
PROJ: 4A762719AT41
TASK: T5

UNCLASSIFIED REPORT

DESCRIPTORS: *Shelters, *Civil engineering, *Tropical regions, *Deserts, Construction, Vertical orientation, Construction materials, Environmental engineering, Climate, Erosion, Protective treatments, Paints, Molds(Organisms) (U)
IDENTIFIERS: PE62719A, AST41, WU004 (U)

This report provides a simple description of the basic principles and guidelines that should be observed in selecting materials for shelters, in designing and planning shelters, and in constructing shelters in desert and tropical climates. The report identifies preferred construction materials, design methods, and construction technique for buildings to be located in these two climatic regions. The guidelines presented in the report are based on actual field experience by the Army, Navy, and Air Force as well as research of existing literature pertinent to construction in desert and tropic regions. This report supercedes an earlier report by A. Kao and J. Cook entitled 'Preliminary Design and Construction Guidelines for Vertical Construction in Desert and Tropical Theaters of Operation' (CERL Interim Report C-74) published in October, 1976. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A057 956 9/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Potential Uses of Fiber Optics in Army Fixed Facilities. (U)

DESCRIPTIVE NOTE: Special rept.,
JUL 78 46P McCormack,R. G. ;
REPT. NO. CERL-SR-M-241
PROJ: 4A762719AT40
TASK: A1

UNCLASSIFIED REPORT

DESCRIPTORS: *Fiber optics transmission lines, *Data transmission systems, *Data links, Military facilities, Monitors, Control systems, Multiplexing, Electromagnetic pulses, Radiation hardening, Survival(General), Cost analysis (U)
IDENTIFIERS: PE62719A, AST40, WU002 (U)

This report describes the results of a study performed to identify potential uses of fiber-optic data transmission links in Army fixed facilities. The uses identified are related to monitoring and controlling electrical-mechanical functions of the facility, primarily in Nuclear Electromagnetic Pulse (EMP) hardened facilities, but also nonhardened facilities. As an example, a comparison is made between fiber-optic and conventional wired data links in an automated monitoring and control system for energy control. Examples are given illustrating general cost comparisons between the fiber optic and conventionally wired systems. Conclusions are that fiber-optic data transmission links may be practical for use in Army fixed facilities where such links are advantageous to circumvent particular threats or in large complex systems where data rates are high. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A057 936 5/3 14/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development of the Economic Impact Forecast System (EIFS)--the Multiplier Aspects. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 78 41P Webster,Ronald D. ;Ortiz, L. ;Mitchell,R. ;Hamilton,W. ;
REPT. NO. CERL-TR-N-35
PROJ: 4A762720A896
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Forecasting, *Economic analysis, *Economic models, *Mathematical prediction, Cost effectiveness, Impact, Cost analysis, Environmental impact statements (U)
IDENTIFIERS: Economic Impact Forecast System, EFIS(Economic Impact Forecast System), Environmental impact analysis, WU006, AS896, PE62720A (U)

This report presents refinements to the Economic Impact Forecast System's (EIFS) multiplier calculation that will make it more accurate and user-oriented. Two techniques for meeting National Environmental Policy Act requirements were analyzed, and EIFS was modified according to user needs and cost considerations shown by the analysis. The resultant system compares very favorably with alternative, more expensive, techniques and can provide the Department of the Army with an efficient methodology for regional economic impact assessment. (Author) (U)

AD-A057 435 11/9 13/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Damaged Building Repair with Polyurethane Foam. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 78 28P Smith,Alvin ;
REPT. NO. CERL-TR-M-245
PROJ: 4A762619AT41
TASK: 08

UNCLASSIFIED REPORT

DESCRIPTORS: *Polyurethane resins, *Foam, *Construction materials, Buildings, Repair, Portable shelters, Theater level operations, Combat areas, Damage, Maintenance personnel, Military personnel, Adverse conditions, Weather, Sprayers, Substrates (U)
IDENTIFIERS: AST41, WU002, PE62619A (U)

IAC ACCESSION NUMBER: PL-029998
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
The report evaluates and describes the use of foamed polyurethane plastic as a repair material in making expedient shelters from combat-damaged buildings in the theater of operations. The material was evaluated from the standpoint of use of troop labor, required substrate material, and the effect of adverse weather conditions. This study led to the following conclusions. (1) Spray-applied polyurethane foam is an expedient means of repairing damaged buildings. The buildings must be structurally sound, since the foam will contribute minimally to the strength of the building. (2) The foam will adhere to almost any building material and a variety of materials may be used to apply the foam to the opening. Plywood scraps, cloth, cardboard paper, and wire mesh were shown to satisfactory substrate materials. (3) Troops with no prior experience in using foam equipment can become proficient foam sprayers with a minimum of instruction. (4) The foam can form satisfactory patches under adverse weather conditions. (Author) (U)

IAC SUBJECT TERMS: P--(U)Urethanes, Repair, Buildings, Spray applications, Military applications,
AD-A057 435

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A057 366 13/2 6/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Management of Reservoir Clearing and Cleaning Debris. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 78 314P Kloster,Sharen E. ;Mikucki, W. J. ;
REPT. NO. CERL-TR-N-50

UNCLASSIFIED REPORT

DESCRIPTORS: *Waste managemEnt, Wood, Debris, Cleaning, Removal, Trees, Cutting, Forestry, Waste disposal, Environmental management, Dams, Army Corps of Engineers (U)
IDENTIFIERS: Logging(Forestry), Environmental impact, LPN-CWIS-31055 (U)

This report provides information on several methods or combinations of methods to dispose of wood debris from clearing and cleaning operations. The basic alternatives include but are not limited to selling, using, burying, and burning. According to the results of the study, there is no universal disposal method that can be used economically at all dam sites to dispose of wood debris and be environmentally compatible. Each site must be considered individually, using social, economic, and physical factors to determine the most appropriate disposal method for the location. Site-specific data obtained from interviews, site visits, questionnaires, and literature surveys were used to develop lists of factors deemed essential for evaluating methods to dispose of clearing and cleaning debris at dam projects. Corps of Engineers personnel can use these lists to evaluate their individual situations. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A057 226 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Compendium of Administrators of Land Use and Related Programs. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 78 205P Lacey,R. M. ;Balbach,H. E. ;Fittipaldi,J. J. ;
REPT. NO. CERL-TR-N-40
PROJ: 4A762720A896
TASK: 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Land use, United States, Administrative personnel, Land areas, Environmental protection, Environmental management, Army planning, Natural resources, Environmental impact statements, Water resources, Rural areas, Flood plains, Air quality (U)
IDENTIFIERS: Compendium, PE62720A, AS896, WU001 (U)

This report is primarily a compendium of the names, addresses, and telephone numbers of Federal agency and State government officials having control over, or interest in, land use and plans and programs related to land use. Discussion of inconsistencies between Army actions and such land use plans, policies, and controls is required by AR 200-1 (para. 2-12b) in environmental impact assessments and statements. Such discussion has been made very difficult by the lack of readily available information about what information these plans contain. Furthermore, many of the policies are relatively informal, or subject to subregional interpretation by regulatory officials. This compendium provides for the Army preparer of environmental impact assessments or statements a point of contact who can answer questions about applicable policies at an early stage of the document preparation process. Nineteen categories of state-level programs are included, with one or more points of contact suggested for each state for each applicable type of program. Twenty-eight Federal government agencies are identified whose programs may require coordination with Army activities. A (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A057 225 20/11 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Equivalent Viscous Damping of Elasto-Plastic Systems under Sinusoidal Loading. (U)

DESCRIPTIVE NOTE: Special rept.,
JUL 78 27P Merritt,R. G. ;
REPT. NO. CERL-SR-M-242
PROJ: 4A762731AT41
TASK: T4

UNCLASSIFIED REPORT

DESCRIPTORS: *Structural response, *Vibration, *Earthquake engineering, Loads(Forces), Sine waves, Resonant frequency, Damping, Elastic properties, Plastic properties, Viscosity, Stiffening, Structural response, Algorithms (U)
IDENTIFIERS: Structural design, PE62731A, AST41, WU007 (U)

This report addresses the possibility of establishing a simple algorithm applicable to structural design that would provide information on a nonlinear structural system based on information on a linear damped structural system. Two variables were considered -- geometrical stiffness and resonant amplitude. Although the geometrical stiffness approach was determined more adequate in accounting for the frequency shift in a nonlinear system, the maximum displacement values it displayed throughout the frequency range were unconservative. The resonant amplitude approach indicated more conservative values in an intermediate range of frequencies, but its lower range values, where nonlinear systems demonstrate resonance, were also unconservative. This report determines that the application of a weighted average of linear viscous damped system displacement to define nonlinear system displacement does not provide a satisfactory method of equivalencing systems by either the resonant amplitude or geometrical stiffness approach. (Author) (U)

AD-A057 148 13/2 12/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development of a Pavement Condition Index for Roads and Streets. (U)

DESCRIPTIVE NOTE: Interim rept.,
MAY 78 112P Shahin,Mohamed Y. ;Darter, Michael I. ;Kohn,Starr D. ;
REPT. NO. CERL-IR-M-232

UNCLASSIFIED REPORT

DESCRIPTORS: *Pavements, *Structural properties, *Indexes(Ratios), Surface roughness, Maintenance management, Repair, Concrete, Asphalt, Mathematical models, Inspection, Field tests (U)

This report describes the preliminary development of a pavement condition index (PCI) for rating jointed concrete and asphalt-surfaced roads and streets. The PCI, which measures pavement structural integrity and surface operational conditions, is calculated by measuring pavement distress types, severities, and densities obtained during pavement inspection. The PCI procedure presented in this report will be further field-tested and verified. (Author) (U)

AD-A057 147 5/1 9/2 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Real Estate Organization Analysis Using the Real Estate Model of Activity Performance (REMAP) Evaluation Procedures. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 78 229P Altheide,Carl P. ;
REPT. NO. CERL-TR-P-90

UNCLASSIFIED REPORT

DESCRIPTORS: *Management engineering, *Management information systems, *Military facilities, Systems analysis, Military organizations, Mathematical models, Computer programs, Management planning and control, Manpower utilization, Allocations, Geographical distribution, Army Corps of Engineers, Division level organizations, Cost analysis (U)

The U.S. Army Construction Engineering Research Laboratory (CERL) has developed a model for analyzing alternative organizational locations of performance centers such as Division, District, field, or project offices. The model, called the Real Estate Model of Activity Performance (REMAP), uses computer-aided techniques to generate the annual workload of each performance center based on a selective assignment of real estate activity locations to that center and to create visual displays of those assignments in the form of maps. This report describes the REMAP methodology and the results of specific applications of REMAP in the evaluation of eight alternative organizational assignments. The evaluations compare relative differences in dollar and manpower requirements for the performance of real estate activities by various performance centers. These analyses were based on FY75 data for the real estate activities of Project Planning, Acquisition (Pre- and Post-Condemnation), Inleasing, Outgranting, Disposals, Compliance and Utilization Inspections, and Relocation Assistance. (Author) (U)

AD-A057 146 5/1 9/2 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Real Estate Model of Activity Performance (REMAP) User's Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 78 209P Althelde,Carl P. ;
REPT. NO. CERL-TR-P-89

UNCLASSIFIED REPORT

DESCRIPTORS: *Management engineering, *Management information systems, *Military facilities, Mathematical models, Programming manuals, Management planning and control, Manpower utilization, Allocations, Geographical distribution, Army Corps of Engineers, Division level organizations, Computer programs, Cost analysis, Computer graphics, Military organizations (U)

The U.S. Army Construction Engineering Research Laboratory has developed a management model for analyzing alternative organizational locations of performance centers as Division, District, Field, or Project Offices for the Office of the Chief of Engineers, Directorate of Real Estate. This report describes the evaluation procedures and provides instructions for using the computer programs and performing the manual calculations required in the model, called the Real Estate Model of Activity Performance (REMAP). The procedures involve computer and manual techniques for conducting comparative analyses of real estate activity assignments which are developed on the locations -actual or proposed--of real estate activities and offices throughout CONUS. The analyses compare relative differences in dollar and manpower requirements for the performance and administration of real estate activities by various performance centers. REMAP uses computer-aided techniques to generate the annual workload of each performance center based on a selective assignment of activity locations to that center and to create visual displays of those assignments in the form of maps. (Author) (U)

AD-A056 997 15/5 6/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Computer-Aided Environmental Impact Analysis for Industrial, Procurement, and Research, Development, Test, and Evaluation Activities: User Manual. (U)

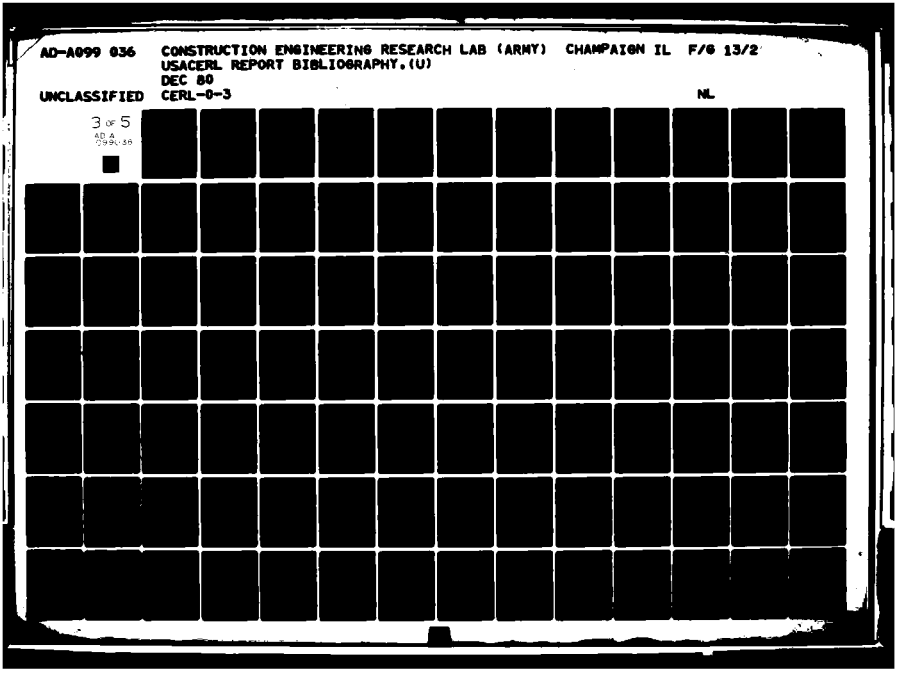
DESCRIPTIVE NOTE: Final rept.,
JUN 78 176P Thomas,Susan E. ;Mitchell, Ralph A. ;Riggins,Robert E. ;Fittipaldi,John J. ;Novak,Edward W. ;
REPT. NO. CERL-TR-N-43
PROJ: 4A762720A896
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Army research, *Computer aided diagnosis, *Environmental impact statements, *Manuals, Computers, Computer programs, Army procurement, Test and evaluation, Organizations, Army personnel, Research management, Industries (U)
IDENTIFIERS: PE62720A, WU001 (U)

This manual and the associated information provided by the Environmental Impact Computer System (EICS) were prepared for proponents of Army industrial, procurement, and research, development, test, and evaluation activities to prepare adequate, comprehensive, and interdisciplinary environmental impact assessments and statements for their ongoing and proposed projects and programs. These procedures will enable the Army to meet the requirements of the National Environmental Policy Act (NEPA) and subsequent Army Regulations (AR 200-1). This manual discusses the philosophy behind the environmental impact assessment process; presents an overview of the Environmental Technical Information System (ETIS); discusses the criteria and general approach for using the EICS; defines the EICS components; provides instructions for accessing the EICS functions listed above; and provides detailed procedures necessary to use the EICS output in the environmental impact assessment process and in preparing a formal Environmental Impact (U)

AD-A099 036 CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL F/G 13/2
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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A056 831 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development of Vault Toilet Waste Treatment Systems. (U)

DESCRIPTIVE NOTE: Interim rept.,
JUN 78 31P Kraybill,D. D. ;Struss,S. R. ;
REPT. NO. CERL-IR-N-47

UNCLASSIFIED REPORT

DESCRIPTORS: *Wastes(Sanitary engineering), *Waste treatment, Louisiana, Construction, Mixers(Mechanical), Aeration, Test and evaluation (U)
IDENTIFIERS: Vault toilet waste treatment systems, Latrines, Vaults, Fort Polk (U)

This interim report describes the study, design, and installation of systems for the in-situ treatment of vault toilet (latrine) wastes. The study investigates properties of vault waste and various waste treatment alternatives. It then selects the most practical alternatives for design and construction. The report then describes design considerations and gives two general overviews of the final designs. The treatment systems consist of one mechanical mixer and two compressor-driven bubble aerators, all of which are installed in concrete lined vaults at Fort Polk, LA. Finally, it details the future testing programs for these devices. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A056 627 13/13 12/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Dynamic Response of Reinforced Concrete Structures. (U)

DESCRIPTIVE NOTE: Special rept.,
JUL 78 28P Sharma,Sushil K. ;
REPT. NO. CERL-SR-M-243
PROJ: 4A161102AT23
TASK: 02

UNCLASSIFIED REPORT

DESCRIPTORS: *Reinforced concrete, *Structural engineering, *Earthquake engineering, *Dynamic response, Finite element analysis, Damping, Coefficients, Structural response, Computerized simulation (U)
IDENTIFIERS: Inelastic deformation, DRAIN-2D computer program, WU004, AST23, PE61102A (U)

Beam-column and plane stress finite elements were described for an inelastic analysis of plane RC structures under earthquake-type ground motion. Material nonlinearities in the beam-column finite element were taken into account by considering cyclic inelastic deformations throughout the element. The plane stress finite element allowed for cracking of the element in tension. These elements were incorporated in the DRAIN-2D computer program, which was determined to be flexible and efficient. Preliminary results for simple structures showed that, with the addition of new finite elements described in this report, this program would be very useful for practical investigations of RC structures. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A056 620 13/13 13/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Investigation of Reflective Solar Control Films for Windows. (U)

DESCRIPTIVE NOTE: Special rept.,
JUN 78 85P Kanarowski,Stanley M. ;
REPT. NO. CERL-SR-M-240

UNCLASSIFIED REPORT

DESCRIPTORS: *Buildings, *Windows, *Coatings, Reflection, Solar radiation, Cooling, Energy conservation, Life cycle costs, Savings, Thin films, Vapor deposition, Glass, Cost analysis, Computerized simulation (U)

This report presents the results of a study of flexible solar control film applied on windows to eliminate or reduce glare and solar heat, and to conserve energy. Four manufacturers' films were investigated by surveying users in 15 areas of the United States, visiting selected installations, and conducting a laboratory evaluation of film/glass samples. In addition, solar radiation heat balance profiles were developed to indicate the solar heat gain through clear glass with and without solar film. A computer heating and cooling load and systems simulation program was run on a typical 72-man barracks module. Annual heating and cooling loads and costs and the related life-cycle cost (LCC) for the barracks module were computed for several types of window glass, solar film on clear glass, and interior shading. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A056 575 1/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development of a Pavement Maintenance Management System. Volume III. Maintenance and Repair Guidelines for Airfield Pavements. (U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 76-30 Sep 77,
SEP 77 122P Shahin,Mohamed Y. ;Darter, Michael I. ;Kohn,Starr D. ;
REPT. NO. CERL-TR-C-76-VOL-3
PROJ: 2104
TASK: 3M
MONITOR: CEEDO TR-77-44-VOL-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A048 884.
DESCRIPTORS: *Pavements, *Maintenance management, *Repair, Computer programs, Airports, Runways, Skidding, Loads(Forces), Roughness, Deterioration, Rates, Economic analysis, Concrete, Asphalt (U)
IDENTIFIERS: LPN-CEEDO-77-014, WUCEEDO21043M01, PE63723F (U)

This report describes the development of guidelines for determination of maintenance and repair (M and R) needs of airfield pavements. The guidelines are based on the pavement condition index (PCI) and other condition indicators, including rate of deterioration, cause of deterioration, load carry capacity, skid resistance/hydroplaning, surface roughness, and extent of previous M and R. The M and R methods were divided into three general categories: routine, major, and overall. The mean pavement PCI was found to relate strongly to M and R needs represented by these three M and R categories. M and R zones for use in selecting the appropriate M and R category were established based on the mean pavement PCI. Other condition indicators are used to further aid in the selection of feasible M and R alternatives. Recommended M and R methods for the different distress types and severity levels were developed. Economic analysis procedures were developed for comparing M (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A056 496 11/4 11/2 20/11

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Steel Fibers as Web Reinforcement in Reinforced Concrete, (U)

JUN 78 15P Williamson,Gilbert R. :

UNCLASSIFIED REPORT

DESCRIPTORS: *Reinforced concrete, *Steel, *Metal fibers, *Beams(Structural), Strength(Mechanics), Shear strength, Shear properties, Structural properties (U)

The objective of this investigation was to determine the feasibility of replacing shear reinforcement (stirrups) with randomly distributed steel fibers for the prevention of diagonal tension (shear) failure in full-scale conventionally reinforced concrete beams. The following conclusions are based upon the use of steel fibers with deformed ends (Dramix) to replace stirrups: (1) Steel fibers can be used to replace stirrups in beams with no reduction in the ultimate design moment capacity; (2) Steel fibers increase the shear strength of concrete beams sufficiently to prevent catastrophic diagonal tension failure, while forcing the beam to fail in flexure; (3) ACI Code procedures can be used without modification to design reinforced concrete beams that contain steel fibers as shear reinforcement; (4) Low volume percentages of steel fibers have no effect upon the stiffness of full-scale beams; and (5) Steel fibers present a potentially more economic alternative to the use of stirrups in reinforced concrete design. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A056 463 5/5 5/10

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Establishing Habitability Factors for the Design of Office Environments, (U)

JUN 78 14P Lozar,Charles C. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Human factors engineering, *Habitability, *Office buildings, Morale, Experimental design, Environmental psychologists, Methodology, Technology transfer, Colors (U)
IDENTIFIERS: Floor plans (U)

The purpose of this presentation is to document an overall methodology which incorporates experimental design considerations from the social sciences, specifically environmental psychology, and transfers that technology to planning and design application to improve habitability in office environments. The importance of this application is that the habitability factors which are involved in most office environments do not have a firm basis in basic research, and are not well documented in terms of guidance information for designers. This paper will present a discussion of a means of derivation for habitability factors in a particular context of office environments. however, the same methodology will be shown to be applicable to others types of environments, with the process being beneficial to the generation of new basic research, application of new concepts, and continuing accumulation of new knowledge in the area of habitability factors for any environment. (U)

AD-A056 452 13/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Comparison of the Actual and Predicted Performance of a Solar Assisted Space Heating System, (U)

JUN 78 13P Joncich,David M. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar heating, *Solar energy, Feasibility studies, Performance(Engineering), Housing(Dwellings), Buildings (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A056 424 20/3 12/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Analysis of a Nonlinear Electromagnetic Field Penetration Problem, (U)

JUN 78 14P Croisant,William J. ; Nielsen,Paul ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Electrical conductivity, *Electromagnetic fields, *Mathematical analysis, Electromagnetic shielding, Magnetic fields, Penetration, Time dependence, Computations, Permeability, Ferromagnetic materials, Isotropism, Homogeneity, Demagnetization (U)

This study examines the time-dependent penetration of a step increase in magnetic field strength H into a semi-infinite conducting medium having a permeability which varies with magnetic field strength. The medium is considered to be isotropic, homogeneous, and initially demagnetized. The medium at any point is presumed to follow its initial magnetization curve for which a simple approximation is assumed. The analytical approach consists of mathematical analysis supplemented with numerical calculations. The problem can be simplified from one involving a second order nonlinear partial differential equation to one involving a second order nonlinear ordinary differential equation utilizing a simple transformation of variables. Although a formal parametric representation of the solution of the second order differential equation is considered, a simple closed form solution in terms of elementary functions does not seem to exist. Hence several analytical techniques, as well as numerical calculations, have been employed to deduce properties of the solution. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A056 406 15/7 6/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Field Use of the Environmental Impact Computer System, (U)

JUN 78 13P Balbach,Harold E. ;Novak, Edward W. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Environmental impact statements, *Army planning, *Computer applications, Military requirements, Field conditions, Military applications, Ecology (U)
IDENTIFIERS: Lessons learned (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A056 300 13/11

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Schedule 40 Polyvinyl Chloride Pipe for Army Theater of Operations Construction. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 78 14P Smith,Alvin ;Morse,David C. ;
REPT. NO. CERL-TR-M-246
PROJ: 4A763734DT08
TASK: T6

UNCLASSIFIED REPORT

DESCRIPTORS: *Pipes, *Polyvinyl chloride, Army operations, Construction, Costs, Comparison (U)
IDENTIFIERS: AST08, WU003, PE63734A (U)

IAC ACCESSION NUMBER: PL-029854
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report presents the results of a study conducted to evaluate the potential of plastic pipe for use in Army Theater of Operations construction. The study compared the cost, weight, and labor requirements of the metallic and bituminous fiber piping systems specified in Technical Manual 5-303 with those of a plastic piping system. Schedule 40 Polyvinyl chloride (PVC) pipe, which was found adequate for all cold water distribution and plumbing as well as drain-waste-vent and sewer systems, was selected for the comparison. It was determined that substitution of PVC for metallic piping would result in cost, weight, and labor reductions of approximately 43, 76, and 57 percent, respectively. Although PVC does not offer such advantages over the bituminous fiber piping, the latter had demonstrated poor performance and is no longer readily available. Compared to the total conventional AFCS piping system (metallic and bituminous fiber), the PVC system offers estimated weight savings of 33 percent and labor savings of 5 percent, with a cost increase of 15 percent. An additional advantage to the PVC system is that specification of a single type and wall thickness of pipe simplifies procurement and inventory procedures. It is recommended that TM 5-303 be revised to allow substitution of Schedule (U)

AD-A056 226 13/1 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The Building Loads Analysis and System Thermodynamics Program (BLAST). Release Number 1. (U)

DESCRIPTIVE NOTE: Software,
JUN 78 1V Hittle,Douglas C. ;Lawrie, Linda ;
MONITOR: DOD/DF 78-008

UNCLASSIFIED REPORT

Available from NTIS, Springfield, VA 22161. Mag Tape $350.00 Source tape is in BCD character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, tract, density and parity. Price includes documentations, AD-A048 734 and AD-A048 982.

DESCRIPTORS: *Energy consumption, *Buildings, *Computer programs, Magnetic tape, Subroutines, FORTRAN, Flow charting, Algorithms, Heating plants, Centralized, Air conditioning equipment, Ventilation, Thermal insulation, Meteorological data, Energy consumption, Computer program documentation (U)
IDENTIFIERS: Software(NTIS), *Blast computer program, CDC 6400 computers (U)

The Building Loads Analysis and System Thermodynamics (BLAST) program is a sophisticated set of subprograms for predicting energy consumption in buildings. The four major subprograms are: (1) the input processor, which parses the high-level input language and sets up the building/systems/plant descriptions; (2) the building loads subprogram, which computes the hourly space load in a building or zone based on the user's description of the building/zone and hourly weather data; (3) the air distribution system simulation subprogram, which calculates the coil energy demands, fan power, etc., based on the user's description of the air handling system and the hourly space load data calculated by the previous subprogram; and (4) the central energy plant simulation subprogram, which calculates energy consumption of a central/solar/total energy plant based on the user's(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A056 218 9/5 20/14

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development of Conduit Design Analytical Procedure. (U)

DESCRIPTIVE NOTE: Interim rept.,
JUN 78 149P Croisant,William ;Nielsen, Paul ;Sieber,David ;McCormack,Raymond G. ;
REPT. NO. CERL-IR-M-234
PROJ: 4A762719AT40
TASK: A1

UNCLASSIFIED REPORT

DESCRIPTORS: *Circuits, *Electromagnetic shielding, *Conduits, Experimental design, Test methods, Mathematical models, Electromagnetic pulses, Electromagnetic fields, Leakage(Electrical), Hardened structures, Military facilities, Penetration, Defects(Materials), Time domain, Frequency (U)
IDENTIFIERS: AST40, PE62719A, WU020 (U)

This report presents proposed models for analysis of the electromagnetic pulse (EMP) signals in conduit shielded circuits. The models are intended for use in an analytical procedure for evaluating conduit system designs currently being developed. The development of preliminary models for calculating (1) EMP penetration in solid conduit, (2) EMP leakage through defects, and (3) the effect of circuit impedances on EMP induced signals is presented. EMP properties and conduit physical properties important to the conduits shielding characteristics are examined. Both time domain and frequency domain analyses are presented. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A056 196 10/1 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Energy Recovery from Solid Waste in the Charleston, SC, SMSA. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 78 73P Collishaw,A. N. ;Hathaway, S. A. ;
REPT. NO. CERL-TR-E-131
CONTRACT: N62467-77-MP-00005

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy, *Solid wastes, *Energy conversion, Feasibility studies, Recovery, Costs, Resources (U)
IDENTIFIERS: Fuel credits (U)

This study investigated the technical and economic feasibility of establishing a single, solid waste resource-recovery facility in the Charleston, SC, Standard Metropolitan Statistical Area (SMSA). Energy was the primary resource to be recovered. The 29,700 tons/year of solid waste generated by Federal facilities in the SMSA are presently being disposed of in landfills operated by county governments. This study compared the cost of continuing solid waste disposal by landfill to the estimated cost of establishing (1) a Federal resource-recovery facility or (2) a regional resource-recovery facility. When a Federal resource-recovery facility which used solid waste generated by Federal facilities only was considered, it was determined that energy could be recovered at a rate of 19.0 x 10 to the 10th power Btu/year. The capital investment was estimated to be $8.5 million in FY82 dollars and the Savings to Investment Ratio (SIR) was estimated at 0.8/1.0, with a payback period of more than 25 years. Because the SIR was less than 1.0, this study concluded that a Federal resource-recovery facility was not economical and should not be pursued. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A056 089 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Automated Data Processing System (ADPS): Documentation Standards. (U)

DESCRIPTIVE NOTE: Special rept.,
JUN 78 50P Lapp,Roger L. ;
REPT. NO. CERL-SR-P-92
PROJ: 4A762731AT41
TASK: T1

UNCLASSIFIED REPORT

DESCRIPTORS: *Computer program documentation, Data processing, Standards, Computer aided design, Army Corps of engineers, Data management (U)
IDENTIFIERS: CAEADS computer program, WU020, AST41, PE62731A (U)

This report presents documentation standards recommendations for the U.S. Army Corps of Engineers Computer Aided Engineering and Architectural Design System (CAEADS). These recommendations, which will be applicable throughout the system's life cycle, emphasize kinds of documents and their general content. It is recommended that governmental publications DOD 4120.17M, AR 18-1, TB 18-122, and CSCM 18-1 (Training Package) be used as an initial foundation for approximately two dozen document types. The recommended standards apply both to CAEADS as a system and to each CAEADS subsystem. These standards govern both technical and management documents. Technical documents include both the more commonly cited documents of high utility and the less frequently mentioned (but vital) documents of limited use. Management documents encompass both resource management (time, funds, manpower, materiel) and general administration. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A055 874 13/2 5/1 5/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Deficiency Judgments in Real Estate Eminent Domain Proceedings. (U)

DESCRIPTIVE NOTE: Special rept., JUN 78 40P Dornan,Kathleen K. ;
REPT. NO. CERL-SP-P-91

UNCLASSIFIED REPORT

DESCRIPTORS: *Land use, *Civil engineering, Acquisition, Army procurement, Decision making, Deficiencies, Cost analysis, Minerals, Industries, Mathematical prediction, Army Corps of Engineers, Resource management, Agriculture, Flooding (U)

This study reviewed the Corps of Engineers' experience with deficiency judgments from land acquisition for civil works projects. Historical data were sampled and analyzed in an attempt to develop a more accurate means of assessing land acquisition costs. It was concluded that three factors generally contribute to the best predictions of total deposits plus deficiencies for a project: (1) the sum of deposits, (2) the fraction of land in Government interests associated with mineral rights and temporary flowage easements, and (3) the fraction of land in the industrial land use category. These factors were developed into a predictive equation. Projects for which settlement costs were severely underestimated by the equation were analyzed to identify circumstances which might lead to unexpectedly high settlements. Such circumstances include: (1) how many small settlements, each relatively large compared to even smaller deposits, and (2) individual high deficiencies stemming from disputes over either equipment evaluation or the effects of easements on an agricultural or industrial operation. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A055 565 13/2 5/2 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Pollution Abatement Management System-- Concept Definition. (U)

DESCRIPTIVE NOTE: Final rept., MAY 78 69P Webster,Ronald D. ;Smith, E. D. ;Kothandaraman,V. ;
REPT. NO. CERL-TR-N-42
PROJ: 4A762620A896
TASK: T2

UNCLASSIFIED REPORT

DESCRIPTORS: *Pollution abatement, *Management planning and control, *Computer applications, Military facilities, Army operations, Management information systems, Solid wastes, Liquid wastes, Air pollution, Legislation, State government, Federal law, Data bases, Environmental protection, Standards, Military requirements, Cost effectiveness (U)
IDENTIFIERS: PE62620A, AS896, WU008 (U)

Regulatory and legislative requirements of Federal and state pollution control acts such as Public Law 92-500, the Clean Air Act, and the Solid Waste Management Act require Army installations to constrain the effluents of their operations within prescribed limits of quality. The Pollution Abatement Management System (PAMS) will help the facility engineer, Army Major Commands (MACOMs), and headquarters environmental offices implement these requirements by providing manual and computer-assisted procedures to (1) determine the most cost-effective, site applicable, energy-conservative solutions for bringing air, water, and solid waste emissions from Army operations into compliance with Federal, state, and Army standards using existing technology and commercial developments wherever possible; (2) monitor the scheduled progress in meeting those prescribed Federal, state, and Army standards; and (3) identify priority ranking of environmental pollution problems within the Department of the Army. This report formalizes the overall concept development of PAMS and the (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A055 561 13/13 13/2 15/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The Rational Threshold Value (RTV) Technique for the Evaluation of Regional Economic Impacts. (U)

DESCRIPTIVE NOTE: Final technical rept., JUN 78 65P Webster,Ronald Dwight ; Shannon,E. ;
REPT. NO. CERL-TR-N-49
PROJ: 4A762720A896
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Environmental impact statements, *Military facilities, Economic analysis, Sociology, Case studies, Army planning, Decision making, Technology transfer, Employment, Income, Population, Regions, Computer programs, Economic models (U)
IDENTIFIERS: PE62720A, AS896, WU002 (U)

This report presents the results of a study undertaken to develop a practical technique for evaluating the 'significance' of predicted socioeconomic impacts. A review of important socioeconomic elements was undertaken, a list of indicator parameters was developed, and a technique for evaluating temporal change for establishing 'significance' of the elements was developed. The result was the rational threshold value (RTV) technique, which can easily be used by DA planners and decision-makers involved in producing Environmental Impact Statements (EISs) and Environmental Impact Assessments (EIAs). Several hypothetical case studies were investigated to ascertain the practicality and usefulness of the technique. Results of these studies indicate that the RTV technique can be used as a screening device to establish the significance of economic and related social impacts resulting from Army military activities. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A055 560 7/1 13/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Application of Modern Coal Technologies to Military Facilities. Volume I. Summary of findings. (U)

DESCRIPTIVE NOTE: Interim rept., MAY 78 46P Honig,Ernest M. , Jr.; Hathaway,S. A. ;
REPT. NO. CERL-IR-E-130-VOL-1
PROJ: 4A762731AT41
TASK: 06

UNCLASSIFIED REPORT

DESCRIPTORS: *Coal, *Military facilities, Energy management, Combustion, Fluidized bed processes, Military planning, Feasibility studies, Costs, Army, Boilers, Conversion, Heating plants, Electric power plants (U)
IDENTIFIERS: *Coal gasification, *Coal liquefaction, Direct combustion, PE62731A, AST41, WU016 (U)

IAC ACCESSION NUMBER: PL-901181
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
Current and emerging coal technologies are described and evaluated for possible current, near-term (1982), and long-term (1987) application to military facilities. Technologies considered are: conventional and advanced direct combustion of coal, coal gasification, and coal liquefaction. The impacts of applying the principal candidate processes of each of three categories are discussed. It was concluded that there are no new advances in conventional direct combustion of coal and that current technology can be applied now and in the near-term. Fluidized-bed combustion may be a prospect for direct combustion by 1982. Current- to near-term coal gasification prospects are the Lurgi and Koppers-Totzek low-Btu processes and the Lurgi high-Btu process. A long-term coal gasification prospect is the CO2-Acceptor high-Btu process. No coal liquefaction processes currently appear to be economically feasible for military-scale applications. Existing natural gas- and oil-fired boilers can be changed to fire low- (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A055 520 11/6 20/11

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Fracture Characteristics of ASTM A-607 Pipe-Line Steel, ASTM A-516 Structural Steel, and ASTM B-209, Aluminum Alloys 5083 and 6061. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 78 46P Scott,J. K. ;
REPT. NO. CERL-TR-M-238
PROJ: 4A761102AT23
TASK: A2

UNCLASSIFIED REPORT

DESCRIPTORS: *Steel, *Aluminum alloys, *Fracture(Mechanics), Pipelines, Structural steel, Hydrogen embrittlement, Tensile strength, Fatigue(Mechanics), Impact strength (U)
IDENTIFIERS: Steel A-607, Steel A-516, Aluminum alloy 5083, Aluminum alloy 6061, PE61102A, AST23, WU002 (U)

IAC ACCESSION NUMBER: MCIC-104288
IAC DOCUMENT TYPE: MCIC -HARD COPY--
The fracture characteristics of two steels (ASTM A-516 and A-607) and two aluminums (ASTM B-209, alloys 5083 and 6061) were analyzed under tensile, fatigue, and impact loading conditions. The effect of hydrogen embrittlement on the steels' behavior when fractured under tensile and fatigue conditions was investigated. (U)

IAC SUBJECT TERMS: M--(U)Engineering Steel, A607, A516, Aluminum Alloys, 5083, CCCI, Hydrogen Embrittlement, Fatigue Test, Impact Loading, Fracture Mechanics, Dimpling, Charpy Impact, Temp -273 to -151 C, Temp 0 to 99 C, Ultimate Tensile Strength, Tensile Yield Strength.;

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A055 095 5/3 9/2 13/1 10/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Field Test of Building Energy Analysis Tools and Procedures. (U)

DESCRIPTIVE NOTE: Interim rept.,
MAY 78 88P Hittle,Douglas C. ;
REPT. NO. CERL-IR-E-129
PROJ: 4A762731AT41
TASK: 06
MONITOR: CEEDO TR-77-38

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy management, *Buildings, *Computer programs, Systems analysis, Energy consumption, Mathematical prediction, Energy conservation, Field tests, Air conditioning equipment, Heating, Performance(Engineering), Solar heating, Military facilities, Programming manuals (U)
IDENTIFIERS: BLAST computer program, PE62731A, AST41, WU021 (U)

This report describes the results of the field test of three building energy analysis tools: (1) the Building Loads Analysis and System Thermodynamics (BLAST) program, (2) Predicting the Performance of Solar Energy Systems, and (3) Use of the Building Loads Analysis and System Thermodynamics Program to Perform Total Energy System Analysis. Projects to which BLAST was applied included a flight simulator training facility, administrative buildings, and a hangar-administration building. Results showed that these tools can be effectively and usefully applied to the analysis and design of energy-conservative buildings. However, extensive revision of the draft BLAST User's Manual was recommended. The recommended revisions were accomplished prior to the publication of the User's Manual in December 1977. Widespread dissemination and use of these energy analysis tools is recommended. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A055 066 19/4 6/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Hypothetical Case Studies of Operational Changes to Reduce Noise Levels. (U)

DESCRIPTIVE NOTE: Interim rept.,
MAY 78 42P Goff,Richard J. ;Pawlowska, Violetta I. ;
REPT. NO. CERL-IR-N-44
PROJ: 4A76270A896
TASK: 03

UNCLASSIFIED REPORT

DESCRIPTORS: *Noise reduction, *Predictions, *Blast, Army operations, Military facilities, Army, Methodology, Case studies (U)
IDENTIFIERS: WU004, AS896, PE6270A (U)

This report describes the effectiveness of various noise mitigation techniques as applied to blast noise, the Army's most significant noise source. The main thrust of the analysis was aimed at operational changes, including relocation, rescheduling, and firing during more optimal weather conditions. Three hypothetical case studies were investigated, and each technique was quantitatively evaluated. It was found that the three types of operational changes studied did prove more or less effective. However, these mitigation techniques are site-specific, and the decision to use them should be based on how they will affect the base mission, their cost-effectiveness, their noise reduction abilities in terms of decibels, and their benefits to the individual site. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A054 935 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Improved Collection and Container-Washing Systems for Solid Waste Management at Army Installations. (U)

DESCRIPTIVE NOTE: Interim rept.,
MAY 78 21P Gerdes,Gary L. ;Mikucki, Walter J. ;
REPT. NO. CERL-IR-N-45
PROJ: 4A762720A896
TASK: T2

UNCLASSIFIED REPORT

DESCRIPTORS: *Solid wastes, *Waste management, *Refuse collection, *Containers, Test and evaluation, Army equipment, Feasibility studies (U)
IDENTIFIERS: PE62720A, AS896, WU007 (U)

This report evaluates two aspects of solid waste management: (1) the impact of changing from backyard collection of Government Issue refuse containers (GI cans) to curbside collection using a solid waste container called a Mobil Toter (Trademark); and (2) the feasibility of using a portable, recycling multiple-container-washing unit designed and fabricated at the U.S. Army Construction Engineering Research Laboratory. The Mobil Toter system was evaluated through an implementation study at Fort Eustis, VA. The 28 percent decrease in collection time noted in the study cannot be ascribed to use of the Mobil Toter container alone; it also reflects the effects of curbside vs. backyard collection, fewer containers (Mobile Toter is larger than a GI can), and power-assisted dumping. The container wash unit was evaluated by facilities engineering personnel at Fort Leavenworth, KS. The test indicated that the concept was sound, but that greater wash pressure and pickup suction would improve performance. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A054 707 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Field Evaluation of the Modular Augered-Bed Heat-Recovery Solid Waste Incinerator. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 78 58P Hathaway,S. A. ;Lin,J. S. ;Collishaw,A. N. ;
REPT. NO. CERL-TR-E-128
PROJ: 4A763734DT09
TASK: T1

UNCLASSIFIED REPORT

DESCRIPTORS: *Incinerators, *Solid wastes, Field tests, Heat recovery, Wastes(Industrial), Waste disposal, Test and evaluation, Augers, Combustion, Sanitary engineering, Modular construction, Furnaces, Military facilities, Heat exchangers (U)
IDENTIFIERS: PE63734A, WU002 (U)

IAC ACCESSION NUMBER: PL-901093
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report presents the results of a field evaluation of the operating prototype modular (package) augered-bed, heat-recovery, solid-waste incinerator (ABI) conducted on 23-28 May 1977. The ABI tested is a horizontal, cylindrical, cast refractory-faced combustion chamber fitted with a water-cooled auger to convey burning waste. Feeding and ash removal are continuous, and steam is produced in a coiled heat exchanger at the base of the stack from water preheated in the auger. The throughput capacity of the furnace is approximately 3.5 tons/hour (3.2 mt/hour), more than three times the capacity of currently marketed modular incinerators. The report furnishes a detailed description of the system evaluated, a critical appraisal of essential unit operations, and environmental and energy data. The satisfactory performance of the furnace, which is a major innovative aspect of the unit evaluated, indicated that it has potential for Army use. However, because of the unreliability of mechanical auxiliaries, inadequate materials of construction, and poor system configuration, the ABI as it (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A054 440 11/9 13/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Construction with Field Moldable Polyurethane Foam Blocks. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 78 50P Smith,Alvin ;
REPT. NO. CERL-TR-M-233
PROJ: 4A762619AT41
TASK: 08

UNCLASSIFIED REPORT

DESCRIPTORS: *Polyurethane resins, *Foam, *Construction materials, Molding techniques, Field tests, Portable shelters, Theater level operations, Weight reduction, Savings, Skills, Manpower utilization, Adhesive bonding, TECHNOLOGY TRANSFER, Fire safety (U)
IDENTIFIERS: PE62619A, AST41, WU002 (U)

IAC ACCESSION NUMBER: PL-029484
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report presents the results of an investigation of the use of polyurethane foam for expedient shelters in the theater of operations (TO). The evaluation showed that polyurethane foam can bring about significant savings in material shipping weight and volume, construction time, and required personnel skill levels, compared to present base development materials. A model structure was erected in which the wall components were building blocks molded from a low density foam. The building blocks can be fabricated in the field by low-skill personnel using simple molds and mixing equipment. The blocks are equal in size to two regular 8 by 8 by 16 in. (203 by 203 x 406 mm) concrete blocks and weigh about 4 lb (1.8 kg) each. They can be rapidly assembled into a wall using an adhesive applied by caulking gun. Conventional foundation, floor, and roofing systems can be used with this wall system. (Author) (U)

IAC SUBJECT TERMS: P--(U)Specifications, Urethanes, Shelters, Fabrication, Weight savings, Molded parts, Buildings, Wall panels, Roofing, Flooring, Foam in place, Flame retardants, Safety, Coatings, ZZ Unlimited.;
AD-A054 440

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A054 309 1/5 13/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Reliability Analysis for Airfield Lighting Systems. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 78 122P Lindow,E. S. ;Kuo,F. ;
REPT. NO. CERL-TR-M-237
CONTRACT: DOT-FA66WAI-118
MONITOR: FAA-RD 77-148

UNCLASSIFIED REPORT

DESCRIPTORS: *Lighting equipment, *Runways, *Airports, Computerized simulation, Mathematical analysis, Reliability, Sensitivity, Maintainability, Cost analysis (U)

This report presents a model for performing reliability analyses of airfield lighting systems. A set of consecutive coefficients was developed to account for system failure criteria which include random light outages, consecutive light outages, and consecutive light bar failures. Probability theory and simulation techniques are used with the consecutive coefficients to determine system reliability. A computerized version of the model was used in a sensitivity analysis to determine the effect on system reliability of parameters such as unit reliability, system configuration, maintenance strategy, and unit performance characteristics. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A054 307 7/1 13/10

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Cathodic Protection Design for Brackish Water Systems: Fresh Water Bayou Lock. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 78 41P Kearney,Frank W. ;
REPT. NO. CERL-TR-M-235

UNCLASSIFIED REPORT

DESCRIPTORS: *Cathodic protection, *Locks(Waterways), *Salt water, Salinity, Anodes, Construction, Protection, Turbulence, Debris (U)
IDENTIFIERS: Design, LPN-CWIS-31204 (U)

This report presents design guidance for cathodic protection systems for hydraulic structures used by the Corps of Engineers in navigational lock systems. The guidance is designed for structures subjected to extreme variations in water conductivity and moderate to severe stochastic loads induced by gate movement, turbulence, etc. The guidance is based on a cathodic protection system design developed for the Fresh Water Bayou Lock in the Intracoastal Waterway System. The guidance includes selection of the types of systems which can be used in waters having specific salinity ranges and procedures for determining the number of anodes required and their optimum placement. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A054 306 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Rapid Construction for Hardening Above-Ground Facilities to Small Arms Fire. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 78 58P Bellini,Paul X. ;Williamson, Gil R. ;Morse,David C. ;
REPT. NO. CERL-TR-M-230
PROJ: 4A762719AT41
TASK: T5

UNCLASSIFIED REPORT

DESCRIPTORS: *Shelters, *Concrete, *Fiber reinforced composites, *Construction, Hardening, Protection, Small arms ammunition, Ballistics, Shear tests, Construction materials, Tables(Data), Test methods (U)
IDENTIFIERS: PE62719A, AST41, WU003 (U)

The purpose of this research was to develop an efficient structural system for the rapid construction of above-ground hardened shelters in the theater of operations. This system would have a short construction time, use unskilled labor, and be capable of resisting small arms fire and bomb blast concussion and fragmentation. Two material systems were considered: (1) standard concrete block with a surface bond material using no conventional mortar joints, and (2) ferrocement-several layers of wire mesh impregnated with Portland cement mortar. The standard concrete block system was chosen based on results of a series of laboratory tests, and a full-scale shelter was designed, constructed, and tested to determine its actual protective capabilities. It was found that surface-bonded concrete walls having block cells filled with mortar or pea gravel provide complete protection from weapons such as the M16, M1911, and M60 in addition, such structures can be built rapidly by unskilled workers. Lightweight concrete blocks having cells filled with steel-fiber mortar will provide complete protection from M14 and M16 rifles, M1911 pistols, and M2 machine guns. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A054 299 5/1 13/2 13/3 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Preliminary Investigations of Risk Sharing in Construction Contracts. (U)

DESCRIPTIVE NOTE: Interim rept.,
APR 78 74P Erikson,Carl A. ;O'Connor, Michael J. ;Rood,Omar E. , Jr;
PROJ: 4A161102AT23
TASK: A2

UNCLASSIFIED REPORT

DESCRIPTORS: *Contract administration, *Risk, Construction, Army Corps of Engineers, Contracts, Literature surveys, Cost analysis, Allocations, Litigation, Army procurement, Strategy, Losses, Statistical analysis, Cost estimates, Profits (U)
IDENTIFIERS: WU005, AST23, PE61102A (U)

This report presents the results of an investigation to delineate the current assignments of risk between the owner and the contractor in typical Corps of Engineers firm-fixed-price construction contracts. A working definition of risk is formulated. Research performed to date is summarized for the benefit of future researchers in this area. Included is a summary of existing construction risk categorization schemes and a comprehensive reading list of literature available in the construction risk area. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099052

AD-A053 272 13/3 13/13 11/9

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CchampaIGN ILL

Feasibility of Structural Foam/Concrete Building for Theater of Operations Use. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 78 24P Smith,Alvin ;
REPT. NO. CERL-TR-M-231
PROJ: 4A762719AT41
TASK: 08

UNCLASSIFIED REPORT

DESCRIPTORS: *Shelters, *Polystyrene, *Foam, Construction materials, Logistics support, Military requirements, Manhours, Costs, Skills, Army operations, Walls, Foundations(Structures) (U)
IDENTIFIERS: PE62719A, AST41, WU002 (U)

IAC ACCESSION NUMBER: PL-029295
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This study was preformed to assess the feasibility of using performed polystyrene foam building blocks to construct shelters in noncombative areas of the Theater of Operations (TO). A structure in which the principal wall material was polystyrene foam blocks was designed, constructed, and evaluated on the basis of logistics requirements, manpower time, required skill levels, and costs. It was concluded that the polystyrene foam block building required less than half the man-hours and slightly lower skill levels than were necessary to erect a similar-sized Army Facilities Components System timber building. However, the foam block building has a 75 percent greater shipping volume in the expanded form, and a 300 percent greater materials cost. Based on the conclusions, it is recommended that the foam block system be used in the TO only if the expansion and molding equipment is established within the area of planned usage. (Author) (U)

IAC SUBJECT TERMS: P--(U)Structural foam, Buildings, Polystyrene foam, Rigid foam, Design, Fabrication, Testing, Military applications, Shelters, Foaming, Urethanes, Spray applications, Insulation, Wall panels, Material costs, Concrete, Flooring, ZZ

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A053 229 5/1 14/1 13/13 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Supervision and Administration Cost/Rate Forecasting System. Volume I. User's Manual. (U)

DESCRIPTIVE NOTE: Special rept.,
MAR 78 19P O'Connor,Michael J. ;
Lidral,Robert ;
REPT. NO. CERL-SR-P-87

UNCLASSIFIED REPORT

DESCRIPTORS: *Management planning and control, *Cost models, Military engineering, Instruction manuals, Computer programs, Management information systems, Statistical data, Regression analysis, Data bases, Statistical analysis, Supervision, Supervisors, Administrative personnel, Mathematical prediction, Construction (U)

This volume describes the use of the Supervision and Administration (S and A) Cost/Rate Forecasting System to maintain S and A data, to update the S and A forecasting model, and to forecast future S and A costs and rates. Volume II, the Programmer's Guide, contains software documentation. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A053 228 13/3 5/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Trends in the Real Prices of Selected Construction Products and Materials, 1946-1976. (U)

DESCRIPTIVE NOTE: Special rept.,
MAR 78 36P Ramsson,R. ;
REPT. NO. CERL-SR-D-84
PROJ: 4A762731AT41
TASK: T7

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction materials, *Cost analysis, Lumber, Structural steel, Plywood, Concrete, Fittings, Brass, Clay, Paperboard, Heating plants, Asphalt, Gypsum, Inflation(Economics), Price index (U)
IDENTIFIERS: Plumbing fixtures, PE62731A, WU005, AST41 (U)

This study measured trends in the relative prices of 13 construction goods and materials from 1946 through 1976. The prices of three of these products--Douglas Fir lumber, structural steel products, and steel reinforcing bars--have increased substantially since World War II. The prices of plywood, building paper and board, heating equipment, asphalt, and gypsum products have declined during the post-War period. The prices of the remaining products--Southern Pine lumber, concrete products, millwork, plumbing fixtures and brass fittings, and structural clay products--have shown little or no change. The pattern of the real prices of these products in 1976 suggests that savings in construction materials can be obtained by substituting for those products whose prices have increased. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A053 227 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Water Usage Profile -- Fort Carson, CO. (U)

DESCRIPTIVE NOTE: Interim rept.,
MAR 78 61P Matherly,J. E. ;Staub,M. J. ;Benson,L. J. ;Fileccia,R. J. ;
REPT. NO. CERL-IR-N-34
PROJ: 4A762720A896
TASK: 02

UNCLASSIFIED REPORT

DESCRIPTORS: *Water supplies, Consumption, Water conservation, Flowmeters, Water distribution, Military facilities, Army, Colorado (U)
IDENTIFIERS: Water conservation devices, Fort Carson, PE62720A, WU001, AS896 (U)

This report presents preliminary data from an investigation of water usage at Fort Carson, CO. Water meters were installed on supply lines to various facility types, and data were accumulated for a 3-month period. This investigation is continuing, and similar studies will be performed at other U.S. Army installations. Preliminary data reported herein will help formulate the basis for selecting water conservation devices to be installed at Fort Carson. Water metering after water conservation devices have been installed will provide data for assessing the impact of such devices on total water usage. Results of the water metering effort at Fort Carson, CO, have revealed unusually high consumption of water in family housing areas, presumably for irrigation. The study has indicated that civilian water demands must be compared with those of Fort Carson in order to ascertain why per capita water usage at the installation is so high. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A052 708 13/1 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Fixed Facilities Energy Consumption Investigation Data Users Manual. (U)

DESCRIPTIVE NOTE: Interim rept.,
FEB 78 157P Windingland,L. ;Sliwinski,B. ;Mech,A. ;
REPT. NO. CERL-IR-E-127
PROJ: 4A762731AT41
TASK: 06

UNCLASSIFIED REPORT

DESCRIPTORS: *Military facilities, *Energy consumption, Monitoring, Data acquisition, Data bases, Data storage systems, Information retrieval, Energy conservation, Buildings, Army, Instruction manuals (U)
IDENTIFIERS: User manuals, WU007, AST41, PE62731A (U)

This report describes a study being conducted to identify energy consumption patterns at fixed Army facilities. The procedure used to select sites, buildings, and instruments for monitoring is described, as is the data storage system and the method for data access. The report describes and provides photographs of over 110 buildings presently being monitored at three Army posts and describes the energy parameters being monitored in each building. The structure of the energy data storage system is described, and instructions on how to obtain the energy use data that have been gathered are provided, along with examples of available data output formats. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A051 999 20/1 1/2 12/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Rotary-Wing Aircraft Operational Noise Data. (U)

DESCRIPTIVE NOTE: Final rept.,
FEB 78 70P Homans,Brian ;Little,Lincoln ;Schomer,Paul D. ;
REPT. NO. CERL-TR-N-38
PROJ: 4A762720A896
TASK: 03

UNCLASSIFIED REPORT

DESCRIPTORS: *Aircraft noise, *Rotary wing aircraft, *Helicopters, Flight maneuvers, Hovering, Overflight, Aircraft landings, Takeoff, Mathematical prediction, Acoustic measurement, Acoustic data, Sound pressure (U)
IDENTIFIERS: H-1 Aircraft, H-47 Aircraft, H-54 Aircraft, H-55 Aircraft, H-58 Aircraft, PE62720A, AS896, WU001 (U)

This report presents Sound Exposure Level (SEL) vs distance curves for eight models of Army rotary-wing aircraft (OH-58, AH-1G, UH-1M, UH1-1H, UH-1B, CH-47B, CH-54, and TH-55) performing dynamic operations, and Equivalent Sound Level contours for the same aircraft in static operations. The dynamic operations consisted of level fly overs, ascents, descents, turns, takeoffs, and landings; static operations included in-ground and out-of-ground effect hovers. Results are grouped according to model and type of operation and are suitable for use in manual or computerized programs for predicting noise impact from rotary-wing aircraft. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099052

AD-A051 737 20/1 14/1 13/13 13/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Construction-Site Noise Control Cost-Benefit Estimating Procedures. (U)

DESCRIPTIVE NOTE: Interim rept.,
JAN 78 35P Kessler,F. M. ;Schomer,P. D. ;Chanaud,R. C. ;Rosendahl,R. ;
REPT. NO. CERL-IR-N-36
PROJ: 4A762720A896
TASK: 03

UNCLASSIFIED REPORT

DESCRIPTORS: *Noise reduction, *Cost estimates, *Construction equipment, Sound pressure, Barriers, Specifications, Sites, Backfills, Trenching, Earth handling equipment, Substitutes, Foundations(Structures), Modification, Concrete, Plywood (U)
IDENTIFIERS: PE62720A, AS896 (U)

This report aids the U.S. Army Corps of Engineers construction cost estimator in determining the level of noise generated at construction sites, in comparing this level with Corps of Engineers criteria, and in estimating costs to a contractor of reducing the noise. A companion report, Construction-Site Noise Control-Cost-Benefit Estimation Technical Background, Technical Report N-37 (U.S. Army Construction Engineering Research Laboratory (CERL), January 1978), contains the rationale and data supporting this report. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A051 438 5/1 13/13 5/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Proceedings of the CIB W-65 Working Commission on Organization and Management of Construction. Volume III. International Council for Building Research and Documentation and Dissemination, (U)

SEP 77 51P Diejeveen,W. J. ;Docherty, Peter ;Penhoff,Sten ;Paersson,Jan ;Boland, Thomas F. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated May 78, AD-A025 317.
DESCRIPTORS: *Construction, *Management, *Industries, *Symposia, Organizations, Management planning and control, Technology transfer, Morphology, Workshops (U)

This report presents the proceedings of the Symposium on the Organization and Management of Construction presented by the Working Commission of the International Council for Building Research and Documentation and Dissemination at Edinburgh, Scotland in September 1977. This volume contains rapporteur papers on the topics of organization and management of construction of the firm, the technology transfer of organization and management of construction, and a morphology of the construction industry. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A051 074 5/3 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Fixed Facilities Energy Consumption Investigation Initial Energy Data. (U)

DESCRIPTIVE NOTE: Interim rept., JAN 78 97P Windingland,L. M. ; Sliwinski,B. J. ;
REPT. NO. CERL-IR-E-120
PROJ: 4A762731AT41
TASK: 06

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy consumption, *Military facilities, Surveys, Data acquisition, Fossil fuels, Electricity, Diurnal variations, Seasonal variations, Energy conservation, Natural gas, Heating oils, Economic analysis (U)
IDENTIFIERS: AST41, PE62731A, WU007 (U)

This report describes energy consumption data obtained between December 1976 and March 1977 for 45 Army buildings being monitored at Fort Belvoir, VA, Fort Carson, CO, and Fort Hood, TX, as part of a study being conducted to identify energy consumption patterns at fixed Army facilities. The 45 buildings represent six of the major energy consumer groups found on Army installations: family housing, troop housing, administration/training buildings, production/maintenance buildings, medical/dental buidlings, and community support facilities. This report provides potential users of energy data with preliminary findings and indicates the formats and analysis techniques which will be used in a full-year energy-consumption data report to be published in FY78. Consumption data for electrical energy and fossil fuels are presented as monthly energy-consumption totals for the six energy consumer groups. The electrical data for each building are analyzed by computing the daily usage per unit area. The heating energy use for various buildings is compared by computing the energy used per unit area per heating-degree day. Typical daily and monthly usage profiles are presented for each energy consumer group. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A050 813 13/3 20/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Construction-Site Noise Control Cost-Benefit Estimation Technical Background. (U)

DESCRIPTIVE NOTE: Final rept., JAN 78 105P Kessler,Fred M. ;Schomer, Paul D. ;Chanaud ,Robert C. ;Rosendahl,Eugene ;
REPT. NO. CERL-TR-N-37

UNCLASSIFIED REPORT

Availability: Microfiche copies only.
DESCRIPTORS: *Construction equipment, *Noise reduction, Sites, Machinery noise, Noise pollution, Control systems, Cost effectiveness, Cost estimates, Technology transfer, Mathematical models, Computerized simulation, Data acquisition, Scheduling (U)

Presented are methods of estimating noise level at a construction site, methods of noise reduction and control at a construction site, and the associated costs for this reduction with the emphasis on equipment noise control. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A050 169 10/2 14/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Evaluation of Instrumentation for Testing Large Generator Sets. (U)

DESCRIPTIVE NOTE: Special rept., FEB 78 47P Ford,W. D. ;Pollock,M. J. ;
REPT. NO. CERL-SR-E-121
PROJ: 4A763734DT08
TASK: 07

UNCLASSIFIED REPORT

DESCRIPTORS: *Electric generators, *Electric power plants, *Instrumentation, *Test and evaluation, Test equipment, Recording systems, Field tests, Performance(Engineering), Military facilities, Diesel engines, Frequency, Voltage, Measureme (U)
IDENTIFIERS: WU001, PE63734A, AST08 (U)

This report, which supplements CERL Special Report E-103, presents the results of an investigation of instrumentation for use in measuring and recording voltage and frequency changes during performance testing of large engine-generator sets intended for stationary electric power generation service in fixed military facilities. Based on analysis of (1) the specific characteristics needed to fulfill the end use for which the electric power will be produced and (2) the instrumentation currently described in MIL-HDBK-705B, inadequate instrumentation, primarily that used for transient measurement, was selected for replacement by advanced instrumentation. Five advanced instrumentation systems were selected for field testing based on their suitability for field testing, their recording capability, and their capability to measure in the desired range. The system which performed best in the field testing was the Gould 2200 Recorder. It is recommended that this recorder system, supplemented by a Dranetz line monitor to prevent accuracy problems caused by the Gould system's dependence on paper slip and pen width, be used for testing utility-grade and medium-grade power systems. Testing of precision-grade systems would require use of a transient digitizer (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A049 029 1/5 13/2 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development of a Pavement Maintenance Management System. Volume II. Airfield Pavement Distress Identification Manual. (U)

DESCRIPTIVE NOTE: Final rept. Jul 74-Jul 76, DEC 77 115P Shahin,Mohamed Y. ;Darter, Michael I. ;Kohn,Starr D. ;
REPT. NO. CERL-TR-C-76-Vol-2
CONTRACT: MIPR-FQ8952-76-66005
MONITOR: CEEDO TR-77-44-Vol-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Supersedes Rept. no. AFCEC-TR-76-27-VOL-2 dated Nov 76, AD-A042 053. See also Volume 1, AD-A048 884.
DESCRIPTORS: *Pavements, *Runways, *Maintenance management, Concrete, Asphalt, Cracking(Fracturing), Cracks, Classification, Loads(Forces), Repair, Surveys (U)

This manual is designed to provide airfield pavement inspectors with a comprehensive reference for pavement distress identification. The information is to be used in conjunction with procedures presented in Volume I of this report to determine pavement condition and maintenance and repair requirements. The types of airfield pavement distress are listed alphabetically under the major categories of asphalt- or tar-surfaced pavements and jointed concrete pavements. Names, descriptions, severity levels, photographs, and measurement or count criteria are presented for each distress type. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099052

AD-A048 982 13/1 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The Building Loads Analysis and System Thermo-Dynamics (BLAST) Program. Volume II. Reference Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 77 437P Hittle,D. C. ;
REPT. NO. CERL-TR-E-119-Vol-2
PROJ: 4A762731AT41, 2102
TASK: 06, 01
MONITOR: CEEDO TR-77-35-Vol-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A048 734.
DESCRIPTORS: *Energy management, *Buildings, *Computer programming, *Programming manuals, Subroutines, Flow charting, Algorithms, Centralized, Heating plants, Air conditioning equipment, Ventilation, Thermal insulation, Meteorological data, Energy consumption, Thermal stresses, High level languages, Computer program documentation (U)
IDENTIFIERS: WUCEEDO21020103, AST41, PE62731A, PE63723F, WU012, WU021 (U)

The Building Loads Analysis and System Thermodynamics (BLAST) program is a sophisticated set of subprograms for predicting energy consumption in buildings. The four major subprograms are: the input processor, which parses the high-level input language and sets up the building/systems/plant descriptions; the building loads subprogram, which computes the hourly space load in a building or zone based on the user's description of the building/zone and hourly weather data; the air distribution system simulation subprogram, which calculates the coil energy demands, fan power, etc., based on the user's description of the air handling system and the hourly space load data calculated by the previous subprogram; and the central energy plant simulation subprogram, which calculates energy consumption of a central/solar/total energy plant based on the user's description of the plant and the hourly coil loads calculated by the previous subprogram, and performs (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A048 884 1/5 13/2 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development of a Pavement Maintenance Management System. Volume I. Airfield Pavement Condition Rating. (U)

DESCRIPTIVE NOTE: Final rept. Jul 74-Jul 76,
DEC 77 232P Shahin,Mohamed Y. ;Darter, Michael I. ;Kohn,Starr D. ;
REPT. NO. CERL-TR-C-76-VOL-1
CONTRACT: MIPR-FQ8952-76-66005
MONITOR: CEEDO TR-77-44-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Supersedes rept. no. AFCEC-TR-76-27, AD-A041 461. See also Volume 2, AD-A049 029.
DESCRIPTORS: *Pavements, *Runways, *Maintenance management, Concrete, Asphalt, Surveys, Classification, Ratings, Deformation, Inspection, Maintenance, Repair, Cracking(Fracturing) (U)

This report describes the development and verification of a pavement condition index (PCI) for rating the condition of jointed concrete and asphalt-or tar-surfaced airfield pavements. The PCI, which measures airfield pavement structural integrity and surface operational condition, is calculated based on measured pavement distress types, severities, and densities obtained during an inspection of the pavement. Volume II of this report presents distress types, descriptions, severity levels, and measurement criteria for use in performing the pavement inspections. (U)

AD-A048 250 13/2 1/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The Effects of Gear Pattern on Pavement Systems Performance. (U)

DESCRIPTIVE NOTE: Final rept.,
FEB 74 126P Rice,J. L. ;Panak,J. J. ;Healy,J. J. ;
REPT. NO. CERL-TR-S-30
PROJ: 4A664-717D895
TASK: 04

UNCLASSIFIED REPORT

Availability: microfiche copies only.
DESCRIPTORS: *Pavements, *Runways, Performance(Engineering), Landing impact, Loads(Forces), Failure(Mechanics), Thickness, Concrete, Structural analysis, Structural engineering, Pavement bases, Computerized simulation, Computer programs, Tables(Data), Computer applications, Strength(Mechanics) (U)
IDENTIFIERS: PE64717A, AS895, WU003 (U)

This report presents the results of a study of the effects of gear pattern on airfield pavement performance. The report presents the methodology required to express aircraft traffic in terms of passes rather than the current coverage concept. The method is capable of considering wheel interaction rather than only surface geometry. (Author) (U)

AD-A048 102 13/13 5/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Civil Works Construction Cost Index System (CWCCIS). (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 77 146P Poskus,U. R. ;
REPT. NO. CERL-TR-P-85

UNCLASSIFIED REPORT

Availability: Microfiche copies only.
DESCRIPTORS: *Construction materials, *Civil engineering, Indexes, Dams, Reservoirs, Locks(Waterways), Electric power plants, Roads, Bridges, Railroads, Channels(Waterways), Levees, Flood control, Foundations(Structures), Structural engineering, Costs (U)

This report describes a system of cost indices for updating early government estimates of the costs of heavy construction in civil works projects. The system provides national indices specific to 19 major construction types (features). The feature indices are computed from three levels of subindices which provide increasing detail. The first level below the feature consists of indices for five primary categories of work-earthwork (E), concrete (C), steel (S), mechanical (M), and electrical (L)-and a secondary category, buildings (B). The third level breaks each category into labor (L), plant (P), and material (M) resource classes. The lowest level provides indices for the actual resource types used in the construction for each resource class. The user can either use the feature index as provided or modify it by changing the weighting of one or more of the items in the three lower levels. The indices can also be regionalized by substituting region-specific resource type indices at the lowest level. (U)

AD-A047 969 6/6 15/7

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Environmental Noise Impact Analysis for Army Military Activities: User Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 77 120P Goff,R. J. ;Novak,E. W.
;
REPT. NO. CERL-TR-N-30
PROJ: 4A162121A896
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Noise pollution, *Environmental impact statements, Level(Quantity), Assessment, Quantitative analysis, Army operations, Damage, Criteria, Vehicles, Helicopters, Army equipment, Manuals (U)
IDENTIFIERS: Guidelines, AS896, PE62121A, WU001 (U)

This manual presents the most current techniques for evaluating the environmental impact of noise emissions from proposed and ongoing Army activities. It is designed for use in conjunction with the CERL-developed computer systems to produce an integrated approach to environmental impact assessment. The manual provides the methodology for determining and documenting environmental noise levels, procedures for interpreting these levels in terms of impact on the human environment, methods by which these impacts might be mitigated, and finally procedures to prepare comprehensive environmental noise impact assessments or statements in accordance with the Council on Environmental Quality (CEQ) Guidelines and AR 200-1. (Author) (U)

AD-A045 708 13/3 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Proceedings of the CIB W-65 Symposium on Organization and Management of Construction, 19-20 May 76, U.S. National Academy of Sciences, Washington, D.C. Volume II. Opening Addresses, Rapporteur Reviews, and Discourses. (U)

MAY 76 122P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-A025 317.
DESCRIPTORS: *Construction, *Management, Symposia, Management information systems, Computer applications, Cost analysis, Assessment, Decision making, Construction materials, Algorithms, Optimization, User needs (U)

This report is the second volume of the proceedings of the Symposium on the Organization and Management of Construction presented by Working Commission W-65 of the International Council for Building held in May 1976. Volume I presented papers submitted to the symposium; this volume presents comments and discussion papers recorded at the symposium. Topics covered include organizational forms for construction, evaluation of organizational forms, and management methods in construction. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A045 421 13/2 5/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Cost of Recycling Waste Material from Family Housing. (U)

DESCRIPTIVE NOTE: Final rept., SEP 77 61P Freeman ,R. E. ;Donahue,B. A. ;Kloster,S. E. ;Schanche,G. W. ;Smith, E. D. ;
REPT. NO. CERL-TR-N-29
PROJ: 4A762720A896
TASK: T2

UNCLASSIFIED REPORT

DESCRIPTORS: *Waste recycling, *Solid wastes, Cost analysis, Costs, Military facilities, Housing(Dwellings), Residential section, Marketing, Resource management (U)
IDENTIFIERS: PE62720A, AS896, WU007 (U)

The purpose of this research was to determine the cost of recycling waste from a selected family housing area at Fort Bragg through source separation in order to evaluate the feasibility of solid waste recovery and recycling at a military installation. This report presents (1) analysis of the waste volume and composition from the Normandy Heights area at Fort Bragg, (2) data showing the current cost of refuse collection and disposal in the Normandy Heights area, (3) a market analysis for recyclable material in the Fort Bragg area, and (4) a design for the recyclable material recovery strategy that was tested and the costs associated with this strategy, (5) participation rates of Normandy Heights residents, (6) waste reduction rates, and (7) collection labor data. It was found that recycling by source separation could be cost-effective, could reduce the amount of refuse to be landfilled, and could decrease the number of weekly collections. It was established that military family housing refuse is comparable to that of the civilian sector and that military personnel are willing to participate in a source separation recycling program. The research indicated that experienced personnel should collect recyclables. (Author) (U)

AD-A045 421

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A045 186 11/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Use of Fly Ash and High-Strength Reinforcing Bars in Military Construction. (U)

DESCRIPTIVE NOTE: Final rept., SEP 77 47P Howdyshell,Paul A. ;Morse, David C. ;
REPT. NO. CERL-TR-M-228
PROJ: 4A762719AT41
TASK: T7

UNCLASSIFIED REPORT

DESCRIPTORS: *Reinforced concrete, *Fly ash, *Steel, High strength alloys, Economic models, Reinforcing materials, Military engineering, Construction materials, Energy conservation, Cost benefits, Resource management (U)
IDENTIFIERS: *REBARS, WU005, AST41, PE62719A (U)

This report presents the results of an investigation to evaluate fly ash and high-strength reinforcing bars (Grade 60 and above) as alternate construction materials to alleviate the impact of material shortages on military construction. The evaluation was based on the effect of these materials on cost and resource (raw material and energy) intensity of military construction. The results show that the use of fly ash is economically feasible for 78 percent of all military installations in the United States. The resulting average savings per cubic yard of concrete would be 73 lb (43 kg/cu m) of cement and 2.72 X 10 to the 5th power Btu (3.75 X 10 to the 8th power J/cu m). This translates into a monetary savings of $0.87/cu yd ($1.14 cu m) and an energy savings sufficient to heat the average home in Illinois for 14 hours. Use of Grade 80 and Grade 60 high-strength reinforcing bars in place of the more conventional Grade 40 reinforcing bars can result in maximum material savings of 41 and 25 percent and a corresponding cost savings of 24 and 15 percent, respectively. (U)

AD-A045 186

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A045 185 11/6 13/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The Effects of Weld Porosity on the Fracture Toughness of A514F Steel. (U)

DESCRIPTIVE NOTE: Interim rept.,
SEP 77 28P Cox,E. P. ;
REPT. NO. CERL-IR-M-227
PROJ: 4A762731AT41
TASK: 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Steel, *Welds, *Porosity, Tearing, Dynamic tests, Fracture(Mechanics), Test equipment, Instrumentation, Clustering, Linearity, Plastic deformation, Ductile brittle transition, High strength alloys, Structural steel, Technology transfer, Tensile properties, Electrodes (U)
IDENTIFIERS: Steel A-514F, WU011, AST41, PE62731A (U)

IAC ACCESSION NUMBER: MCIC-102060
IAC DOCUMENT TYPE: MCIC -HARD COPY--

This report presents the results of an investigation conducted to evaluate the effects of clustered and linear porosity on the impact (dynamic tear) and dynamic fracture toughness of American Society for Testing and Materials (ASTM) A514 grade F steel welds. Tests were conducted using standard 1.59-cm dynamic tear specimens in a dynamic tear machine. Tests were also conducted using instrumentation recently developed for use with the dynamic tear machine. Results indicated that the upper shelf fracture toughness of welds containing clustered or linear porosity is sufficient to permit large-scale plastic deformation prior to fracture. However, the ductile-to-brittle transformation in welds containing linear porosity may be elevated to normal operating temperatures, thus increasing the possibility of catastrophic fracture. The instrumented dynamic tear test was found to provide a means of calculating dynamic fracture toughness values on the lower shelf and a lower bound for fracture toughness on the upper shelf in high-strength structural steels. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A045 184 13/8 13/7

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Corrosion Control in Civil Works: Cathodic Protection. (U)

DESCRIPTIVE NOTE: Interim rept.,
AUG 77 69P Kearney,F. W. ;
REPT. NO. CERL-IR-M-222

UNCLASSIFIED REPORT

DESCRIPTORS: *Cathodic protection, *Corrosion inhibition, *Hydraulic equipment, Electrochemistry, Anodes, Circuits, Rectifiers, Dams, Locks(Waterways), Steel, Sea water corrosion, Current density, Electric fields, Brackish water, Technology transfer, Protective coatings, Polarization (U)
IDENTIFIERS: LPN-CWIS-31204 (U)

This report presents the initial results of a study being conducted to mitigate corrosion in Corps of Engineers civil works structures. This phase of the study dealt with specific aspects of cathodic protection. Basic electrochemical principles and cathodic protection experiments particularly germane to civil works problems are discussed, and an innovative investigation of cathodic protection current distribution using the continuum features of electric field analysis is presented. Recently developed automatic controlled rectifiers are analyzed, and their control response measured for applications involving brackish water. Guidelines for application of cathodic protection principles to system design are also presented. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A045 183 13/13 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Construction Specification Preparation within the EDITSPEC System. (U)

DESCRIPTIVE NOTE: Interim rept.,
SEP 77 24P Neely,Edgar S. , Jr;
REPT. NO. CERL-IR-P-84
PROJ: 4A762731AT41
TASK: T1

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Specifications, *Computer applications, Army Corps of Engineers, Automation, Computer aided design, Formats, Computer programs, Military engineering (U)
IDENTIFIERS: EDITSPEC Construction specification preparation system, PE62731A, AST41, WU009 (U)

This report provides management personnel with a brief description of the computer-aided construction specification preparation system known as EDITSPEC. The Corps of Engineers' current construction specification preparation process is described, as are the basic capabilities of the EDITSPEC system. Application of the EDITSPEC system within the current preparation process is presented along with procedures for implementing the system in a Corps District specification preparation section. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A044 993 20/4 20/11 12/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Liquid-Spring Shock Isolator Modeling. (U)

DESCRIPTIVE NOTE: Final rept. Jul 75-Aug 76,
SEP 77 57P Sonnenburg,P. N. ;Wendler, B. H. ;Fisher,W. E. ;
REPT. NO. CERL-TR-M-226
PROJ: 4A762719AT40
TASK: A1

UNCLASSIFIED REPORT

DESCRIPTORS: *Springs, *Fluid mechanics, *Shock absorbers, *Mathematical models, Pilot studies, Shock(Mechanics), Isolation, Differential equations, Parameters, Variables, Experimental data, Technology transfer, Test and evaluation, Test equipment, Nonlinear systems, Damping, Least squares method (U)
IDENTIFIERS: *Liquid springs, WU023, AST40, PE62719A (U)

The purpose of this pilot study was to determine whether mathematical models of high-performance shock isolators could be established from test performance data. A liquid spring was modeled using an open-parameter differential equation. A system identification technique was used to select the best algebraic form of the model and to optimize the parameters for the sample isolator. A comparison of the calculated response variables with the test data showed that the model was accurate and that isolator models could generally be established in this manner. The use of the isolator mathematical model and determination of optimum constant parameters for practical design purposes is discussed. However, conversion of this information to actual hardware design dimensions warrants further research and is not addressed. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A044 992 13/13 11/9

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Dome Shelter Construction with Polyurethane Foam. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 77 35P Smith,Alvin ;
REPT. NO. CERL-TR-M-225
PROJ: 4A762619AT41
TASK: 08

UNCLASSIFIED REPORT

DESCRIPTORS: *Domes(Structural forms), *Portable shelters, *Polyurethane resins, *Foam, Construction equipment, Construction materials, Inflatable structures, Field equipment, Field tests, Sprays, Turntables, Balloons, Cost effectiveness, Training, Flammability, Membranes, Platforms (U)
IDENTIFIERS: WU002, AST41, PE62619A (U)

IAC ACCESSION NUMBER: PL-027121
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report presents the results of a study of the use of polyurethane foam in erecting expedient shelters (domes) in the Theater of Operations (TO). The evaluation indicated that these foams can effect savings in labor, time, shipping weight and volume, and material costs when compared to conventional material buildings. (Author) (U)

IAC SUBJECT TERMS: P--(U)Urethanes, Shelters, Inflated structures, Fabrication, Design, Flammability, Weight comparisons, Portable structures, Structures, Properties, Spray foam, Membranes, Costs, Military applications, Domes, ZZ Unlimited.;

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A044 991 13/13 11/9 11/12

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Prefabricated Expandable Foam/Wood Structures for Theater of Operations. (U)

DESCRIPTIVE NOTE: Interim rept.,
SEP 77 35P Kao,A. M. ;Whiteside,T. M. ;Trent,R. L. ;Smith,A. ;
REPT. NO. CERL-IR-C-45
PROJ: 4A763734DT34
TASK: 04

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Rept. no. CERL-IR-C-50, AD-A032 726 and Rept. no. CERL-IR-C-52, AD-A027 382.
DESCRIPTORS: *Prefabricated buildings, *Structural members, *Wood, *Polyurethane resins, *Foam, Sprays, Expandable structures, Multipurpose, Construction equipment, Construction materials, Field equipment, Field tests, Insulation, Assembly, Transportable, Portable shelters, Military applications (U)
IDENTIFIERS: TOBSEP(Theater of Operations Building System Evaluation Procedures), Theather of operations building system evaluation procedures, PE63734A, WU003, AST34 (U)

IAC ACCESSION NUMBER: PL-027538
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
This report, one of a series covering development of multipurpose structural components, documents the results of field experiments of several field-fabricated structural components using polyurethane spray-applied foam as a structural and insulative material in combination with wood. The components were evaluated from the standpoints of ease of fabrication, transportability, assembly and erection, relocatability, and expandability. A set of structural components that had potential military application in providing a wide range of temporary facilities for use in the theater of operations was selected. (Author) (U)

IAC SUBJECT TERMS: P--(U)Rigid foam, Cellular plastics, Prefabricated structures, Spray applications, Urethanes, Expandable structures, Fabrication,

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A044 814 15/2 10/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Recovery of Energy from Solid Waste at Army Installations. (U)

DESCRIPTIVE NOTE: Technical Manuscript, AUG 77 58P Hathaway,S. A. ;
REPT. NO. CERL-Technical-Ms-E-118
PROJ: 4A762731AT41
TASK: T6

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy management, *Energy conversion, *Solid wastes, Incinerators, Heat, Recovery, Field equipment, Military facilities, Military requirements, Modular construction, Packaging (U)
IDENTIFIERS: Refuse derived fuel, WU011, AST41, PE62731A (U)

IAC ACCESSION NUMBER: PL-900843
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This paper provides a technical overview of the current status of solid waste-to-energy conversion systems scaled for use on Army fixed facilities and installations. Attention is given to modular (package) and field-erected heat recovery incineration systems and to using refuse-derived fuel (RDF) in existing steam generation plants. It is shown that most available systems have evolved as an art and not as products of basic scientific inquiry. The proper performance of many marketed systems cannot be guaranteed because neither long term operational data nor reproducible experimental information for design exists. Critical research areas in waste characterization, heat recovery incineration, and use of RDF are discussed, and accelerated scientific inquiry within each area is encouraged on a priority basis. (Author) (U)

IAC SUBJECT TERMS: P--(U)Reviews, Energy recovery, Solid wastes, RDF, Boiler feed, Incinerators, Military wastes, Heat recovery, Rotary kilns, Disposal equipment, Rotary basket grates, Shredders, Design guides, ZZ MTDE, ZZ Unlimited.;

AD-A044 814

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A044 813 15/5 10/1 10/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Analysis of Central Total Energy Systems at Military Facilities. (U)

DESCRIPTIVE NOTE: Interim rept., AUG 77 72P Honig,E. M. , Jr.;Dolan, W. H. ;
REPT. NO. CERL-IR-E-115
PROJ: 4A762719AT41
TASK: 06

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy management, *Military facilities, *Army planning, Energy consumption, Energy conservation, Systems engineering, Centralized, Electric power plants, Heating plants, Life cycle costs, Computerized simulation, Cost analysis, Economics (U)
IDENTIFIERS: Central total energy systems, WU013, AST41, PE62719A (U)

This report discusses the potential of central total energy (TE) systems for improving the efficiency and economies achieved using multiple regional TE systems. It also provides an energy and life-cycle cost analysis procedure for Corps District Engineer personnel and contracted architect-engineers to use in assessing the performance of central vs. regional TE systems. Part of the procedure involves application of computer-aided feasibility analysis to determine the number, size, and generic design of TE plants that will minimize total fuel consumption for given energy demands. The procedure also includes a method for determining the load for a central TE plant. A case study employing the method is presented. The report concludes that many Army installations have enough thermal demand to justify considering centralized TE applications for a large portion of the installation. Central TE plants can be economically advantageous over regional TE plants, due primarily to economies of scale in prime movers and secondarily increased load diversity. Central diesel plants with thermal storage were found to be most fuel-efficient, while central gas turbine plant (U)

AD-A044 813

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A044 455 5/3 9/2 10/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Study of the Technical Feasibility of Developing a Standardized Energy Control System Specifically for Army Facilities. (U)

DESCRIPTIVE NOTE: Interim rept.,
AUG 77 24P Eng,D. ;Wu,K. H. ;
REPT. NO. CERL-IR-E-117
PROJ: 4A762719AT41
TASK: T6

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy management, *Energy conservation, *Energy consumption, Military facilities, Maintenance management, Minicomputers, Microprocessors, Real time, Remote terminals, Scheduling, Cost benefits, Feasibility studies, Standardization, Cost effectiveness, Energy conversion (U)
IDENTIFIERS: Energy control systems, WU010, AST41, PE62719A (U)

IAC ACCESSION NUMBER: PL-900835
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report evaluates the feasibility of developing a standardized energy control system (ECS) for monitoring and controlling energy use in Army buildings and facilities. Criteria used in the evaluation were that the system must: Maximize use of off-the-shelf hardware; Use standard software programs and language; Use hardware and software modules which can be easily changed or expanded to insure the user maximum independence of the original equipment manufacturer; Provide reliable real-time facility monitoring and control functions for all types of equipment systems; Minimize number of personnel and skills required for operation; Maintain cost-effectiveness; and Be easy to operate. Results of the evaluation show that a standardized Army system for energy conservation is feasible and would be cost-effective. Available hardware can be used, but further development is needed to prepare necessary standardized software. The proposed standardized ECS consists of (1) microprocessor-based remot (U)

AD-A044 455

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A044 454 6/12

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Management Summary: Hospital Equipment Maintenance System. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 77 52P Brown,David W. ;Colver, Richard J. ;
REPT. NO. CERL-TR-P-83
PROJ: 4A762719AT41
TASK: T1

UNCLASSIFIED REPORT

DESCRIPTORS: *Medical equipment, *Maintenance management, Management information systems, Army equipment, Logistics management, Scheduling, Inspection, Replacement, Repair, Spare parts, Estimates, Life expectancy, Hospitals, Integrated systems (U)
IDENTIFIERS: *Hospital equipment maintenance system, *Integrated facilities system, HEMS(Hospital Equipment Maintenance System), AST41, LPN-ENG-CERL-75-6, PE62719A, WU015 (U)

This report is a management summary of the capabilities provided by the Hospital Equipment Maintenance System (HEMS) and a preview of capabilities to be provided by the Facilities Engineering Equipment Maintenance System (FEEMS), for which HEMS is an operational pilot system. When extended as a Class A Army Standard System (scheduled for FY78), FEEMS will be an integrated module of the Integrated Facilities System (IFS). HEMS was developed for use by the installation-level Directorate of Facilities Engineering (DFAE) to support recurring maintenance activities on critical utility equipment and systems in Army hospitals and medical facilities. However, the system is equally applicable to utility systems and equipment throughout the entire installation. HEMS is designed to operate with the Integrated Facilities System (IFS) and uses several input transactions, code structures, and output documents common to IFS. To use HEMS, however, the DFAE must develop a thorough plan for recurring utilities (U)

AD-A044 454

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099052

AD-A043 717 15/5 12/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Modifications Processing Procedures: A Generalized Stochastic Network Model. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 77 27P O'Connor,M. J. ;
REPT. NO. CERL-TR-P-82
PROJ: A4161101A91D
TASK: 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Contract administration, *Stochastic processes, *Mathematical models, Computerized simulation, Modification, Government procurement, Contract proposals, Army Corps of Engineers, Network analysis(Management), Data processing, Construction, Cost analysis, Price index, Operations research, Management planning and control, Queueing theory, Statistical analysis (U)
IDENTIFIERS: *Claims, PE61101A, AS91D, WU055 (U)

This report discusses a generalized stochastic network model which incoporates the key features of the Corps of Engineers' contract modifications and claims processing procedures. The results of simulating the network model with two different levels of Resident Contracting Officer (RCO) authority are presented. The models and simulation provide a quantitative measure of the modifications and claims system's performance on which a quantitative evaluation of proposed system changes can be based. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A043 558 11/2 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Evaluation of the Corrosion Resistance of Alternate Revetment Wire Fabric Materials in the Lower Mississippi River. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 77 62P Cox,E. P. ;Chen,C. G. ;
REPT. NO. CERL-TR-M-221

UNCLASSIFIED REPORT

DESCRIPTORS: *Wire, *Fabrics, *Revetments, *Reinforced concrete, Stainless steel, Organic coatings, Carbon steels, Copper alloys, Zinc alloys, Corrosion resistance, High strength, Electrochemistry, Laboratory tests, Exposure(General), Brackish water, Fresh water, Mississippi River (U)
IDENTIFIERS: Stainless steel 201, Stainless steel 301, Stainless steel 430, Stainless steel AM363 (U)

This report presents the results of a study of the corrosion resistance and strength of alternate fabric materials for use in articulated concrete revetment mattresses to be placed on the lower banks of the Mississippi River. Three groups of materials-stainless steels, bimetallics, and organically coated low-carbon steels-were evaluated based on short-term electrochemical laboratory tests, laboratory sensitization evaluations, and exposures of up to approximately 4 years in freshwater and 15 months in brackish water. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A043 173 13/13 8/11 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Seismic Risk Simulation Model for Army Facilities: Phase One, Development of Deterministic Model. (U)

DESCRIPTIVE NOTE: Special rept., AUG 77 104P Merritt,Ronald G. ;
REPT. NO. CERL-SR-M-223
PROJ: ILIR
TASK: A91D

UNCLASSIFIED REPORT

DESCRIPTORS: *Earthquake resistant structures, *Seismic waves, *Risk analysis, Earthquakes, Intensity, Hazards, Buildings, Height, Military facilities, Army, Ground motion, Damage assessment, Computerized simulation, Costs, Repair, Replacement, Reinforcement(Structures), Reinforced concrete, Loads(Forces), Structural response, Cost analysis, Decision making, Computer applications, Algorithms (U)
IDENTIFIERS: Lateral loads, WURADCILIRA91D04048 (U)

This report describes the first phase in the development of a decision tool for assessing: (1) the seismic hazard to Army facilities and (2) the cost of mitigation schemes for reducing the hazard. A simulation model was developed to determine the cost of repairing damage to a facility resulting from seismic activity, as well as the cost of strengthening or replacing the facility to mitigate the effects of seismic activity. The cost to repair damage and the costs to strengthen and replace four-, seven-, and ten-story facilities are presented for three basic building configurations and a continuum of loads ranging from the the 1968 Structural Engineers Association of California Zone 3 requirements to a 1.0 g response spectrum. An example for use of the model is given, along with two decision methodologies. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A043 172 15/5 12/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Prototype Procedure for the Local Generation of Facility Requirements. (U)

DESCRIPTIVE NOTE: Interim rept., AUG 77 51P Dressel,David L. ;Brauer, Roger L. ;Veneklasen,Wayne D. ;Burgess,John H. ;
REPT. NO. CERL-IR-D-80
PROJ: 4A762719AT41
TASK: T3

UNCLASSIFIED REPORT

DESCRIPTORS: *Military engineering, *Functional analysis, Prototypes, Military facilities, Construction, Maintenance management, Systems approach, Military requirements, Field conditions, Flow charting, Military training (U)
IDENTIFIERS: Design, WJ001, AST41, PE62719A (U)

This report describes a prototype procedure developed in the first phase of an ongoing study to develop tools and procedures for using organizations at the installation level to use in formulating functional requirements for facilities in the Military Construction, Army program. The requirements generation prototype procedure described in this report was developed in actual field test situations at three sites. The procedure consists of four phases-getting started, establishing facts, making judgements, and summarizing. The steps in each phase and the responsibilities of specific individuals and groups in each step are described, as is the training required for accomplishment of each phase. Future plans for testing and improving the prototype procedure are outlined. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A043 171 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Collecting Cost and Performance Data on Army New Air Pollution Control Equipment. (U)

DESCRIPTIVE NOTE: Special rept., AUG 77 18P Struss,S. R. ;Mikucki,W. J. ;
REPT. NO. CERL-SR-N-25
PROJ: 4A162121A896
TASK: T2

UNCLASSIFIED REPORT

DESCRIPTORS: *Air pollution control equipment, *Boilers, *Incinerators, Costs, Performance(Engineering), Emission control, Pollution abatement, Air pollution, Control, Reliability, Cost analysis, Scrubbers, Electrostatic precipitation, Bags, Cyclone separators, Particulates (U)
IDENTIFIERS: Baghouses, WU005, AS896, PE62121A (U)

This report outlines procedures for collecting data to conduct an air pollution control equipment cost analysis. It considers data in two basic categories: (1) data which can be collected automatically, such as power and water consumption, and (2) data which must be collected manually, such as labor and spare parts demands. The automatically collectable data are broken down into three types: (1) direct cost data (consumptions), (2) operations data (collection efficiency, gas flow rate, and (3) performance data (availability, reliability). The systems presently available for extracting and handling these data are described and compared. These systems range from simple strip chart recorders to complex telemetry units. Criteria for choosing the appropriate system for a given cost study are given. Two systems for collecting data manually are discussed: (1) a log system and (2) a cost code system which would be compatible with the Z accounting system for operations and maintenance of Army facilities. Specific (U)

AD-A043 171
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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A043 170 21/5 10/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Stationary Gas Turbine-Generator Set Acceptance Testing Procedures, Methods, and Instructions. (U)

DESCRIPTIVE NOTE: Special rept., AUG 77 28P Takemori,E. M. ;Lee,S. W. ;
REPT. NO. CERL-SR-E-116
PROJ: 4A763734DT08
TASK: 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Gas turbines, *Electric generators, Acceptance tests, Military requirements, Standards, Military facilities, Test methods, Electric power plants, Flow charting, Lubrication, Installation, Demonstrations (U)
IDENTIFIERS: WU001, AST04, PE63734A (U)

This report establishes procedures for acceptance testing gas turbine-generator sets intended for installation in fixed military facilities. The new test procedures, numbered CE-TP-2001 through 2003, are designed for use by Corps of Engineers Division and District personnel. Also included are lists of MIL-STD-705B test methods and Corps of Engineers diesel engine generator set test procedures that apply directly to acceptance testing gas turbine-generator sets. (Author) (U)

AD-A043 170
UNCLASSIFIED 099062

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A042 873 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Guidelines for Evaluating the Seismic Resistance of Existing Buildings. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 77 134P Lybas,John M. ;
REPT. NO. CERL-TR-M-213
PROJ: 4A762719AT41
TASK: T4

UNCLASSIFIED REPORT

DESCRIPTORS: *Buildings, *Seismic waves, *Structural response, Structural properties, Ductility, Elastic properties, Damping, Computerized simulation, Resistance, Structural engineering, Steel, Reinforced concrete, Masonry, Failure(Mechanics), Earthquakes, Mathematical models (U)
IDENTIFIERS: PE62719A, AST41, WU003 (U)

This report presents a methodology for evaluating an existing building's seismic resistance. The method uses a design response spectrum and modal analysis techniques to compute a linearly elastic structural response. This is compared to the structure's yield capacity to obtain a factor denoting the structure's required energy dissipation capacity. Charts suitable for design office application are provided for use in estimating the levels of structural damping and ductility consistent with the required energy dissipation. Various structural characteristics pertinent to the building's suitability for seismic loading are discussed. The method compares these structural characteristics to the computed structural damping and ductility to reach a judgement concerning the likelihood of structural failure during an earthquake. Several appendices are included to provide additional technical support for the methodology. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A042 665 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Field Participation in CAEADS. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 77 26P Sadoff,Laurence R. ;
REPT. NO. CERL-Technical Ms-ADS-4
PROJ: 4A763734DT08
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Computer aided design, Architects, Engineers, User needs, Computer graphics, Catalogs, Interactions, Planning, Input (U)
IDENTIFIERS: CAEADS project, WU005, AST08, PE63734A (U)

This manuscript documents the interaction of the Computer Aided Engineering and Architectural Design System (CAEADS) staff with Corps of Engineers field organizations and describes the active field participation in the CAEADS project. The forms of field/staff interaction and their results to date are discussed. The CAEADS experience described in this report demonstrates the positive benefits of soliciting and incorporating field input into research projects conducted by Corps laboratories. (Author) (U)

AD-A042 629 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Recommended Design Criteria for Wastewater Treatment at Proposed Consolidated Tactical Vehicle Wash Facility, Fort Drum, NY. (U)

DESCRIPTIVE NOTE: Interim rept.,
JUL 77 64P Benson,L. J. ;Staub,M. ;
Fileccia,R. ;Matherly,J. ;
REPT. NO. CERL-IR-N-26

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Jun 76, AD-A026 173.
DESCRIPTORS: *Waste water, *Vehicles, Cleaning, Sanitary engineering, Army equipment, Water pollution abatement, Discharge, Drainage, Cost estimates, Army training, Water filters, Sedimentation, New York (U)
IDENTIFIERS: Fort Drum (U)

Tracked vehicle washrack discharges were surveyed at Fort Drum, NY, to determine design criteria for wastewater treatment at a proposed consolidated tactical vehicle wash facility. These design criteria include recommended sizing of the various treatment components as indicated by the characteristics of the wastewater analyzed during the study. Wastewater treatment components include a sedimentation basin equipped for mechanical free oil removal followed by a flow equalization basin and intermittent sand filtration. (Author) (U)

AD-A042 628 13/3 14/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Corrosion Costs of Air Force and Army Facilities and Construction of a Cost Prediction Model. (U)

DESCRIPTIVE NOTE: Final rept. 1 Jul 75-30 Oct 76,
JUL 77 71P Hahin,Christopher ;
REPT. NO. CERL-TR-M-224
PROJ: 4A762719AT41
TASK: T7
MONITOR: AFCEC TR-77-17

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction materials, *Corrosion, *Cost analysis, Mathematical models, Air Force facilities, Army, Military facilities, Soils, Costs, Construction, Electrical conductivity, Air pollution, Energy consumption, Climate, Topography, Predictions, Water pollution (U)
IDENTIFIERS: WU001, AST41, PE62719A (U)

The facility maintenance organizations of several Air Force and Army installations were analyzed to determine the percentage of their direct maintenance, repair or replacement efforts that were corrosion-related. Also included were the costs of designing and inspecting corrosion-related construction projects. This raw data was processed and correlated with climatological, geographic and environmental statistics to develop a predictive corrosion cost model. The resulting empirical equations are able to predict facility corrosion costs and classification with reasonable accuracy as a function of installation dimensions and capacities, and readily obtainable weather, soil and air quality data. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A042 582 13/2 5/1 9/2 5/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Automated Pavement Maintenance and Repair Management System. (U)

DESCRIPTIVE NOTE: Interim rept.,
JUN 77 85P Shahin,Mohamed Y. ;Rozanski, Francine M. ;
REPT. NO. CERL-IR-C-79

UNCLASSIFIED REPORT

DESCRIPTORS: *Pavements, *Management information systems, *Management planning and control, *Data bases, *Computer applications, Information retrieval, Maintenance, Repair, Facilities, Scheduling, Computer programs (U)
IDENTIFIERS: Paver system, Integrated facilities system (U)

This report describes the use of a computer system designed to aid the facilities engineer in managing pavement maintenance and repair. The system, called PAVER, consists of a computer data base for storage of relevant pavement information, forms for collecting data, and a set of report-generator programs to retrieve information from the data base in an organized format. Adoption of the system will help the facilities engineer achieve the following benefits: prevention of over- or undermaintenance of pavements, more efficient utilization of funds, more efficient scheduling of maintenance activities, rapid retrieval of pavement information (especially important in determining work requirements for submission to the shop or contractor), and documentation of pavement performance. Procedures are presently being developed to interface PAVER with the Integrated Facilities System (IFS). (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A042 580 15/5 13/13 5/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Fort Lee Enlisted Personnel Dining Facility Modernization Evaluation Program. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 77 76P Burgess,J. H. ;
REPT. NO. CERL-TR-D-77

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Rept. nos. CERL-TR-D-1, AD-760 185 and CERL-TR-D-38, AD-A003 828.
DESCRIPTORS: *Dining halls, *Army operations, *Military facilities, Consumers, Enlisted personnel, Rehabilitation, Questionnaires (U)
IDENTIFIERS: Decor catalogs (U)

Seven enlisted personnel dining facilities at Fort Lee, VA, were studied prior to and after being modernized based on guidance in the Decor Catalog for Dining Facilities (U.S. Army Construction Engineering Research Laboratory (CERL) Technical Report D-1/AD760 185, 1972). Oral and written questionnaires were used to measure soldiers' satisfaction before and after renovation. Responses indicated that modernization resulted in universal improvement in consumer satisfaction. Results also indicated that once the elements of the dining environment primarily responsible for dissatisfaction have been eliminated, type of decor scheme and alternative seating arrangements become salient consumer issues. In response to these requirements, a new and expanded Decor Guide for Enlisted Personnel Dining Facilities (CERL Technical Report D-38/ ADA003 828, 1974) was prepared and introduced to Army food advisers and facility engineers. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A042 579 20/6 17/2 18/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

State of the Art in Fiber Optics Communications and Data Transfer. (U)

DESCRIPTIVE NOTE: Interim rept.,
JUL 77 42P McCormack,R. G. ;Croisant, W. J. ;Lam,P. C. ;
REPT. NO. CERL-IR-E-111
PROJ: 4A762719AT40
TASK: A1

UNCLASSIFIED REPORT

DESCRIPTORS: *Fiber optics, *Optical communications, *Data transmission systems, Radiation hardening, Nuclear radiation, Light emitting diodes, Broadband, Data links, Dielectrics, Interfaces, All weather, Range(Distance), Electromagnetic pulses, Bibliographies (U)
IDENTIFIERS: WU022, AST40, PE62719A (U)

This report addresses the state of the art of fiber optic communications as related to U.S. Army Corps of Engineers military construction. It discusses the general capabilities of commercially available fiber optics and summarizes the research and development work being done in the area by other Department of Defense and U.S. Government agencies. Potential Corps of Engineers usage of fiber optics is discussed, and nuclear radiation hardening aspects are summarized. Interfacing optical fibers with electronics is discussed along with factors which limit the performance of fiber optics data transmission links. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A042 578 13/1 10/1 21/2 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Technology Evaluation of Army-Scale Waste-to-Energy Systems. (U)

JUL 77 85P Hathaway,S. A. ;Dealy,R. J. ;
REPT. NO. CERL-IR-E-110
PROJ: 4A762719AT41
TASK: T6

UNCLASSIFIED REPORT

DESCRIPTORS: *Waste management, *Energy conversion, *Fuels, *Incinerators, Pyrolysis, Anaerobic processes, Digestion(Biology), Gases, Liquids, Waste recycling, Solid wastes, Shredding, Military facilities, Army, Furnaces, Boilers, Modular construction, Compatibility, Fluidized bed processes, Combustion, Methane, Earth fills, Recovery, Energy management, State of the art, Technology, Assessment, Army planning (U)
IDENTIFIERS: Refuse derived fuels, Anaerobic digestion, Supplementary fields, Stokers, Design, Mass buring, WU011, AST41, PE62719A (U)

IAC ACCESSION NUMBER: PL-900716
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This investigation evaluated current and emerging technologies for the converting waste to energy in applications scaled for use on Army fixed facilities and installations. Technologies reviewed include: mass burning of wastes in package (modular) and field-erected systems; use of refuse-derived fuel (RDF) in new combustion capital and as a supplementary fuel in existing Army-scale central steam generators; pyrolytic conversion of waste to a gaseous and liquid fuel; and anaerobic digestion of wastes to a fuel gas. The report includes application of a rating system for candidate technologies which considers dependability, practicability, conservation, environmental compatibility, economics, and length of operational history. Use of package waste-to-energy systems and use of RDF as a supplementary boiler fuel are treated in detail. Fully satisfactory methods of (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A042 429 18 6 20/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The Effects of Fast and Thermal Neutron Flux and Gamma Radiation on the Transmission Characteristics of Optical Fibers. (U)

DESCRIPTIVE NOTE: Interim rept.,
JUL 77 23P Sieber,D. C. ;McCormack, R. G. ;Chrisant,W. J. ;
REPT. NO. CERL-IR-E-112
PROJ: 4A762719AT40
TASK: A1

UNCLASSIFIED REPORT

DESCRIPTORS: *Fiber optics transmission lines, *Radiation damage, *Light transmission, Neutron flux, Fast neutrons, Thermal neutrons, Gamma rays, Flux(Rate), Radiation attenuation, Luminescence, Fused silica, Lead compounds, Silicates, Boron compounds, Cladding, Plastic (U)
IDENTIFIERS: WU022, AST40, PE62719A (U)

This report presents the results of a study of the effects of nuclear radiation on the light transmission characteristics of optical fibers. Two types of radiation were used: 1800-MW pulses of prompt, thermal neutrons (10 to the 12th power n/sq cm), and a 20-minute exposure of thermal and fast neutrons and gamma radiation. Three representative types of optical fibers were tested: lead-oxide fused silica, radiation-lead silicate with borosilicate cladding, and plastic. The fibers' radiation-induced attenuation changes and luminescence were monitored. Thermal neutrons were found to induce both attenuation increases and luminescence in all three fiber types. Fibers made of lead silicate with borosilicate cladding were found to develop a permanent attenuation increase of greater than 300 dB/km, making the fiber useless for most communication systems. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A042 313 13/11 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Investigation of Plastic Pipe for Use by the Corps of Engineers. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 77 43P Smith,Alvin ;
REPT. NO. CERL-TR-M-219
PROJ: 4A762731AT41
TASK: T7
MONITOR: GIDEP E082-2659

UNCLASSIFIED REPORT

DESCRIPTORS: *Pipes, *Sanitary engineering, Thermoplastic resins, Plastic properties, Sewage, Drainage, Construction materials, Acceptance tests, Water hammer, Military engineering, User needs (U)
IDENTIFIERS: *Plastic pipes, Plumbing supplies, AST41, WU008, PE62731A (U)

IAC ACCESSION NUMBER: PL-027134
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
ASTM, ANSI, and NBS standards and specifications for various plastic pipe, fittings, and related materials are included. (Author, modified-PL). (U)

IAC SUBJECT TERMS: P--(U)Plastic pipe, Pipe, Sanitary engineering, Sewage sludge, PVC, ABS, Polyethylenes, CPVC, Polypropylenes, Polybutylenes, Standards, Specifications, Military applications, ZZ Unlimited.;

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A042 312 13,13 15/7

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Alternative Theater of Operations Building Systems. (U)

DESCRIPTIVE NOTE: Special rept.,
JUL 77 94P Kao,A. M. ;Cook,Jere ;
REPT. NO. CERL-SR-C-80
PROJ: 4A763734DT07
TASK: 06

UNCLASSIFIED REPORT

DESCRIPTORS: *Structural engineering, *Theater level operations, *Buildings, *Shelters, Fiberglass, Pipes, Paperboard (U)
IDENTIFIERS: Foam wood panelized building, Fiberglass-reinforced paperboard building, Pipe-frame building system, AST07, WU002, PE63734A (U)

This report documents the findings resulting from fabricating and erecting two prototype building systems--a fiberglass-reinforced paperboard building and a pipe-frame building system. The results indicate that the pipe-frame building concept has potential for use in the theater of operations (TO) if the required construction skills and materials are made more compatible with those expected to be available in the TO. The fiberglass-reinforced paperboard building has not weathered satisfactorily. The costs of both systems are reasonable compared to those of selected Army Facilities Components System facilities. This report also summarizes a study on development of new building concepts. It is believed that several of the concepts developed in the study can be developed into effective systems for use in a TO. Finally, this report presents the results of a performance inspection of an experimental foam/wood panelized building during its first year in service. The results indicate that the building has weathered satisfactorily except for rainwater seepage along the joints, which can be prevented by caulking along the joints. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A042 179 13/13 13/4 15/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Shipping Containers as Structural Systems. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 77 34P McDowell,E. L. ;
REPT. NO. CERL-TR-C-77
PROJ: 4A763734DT34, 4A6647170895
TASK: 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Shipping containers, *Structural engineering, *Military facilities, Theater level operations, Finite element analysis, Laboratory tests, Field tests, Stresses, Strain(Mechanics), Loads(Forces), Strength(Mechanics), Shelters (U)
IDENTIFIERS: *Structural elements, WU001, AS895, AST34, PE64717A, PE63734A (U)

This report investigated the feasibility of (1) using shipping containers (MILVAN) as structural elements in the construction of theater of operations (T/O) facilities, and (2) using dedicated containers in the T/O for the dual purpose of logistics and shelter. Mathematical structural modeling via finite element analysis, laboratory tests, and field tests were used to validate the concept of using shipping containers as structural elements in the construction of T/O facilities. The most effective configuration was an 80-ft (24-m) box beam configuration formed by joining four MILVANs end to end. Used as a roof system, these box beams and the facilities constructed from them meet wind and snow design loads encountered at any location in the world. For a typical logistic port base study exercise, facilities constructed from shipping containers showed an acutal savings of $2.3 million and 1.5 battalion months of engineering effort over stell-framed Army Facilities Component System (AFCS) facilities. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099052

AD-A042 178 10/1 5/3 14/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Market Evaluation Study: Solar Heating and Domestic Hot Water Heating in DOD Buildings. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 77 30P Windingland,L. M. ;Martel, C. ;
REPT. NO. CERL-TR-E-114

UNCLASSIFIED REPORT

DESCRIPTORS: *Economic analysis, *Solar heating, Hot water, Heating, Commerce, Cost analysis, Department of Defense, Facilities, Buildings (U)
IDENTIFIERS: Solar space heating, Solar domestic hot water heating, Solar hot water heating, Energy utilization index (U)

This study assesses the potential market for combined solar space heating and domestic hot water heating in Department of Defense (DOD) buildings. The study considers eight building categories: family housing, bachelor enlisted quarters, bachelor officers' quarters, administration, training, operational, community support, and recreational, which together contain 683 million sq ft (61.5 million m2), or 40 percent of the DOD inventory. All buildings were assumed to be oil heated. The buildings were grouped by climatological/solar regions, and the loads for each building type were determined by using the Energy Utilization Index (EUI) method. Solar system performance in each region was obtained by using the U.S. Army Construction Engineering Research Laboratory universal curve method. The life-cycle costs of providing solar space heating and domestic hot water heating were analyzed, and the DOD market potential for installed solar system costs of $9, $15, and $20 per square foot were determined. The study shows that at an estimated initial fuel cost of $3.50 MBtu for oil heating, a 10 percent cost of money, and an 8.5 percent overall fuel inflation factor, solar systems for space heating and domestic hot water heating become (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A041 450 9/1 14/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Radio Frequency Shielding Tests of System Technology Test Facility at Meck Island, Marshall Islands. (U)

DESCRIPTIVE NOTE: Final rept. 16 Aug-15 Oct 76,
JUN 77 119P Nielsen,P. H. ;
REPT. NO. CERL-SR-E-107

UNCLASSIFIED REPORT

Availability: Microfiche copies only.
DESCRIPTORS: *Shielding, *Attenuation, *Electromagnetic shielding, *Test facilities, Radiofrequency, Leakage(Electrical), Detection, Kwajalein atoll (U)
IDENTIFIERS: *Radiofrequency shielding, *Radiofrequency attenuation, Sniffer tests (U)

This report presents the results of tests and inspections performed to verify the shielding integrity of the newly constructed Systems Technology Test Facility (STTF) on Meck Island, Kwajalein Atoll, Marshall Islands. Recommendations for improvement of the structure's effectiveness, including suggested maintenance techniques and recommendations for additional testing, are presented. The report also evaluates the radio frequency (RF) shielded enclosure leak detection (sniffer) test technique for determining the shielding performance of a structure. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A041 339 11/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Corrosion Behavior of Steel Fibrous Concrete. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 77 37P Morse,D. C. ;Williamson,G. R. ;
REPT. NO. CERL-TR-M-217
PROJ: 4A762731AT41
TASK: T7

UNCLASSIFIED REPORT

DESCRIPTORS: *Reinforced concrete, *Steel, *Fiber reinforcement, Corrosion, Sea water corrosion, Cracks, Cracking(Fracturing), Fatigue(Mechanics), Mechanical properties (U)
IDENTIFIERS: *Steel fibrous concrete, WU003, AST41, PE62731A (U)

This report presents the results of an investigation into four aspects of the corrosion behavior of steel fibrous concrete: (1) The behavior of cracked and uncracked metallic and nonmetallic fibrous concrete subjected to a natural wet-dry, freeze-thaw saltwater environment; (2) The effect of crack width on the corrosion of fibers bridging the crack; (3) The effect of various durations of exposure to a corrosive environment on constant-crack-width and uncracked steel fibrous concrete specimens; and (4) The effect of fatigue. Results indicate that good quality, air-entrained, uncracked steel fibrous concrete does not experience any undesirable strength changes when subjected to a seawater environment for up to 1.5 years. Results also indicate that unworking cracks less than 0.01 in. (0.25 mm) wide do not provide sufficient passageway for corrosive liquids to cause corrosion of the fibers bridging the crack, while fibers bridging larger cracks can be expected to corrode. The fatigue behavior of uncracked, good quality, air-entrained steel fibrous concrete at 65 percent of the first cracked stress level was found to be unaffected by exposure to a saltwater environment. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A041 331 15/5 14/1 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Consolidation of RPMA at Fayetteville, NC. Volume IV. General Procedures for Conducting RPMA Consolidation Studies. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 77 169P Brown,David W. ;Nay,Joyce L. ;Kirby,Jeffrey G. ;
REPT. NO. CERL-TR-C-73-Vol-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A033 754.
DESCRIPTORS: *Military facilities, *Maintenance management, *Cost analysis, Centralized, North Carolina, Joint military activities, Feasibility studies, Management information systems, Resource management, Decision making, Economic analysis, Methodology, Management planning and control, Logistics support, Maintenance equipment, Army, Air Force, Military planning, Manpower utilization, Maintenance, Cost effectiveness, Savings (U)
IDENTIFIERS: Real property, Fayetteville(North Carolina), Fort Bragg, Pope Air Force Base, Consolidation (U)

This report presents general procedures for conducting a feasibility analysis for consolidating real property maintenance activities (RPMA) at military installations. The procedures are based on the cost analysis conducted by the U.S. Army Construction Engineering Research Laboratory as part of the RPMA consolidation study for Fort Bragg and Pope AFB, Fayetteville, NC. The report presents the initial planning required and the concepts necessary to compare the current method of operation of the existing facilities engineering organizations with that of the proposed Army RPMA consolidated organization. The procedures are based on the assumption that the Army is the lead service for the consolidation and that Army policies will be used. Although based on Army and Air Force RPMA data, the procedures should be generally applicable to the Navy. Suggestions for the (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A041 188 5/5 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development of an Objective Definition of Habitability and a Habitability Data Base. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 77 35P Brauer,Roger L. ;Davis, Thomas A. ;
REPT. NO. CERL-SR-D-79
PROJ: 4A762719AT03
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Human factors engineering, *Habitability, *Data bases, Data reduction, Performance(Human), Morale, Military facilities, Construction, Computer applications (U)
IDENTIFIERS: WU001, AST03, PE62719A (U)

This report summarizes the work performed in two areas: development of an objective definition of habitability and development of a habitability data base. Although it has been assumed that an absolute, objective definition of habitability cannot be reached because of the subject's dynamic nature, considerable progress has been made in developing a definition which provides a means for dealing systematically with habitability data. The prototype Habitability Data Base which has been developed provides a way of collecting, analyzing, storing, and retrieving such data. Recommendations for continuing development in both areas are also presented. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A041 187 5/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Concepts for the Generation, Communication, and Evaluation of Habitability Criteria. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 77 34P Brauer,Roger L. ;Dressel, David L. ;
REPT. NO. CERL-SR-D-78
PROJ: 4A762719AT41
TASK: 03

UNCLASSIFIED REPORT

DESCRIPTORS: *Human factors engineering, *Habitability, Criteria, Military facilities, Architecture, Performance(Human), Morale, Army planning, Construction, Standards, Information exchange (U)
IDENTIFIERS: Design, AST41, WU006, PE62719A (U)

This report presents background information and concepts concerning the generation, evaluation, and communication of habitability criteria. Interactions between habitability criteria and facility delivery and use are discussed. The concepts presented form a basis for developing procedures relating personnel requirements to architectural requirements in the Army facility delivery and use process. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A040 789 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Inflation/Foam/Shotcrete System for Rapid Shelter Construction. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 77 26P Williamson,G. R. ;Smith,A. ;Morse,D. ;Woratzeck,M. ;Barrett,H. ;
REPT. NO. CERL-TR-M-215
PROJ: 4A162719AT41
TASK: 05

UNCLASSIFIED REPORT

DESCRIPTORS: *Shelters, *Inflatable structures, *Foam, Theater level operations, Domes(Structural forms), Hemispheres, Hardening, Construction, Construction materials, Expanded plastics, Sprays, Polyurethane resins, Reinforced concrete, Steel, Metal fibers, Fire resistant materials, Impact strength, Underground, Costs, Economics (U)
IDENTIFIERS: WU001, AST41, PE62719A (U)

IAC ACCESSION NUMBER: PL-026303
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report discusses an inflation/foam/shotcrete system for constructing hardened shelters in the theater of operations. The method was found to be rapid and low-cost, with a low skill level requirement. Five hemispherical domes of varying sizes and foam thicknesses were constructed and tested to determine their resistance to fire, ballistics, and simulated burial. Costs, man-hours, and skill levels required for construction are discussed. (Author) (U)

IAC SUBJECT TERMS: P--(U)Costs-Shell structures, Inflatable structures-Military applications, Concrete/steel-Structures, Expanded plastics-Repair, Urethane-Patching, Foam in place-FRP/polyester/urethane, Construction-Hemispheres, ZZ Unlimited.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A040 758 13/13 13/3 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Effective Use of Systems Building Technology: Open Systems Catalog. Volume III. Building Products Information. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 77 94P Kenney,Thomas A. ;
REPT. NO. CERL-SR-D-73-Vol-3
PROJ: 4A762719AT02
TASK: 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A040 756.
DESCRIPTORS: *Construction, *Construction materials, *Management information systems, *Catalogs, Computer applications, Systems engineering, Maintenance, Military facilities, Cooling and ventilating equipment, Lighting equipment, Electronic equipment, Electrical equipment, Compatibility, Specifications (U)
IDENTIFIERS: Industrial buildings, Partitions, WU002, AST02, PE62719A, Subsystems (U)

This Building Products Information is intended to be an aid in the use of advanced building technology and methods. This document can best be utilized in connection with its companion volumes of Effective Use of Systems Building Technology: Open Systems Catalog-Vol I, Open Systems Guide and Vol II, Prototype Performance Specifications. This document includes a Data Summary developed from a survey of selected open systems projects and industrialized subsystem manufacturers. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A040 757 13/13 13/3 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Effective Use of Systems Building Technology: Open Systems Catalog. Volume II. Prototype Performance Specifications. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 77 127P Schneider,Richard L. ;
REPT. NO. CERL-SR-D-73-Vol-2
PROJ: 4A762719AT02
TASK: 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3, AD-A040 758.
DESCRIPTORS: *Construction, *Specifications, *Catalogs, *Construction materials, *Management planning and control, Office buildings, Military requirements, Heating, Lighting equipment, Management information systems, Cooling and ventilating equipment, Electrical equipment, Electronic equipment, Military facilities, Systems engineering (U)
IDENTIFIERS: Classrooms, Partitions, WU002, AST02, PE62719A (U)

This volume of performance specifications is intended to be an aid in the use of advanced building technology and methods. This document is intended to be utilized in conjunction with its companion volumes of Effective Use of Systems Building Technology: Open Systems Catalog-Vol I. Open Systems Guide, and Vol III. Building Products Information. Included in this document are prototype performance specifications for office and classroom spaces, which were developed and organized from previously published specifications and specification guides. Specifications are outlined in terms of structure; interior partitions; heating, ventilation, and cooling; lighting-ceiling; and electrical-electronic subsystems. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A040 756 13/13 13/3 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Effective Use of Systems Building Technology: Open Systems Catalog. Volume I. Open Systems Guide. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 77 112P Csizmadia,Tibor D. ;
REPT. NO. CERL-SR-D-73-Vol-1
PROJ: 4A762719AT02
TASK: 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A040 757.
DESCRIPTORS: *Construction, *Construction materials, *Management planning and control, Procurement, Military requirements, Catalogs, Quality control, Systems engineering, Cost benefits, Maintenance, Military facilities, Computer applications, Management information systems, Prefabricated buildings, Compatibility (U)
IDENTIFIERS: Industrial buildings, WU002, AST02, PE62719A, Subsystems (U)

Relatively recent advances in building technology and in the application of innovative procurement methods make it possible to introduce precoordinated subsystems into military construction. Existing data suggest that the time-cost-quality advantages of applying such technology and methods to military construction are significant. To facilitate the use of alternative technology and procurement methods, current and practical information must be made available to project personnel. This report provides such information on available products, processes, and methods, along with guidelines for their effective use in military construction. A review of product data revealed that the products integrated into most systems were not universally interchangeable (i.e., a completely open system), but rather that their 'openness' was largely limited to each particular program. While there are common elements for most, if not all, of the products, the fact remains that not all of the products are freely interchangeable; consequently, a guide for completel (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A040 744 13/1 20/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Use of the Building Loads Analysis and System Thermodynamics Program to Perform Total Energy System Analysis. (U)

DESCRIPTIVE NOTE: Interim rept., JUN 77 19P Hittle,Douglas C. ;
REPT. NO. CERL-IR-E-108
PROJ: 4A762719AT41
TASK: T6

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy management, *Computer programs, *Thermodynamics, Energy, Buildings, Energy consumption, Systems analysis, Heating, Cooling, Life cycle costs, Construction, Civil engineering, Mechanical engineering (U)
IDENTIFIERS: *Total energy, Selective energy systems, Blast computer program, WU012, AST41, PE62719A (U)

This report describes a systematic procedure for applying the Building Loads Analysis and System Thermodynamics (BLAST) computer program to perform energy and life-cycle cost analyses of conventional, total energy, and selective energy systems as they might be applied to meet the energy demands of buildings or groups of buildings. The iterative application of this computer tool to permit the selection of nearly optimal candidate systems is described, and use of the program to estimate the performance of specific components during final plant design is outlined. The BLAST program and methods for its effective use are designed to support the engineering efforts required to implement guidance issued by the Office of the Chief of Engineers (Engineering Instructions for Preparation of Feasibility Studies for Total Energy, Selective Energy, and Heat Pump Systems, 1 July 1975). In addition to the prediction of space energy demand and the simulation of various air distribution systems, the BLAST program can simulate the performance of central energy supply systems consisting of any or all of the following components: diesel engine generators, gas turbine (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A040 743 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Design Features of Package Incinerator Systems. (U)

DESCRIPTIVE NOTE: Interim rept., MAY 77 31P Hathaway,S. A. ;
REPT. NO. CERL-IR-E-106
PROJ: 4A062103A891
TASK: 03

UNCLASSIFIED REPORT

DESCRIPTORS: *Incinerators, *Waste disposal, *Solid wastes, Packaging, Site selection, Military facilities, Army planning, Sanitary engineering, Technology transfer, Ratings, Pollution abatement (U)
IDENTIFIERS: Design, WU002, AS891, PE62103A (U)

IAC ACCESSION NUMBER: PL-900714
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--

This report summarizes information collected in the early stages of a project to evaluate current small-scale solid waste incineration technologies for use at Army fixed facilities and installations. Information gathered through literature review, field observation, and contact with manufacturers and vendors is presented. Subjects covered include basic plant design requirements, site selection, waste receipt and handling, ash handling and disposal, instrumentation and controls, operation and maintenance, personnel facilities, safety, and pollution abatement. A technical description of each currently marketed package incinerator configuration (controlled air, rotary-kiln, basket-grate, and augered-bed combustor) is given. Application of a comparable performance rating system shows that none of the four package incinerators currently available can be confidently recommended as a reliable, cost-effective method of handling solid waste generated at Army installations. A program of continued evaluation of currently operating plants coupled with field tests of candidate units on Army solid waste is encouraged. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A040 742 13/13 5/1 14/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Military Construction Supervision and Administration Cost Forecasts. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 77 43P O'Connor,Michael J. ;
Thompson,Bruce ;
REPT. NO. CERL-TR-P-80

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Management planning and control, *Cost analysis, Mathematical prediction, Estimates, Regression analysis, Forecasting, Maintenance, Statistical analysis, Supervision, Administrative personnel, Rates, Variables, Curve fitting (U)

This report presents a statistical model for forecasting supervision and administration (S and A) costs to aid the Directorate of Military Construction, Office of the Chief of Engineers, in establishing yearly limits for Corps of Engineers Division/District S and A rates. Data for 12 military construction Divisions/Districts from fiscal year 1963 (FY63) through FY76 were analyzed. A statistically significant model for 10 Districts was developed and verified using a retrospective test. S and A costs/rates for FY77 and FY78 were predicted as a function of the estimated work placement. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A040 741 13/13 20/11 11/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Unified Approach for Modeling Inelastic Behavior of Structural Metals under Complex Cyclic Loadings. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 77 41P Jhansale,H. R. ;
REPT. NO. CERL-TR-M-214
PROJ: 4A762719AT41
TASK: T4

UNCLASSIFIED REPORT

DESCRIPTORS: *Structural steel, *Aluminum alloys, Cold working, Hot working, Cyclic tests, Hardening, Softening, Relaxation, Creep, Nonlinear systems, Fatigue(Mechanics), Mathematical models, Loads(Forces) (U)
IDENTIFIERS: Inelastic metals, Memory(Materials), AST41, WU010, PE62719A (U)

IAC ACCESSION NUMBER: MCIC-100473
IAC DOCUMENT TYPE: MCIC -HARD COPY--
This report develops a general procedure for modeling the inelastic stress-strain response of structural metals subjected to complex irregular cyclic loadings. The model is ideally suited for programming on a digital computer and uses 'cyclic' material parameters (or properties) determined from simple constant strain amplitude cyclic tests. Four model formulations which include three degrees of simplification in the model are proposed and their appropriate applications are indicated. In its most complete formulation, the model is capable of simulating all the important observed phenomena of a wide range of structural metals, including hotworked and coldworked steels and aircraft aluminums. These phenomena include 'memory' of prior history, cyclic hardening, cyclic softening, cyclic relaxation, cyclic creep, and the observed deviation from the Masing behavior. A major contribution of this report is in the development of a unified characterization of these phenomena. The model and the 'cyclic' material parameters developed provide the necessary base for formulating a general (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL : 099062

AD-A040 119 14/1 9/2 5/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Computer-Aided Final Design Cost Estimating System Overview. (U)

DESCRIPTIVE NOTE: Interim rept.,
MAY 77 12P O'Conner,Michael J. ;
Botero,S. A. ;
REPT. NO. CERL-IR-P-81
PROJ: 4A762790AT41
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Cost estimates, *Computer aided design, Construction, Buildings, Maintenance (U)
IDENTIFIERS: *Cost engineering, AST41, PE62790A, WU005 (U)

This report presents an overview of a proposed computer-aided final design cost estimating system that will help cost estimators prepare final design construction cost estimates. Use of the system and the cost estimating concepts on which the system is based are discussed. Data development and maintenance strategies are proposed. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A040 061 13/3 7/4 18/8

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Comparative Evaluation of the Neutron/ Gamma and Kelly-Vail Techniques for Determining Water and Cement Content of Fresh Concrete. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 77 167P Howdyshell,P. A. ;
REPT. NO. CERL-SR-M-216
PROJ: 4A762719AT41
TASK: T4

UNCLASSIFIED REPORT

DESCRIPTORS: *Concrete, *Radioactivation analysis, *Chemical analysis, Accuracy, Neutron activation, Neutron absorption, Neutron scattering, Neutron spectrometers, Gamma ray spectroscopy, Neutron capture gamma rays, Flames, Photometry, Chlorides, Ions, Cements, Components, Nondestructive testing, Quick reaction (U)
IDENTIFIERS: Titration, WU008, AST41, PE62719A (U)

IAC ACCESSION NUMBER: NT-014722
IAC DOCUMENT TYPE: NTIAC -MICROFICHE--
The objective of this investigation was to comparatively evaluate a nuclear (neutron/gamma) technique and a chemical (Kelly-Vail) technique determining water and cement content of fresh concrete. The nuclear technique relies on the characteristic energy emissions of various elements during neutron interactions for determining water and cement content. The chemical technique relies on chloride ion titration to determine water content and flame photometry to determine cement content. Tests results indicate that the neutron/gamma method can estimate water contents to + or - 6 percent, and cement contents to + or - 9 to 22 percent, depending on the type of aggregate used. This compared to cement and water content accuracies of 7.1 and 5.2 percent, respectively, for the chemical technique. (U)

IAC SUBJECT TERMS: N--(U)EVALUATION, COMPARATORS, TECHNIQUE, CHEMICALS, CONCRETE, ACCURACY, NEUTRON ACTIVATION ANALYSIS, NEUTRON ABSORPTON, NEUTRONS,
AD-A040 061

AD-A040 005 20/1 17/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Analysis of Environmental Noise Monitors. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 77 23P Schomer,P. D. ;Averbuch,A. J. ;
REPT. NO. CERL-TR-N-21

UNCLASSIFIED REPORT

DESCRIPTORS: *Acoustic measurement, *Monitors, *Noise pollution, *Acoustic detection, Performance(Engineering), Data reduction, Range(Distance), Shock resistance, Errors, Wind, Environmental tests, Response (U)
IDENTIFIERS: Environmental noise monitors, Noise levels, Impulse analysis (U)

This report establishes criteria and performance guidelines desirable in environmental noise monitors that are achievable through state-of-the-art technology. To assess this technology, the performances of 10 available units were evaluated based on the following points: (1) Data reduction methods and analytic results; (2) Dynamic range; (3) Impulse response; (4) Environmental considerations (temperature extremes and wind); (5) Shock resistance; (6) Ease of operation; and (7) Likelihood of errors in operation. Favorable and unfavorable features discovered during the investigation of these units are discussed, as well as desirable features found to be absent in all of the units. Based on the study and the conclusions, the operating characteristics of an ideal unit are recommended. (U)

AD-A039 364 6/8 6/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Air Curtain Machines for Food Service Facilities. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 77 29P Eng,Dominic ;
REPT. NO. CERL-TR-E-104

UNCLASSIFIED REPORT

DESCRIPTORS: *Food service, *Insect control, Effectiveness, Diptera, Literature surveys (U)
IDENTIFIERS: *Air curtains (U)

The objectives of this study were to ascertain the effectiveness of air curtain machines in excluding small insects from food service and commissary facilities, and to provide design guidance and installation information for such machines. (U)

AD-A039 363 13/2 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Systems Approach to Construction of Recreational Area Facilities. Volume I. Program Methodology. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 77 80P Worrel,Edward J. ;
REPT. NO. CERL-TR-D-76-Vol-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A038 594.
DESCRIPTORS: *Toilet facilities, *Army procurement, Contract administration, Construction, Specifications, Systems management, Costs, Project personnel, Army Corps of Engineers, Systems approach, Recreation, Shower facilities, Reservoirs, Sanitary engineering, Cost effectiveness (U)
IDENTIFIERS: Recreational facilities (U)

This report describes a program conducted by this laboratory in conjunction with the U.S. Army Engineer Division, Ohio River, for procurement of 78 industrialized sanitary facilities. Performance specifications and two-step formal advertising procedures were used to obtain the desired facilities. The low bid price was 53% of the conventional construction government estimate. The cost savings did not result from a particular design for sanitary facilities, but from the definition of the project and the manner in which the facilities were procured. Given a sufficient number of facilities within a particular geographic region, builders can reduce material costs through bulk purchasing, and labor costs through the learning-curve phenomenon. The labor cost savings, which is the significant one, can only be achieved if the builder is performing in its area of specialization; a sizable part of the builder's savings will be passed on to the purchaser only if other builders who are also permitted to achieve such savings are in competition. The key to the approach is performance specifications, which describe the facility requirements so that builders can propose (U)

AD-A039 132 13/2 9/2 5/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Computer-Aided Environmental Impact Analysis for Air Force Research, Development, Test and Evaluation Activities: User Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 77 139P Thomas,Susan E. ;
REPT. NO. CERL-TR-N-20

UNCLASSIFIED REPORT

DESCRIPTORS: *Environmental impact statements, *Computer applications, *Air Force facilities, Civil engineering, Reports, Preparation, Technical writing, Instruction manuals, Input output processing, Assessment, Factor analysis, Test and evaluation, Computer aided design, Methodology (U)
IDENTIFIERS: User manuals (U)

The federal government has requested that its agencies incorporate environmental considerations into the planning of new projects and activities. Environmental impact assessments and statements (EIA/EIS) provide a basis for review and analysis of a proposed project's environmental consequences. The Environmental Impact Computer System (EICS), developed by the U.S. Army Construction Engineering Research Lab., helps planners efficiently identify primary and secondary impacts of their proposed projects or activities and suggests way to mitigate these impacts. This manual is designed to help Air Force personnel prepare EIAs and EISs using the EICS. Detailed instructions for accessing the Research, Development, Test, and Evaluation Functional Area of EICS are included as is an input form necessary for obtaining EICS output. The manual discusses in detail procedures necessary for using EICS output for environmental impact assessment and outlines the steps for preparing a proper and complete EIA/EIS. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A039 120 11/2 7/4

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Revised Operations Guide for a Chemical Technique to Determine Water and Cement Concrete of Fresh Concrete. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 77 38P Howdyshell,P. A. ;
REPT. NO. CERL-TR-M-212
PROJ: 4A763734DT08
TASK: 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Concrete, *Chemical analysis, *Chemical composition, Water, Cements, Test methods, Test equipment, Chlorides, Calcium, Instruction manuals (U)
IDENTIFIERS: PE63734A, WU002, AST08 (U)

This operations guide provides information needed to set up and operate the U.S. Army Construction Engineering Research Laboratory/ Kelly Vail (CERL/K-V) system for determining water and cement content of fresh concrete. The guide describes the system's capabilities (including its capability to estimate potential concrete strength), limitations, and accuracy, and details the required equipment, reagents, and procedures. A guide for analyzing test results and a description of a mobile miniaturized field unit are presented. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A039 029 13/8 11/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Spray Painting: Equipment and Techniques for Application of Vinyl Paints. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 77 31P Beitleman,A. ;
REPT. NO. CERL-TM-M-210

UNCLASSIFIED REPORT

DESCRIPTORS: *Plastic paints, *Sprayers, *Sprays, Vinyl plastics, Atomization, Air, Heating, Vinyl plastics, Polyurethane resins, Epoxy resins, Zinc, Weather, Temperature (U)

This paper is intended to assist those involved with spray painting to better understand both the equipment and techniques used in the application of vinyl paints. The basic components of both conventional atomization and airless atomization systems are discussed (including heated systems). Guidance is given on the application techniques found to be most effective when applying Corps of Engineers' vinyl paints. The causes of some unsatisfactory painting results are given along with methods for correcting the problem. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A038 832 13/8 11/3 13/10

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Coatings and Cathodic Protection of Pilings in Seawater: Results of 5-Year Exposure. (U)

DESCRIPTIVE NOTE: Final rept..
MAR 77 82P Wittmer,D. E. ;Kumar,A. ;
REPT. NO. CERL-TR-M-207

UNCLASSIFIED REPORT

DESCRIPTORS: *Cathodic protection, *Anodic coatings, *Pile structures, *Sea water, Steel, Inspection, Test methods, Extraction, Corrosion, Zinc, Aluminum, Exposure(General), Polarization, Nondestructive testing, Site selection, Pitting, Cost effectiveness (U)

IAC ACCESSION NUMBER: NT-014638
IAC DOCUMENT TYPE: NTIAC -MICROFICHE--

This report presents the results of the inspection of test pilings extracted after 5 years of exposure to seawater at LaCosta Island, FL. The effectiveness of various coating systems and sacrificial anodes in preventing corrosion of H- and steel pipe pilings in seawater is assessed. Six of the coating systems were found to perform excellently, as was a coating/cathodic protection combination. Sacrificial anodes of zinc and aluminum were also found to effectively reduce corrosion in the immersed zone. The study also confirmed that use of the cathodic protection index and polarization behavior is an effective nondestructive testing technique for monitoring corrosion of steel immersed in seawater. (Author) (U)

IAC SUBJECT TERMS: N--(U)COATINGS, PILINGS, UNDERWATER, PROTECTIVE COATINGS, ANODIZING, CATHODIC PROTECTION,TEST METHODS, COST EFFECTIVENESS, ZINC, ALUMINUM, STEEL, CORROSION, POLARIZATION;

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A038 768 15/5 14/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Fragility Data Analysis and Testing Guidelines for Essential Equipment Used in Critical Facilities. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 77 46P Sonnenburg,Paul N. ;
REPT. NO. CERL-SR-M-209
PROJ: 4A762731AT41
TASK: 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Fragility, *Critical assemblies, *Army equipment, *Military facilities, Tactical analyses, Hardened structures, Test equipment, Reports, Data acquisition, Test methods, Specifications, Military requirements, Guided missile sites, Earthquake resistant structures, Earthquake engineering, Hardening, Failure, Survival(General) (U)
IDENTIFIERS: Safeguard antiballistic missile system, WU002, AST41, PE62731A (U)

Fragility data reports from tests of many items of tactical support equipment used at missile sites were reviewed to analyze failure characteristics. This type of equipment is closely related to that used in essential systems of critical facilities. Results were organized to formulate specifications for fragility test report requirements and guidelines for planning fragility tests for the essential equipment of utilities and lifelines used in critical facilities. A method of statistically analyzing fragility data was developed to facilitate calculating the probability of failure when the cause of failure was not consistent or obvious. The proposed specifications and guidelines were to be incorporated into a more complete set of testing specifications to be finished at a later date. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A038 594 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Systems Approach to Construction of Recreational Area Facilities Volume II. Request for Technical Proposal and Evaluation Documentation. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 77 117P Aorrel,Edward J. ;
REPT. NO. CERL-TR-D-76-Vol-2

UNCLASSIFIED REPORT

DESCRIPTORS: *Toilet facilities, *Sanitary engineering, *Shower facilities, Construction, Specifications, Proposals, Systems approach, Documentation (U)
IDENTIFIERS: Recreational facilities (U)

This is the second volume of a two-volume report describing a program conducted by the U.S. Army Construction Engineering Research Laboratory in conjunction with the U.S. Army Engineer Division, Ohio River, for the procurement of 78 industrialized sanitary facilities. This volume contains the Request for Technical Proposal Step-One documentation (which includes the Performance Specification for Sanitary Facilities), and the evaluation documentation used by the Evaluation Board to evaluate the submitted proposals, and Step-Two documentation (excluding wage rates per county for potential laborers involved in the program). (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A038 232 5/4 20/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Practical Application of Community Noise Analyses -- Case Study of Allegheny County, Pennsylvania. (U)

DESCRIPTIVE NOTE: Final rept.,
FEB 77 82P Goff,R. J. ;Valoski,M.
P. ;D'Amato,R. E. ;
REPT. NO. CERL-TR-N-22
MONITOR: EPA 550/9 77-400

UNCLASSIFIED REPORT

DESCRIPTORS: *Noise reduction, *Community relations, Communities, Legislation, Control, Parameters, Sources, Noise pollution, Data reduction, Cost analysis, Noise analyzers, Pennsylvania (U)
IDENTIFIERS: Allegheny County(Pennsylvania) (U)

This report was developed to document the technical results of a 2-1/2 year Noise Control Program in Allegheny County, Pennsylvania, while the Program was tested in many facets--public education, compliance, analysis, community noise survey, public meetings, legislation drafting, and public hearings--only the survey and legislation are detailed. First, data are presented for describing a community noise environment. Specific parameters affecting community noise are evaluated and used to develop a survey methodology. Survey data are presented and analyzed according to such parameters as time of day, noise source, land use, and municipality. Finally, the results are incorporated into community noise legislation. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 094062

AD-A037 747 UNCLASSIFIED

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Specifications for Diesel Engine-Generator Set Acceptance Testing Procedures, Methods, and Instructions. (U)

DESCRIPTIVE NOTES: Special rept.,
MAR 1968 Takemori,E. M. ;Lee,S.
W. CRAIG,W. A.
REPT. NO. CERL-TR-P-103
PROJ. 4A762719AT40
TASK 04

UNCLASSIFIED REPORT

[illegible] (U)
IDENTIFIERS [illegible] (U)

[illegible] Specifications for Diesel Engine-Generator Set Acceptance Testing Procedures, Methods, and Instructions. (U)

DESCRIPTORS: *Electric generators, *Electric power generation, Diesel engines, Military facilities, Acceptance tests, Test methods (U)
IDENTIFIERS: [illegible] A 001, AS10B (U)

[illegible] (CE) Test Procedures have been prepared in a format similar to the conventional MIL-STD-705B test methods for easy implementation by CE district and field personnel. The procedures presented are for testing large diesel engine-generator sets (100 kW capacity range--intended for installation in fixed military facilities (Class A (Prime), Class B (Standby), or Class C (Emergency) electrical power generation sources. This document provides a list of MIL-STD-705B test methods which are directly applicable for acceptance testing large diesel engine-generator sets. In addition, the document provides new test procedures numbered CE-TP-1001 through 1004, designed specifically for acceptance testing large stationary diesel engine-generator sets intended for electrical power generation within fixed military facilities. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A037 545 UNCLASSIFIED

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL

Specifications for Diesel Engine-Generator Set Acceptance Testing Procedures, Methods, and Instructions. (U)

DESCRIPTIVE NOTES: Special rept.,
MAR 1968 Takemori,E. M. ;Lee,S.
W. CRAIG,W. A.
REPT. NO. CERL-TR-P-103
PROJ. 4A762719AT40
TASK 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Electric generators, *Electric power generation, Diesel engines, Military facilities, Acceptance tests, Test methods (U)
IDENTIFIERS: CE Test Procedures, A 001, AS10B (U)

Corps of Engineers (CE) Test Procedures have been prepared in a format similar to the conventional MIL-STD-705B test methods for easy implementation by CE district and field personnel. The procedures presented are for testing large diesel engine-generator sets (100 kW capacity range--intended for installation in fixed military facilities (Class A (Prime), Class B (Standby), or Class C (Emergency) electrical power generation sources. This document provides a list of MIL-STD-705B test methods which are directly applicable for acceptance testing large diesel engine-generator sets. In addition, the document provides new test procedures numbered CE-TP-1001 through 1004, designed specifically for acceptance testing large stationary diesel engine-generator sets intended for electrical power generation within fixed military facilities. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A037 048 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Fugitive Dust Emissions from Construction Haul Roads. (U)

DESCRIPTIVE NOTE: Special rept., FEB 77 53P Struss,S. R. ;Mikucki,W. J. ;
REPT. NO. CERL-SR-N-17
PROJ: 4A162121A896
TASK: T2

UNCLASSIFIED REPORT

DESCRIPTORS: *Air pollution, *Dust, Soils, Roads, Trucks, Construction, Moisture content, Plastic properties, Emission, Tires, Water treatment, Control, Laboratory tests, Environmental impact statements (U)
IDENTIFIERS: Air pollution abatement, WU006, AS896, PE62121A (U)

In Fiscal Year 1972, a study was initiated (1) to examine the nature of environmental degradation resulting from construction, and (2) to formulate both a Contract Specification Writer's Guide containing environmentally protective specifications and a Resident Engineers' Guide with similar information to allow proper enforcement of the environmental specifications. These two guides were published as CERL Technical Reports E-72 (July 1975) and E-57 (May 1975), respectively. During the development of these documents, two areas were noted to have a paucity of available information: (1) solid waste generation from construction and demolition activities, and (2) fugitive dust emissions from unimproved construction haul roads. This report provides details on a study which developed a model for predicting dust emissions from haul roads. The study examines the use of water as a palliative to control dust emissions. The study was conducted in two phases, and comparative data were obtained from a third, independently conducted phase. This study indicates that soil water potential, along with vehicle speed, vehicle weight, and soil type, are significant in the determination (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A037 047 11/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Effect of Lack of Penetration on Fatigue Resistance of High-Strength Structural Steel Welds. (U)

DESCRIPTIVE NOTE: Final rept., FEB 77 30P Tobe,Y. ;Cox,E. P. ; Lawrence,F. V. , Jr;
REPT. NO. CERL-TR-M-203
PROJ: 4DM780120K1
TASK: 02

UNCLASSIFIED REPORT

DESCRIPTORS: *Welds, *Steel, High strength, Fatigue(Mechanics), Fatigue tests(Mechanics), Crack propagation, Metal plates, Defects(Materials), Butt welding, Penetration, Structural properties, Porosity (U)

IAC ACCESSION NUMBER: MCIC-107330
IAC DOCUMENT TYPE: MCIC -HARD COPY--

Zero-to-tension fatigue tests were carried out on double-V butt welds of ASTM A514 steel plate, 20 mm in thickness, which contained full-length lack of penetration (LOP) defects. The fatigue crack initiation and propagation portions of the specimens' fatigue lives were experimentally separated. Compression-to-tension fatigue tests were carried out on prime base plate, as-welded sound joints, and reinforcement-removed welds to experimentally determine the fatigue strength reduction factor (Kf) of the LOP defects. LOP defects as small as 0.5 mm wide had a profound effect on fatigue life. The fatigue crack initiation life was found to be short-only 10 percent of the total life-and could be predicted using fatigue crack initiation concepts. The use of KF(max), the maximum possible fatigue strength reduction factor, was found to be appropriate. In a separate substudy, the fatigue resistance of ASTM A514 butt-welded joints containing clustered porosity was determined. (Author) (U)

IAC SUBJECT TERMS: M--(U)MPDC, Welds, Weld Penetration, Fatigue Test, Fatigue Crack Propagation, Engineering Steel, A514, Low Cycle

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A037 046 13/8 11/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The Effects of Base Metal Notch Orientation and Acuity and Weld Porosity on the Dynamic Tear Toughness of A514F Steel. (U)

DESCRIPTIVE NOTE: Final rept.,
FEB 77 32P Cox,E. P. ;
REPT. NO. CERL-TR-M-201
PROJ: 4A078012A0K1
TASK: 02

UNCLASSIFIED REPORT

DESCRIPTORS: *Welds, *Porosity, *Steel, *Butt welding, Defects(Materials), Notch toughness, Orientation(Direction), Impact, Toughness, Dynamic tests, Tearing (U)
IDENTIFIERS: Steel A-514F (U)

The effects of weld porosity on the dynamic tear properties of A514F steel butt welds were assessed in a program which conducted dynamic tear tests in six areas of experimentation: (1) the base plate steel in the longitudinal and transverse orientations: (2) sound weld metal; (3) weld metal containing clustered porosity; (4) weld metal containing linear porosity; (5) stress-relieved weld metal; and (6) base metal in the longitudinal and transverse directions having fatigue precracked notches. The upper shelf dynamic tear toughness of the base plate was observed to be much greater for specimens with the notch oriented perpendicular to the final rolling direction than for the specimens with the notch parallel to the final Specimens which had notches precracked in fatigue and oriented parallel to the rolling direction had the same toughness-temperature behavior as specimens that were machine-notched in the same orientation. The toughness values of the fatigue precracked specimens whose notches were perpendicular to the rolling direction were greater than for the same orientation specimens with machined notches. The fatigue precracked specimens had higher temperature ductile-to-brittle transitions than the machine-notched specimens. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A036 675 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Disposal of Clearing Debris. (U)

DESCRIPTIVE NOTE: Interim rept.,
FEB 77 93P Kloster ,S. E. ;Mikucki,W. J. ;
REPT. NO. CERL-IR-N-16

UNCLASSIFIED REPORT

DESCRIPTORS: *Dams, *Waste disposal, Pollution abatement, Construction, Solid wastes, Vegetation, Debris (U)

IAC ACCESSION NUMBER: PL-900776
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--

Recent environmental legislation has made the disposal of clearing debris a more difficult problem at dam sites. Corps of Engineers personnel must now consider a number of complex and interacting factors when determining disposal methods. Investigators reviewed many clearing contracts and pertinent literature, visited several projects, and discussed disposal methods with personnel working on Corps projects. From this information, the investigators developed a list of factors that should be considered when selecting clearing and disposal methods for a particular site. (U)

IAC SUBJECT TERMS: P--(U)Wood wastes, Machinery, Incineration, Open burning, Vegetation wastes, Solid wastes, Waste disposal, Forestry wastes, Feedstocks, RDF, Disposal equipment, ZZ MTDE, ZZ Unlimited.;

AD-A036 479 13/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Market Evaluation Study: Solar Domestic Water Heaters for DOD Barracks. (U)

DESCRIPTIVE NOTE: Final rept.,
FEB 77 39P Windingland,Larry ;Walton, George ;Hittle,Douglas ;
REPT. NO. CERL-TR-E-102

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar heating, *Solar collectors, *Barracks, *Hot water, Life cycle costs, Cost analysis, Solar energy, Heating, Solar radiation, Geographic areas, Computerized simulation, Grap (U)

This study assesses the potential market for solar domestic hot water systems in DOD bachelor enlisted and bachelor officer quarters (barracks). The number and locations of existing and planned bachelor enlisted and bachelor officer quarters in the United States are analyzed, and the locations where solar domestic water heating is most feasible are determined. Life-cycle costs of providing solar domestic water heating systems are analyzed and the DOD market potential for these systems determined for varying system costs. The results of more than 120 one-year solar hot water heating system simulations are presented along with a dimensionless graph and methodology which can be used to estimate solar hot water heater performance for building loads and sites other than those studied. The potential markets for solar collectors based on varying system costs are presented. Results indicate that at an anticipated future system cost of $9/sq ft ($97/sq m) of collector the probable market for solar collectors is 4.4 million sq ft (409 000 sq m). Over a 20-year life, the potential savings resulting from application of this collector area is estimated to be 4.5 million barrels of fuel and $29 million. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A036 473 20/11

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Plasticity Formulation for Cyclic Inelastic Structural Analysis. (U)

DESCRIPTIVE NOTE: Interim rept.,
FEB 77 28P Sharma,S. K. ;Jhansale,H. R. ;
REPT. NO. CERL-IR-M-202
PROJ: 4A161102AT23
TASK: 02

UNCLASSIFIED REPORT

DESCRIPTORS: *Structural analysis, *Elastic properties, *Plastic properties, Deformation, Loads(Forces), Cyclic tests, Mathematical models, Algorithms, Formulations, Stresses, Strain(Mechanics) (U)
IDENTIFIERS: AST23, WU004 (U)

A critical review of current inelastic structural analysis procedures indicates that the material constitutive models presently in use do not adequately reflect the materials' cyclic inelastic properties. This will result in erroneous evaluation of deformation response and energy dissipation in structures subjected to dynamic loadings. This report presents a plasticity formulation which is capable of simulating all the important features of material properties observed under cyclic uniaxial loading. Appropriate cyclic material properties required for characterizing the combined isotropic-kinematic hardening features of this formulation are defined. These properties are determined from simple cyclic uniaxial tests. The formulation uses Mroz's concept of multiple and nesting hypersurfaces in stress space to simulate the memory of prior history; it eliminates the need for classifying a general loading path into a plastic loading or a plastic load reversal for cyclic analysis. The superiority of this formulation over currently available methods is demonstrated. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A035 779 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Design Criteria for Theater of Operations Steel Highway Bridges. Volume II. Appendices A-I. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 77 199P Knab,L. I. ;Munse,W. H. ;Ang,A. H-S. ;Rolfe,S. T. ;Sanders,W. W. , Jr;
REPT. NO. CERL-TR-M-195-Vol-2
PROJ: 4A763734D734
TASK: 04

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A035 763.
DESCRIPTORS: *Military bridges, *Bridges, Military engineering, Theater level operations, Criteria, Construction, Bridges, Loads(Forces), Stress analysis, Tension, Fatigue(Mechanics), Static loads, Structural properties, Military requirements, Reliability, Steel, Structur steel, Highways (U)
IDENTIFIERS: *Steel highwa idges, Design, WU002, AS734, PE63734A (U)

This volume details the development and justification of the design criteria, procedures, and material specifications for Theater of Operations (T/O) temporary steel highway bridges recommended in Volume I. Appendices A through D describe the development of the static load case criteria. The brittle fracture criteria are treated in Appendix E and the fatigue criteria are developed in Appendix F. Appendix G provides the background for the fastener and connection resistance for the static load case. Appendices H and I contain the development of the lateral load distribution and shear formulas. It should be emphasized that this volume does not provide recommendations for design criteria, procedures, and material specifications; it provides only their development and justification. Volume I provides the recommendations. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A035 763 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Design Criteria for Theater of Operations Steel Highway Bridges, Volume I. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 77 35P Knab,L. I. ;Munse,W. H. ;Ang,A. H-S. ;Rolfe,S. T. ;Sanders,W. W. , Jr;
REPT. NO. CERL-TR-M-195-Vol-1
PROJ: 4A763734DT34
TASK: 04

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A035 779.
DESCRIPTORS: *Military bridges, *Bridges, Military engineering, Theater level operations, Criteria, Construction, Military requirements, Models, Reliability, Structural engineering, Loads(Forces), Tension, Cost effectiveness, Safety, Weight, Static loads, Structural steel, Steel, Highways (U)
IDENTIFIERS: Design, WU002, AST34, PE63734A (U)

This report presents structural design criteria recommendations for theater of operations (T/O) temporary steel highway bridges. The report consists of two volumes: Volume I provides the design criteria, procedures, and material specifications for both Army Facilities Components System (AFCS) bridges and bridges designed by combat engineers; Volume II contains the development and justification for the criteria in Volume I. Evaluation of the existing military design criteria indicated that their use can result in bridges which are potentially unsafe or perform poorly. State-of-the-art methodologies were used to develop static, fatigue, and brittle fracture criteria which should result in improved safety and performance for T/O bridges. The recommended criteria are based on modifications to existing criteria for military and permanent nonmilitary bridges. The AFCS bridge criteria are intended for use by engineers in bridge design offices. Use (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A035 688 13/13 11/7

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Design Criteria for Theater of Operations Glued-Laminated Timber Highway Bridges. Volume II. Appendices A-E. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 77 72P Knab,L. I. ;Moody,R. C. ;Sanders,W. W. , Jr.;Elleby,H. A. ;
REPT. NO. CERL-TR-M-198-Vol-2
PROJ: 4A763734DT34
TASK: 04

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A035 687.
DESCRIPTORS: *Military bridges, *Laminates, *Bridges, Wood, Load distribution, Military engineering, Stress analysis, Construction, Materials, Shear strength, Tension, Bending stress, Structural properties (U)
IDENTIFIERS: Design, PE63734A, AST34, WU002 (U)

IAC ACCESSION NUMBER: PL-025159
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
This volume contains the development of and justification for the design criteria, procedures, and material specifications for glued-laminated timber Theater of Operations highway bridges recommended in Volume I. Appendices A through D describe the method and assumptions used in developing the design criteria. Appendix E describes the development of the moment distribution and shear formulas. These appendices do not provide recommendations for design criteria, procedures, and material specifications; the recommendations are given in Volume I. (Author) (U)

IAC SUBJECT TERMS: P--(U)Design-Stringer structures, Bridges-Military applications, Specifications-Bridges, Stress-Timber/plastic, Buckling-Wood/plastic, Adhesive bonding-Timber, Laminates-Bridges, Bending-Wood/plastic, ZZ Unlimited.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A035 687 13/13 11/7

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Design Criteria for Theater of Operations Glued-Laminated Timber Highway Bridges. Volume I. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 77 20P Knab,L. I. ;Moody,R. C. ;Sanders,W. W. , Jr.;Elleby,H. A. ;
REPT. NO. CERL-TR-M-198-Vol-1
PROJ: 4A763734DT34
TASK: 04

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A035 688.
DESCRIPTORS: *Military bridges, *Laminates, *Bridges, Wood, Specifications, Theater level operations, Criteria, State of the art, Construction, Materials, Loads(Forces), Cost effectiveness, Civil engineering (U)
IDENTIFIERS: Design, *Military fixed bridges, PE63734A, AST34, WU002 (U)

IAC ACCESSION NUMBER: PL-025158
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
This report presents structural design criteria recommendations for theater of operations (T/O) temporary glued-laminated timber highway bridges. The report consists of two volumes: Volume I provides the design criteria, procedures, and material specifications, and Volume II contains the development of and justification for the criteria in Volume I. State-of-the-art methodologies were used to develop the criteria, which are based on modifications to existing military and permanent criteria. Use of the criteria by engineers in bridge design offices should result in T/O bridges that have adequate safety and perform satisfactorily. Material weight of glued-laminated timber stringers in T/O bridges designed using the recommended criteria, typically will be about 15 percent less than when designed using permanent bridge criteria. (Author) (U)

IAC SUBJECT TERMS: P--(U)Design-Stringer structures, Bridges-Military applications, Specifications-

AD-A035 629 11/6 20/11

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Fracture Characteristics of Two High-Strength, Low-Alloy and Two Stainless Steels. (U)

DESCRIPTIVE NOTE: Interim rept.,
JAN 77 56P Scott,J. K. ;Cox,E. P. ;
REPT. NO. CERL-IR-M-200
PROJ: 4A761102AT23
TASK: A2

UNCLASSIFIED REPORT

DESCRIPTORS: *Structural steel, *Stainless steel, *Fracture(Mechanics), High strength alloys, Low alloy steels, Tensile stress, Fatigue tests(Mechanics), Impact tests, Loads(Forces), Hydrogen embrittlement, Tempering, Surface properties, Experimental data, Chemical composition, Mechanical properties, Electron microscopy, Simulation (U)
IDENTIFIERS: Steel A-588, Steel A-242, Steel AISI 416, Steel 17-4PH, WU002, PE61102A, AST23 (U)

IAC ACCESSION NUMBER: MCIC-099048
IAC DOCUMENT TYPE: MCIC -HARD COPY--
The fracture characteristics of two high-strength, low-alloy structural steels (ASTM A-588 and A-242) and two stainless steels (AISI 416 and 17-4PH) were analyzed under tensile, fatigue, and impact loading conditions. The effects of hydrogen- and temper-embrittlement on the materials' behavior when fractured under tensile and fatigue conditions were investigated. The structural steels were found to be unsusceptible to temper-embrittlement. ASTM A-588 was found to be susceptible to hydrogen-embrittlement; A-242 was not found susceptible, but this could be attributed to the abnormally low toughness condition of the as-received material. The stainless steels were found to be unsusceptible to the hydrogen-charging procedure performed in this study. Mechanical tests showed large variations in values for the tempered stainless steeel specimens, although the fracture surfaces appeared very similar. These findings reaffirmed the generally accepted (U)

AD-A035 608 10/1 20/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Predicting the Performance of Solar Energy Systems. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 77 45P Hittle,D. C. ;Walton,G. N. ;Holshouser,D. F. ;Leverenz,D. J. ;
REPT. NO. CERL-IR-E-98
PROJ: 4A763734DT08
TASK: 06

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar energy, *Heating plants, *Solar collectors, Solar radiation, Hot water, Life cycle costs, Cooling and ventilating equipment, Computerized simulation, Charts, Cost analysis (U)
IDENTIFIERS: AST08, WU001, PE63734A (U)

IAC ACCESSION NUMBER: PL-900779
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
This report presents a method for making an energy and life-cycle cost analysis of solar energy systems. A graphical method is presented for predicting the performance of solar domestic hot water systems, solar heating systems, and solar heating and cooling systems. Methods for selecting the optimum collector area based on life-cycle cost and for systematically making detailed design calculations using the Building Loads Analysis and System Thermodynamics (BLAST) computer simulation program are also presented. Practical considerations for solar system designs are discussed. The methods presented provide the required accuracy for both initial evaluations and final design calculations. Examples are provided throughout the text to aid in using the methods described. (Author) (U)

IAC SUBJECT TERMS: P--(U)Cost analysis, Solar collectors, Design optimization, Computer programs, Modeling, Energy conversion, Heat exchangers, Cooling systems, ZZ MTDE, ZZ Unlimited.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A035 262 15/7 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Military Construction Engineering and Design Cost Forecasts. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 77 30P O'Connor,Michael J. ;
Brown,Gerald J. ;DeCardy,John R. ;
REPT. NO. CERL-TR-P-77
PROJ: DA-4-A-762719-AT-05
TASK: 4-A-762719-AT-0503

UNCLASSIFIED REPORT

DESCRIPTORS: *Military engineering, *Construction, *Cost models, Military facilities, Military planning, Cost estimates, Predictions, Statistical analysis (U)

This report presents a statistical model for forecasting engineering and design (E and D) costs to aid the Directorate of Military Construction in establishing yearly targets for Division/District E and D rates. Data for nine military Construction Divisions/Districts from fiscal year (FY) 1966 through fiscal year 1975 were analyzed. A statistically significant model for eight Districts was developed and verified by a retrospective test. E and D costs/rates predicted as a function of the estimated cost of construction for the eight Districts are presented for FY 76 and FY 77. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A035 258 13/3 11/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

An Investigation of the Susceptibility of Post-Tensioning Cables to Stress-Corrosion Cracking. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 77 12P Hahin,C. ;Gambill,J. ;
Scott,J. K. ;
REPT. NO. CERL-TR-M-199
PROJ: DA-4-A-762719-AT-41
TASK: 4-A-762719-AT-4107

UNCLASSIFIED REPORT

DESCRIPTORS: *Mechanical cables, *Stress corrosion, Reinforcement(Structures), Tension, Steel, Wire rope, Construction materials, Prestressing, Environmental tests, Corrosive liquids (U)
IDENTIFIERS: Post-tensioning cables (U)

Post-tensioning cables having ultimate tensile strength (UTS) of 270 ksi (1862 MPa) and satisfying ASTM Standard A-416 were stressed to 80 to 95 percent UTS and exposed to 3.5 percent sodium chloride and saturated calcium hydroxide solutions, where pH values ranged from 8 to 12.5. After 900 hours, since no failures were experienced, cables were forced to rupture. No appreciable reduction in strength resulted, except in cables that were artificially notched (strength losses were not due to corrosion). However, rapid failures at 95 percent UTS occurred when cables were immersed in a dilute hydrochloric acid solution where pH values ranged from 1 to 2. Time-to-failure at pH 2 averaged about 100 hours, whereas at pH 1 time-to-failure was about 1 hour. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A035 208 5/1 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Engineering and Design Performance Analysis. (U)

DESCRIPTIVE NOTE: Interim rept.,
DEC 76 316P Lapp,Roger L. ;Kirby, Jeffrey G. ;
REPT. NO. CERL-IR-C-75

UNCLASSIFIED REPORT

DESCRIPTORS: *Military planning, *Construction, *Army Corps of Engineers, Policies, Management planning and control, Environmental impact statements, Environmental management, Military engineering, Environmental engineering, Networks, Military facilities, Housing(Dwellings), Systems engineering (U)
IDENTIFIERS: *Design (U)

The Corps of Engineers design process has been represented by a general activity network of 127 quantifiable activities: 13 for environmental impact statements, 30 for architect-engineer (A/E) procurement and District Engineer predesign, 53 for preconstruction design, 13 for advertisement and award, and 18 for design modification activities. Five bodies of project time and cost were identified. Detailed project data from the Fort Worth District have been completely analyzed: two sets of data were partially analyzed (ER 415-345-43 project data and MIDAS PROJECT DATA); advertisement and award data were received but not analyzed; and a satisfactory source for design modification (during construction) data is being sought. (Author) (U)

AD-A034 662 13/5 11/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The Effects of Clustered Porosity on the Shear Strength of A 514F Transverse Fillet Welds. (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 76 24P Lamba,H. S. ;Cox,E. P. ;
REPT. NO. CERL-TR-M-196

UNCLASSIFIED REPORT

DESCRIPTORS: *Steel, *Weldments, *Porosity, *Shear strength, Defects(Materials), Clustering, Porous materials (U)

IAC ACCESSION NUMBER: MCIC-099175
IAC DOCUMENT TYPE: MCIC -HARD COPY--
This report presents the results of a study of the effects of clustered porosity on the transverse shear strength of A 514F steel weldments. The amount of porosity induced into the specimens ranged from zero to over 20 percent of the fracture surfaces. Results indicate that clustered porosity, up to about 10 percent, has little effect on the shear strength or ductility of transverse shear welds. A slight decline in shear strength was observed for larger amounts of porosity. Results also indicated that secondary defects in the fillet welds which were undetected by x-ray radiography reduced strength below that found in the specimens containing porosity only. (Author) (U)

IAC SUBJECT TERMS: M--(U)POROSITY, SHEAR ULTIMATE STRENGTH, FILLET WELDS, WELD DEFECTS, ELASTIC PROPERTIES, STRESS INTENSITY, MACHINING, SAWING, CUTTING, SHEAR STRESS, FRACTURE SURFACE, HAZ, GAS METAL ARC WELDING, ULTIMATE TENSILE STRENGTH, RADIOGRAPHY, TENSILE YIELD STRENGTH, ELONGATION, REDUCTION IN AREA, NONDESTRUCTIVE TESTING, ENGINEERING STEEL, T-1, PLATE, 1MN STEEL, WELDS, A514.;

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A034 416 21/4 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Technical Evaluation Study: Solid Waste as a Fuel at Ft. Bragg, N. C. (U)

DESCRIPTIVE NOTE: Final rept., DEC 76 56P Hathaway,S. A. ;Woodyard, J. P. ;
REPT. NO. CERL-TR-E-95

UNCLASSIFIED REPORT

DESCRIPTORS: *Fuels, *Solid wastes, *Waste treatment, Energy conservation, Recovery, Cost analysis, Cost effectiveness, Electric power, Steam power plants, Energy, Combustion (U)
IDENTIFIERS: *Refuse derived fuels, Scenarios (U)

IAC ACCESSION NUMBER: PL-900509
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
This study investigated the technical and economic feasibility of using refuse as an energy resource at Ft. Bragg, NC. The technically proven system found to be most cost-effective uses mixed solid waste generated at both military (Ft. Bragg, Pope AFB) and civilian (City of Fayetteville) sources in the region. Refuse is delivered to an energy-recovery plant near the 82nd Airborne Division Heating Plant at Ft. Bragg, where it is processed into a refuse-derived fuel (RDF) by shredding and magnetic removal of ferrous materials. RDF is temporarily stored in a hopper until fed by screw conveyor to the incinerator feed hopper, from which it is ram-fed into the furnace. The stoking mechanism is a three-flight double reciprocating grate. Saturated steam at 160 psig is produced in the boiler section after furnance and fed to the main header of the nearby steam plant for distribution. Nearly 65,000 tons of refuse is processed annually. Review of alternative system reveals that if the civilian sector chooses not to participate in the plan, energy recovery from the military refuse alone is still economically attractive. (U)

IAC SUBJECT TERMS: P--(U)Economics-Energy recovery, Technology-Incineration, Refuse-Energy resources, RDF-Solid wastes, Processing-Military wastes,

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A034 167 13/13 5/9 5/5 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Site Concept Plan Development Manual for Family Housing. (U)

DESCRIPTIVE NOTE: Final rept., DEC 76 45P Napier,T. R. ;Moore,A. W. ;
REPT. NO. CERL-TR-D-74
PROJ: 4A763734DT08
TASK: 03

UNCLASSIFIED REPORT

DESCRIPTORS: *Housings, *Military personnel, Manuals, Architecture, Military planning, Contracts, Standards, Human factors engineering, Cost analysis, Cost effectiveness, Environmental management (U)
IDENTIFIERS: Military family housing, Construction engineering, Site concept plans, Design, Sociological standards, Psychological standards, Physiological standards, Environmental standards, Development manual, WU001, AST08, PE63734A (U)

This report prescribes activities, considerations, and procedures necessary for preparing military family housing site concept plans which achieve high environmental, sociological, psychological, and physiological standards. District personnel and contracted architect/engineer (AE) firms who are involved in concept plan development can use the manual to select the most desirable concept plan based on an evaluation of environmental and habitability considerations as well as cost comparisons. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A034 135 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Programming for Habitability: Symposium Proceedings. (U)

SEP 75 129P Preiser,Wolfgang ;
REPT. NO. CERL-Symp-Proc-D-62
PROJ: 4A162719AT03
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Habitability, *Buildings, Interpersonal relations, Criteria, Symposia, Space environments, Formats, Workplace layout, Construction, Experimental design, Architecture (U)
IDENTIFIERS: PE62121A, AST03, WU003, PE62719A (U)

This report contains the proceedings of the symposium 'Programming for Habitabiliy'. The three major topics discussed were habitability criteria generation processes, communication of habitability criteria, and design and social scientist collaboration. In the first area, analogies between habitability programming and testing of NASA's space flight environments and of everyday buildings were sought. Several approaches to the formulaton of habitability criteria based on research information were presented. Formats and problems for the communication of habitability criteria, specifically in the institutional section, were exposed in the second topic area. Three charrettes simulating designer and social scientist collaboration in programming various building types were held in the third area. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A034 131 13/13 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

An Interim Guide to Industrialized Building Systems. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 76 452P Lanford,Samuel T. ;
Csizmadia,Tibor D. ;Bryant,Dale ;
REPT. NO. CERL-TR-D-70

UNCLASSIFIED REPORT

DESCRIPTORS: *Architecture, *Industrial engineering, *Management planning and control, *Industrial research, *Systems engineering, Industrial procurement, Methodology, Industrial plants, Contract proposals (U)
IDENTIFIERS: *Construction engineering, *Industrialized construction, *Industrial planning, *Industrial management, *Construction management, *Construction program, Industrialized building (U)

Each chapter in Volume I is devoted to a primary activity in the procurement process. The chapters are organized in the same sequence as the activities which occur in the building procurement process: Chapter 1: Feasibility, provides guidelines on whether a project should be executed through conventional means or by using industrialized building methods; Chapter 2: Programming, describes how to define and schedule the work; Chapter 3: Design and Documentation, directs specification writing and the defining of interfaces between building and site; Chapter 4: Proposal and Evaluation, provides methods for selecting the best response from industry and for awarding the contract; and Chapter 5: Construction Administration, defines the construction documents which are required of the contractor, as well as the quality control. (U)

AD-A033 757 19/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Comparison of Selected Conductive Polyolefin and Lead Floorings. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 76 64P Smith,Alvin ;
REPT. NO. CERL-TR-M-193

UNCLASSIFIED REPORT

DESCRIPTORS: *Conductivity, *Olefin resins, *Floors, *Lead(Metal), Polymers, Explosives, Comparison, Materials handling, Mechanical properties, Chemical properties, Electrical properties (U)
IDENTIFIERS: Chemical resistivity (U)

IAC ACCESSION NUMBER: PL-024742
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report presents the findings of a study to assess particular properties of four conductive polyolefin and two lead flooring materials. The study provides comparative data for use in preparing specifications for constructing appropriate floors for explosive loading and handling facilities. The study shows certain mechanical, chemical, and electrical differences among the test materials. (U)

IAC SUBJECT TERMS: P--(U)Polyolefins-Conductive flooring, Lead-Conductive flooring, Conductive flooring-Explosive loading, Materials evaluation-Polyolefins, Flooring-Explosive loading, Compatibility-Polyolefin resins, Lead azide-Explosive loading, ZZ Unlimited.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A033 755 13/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Evaluation of Load-Bearing Honeycomb Core Sandwich Panels. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 76 58P Worrell,Edward J. ;Wendler, Bruce H. ;
REPT. NO. CERL-TR-D-75
PROJ: DA-4-A-762619-AT-41
TASK: 4-A-762619-AT-41-T-4

UNCLASSIFIED REPORT

DESCRIPTORS: *Sandwich panels, Honeycomb cores, Fire resistance, Damage, Impact strength, Impact tests, Thermal conductivity, Degradation, Fungus deterioration, Biodeterioration, Tropical deterioration, Fire safety, Skin(Structural), Aluminum, Steel, Paper, Fiberboard (U)
IDENTIFIERS: Durability (U)

IAC ACCESSION NUMBER: PL-026789
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
The report describes an investigation of the performance of three-ply and five-ply paper honeycomb core sandwich panels. The core of the three-ply material consisted of metallic skins bonded to a cellular paper ply; the five-ply construction had 1/8-in.(3.2 mm) hardboard or asbestos board bonded to the metal skin which was bonded to the honeycomb paper. The panels were tested for fire safety, superficial damage, thermal conductivity, and durability. It was found that addition of backup plies did not significantly affect performance in thermal conductivity, durability, or large impact loads; however, a significant increase in performance was achieved in localized superficial damage and five endurance times. The improved fire performance of the five-ply panels was still decidedly inferior to that of conventional wood stud construction. Further study should be made to determine if simple changes in the basic design of the panel are available which could bring the fire performance up to the level of conventional construction. (U)

IAC SUBJECT TERMS: P--(U)Impact strength, Honeycombs, Cores, Evaluation, Sandwiches, Panels, Paper,
AD-A033 755

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A033 754 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Consolidation of RPMA at Fayetteville, N. C. Volume I. Executive Summary for the Study of Consolidation of RPMA in the Fayetteville, N. C. Area. (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 76 30P Brown,David W. ;Kirby, Jeffrey G. ;Nay,Joyce L. ;
REPT. NO. CERL-TR-C-73

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A030518.
DESCRIPTORS: *Military facilities, *Maintenance, *Geographic areas, *Cost analysis, Savings, Manpower, Economic analysis, Quality assurance, Military planning (U)
IDENTIFIERS: Real property, Fayetteville(North Carolina), Pope Air Force Base, Consolidation, Fort Bragg (U)

The report provides an executive summary of the economic analysis performed to determine the feasibility of consolidating real property maintenance activities (RPMA) in the Fayetteville, NC area (Fort Bragg/Pope AFB). Results indicate that consolidation of RPMA at Fort Bragg and Pope AFB using an Army Industrial Fund Organization (AIFO) is feasible and that savings are possible based on the assumptions made in the study. Manpower reductions of 83 to 100 (6 to 8 percent) are to be expected. No loss of responsiveness or quality of work is expected. Since the savings are based on more than one military service, some of the savings, e.g., for equipment, may be realized by the Department of Defense and not entirely at the local level. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A033 753 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Pollution Estimation Factors. (U)

DESCRIPTIVE NOTE: Final technical rept.,
NOV 76 28P Schanche,Gary W. ;Cannon, John R. ;Greep,Larry R. ;Donahue,Bernard A. ;
REPT. NO. CERL-TR-N-12
PROJ: DA-4-A-162121-A-896
TASK: 4-A-162121-A-89601

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Characterization of Wastes from Army Installations.
DESCRIPTORS: *Military facilities, *Water pollution, *Air pollution, Army, Laundry operations, Blowdown, Residential section (U)
IDENTIFIERS: *Emission factors, *Solid wastes, Refuse (U)

The Army is required to evaluate the environmental consequences of proposed actions while they are being planned. To effectively perform this task, Army planning personnel must have some means of predicting the amount and types of impacts likely to result from a particular action. For air pollution, the U.S. Environmental Protection Agency (USEPA) has developed a series of emission factors that relate pollutant quantities resulting from fuel combustion and industrial operations to the level of that particular polluting activity. This report extends the emission factor approach to allow estimation of types and amounts of solid waste and wastewater discharged from certain activities common to U.S. Army Training and Doctrine Command (TRADOC) and Forces Command (FORSCOM) military facility operation. The purpose of this report is to provide factors for estimating the amounts of air pollutants, water pollutants, and solid waste materials generated by the operation of military facilities and vehicles. The report consists of three parts based on the class of pollutants being estimated. One contains examples of how to use air pollutant emission factors and identifies Army-relevant portions of (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A033 684 13/8 20/3 11/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Determination of Arc Voltage, Amperage, and Travel Speed Limits by Bead-on-Plate Welding. (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 76 22P Weber,R. A. ;
REPT. NO. CERL-TR-M-197
PROJ: 4A762731AT41
TASK: T7

UNCLASSIFIED REPORT

DESCRIPTORS: *Arc welding, *Gas metal arc welding, Electric arcs, Shielding, Electrodes, Limitations, Velocity, Travel, Electric current, Voltage, Metal plates, Beads (U)
IDENTIFIERS: WU007, AST41, PE62731A (U)

IAC ACCESSION NUMBER: MCIC-09845I
IAC DOCUMENT TYPE: MCIC -HARD COPY--
This report presents the results of bead-on-plate tests to define limits for voltage, amperage, and travel speed. The work was divided into two sections: shielded metal-arc welding (SMAW) and gas metal-arc welding (GMAW). The limits for voltage and travel speed were determined for SMAW electrodes based on limits previously determined by the American Welding Society (Specification A5.1-69). Voltage and amperage limits for GMAW electrodes were determined based on types of metal transfer; travel speed limits were based on bead appearance and shape. The results of this research are not final; further work on butt welds will refine the limits. The final results will be used to prepare recommended changes to appropriate guide specifications and technical manuals. (Author) (U)

IAC SUBJECT TERMS: M--(U)GAS METAL ARC WELDING, WELDS, PLATE, ENGINEERING STEEL, A36, A242, A441, A514, A527, A588, A710.;

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A033 530 5/9 13/13 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Directory of Experts on Organization and Management of Construction (1977), CIB W-65 Commission. (U)

NOV 76 55P

UNCLASSIFIED REPORT

DESCRIPTORS: *Specialists, *Construction, *Directories, United States, Foreign, Biographies, Documents. Jobs, Corporations, Universities, Ranking, Organizations, Management (U)
IDENTIFIERS: Experience (U)

This directory identifies 48 experts located in 13 countries. The biographic information on each expert includes his major areas of research interests in priority order, a description of his professional experience, his publications and honors. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A033 476 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Military Construction Contract Management. Recommendations for Improved Military Construction Contract Management Procedures. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 76 16P Foster,Ronald L. ;
REPT. NO. CERL-TR-P-76

UNCLASSIFIED REPORT

DESCRIPTORS: *Contract administration, Construction, Civil engineering, Army Corps of engineers, Regulations, Contracts, Modification, Processing, Methodology (U)
IDENTIFIERS: Claims (U)

This report summarizes recommendations for improved Corps of Engineers construction contract management policies and procedures for the activities of modifications and claims processing, contractor submittals administration, and construction contract progress determination and reporting. The major product of this research was a proposed Engineer Pamphlet 415-1-2--Modifications and Claims Guide. Other recommendations proposed: (1) changes to certain modifications and claims requirements of the Engineer Contract Instructions (ER 1180-1-1), (2) a revised ER 415-1-10--Contractor Submittals; and (3) Guidance for standardized calculation of reported construction contract progress values. This report also summarizes the considerations and methodology involved in the development of these recommendations. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A033 475 13/2 4/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The Statistics of Amplitude and Spectrum of Blasts Propagated in the Atmosphere. Volume I. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 76 63P Schomer,P. D. ;Goff,R. J. ;Little,L. M. ;
REPT. NO. CERL-TR-N-13
PROJ: 4A162121A896
TASK: 06

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A033 361.
DESCRIPTORS: *Noise pollution, *Atmospheres, *Wave propagation, *Military facilities, Civil engineering, Spectrum analysis, Statistical analysis, Wind direction, Blast loads, Amplitude, Predictions, Noise reduction (U)
IDENTIFIERS: Blast propagation, Airblast, PE62121A, A5A896, WU001 (U)

This report presents the results of a study of blast propagation in the atmosphere. Detailed blast noise measurements and information on meteorological conditions gathered at Fort Leonard Wood, MO were used to develop blast propagation statistics. The relationship between the specific meteorological and terrain conditions at Fort Leonard Wood and the measured blast amplitudes was established, as were frequency-weighted one-third octave spectra for use in predicting community response to blast noise. The weather and terrain dependence of blast propagation implies that the data gathered at Fort Leonard Wood can be used to predict blast amplitudes under similar conditions at other locations and to suggest possible relationships between general weather conditions and blast statistics. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A033 440 13/2 11/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Study of Articulated Concrete Revetment Mattress: Test and Analysis--Results of FY 1975 Program. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 76 66P Kearney,F. ;Prendergast,J. ;
REPT. NO. CERL-TR-M-194

UNCLASSIFIED REPORT

DESCRIPTORS: *Revetments, *Mats, *Wire, Launching, Emplacement, Load distribution, Structural analysis, Test and evaluation, Banks(Waterways), Mississippi River, Installation, Peak values, Concrete, Reinforcement(Structures), Connectors, Strength(Mechanics), Mechanical cables, Tensile strength, Stainless steel, Corrosion resistance, Reinforced concrete (U)
IDENTIFIERS: Articulated concrete mattresses, Design, Articulation (U)

This report presents results of the fiscal year 1975 (FY 75) portion of a program to determine the magnitude and distribution of forces developed during launching of articulated concrete mattresses on the banks of the lower Mississippi River and to provide guidance for design changes in the mat structure. The FY 75 work involved monitoring the launching of some of the approximately 10,000 experimental squares cast with two 4000-lbf (17.8 kN) breaking strength longitudinal wires instead of three. Results indicate that the two-longitudinal-wire mat will have adequate strength. Results also confirm conclusions drawn from earlier work in the program by these authors (AD-A021 774, 1976). (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A033 363 13/13 15/7 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Information Flow for Military Construction. (U)

DESCRIPTIVE NOTE: Interim rept.,
OCT 76 120P Johnson,J. H. ;
REPT. NO. CERL-IR-ADS-2
PROJ: 4A762619AT41
TASK: 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Coordination and Integration of AEADS Modules.
DESCRIPTORS: *Construction, *Army planning, Military facilities, Army Corps of Engineers, Management information systems, Management planning and control, Information theory, Network flows, United States, Overseas, Army operations, Army budgets, Department of Defense, Policies, Planning programming budgeting, Flow charting (U)
IDENTIFIERS: PE62619A, WU020, AST41 (U)

This report presents information flow networks which correlate the operations and information flow supporting Army Military Construction (MCA) projects within the Corps of Engineers during the planning and programming phase. The diagrams are developed at three levels of functional inclusiveness to provide pertinent, ordered, and logical information flow to each reviewer of the MCA process. Identification of representative procedures to the level necessary for a fundamental understanding necessitated the 30 information flow networks presented. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A033 361 13/2 4/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The Statistics of Amplitude and Spectrum of Blasts Propagated in the Atmosphere Volume II. Appendices C through E. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 76 761P Schomer,P. D. ;Goff,R. J. ;Little,L. M. ;
PROJ: 4A162121A896
TASK: 06

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A033 475.
DESCRIPTORS: *Noise pollution, *Meteorological data, Civil engineering, Military facilities, Blast loads, Tables(Data), Environmental engineering, Noise reduction, Wave propagation, Statistical analysis (U)
IDENTIFIERS: Airblast, Blast noise, AS896, WU001, PE62121A (U)

This volume presents the spectra data derived from the analysis of the blast noise and meteorological measurements taken at Fort Leonard Wood, MO, and described in Volume I. One-third octave spectra, absolute, relative, and difference energy-average one-third octave spectra, and difference distributions are presented. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A033 223 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Water/Wastewater Survey Guidelines. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 76 59P Schanche,Gary W. ;Greep, Larry A. ;Donahue,Bernard A. ;Cannon,John R. ;
REPT. NO. CERL-TR-N-11
PROJ: 4A162121A896
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Water pollution, *Waste water, *Surveys, Planning, Regulations, Sources, Water, Water quality, Sampling, Wastes(Industrial) (U)
IDENTIFIERS: WU004, AS896, PE62121A (U)

This report--one of a series of three which supply the means for gathering background data on solid waste, air, and water/wastewater--provides assistance in planning and performing water/wastewater surveys. It provides the format for planning an appropriate survey given a specific need for data. The types of surveys covered include regional and installation surveys designed to gather background information, and regulation compliance, waste source evaluation, and ambient water quality evaluation surveys, which provide information for regulation compliance inquiries, environmental impact analyses, problem characterizations, and design analyses. Additionally, the report provides background information on performing mass balances, developing sampling schedules, selecting sampling points, evaluating wastewater sources, and taking flow measurements. (Author) (U)

AD-A032 726 13/13 13/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Field Experiment on a Prefabricated Expandable Foam/Wood Structure. (U)

DESCRIPTIVE NOTE: Interim rept., OCT 76 54P Trent,R. L. ;Whiteside,T. M. ;Robertus,J. ;
REPT. NO. CERL-IR-C-50
PROJ: 4A764717DT34
TASK: 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Prefabricated buildings, *Foam, *Wood, Construction materials, Expandable structures, Army Corps of Engineers, Military facilities, Theater level operations, Tactical warfare, Fabrication, Field tests, Polyurethane resins, Lumber, User needs, Army operations, Cost effectiveness, Computer aided design (U)
IDENTIFIERS: AST34, WU003, PE64717A (U)

IAC ACCESSION NUMBER: PL-025068
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
This report, the third in a series of report covering development of multi-purpose structural components, documents the findings, results, and conclusions of a field experiment to fabricate and erect the components of a prefabricated foam/wood theater of operations (TO) structure. The floor, wall, and roof panels were fabricated off-site and shipped without damage to the erection site; the foundation bents and roof trusses were fabricated on-site. These multi-purpose structural components were then assembled and erected on a building site at Fort Belvoir, VA. Interior finishing and services were provided to enable the completed structure to be used as a classroom, as well as a demonstration facility. (Author) (U)

IAC SUBJECT TERMS: P--(U)Foam/wood-Prefabricated structures, Urethane/wood-Prefabricated structures, Prefabrication-Floors, Design-Building construction, Costs-Erection methods, Field testing-Erection methods, Prefabrication-Walls, Prefabrication-Roofing, Erection methods-Military applications, ZZ Unlimited.;
AD-A032 726

AD-A032 569 13/3 9/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Evaluation of Load-Indicating Devices (LIDS) for Mobile Construction Cranes. (U)

DESCRIPTIVE NOTE: Final rept., OCT 76 96P Rosenfield,Myer J. ;Wendler, Bruce H. ;
REPT. NO. CERL-TR-M-188

UNCLASSIFIED REPORT

DESCRIPTORS: *Cranes, *Booms(Equipment), *Loads(Forces), *Indicators, Angles, Moments, Computers, Detectors, Calibration (U)
IDENTIFIERS: *Load indicating devices (U)

Load- and boom-angle-indicating devices and load moment computers for construction cranes are generically termed load-indicating device systems (LIDS). Several of these systems were laboratory tested to evaluate them for compliance with Society of Automotive Engineers (SAE) performance standards. Testing included calibration of the load or angle sensor and operation of the systems at temperatures between -50 and +150 F(-45.6 and 65.6 C). Results of the tests and an analysis of the data are presented. Functioning ability and accuracy of load-, angle- or radius-, and load-moment indicating systems were found to be satisfactory. (Author) (U)

AD-A032 569

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A032 126 18/6 9/4 20/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Fiber Optic Communications Link Performance in EMP and Intense Light Transient Environments. (U)

DESCRIPTIVE NOTE: Interim rept., OCT 76 24P McCormack,Ray G. ;Sieber, David C. ;
REPT. NO. CERL-IR-E-94
PROJ: 4A762719AT40
TASK: A1

UNCLASSIFIED REPORT

DESCRIPTORS: *Fiber optics transmission lines, *Transient radiation effects, Electromagnetic pulses, Light pulses, Radiation resistance, Radiation hardening, Data transmission systems, Electromagnetic interference, Test methods, Light emitting diodes (U)
IDENTIFIERS: PE62719A, WU022, AST40 (U)

Optical fiber communications links are a possible means for providing voice and data transmission electromagnetic pulse (EMP) hardened facilities. This report describes evaluations of the effects of high-level EMP fields and intense light flashes on fiber links. The results show that neither EMP fields nor light transient have any appreciable effect on the fiber links. Further evaluations, which were performed in EMP fields to compare the data transmission system using an optical fiber with an equivalent system using conventional cabling, showed te conventional system is susceptible to EMP. The optical link is thus superior in the EMP environment. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A032 125 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Preliminary Concept for a Design Criteria Management System. (U)

DESCRIPTIVE NOTE: Special rept., SEP 76 87P O'Connor,Michael J. ; Jordani,David A. ;
REPT. NO. CERL-SR-P-74
PROJ: 4A762719AT05
TASK: 02

UNCLASSIFIED REPORT

DESCRIPTORS: *Military facilities, *Construction, *Military construction, *Buildings, Information exchange, Management information systems, Architects, Engineers, Concept formation, Data bases, Automation, Cost estimates (U)
IDENTIFIERS: Design, Subsystems, Pe62719A, WU002, AST05 (U)

The Corps of Engineers' design process relies on the relevancy and currentness of the data used in facility design and the transfer of these data to and from a variety of design and review levels. This report presents a conceptual description of an effective system for the organization, management, and communication of Department of Defense and Corps of Engineers military construction design criteria. The conceptual system comprises three major subsystems: (1) the Standard Design Criteria Subsystem provides for the handling, consistency checking, and production of standard design criteria; (2) the Project-Specific Design Criteria Subsystem permits the introduction of project-specific criteria and the merging of them with standard criteria; and (3) the Facility Criteria File Generation Subsystem translates the criteria into an appropriate format and relates the criteria to the design procedures. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A032 124 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Preliminary Design and Construction Guidelines for Vertical Construction in Desert and Tropical Theaters of Operations. (U)

DESCRIPTIVE NOTE: Interim rept., OCT 76 37P Kao,Anthony ;Cook,Jere ;
REPT. NO. CERL-IR-C-74
PROJ: 4A762719AT41
TASK: T5

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Tropical regions, Deserts, Shelters, Field conditions, Hot weather, Climate, Construction materials, Termites, Structural engineering, Environmental protection (U)
IDENTIFIERS: PE62719A, WU004, AST41 (U)

This study provides a simple description of the basic principles and guidelines that should be observed in designing and planning shelters in desert and tropical climates. The study identifies preferred materials, design, and construction details for use in the theater of operations (TO). Findings are based on actual Army field experience and research of existing literature pertinent to construction in desert and tropical regions. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A031 781 9/1 9/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Investigation of Ground Fault Circuit Interrupter. (U)

DESCRIPTIVE NOTE: Final rept., SEP 76 125P Ford,W. D. ;McCormack,R. G. ;
REPT. NO. CERL-TR-E-92

UNCLASSIFIED REPORT

DESCRIPTORS: *Circuit breakers, *Electric power distribution, *Faults, *Ground(Electrical), Circuits, Construction, Army corps of engineers, Condensation, Thermal cycling tests, Radiofrequency interference, Microwaves, Ultrahigh frequency, Electromagnetic interference, Threshold effects, Electric current, Vibration, Laboratory tests (U)
IDENTIFIERS: *Ground fault circuit interrupters (U)

The objective of this study was to ascertain the capabilities and limitations of the Ground Fault Circuit Interrupters (GFCI) used on Corps of Engineers (COE) supervised construction sites. Laboratory tests were conducted to determine (1) if GFCI samples from different manufacturers met the trip threshold design specifications of 5 mA plus or minus and (2) if condensation, hot-cold environment, vibration, and RF, UHF, and microwave fields adversely affected their operation. A limited field survey of COE supervised construction sites was conducted to evaluate the actual application of the GFCI. This survey included trip threshold measurements and discussions with COE and contractor personnel after nuisance tripping had occurred. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A031 450 1/3 17/7 20/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

User Manual: Interim Procedure for Planning Rotary-Wing Aircraft Traffic Patterns and Siting Noise-Sensitive Land Uses. (U)

DESCRIPTIVE NOTE: Interim rept., SEP 76 40P Schomer,P. D. ;Homans,B. L. ;
REPT. NO. CERL-IR-N-10
PROJ: DA-4-A-762720-A-896
TASK: 4-A-762720-A-89602

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-A031 449.
DESCRIPTORS: *Rotary wing aircraft, *Land use, *Aircraft noise, *Helicopters, *Air traffic control system analysis, *Flight paths, Planning, Patterns, Contours, Urban areas, Landing fields, Range(Distance) (U)
IDENTIFIERS: *Flight corridors, *Air corridors, User manuals, Corridors(Trajectories) (U)

This report presents (1) interim procedures for determining the location of rotary-wing aircraft traffic patterns and ingress and egress corridors into an airfield/heliport area to avoid conflict with noise-sensitive land uses, and (2) criteria for siting noise-sensitive land uses with respect to established airfield or heliport plans. The procedures are based on interim criteria established in a companion report, Technical Background: Interim Criteria for Planning Rotary-Wing Aircraft Traffic Patterns and Siting Noise-Sensitive Land Uses (Construction Engineering Research Laboratory Interim Report N-9 1976). The presentation of the procedures includes a history of noise impact measures, a background of the development of noise contours, and tables for finding the noise impact. A complete descriptive example of the use of the procedures is presented as an aid to the reader. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A031 449 1/3 17/7 20/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Technical Background: Interim Criteria for Planning Rotary-Wing Aircraft Traffic Patterns, and Siting Noise-Sensitive Land uses. (U)

DESCRIPTIVE NOTE: Interim rept., SEP 76 17P Schomer,P. D. ;Homans,B. L. ;
REPT. NO. CERL-IR-N-9
PROJ: DA-4-A762720-A-896
TASK: 4-A-762720-A-89602

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-A031 450.
DESCRIPTORS: *Rotary wing aircraft, *Land use, *Aircraft noise, *Helicopters, *Air traffic control system analysis, *Flight paths, Planning, Urban areas, Patterns, Landing fields, Range(Distance) (U)
IDENTIFIERS: *Flight corridors, *Air corridors, *Corridors(Trajectories) (U)

This report presents interim criteria for locating rotary-wing aircraft traffic patterns and ingress and egress corridors into an airfield/heliport to avoid conflict with noise-sensitive land uses, and provides criteria for planners to site noise-sensitive land uses with respect to the established airfield/ heliport and established flight corridors. These interim criteria are required because the exact Air Force technique for predicting fixed-wing aircraft noise cannot currently be used due to the unpredictability of helicopter flight patterns; these criteria are the basis for interim procedures established in a companion report, User Manual: Interim Procedure for Planning Rotary-Wing Aircraft Traffic Patterns and Siting Noise-Sensitive Land Uses (Construction Engineering Research Laboratory Interim Report N-10, 1976). (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A031 000 13/13 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Procuring Today's Building Technology: Volume I. A Summary. (U)

DESCRIPTIVE NOTE: Special rept., SEP 76 34P Carroll,Michael G. ;
REPT. NO. CERL-SR-D-72-Vol-1
PROJ: DA-4-A-762719-AT-02
TASK: 4-A-762719-AT-0203

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A030 520.
DESCRIPTORS: *Construction, *Military procurement, Technology, Law(Jurisprudence), Regulations, Standardization, Procurement, Buildings, Prefabricated buildings, Modular construction (U)
IDENTIFIERS: *Construction engineering (U)

This report summarizes the findings of a study to assess ways of procuring present building technology. The study analyzed the state of the art of building technology and reviewed various procurement processes within the given laws, regulations, and policies. The results indicate that the evolution of procurement techniques has not kept pace with the evolution of building technology. The traditional procurement process--formal advertising--is not effective in procuring today's building techology. There are other procurement processes which are better in that respect; their use, however, is restricted by traditional interpretations of the laws and by the regulatory inertia of traditional procurement techniques. Nonetheless, given the general intent of Congress and given some needed revisions, there exist procurement processes consonant with the best available building technology. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A030 566 11/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Review of Formulation and Testing Procedures for Coal Tar Epoxy (SSPC Paint 16-68T). (U)

DESCRIPTIVE NOTE: Final rept., SEP 76 57P Beitelman,A. ;
REPT. NO. CERL-TR-M-192

UNCLASSIFIED REPORT

DESCRIPTORS: *Plastic paints, *Epoxy resins, *Coal tar, *Specifications, Paints, Steel, Structural steel, Pitch(Material), Replacement, Polyamide plastics, Formulations, Viscosity, Odors, Physical properties, Test methods (U)
IDENTIFIERS: RT-12 coal tar pitch, Sag tests (U)

IAC ACCESSION NUMBER: PL-024514
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
The Corps of Engineers uses the Steel Structures Painting Council (SSPC) specification 16-68T for coal tar epoxy paint extensively. Although performance of the material is unquestioned, difficulty in obtaining the coal tar pitch used in its manufacture has been experienced during energy shortages; this problem has stimulated efforts to revise the specification. This study critically examined the test methods and requirements set forth in the specification and evaluated several pitches as possible replacements. It is recommended that the sag test be simplified without altering the test requirement; that the nonvolatiles requirement be altered if a proposed change in the packaging ratio is implemented; and that coal tar pitch RT-12 be used as a replacement for the pitch now specified--if requirements can be written to provide a pitch with a minimum of water-extractable material, and if the odor requirement of the present specification is eliminated. (Author) (U)

IAC SUBJECT TERMS: P--(U)Paints-Structural steel, Formulation-Coal tar/epoxy/polyamide, Coal tar pitch-Paints, Coal tar epoxy-Paints, Epoxy resins-Plastic paints, Polyamides-Plastic paints, Specifications-Pitch/epoxy/polyamide, Specifications-Paints, Coal tar pitch-Epoxy/polyamide, ZZ

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A030 565 11/6 11/3 13/8

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Chloride Sensitivity of the Corrosion Rate of Zinc-Coated Reinforcing Bars. (U)

DESCRIPTIVE NOTE: Interim rept.,
SEP 76 31P Hahin,C. ;Cato,S. ;
Mattheessen,W. ;
REPT. NO. CERL-IR-M-191
PROJ: DA-4-A-762719-AT-41
TASK: 4-A-762719-AT-41-T-7

UNCLASSIFIED REPORT

DESCRIPTORS: *Steel, *Reinforced concrete, *Corrosion inhibition, *Zinc coatings, Corrosion, Concrete, Protective coatings, Chlorides, Sensitivity, Life expectancy, Test methods, Reinforcing materials, Cracking(Fracturing) (U)

This laboratory study was undertaken to determine whether zinc coatings can be relied on for long-term protection of reinforcing bars subject to environments of variable salt concentrations. Hot-dip galvanized reinforcing bars were coupled to bare carbon steel rebars in various concentrations of CaCl2 in saturated Ca(OH)2-distilled water solutions. Galvanic current output was monitored as a function of time and percent CaCl2 for a zinc-steel couple with an anode-cathode area ratio of unity. Current output became stable after 20 days for CaCl2 concentrations less than 1 percent. For concentrations at 1 percent or greater, current fluctuations were cyclical, increasing in magnitude as percent CaCl2 increased. At 4 percent CaCl2, current output rose sharply. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A030 520 13/12 15/5 5/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Procuring Today's Building Technology. Volume II. (U)

DESCRIPTIVE NOTE: Special rept.,
SEP 76 231P Carroll,Michael G. ;
REPT. NO. CERL-SR-D-72
PROJ: DA-4-A-762719-AF-02
TASK: 4-A-762719-AT-0203

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A031 000.
DESCRIPTORS: *Procurement, *Buildings, *Contracts, Law(Jurisprudence), Modular construction, Military requirements, Cost effectiveness, Military organizations, Feedback (U)
IDENTIFIERS: Advertising, Formal advertising, Industrial buildings, Legal constraints, Subsystems (U)

This report summarizes the findings of a study to assess ways of procuring present building technology. The study analyzed the state of the art of buidling technology and reviewed various procurement processes within the given laws, regulations, and policies. The results indicate that the evolution of procurement techniques has not kept pace with the evolution of building technology. The traditional procurement process--formal advertising--is not effective in procuring today's building technology. There are other procurement processes which are better in that respect; their use, however, is restricted by traditional interpretations of the laws, and by the regulatory inertia of traditional procurement techniques. Nonetheless, given the general intent of Congress and given some needed revisions, there exist today procurement processes consonant with the best available building technology. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099052

AD-A030 519 5/1 15/5 5/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Consolidation of RPMA at Fayetteville, NC. Volume III. Cost Analysis Support and Backup Data for the Consolidation of RPMA in the Fayetteville, NC Area. (U)

DESCRIPTIVE NOTE: Final rept.,
SEP 76 380P Brown,D. W. ;Kirby,J. G. ;Nay,J. L. ;
REPT. NO. CERL-TR-C-73-Vol-3
PROJ: CERL-75-5

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 4, AD-A041 331.
DESCRIPTORS: *Maintenance management, *Cost analysis, *Integrated systems, *Army planning, *Cost effectiveness, *Army operations, Economic analysis, Data acquisition, Army budgets (U)
IDENTIFIERS: RPMA(Real Property Maintenance Activities), *Real property maintenance activities, *Army industrial fund organization, Consolidation (U)

This report presents the cost analysis support and the backup economic data used by the U.S. Army Construction Engineering Research Laboratory's (CERL) rpma Study Team to evaluate the feasibility of consolidating real property maintenance activities (RPMA) at Fort Bragg and Pope AFB, NC. Included are the research study plan, the Army Industrial Fund description and cash flow procedures, the legal analysis for consolidation actions, general concept of the Army Industrial Fund Organization, an analysis of the fiscal year (FY) 75 current method of operation and the proposed consolidation, implementation costs, and an environmental impact assessment. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A030 518 5/1 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Consolidation of RPMA at Fayetteville, NC. Volume II. Summary Cost Analysis for Consolidation of RPMA in the Fayetteville, NC Area. (U)

DESCRIPTIVE NOTE: Final rept.,
SEP 76 81P Brown,D. W. ;Kirby,J. G. ;Nay,J. L. ;
REPT. NO. CERL-TR-C-73-Vol-2
PROJ: CERL-75-5

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3, AD-A030 519.
DESCRIPTORS: *Maintenance management, *Cost analysis, *Army planning, *Integrated systems, *Cost effectiveness, *Army operations, Economic analysis, Data acquisition, Army budgets (U)
IDENTIFIERS: RPMA(Real Property Maintenance Activities), *Real property maintenance activities, Army industrial fund organization, Consolidation (U)

This report summarizes the results of an economic analysis performed to determine the feasibility of consolidating real property maintenance activities (RPMA) in the Fayetteville, NC area (Fort Bragg/Pope AFB). Results indicate that consolidation of RPMA at Fort Bragg and Pope AFB using an Army Industrial Fund Organization is feasible and economically desirable. Based on the actual fiscal year (FY) 75 workload, the consolidated organization could generate savings of between $814,000 (2 percent of combined FY 75 cost) and $1,184,000 (3 percent of combined FY 75 cost). Manpower reductions of 83 to 100 (6 to 8 percent) are to be expected. No loss of responsiveness or quality of work is expected. The new implementation costs of $718,000 should be recoverable within the first year of operation. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A030 453 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Migration of Explosives and Chlorinated Pesticides in a Simulated Sanitary Landfill. (U)

DESCRIPTIVE NOTE: Final rept. Jul 73-Mar 76, SEP 76 48P Conley,Kathy A. ;Mikucki, Walter J. ;
REPT. NO. CERL-TR-N-8
PROJ: DA-4-A-161101-A-91-D

UNCLASSIFIED REPORT

DESCRIPTORS: *Waste disposal, *DDT, *TNT, Solid wastes, Simulation, Leaching, Migration, Explosives, Pesticides, Ground water, Land us (U)
IDENTIFIERS: Sanitary landfill (U)

This report presents results of a series of tests to determine whether the hazardous substances DDT and TNT will leach from or migrate through a simulated sanitary landfill. DDT and two of its degradation products, DDD and DDE, were not recovered from samples of the leachates tested. Analysis of soil core samples showed some vertical migration and very little horizontal migration. TNT analysis in leachates was accomplished by applying a sensitive method of analysis--pulse polarography. Fewer than five parts per billion of TNT were found in leachates from soil systems. TNT was detected in core samples from a soil/solid waste system, but not from a soil system. It is theorized that some channelization of flow occurred. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A030 397 11/3 11/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Maintenance Painting of Steel Structures. (U)

DESCRIPTIVE NOTE: Technical manuscript, SEP 76 17P Beitelman,Alfred ;
REPT. NO. CERL-Technical-Ms-M-189

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Maintenance Engineering Seminar, 29-30 Jun 76, Greenup, Ky.
DESCRIPTORS: *Paints, *Corrosion inhibition, *Steel, *Structures, Coatings, Maintenance, Surfaces, Preparation, Specifications, Inspection, Corrosion (U)

This paper is intended to assist those responsible for mitigating corrosion on existing structures. The following factors involved in maintenance painting are discussed: (1) degree of destruction of existing coatings that can be allowed before repainting is required; (2) determination of the most economical surface preparation; (3) selection of the paint system which gives the most economical performance; (4) preparation of specifications covering the work to be done; and (5) inspection of the cleaning and painting operation. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099052

AD-A030 314 11/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Aligned Ferrous Martensite. (U)

DESCRIPTIVE NOTE: Interim rept.,
SEP 76 19P Mohammad,Khobaid ;
REPT. NO. CERL-IR-M-190
PROJ: DA-4-A-161102-AT-23
TASK: 4-A-161102-AT-2302

UNCLASSIFIED REPORT

DESCRIPTORS: *Martensite, *Alignment, *Phase transformations, Steel, Stresses, Deformation, Austenite, Crystal structure, Orientation(Direction), Stress strain relations, Annealing, Quenching, Metallography (U)
IDENTIFIERS: Iron alloy 20Ni 5Mn (U)

IAC ACCESSION NUMBER: MCIC-097666
IAC DOCUMENT TYPE: MCIC -HARD COPY--
Previous research has shown that an Fe-Ni-Mn alloy may be suitable for producing aligned martensite. This work is concerned with the texture and transformation characteristics of the Fe-20%Ni-5%Mn alloy. The austenitic deformation texture was found to be typical face-centered cubic (fcc) texture--(123) (412) rather than (100) (011) as thought previously. Subsequent annealing at 1000 C for 30 min produced a strong annealing cube texture (011) (100). A partial alignment of martensite was obtained by stress-assisted transformation. Nearly 75 percent martensite was aligned when a strongly cube-textured specimen was strained 3 percent at 45 degrees to the rolling direction, followed by a liquid nitrogen quench of 10 hours. (Author) (U)

IAC SUBJECT TERMS: M--(U)Iron Alloy, Nickel Addition, Manganese Addition, Martensite, Deformation, Transformation, Annealing, Alloy Development, Hot Rolling, Texture, Composition, Stress Strain Data, Microstructure, Castings, Pole Figures.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A030 092 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

User Evaluation of the Fort Knox Industrialized BOQ (Bachelor Officers' Quarters) Project. (U)

DESCRIPTIVE NOTE: Special rept.,
SEP 76 79P Poskus,K. K. ;
REPT. NO. CERL-SR-D-71
PROJ: DA-4-A-762719-AT-02
TASK: 4-A-762719AT0201

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Dec 75, AD-A019 929.
DESCRIPTORS: *Military facilities, *Housing(Dwellings), *User needs, Questionnaires, Officer personnel, Noise reduction, Laundry operations, Kentucky (U)
IDENTIFIERS: BOQ(Bachelor Officers' Quarters), Bachelor Officers' Quarters, Fort Knox(Kentucky), Evaluation (U)

The research objective was to evaluate user satisfaction with the first BOQ (Bachelor Officers' Quarters) constructed by industrialized building methods. This BOQ, Steindam Apartments at Fort Knox, KY, was completed and occupied in late 1974. It was compared to a conventionally built BOQ (Glassford Hall, Fort Huachuca, AZ) of similar age and design, and to another BOQ, located at Fort Knox but of older vintage and different design (Craig Apartments). Evaluation measures included satisfaction ratings with aspects of the building, open-ended comments, background characteristics of the occupants, and physical measures of the building features. The results indicated that the two new BOQs were rated equally in overall satisfaction and that the industrially constructed BOQ was rated superior in exterior appearance, noise insulation, storage areas, lounge facilities, and laundry facilities. Both new BOQs were more satisfactory to the users than the older BOQ at Fort Knox. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO 099062

AD-A030 091 13/13 5/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Conceptualization for the Generation of Habitability Requirements. (U)

DESCRIPTIVE NOTE: Interim rept.,
SEP 76 58P Davis,Thomas A. ;
REPT. NO. CERL-IR-D-69
PROJ: DA-4-A-762719-AT-03
TASK: DA-4-A-762719AT0201

UNCLASSIFIED REPORT

DESCRIPTORS: *Buildings, *Habitability, *Military facilities, Requirements, Reviews, Health, Safety, Performance, User needs, Criteria (U)
IDENTIFIERS: Objectives (U)

This report defines habitability and identifies documents concerning habitability in the context of the facility delivery process of the Corps of Engineers. This process is described as a cycle of events including master planning, construction programming, project development, design, and construction. Occupant needs for health, safety, performance, and satisfaction, and goals and objectives for occupant needs are conceptualized. Habitability requirements for occupant needs are conceptualized and operationally defined. It is concluded that occupant needs and habitability requirements statements are necessary links in the generation of habitability criteria for the facility delivery process. (U)

AD-A029 911 13/13 10/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Failure Analysis of Ozark, Arkansas, Power Plant Socket-Head Cap Screws. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 76 29P Cox,E. P. ;
REPT. NO. CERL-TR-M-186

UNCLASSIFIED REPORT

DESCRIPTORS: *Screws, *Failure(Mechanics), *Fracture(Mechanics), *Turbines, Metallography, Heat treatment, Turbogenerators, Visual inspection, Stress corrosion (U)
IDENTIFIERS: Cap screws, Socket head screws, Dye penetration, Water turbines, Hydroelectric power plants (U)

This research analyzed the socket-head cap screws which failed in the turbines of the Ozark Power Plant, Ozark, AR. The cause of failure was found to be fatigue in improperly heat-treated cap screws. The reduced fatigue strength of the cap screws was further aggravated by the presence of a sharp fillet where the shaft and head joined and by the nonuniform preloads imposed on the cap screws during installation. Several procedures are recommended to improve the service life of the turbine cap screws: (1) Insure that all cap screws or studs are heat-treated in the following manner: (a) Provide full normalizing heat treatment (after forging) at 1600 F (870 C). (b) Austenitize for 2 to 3 hr at 1550 F (843 C), and quickly oil quench. (c) Temper at 800 F (423 C) to a hardness of 38 to 42 Rc(approximately 3 1/2 hr). (2) Use rolled rather than machined threads for both cap screws and studs. The threads should be rolled on after heat treatment. (3) Keep cap screw and stud hardness below 44 RC to prevent stress corrosion cracking. Machine cap screw and stud/nut seats to insure good alignment and perpendicularity; this will eliminate bending stresses. (U)

AD-A029 661 13/13 5/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Conceptualization of Habitability Expressions for the Habitability Data Base. (U)

DESCRIPTIVE NOTE: Interim rept.,
AUG 76 61P Davis,T. A. ;
REPT. NO. CERL-IR-D-68
PROJ: DA-4-A-762719-AT-03
TASK: 4-A-762719-AT-0301

UNCLASSIFIED REPORT

DESCRIPTORS: *Habitability, *Architecture, *Human factors engineering, Data bases, Military requirements, Safety, Health, Cost effectiveness, Military facilities, Military personnel (U)

Habitability is defined and documents containing statements on habitability are identified within the context of the Corps of Engineers facility delivery process. This process is described as a cycle of events that includes master planning, construction programming, project development, design, and construction. Three generic and ten specific habitability expressions are conceptualized which relate properties of occupant acitvities (physical, physiological, and mental) to properties of facilities (dimensions of length, width, light and sound levels, temperature, etc.). Three expressions of cost-effectiveness are conceptualized as ratios of the dollar cost of a facility, facility property, or property categories divided by units of occupant needs for health, safety, performance and satisfactions. Structural, content, and technical assumptions are given, and data categories are defined by example. Further steps toward the development of prototype expressions are outlined. (Author) (U)

AD-A029 633 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Air Pollution Survey Guidelines for Army Installations. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 76 49P Donahue,Bernard A. ;
Schanche,Gary W. ;
REPT. NO. CERL-TR-N-5
PROJ: DA-4-A-162121-A-896
TASK: 4-A-162121-A-89601

UNCLASSIFIED REPORT

DESCRIPTORS: *Air pollution, *Military facilities, *Emission control, *Pollution abatement, *Management planning and control, Army planning, Army operations, Emission, Monitoring, Monitors, Air quality, Air, Pollutants, Dispersing, Diffusion, Mathematical models, Meteorological data (U)

This report on air pollution survey techniques is the second of a series presenting solid waste, air pollutions, and water pollution survey guidelines. It is intended primarily for use by installation planning, operating, and maintenance personnel. The report presents guidelines for developing a comprehensive air pollution management plan and contains information on emission inventory procedures, source categorization, emission calculations, and regulation comparisons. Air pollution dispersion is discussed, along with factors affecting dispersion, such as source characteristics, meteorological factors, and physiological effects. A section about ambient air monitoring discusses the classification of common air pollutants and some general principles of an ambient air-monitoring network, such as instrument selection and optimum instrument siting. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A029 410 13/13 19/1 20/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Compatibility Study of Conductive Flooring. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 76 19P Smith,Alvin ;
REPT. NO. CERL-TR-M-131

UNCLASSIFIED REPORT

DESCRIPTORS: *Floor coverings, *Electrostatic charge, *Premature functioning(Ordnance), *Explosives, *Electrical resistivity, Compatibility (U)
IDENTIFIERS: *Conductive flooring (U)

IAC ACCESSION NUMBER: PL-023808
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report presents the findings of a study performed to assess certain physical properties of four types of conductive flooring-conductive terrazzo, conductive vinyl, conductive rubber, and monolithic trowel-on. The study provides comparative data on which specifications for flooring in explosive manufacturing, loading, and handling facilities can be based. No attempt was made to judge whether any particular material met any existing criteria. The results show a wide range of properties with respect to resistance to chemical attack, spark resistance, and electrical resistivity. (Author) (U)

IAC SUBJECT TERMS: P--(U)Electrical resistance-Conductive flooring, Chemical resistance-Conductive vinyl, Spark resistance-Conductive terrazzo, Wear-Conductive rubber, Flooring-Conductive, ZZ Unlimited.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A029 409 13/13 19/1 20/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Effects of Temperature Cycling on Selected Conductive Flooring. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 76 11P Smith,Alvin ;
REPT. NO. CERL-TR-M-166

UNCLASSIFIED REPORT

DESCRIPTORS: *Floor coverings, *Concrete, *Bonding, *Explosives, Temperature, Failure, Adhesive bonding (U)
IDENTIFIERS: *Conductive flooring, Coefficient of expansion, *Temperature cycling (U)

IAC ACCESSION NUMBER: PL-024222
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report presents the findings of tests performed to determine the effects of temperature cycling on selected conductive flooring materials bonded to concrete slab substrates. Four specimens of each of two conductive flooring materials-Coroline 510 and Ceilcrete 2500B, both products of the Ceilcote Company-were conditioned to temperatures of -10F (-23.3 C) and 76.4 F (24.7 C). Measurements were made to determine the coefficient of expansion of each of the flooring materials and of the concrete to which they were bonded. The results of the tests indicate that the Coroline 510 is satisfactorily bonded to the concrete within the temperature range indicated, while Ceilcrete 2500B is likely to become unbonded under the same conditions. (Author) (U)

IAC SUBJECT TERMS: P--(U)Explosive loading-Conductive flooring, Bond failure-Adhesives, Temperature effects-Coefficient of expansion, Concrete-Floor Coatings, ZZ Unlimited.;

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A028 922 20/1 5/3 14/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Cost Effectiveness of Alternative Noise Reduction Methods for Construction of Family Housing. (U)

DESCRIPTIVE NOTE: Interim rept., JUL 76 92P Schomer,P. D. ;Kessler,F. M. ;Chanaud,R. C. ;Homans,B. L. ;McBryan, J. C. ;
REPT. NO. CERL-IR-N-3
PROJ: DA-4-A-762720-A-806
TASK: 4-A-762720-A-89602

UNCLASSIFIED REPORT

DESCRIPTORS: *Noise reduction, *Housing projects, *Construction, *Cost effectiveness, Residential section, Sound transmission, Construction equipment, Noise pollution, Military engineering, Texas, Charts, Graphs (U)
IDENTIFIERS: Family housing, Noise level, Fort Hood(Texas) (U)

The objective of this work was to obtain the cost/benefit relationships associated with new, quieter construction equipment and/or construction process modification. A workable cost/benefit model was developed for this purpose, but a significantly larger data base must be acquired to apply this model. This initial work effort concentrated on one type of construction-multifamily housing construction. Significant findings included: (1) Construction site boundary noise can be significantly reduced by a number of currently available techniques; (2) the use of two quieter machines of lower capacity in lieu of one standard machine not only costs more but is of questionable noise control value, since the total noise exposure is sometimes greater from two machines than from one larger machine; (3) cost/benefit relationships for estimating purposes can be provided only after a significantly larger data base is obtained. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A028 921 20/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Noise in Dishwashing Rooms. (U)

DESCRIPTIVE NOTE: Final rept., AUG 76 110P McBryan,J. C. ;Schomer, P. D. ;
REPT. NO. CERL-TR-N-6

UNCLASSIFIED REPORT

DESCRIPTORS: *Noise reduction, *Dining halls, Military facilities, Standards, Blowers, Cleaning, Heaters, Protective equipment, Hearing, Baffles (U)
IDENTIFIERS: Noise level, Dishwashing rooms, Dishwashers (U)

Noise levels in dishwashing rooms have been a continuing problem in Army dining facilities. This study has measured, recorded, and analyzed noise levels at Army and civilian facilities of various sizes. Study results show that noise levels increase with number of personnel served and that levels are above the minimum required for instituting a hearing conservation program under Army regulations. Heater/blowers and clanking dishes were found to be the major noise sources. Absorbing baffles and administrative controls are the two primary means presented to reduce the noise exposure. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A028 605 14/5 9/2 13/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Investigation of Automated Evaluation of Field Weld Radiographs. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 76 19P Kearney,F. ;Fornango,J. ;
REPT. NO. CERL-TR-M-185
PROJ: DA-4-A-762719-AT-41
TASK: 4-A-762719-AT-4104

UNCLASSIFIED REPORT

DESCRIPTORS: *Welds, *Radiography, *Automation, *Image processing, Images, Electronic scanners, Defects(Materials), Detection, Computers, State of the art (U)
IDENTIFIERS: Image analysis (U)

IAC ACCESSION NUMBER: NT-013330
IAC DOCUMENT TYPE: NTIAC -MICROFICHE--

Since evaluation of field welds using radiographs requires that an inspector compare the radiograph with a standard, subjectivity is introduced. An automated image-analyzing system is proposed to remove this subjectivity. Radiographs containing sharp, well-defined defects on a uniform background can be analyzed by cathode-ray scanners and special-purpose computers in real time. However, the visual contrast in field weld radiographs is rather poor, and many extraneous features are usually present. A scan of 80 standard radiographs using an image analyzer detected only 206 weld defects while human operators identified 988. Techniques for enhancement and filtering of extraneous features are essential to the automated analysis of field weld radiographs. It is recommended that further work on development of an automatic radiographic analyzer be deferred until major advancements occur in the state of the art of image analysis. (Author) (U)

IAC SUBJECT TERMS: N--(U)*RADIOGRAPHY, *AUTOMATION, *SCANNING, *IMAGE ANALYSIS, WELDS, IMAGE PROCESSING, IMAGES, ELECTRONIC EQUIPMENT, DEFECTS(MATERIALS), DETECTION, COMPUTERS, STATE-OF-THE-ART REVIEWS;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A028 387 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

A Site Selection Procedure for Military Family Housing. (U)

DESCRIPTIVE NOTE: Special rept.,
JUL 76 112P Reynolds,R. ;Moore,A. ;
REPT. NO. CERL-SR-D-67
PROJ: DA-4-A-763734-DT-08
TASK: 4-A-763734-DT-0803

UNCLASSIFIED REPORT

DESCRIPTORS: *Site selection, *Housing(Dwellings), *Military applications, Requirements, Cost estimates, Sanitary engineering, Public utilities (U)
IDENTIFIERS: Military family housing (U)

The report presents a methodology for use by District or Base Facilities Engineering personnel in manually selecting the best alternative site for military family housing. The best possible site is determined by analyzing previous master planning activities, performing preliminary environmental evaluations, and comparing site development costs. (U)

AD-A028 386 13/3 11/9

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Fire Flammability Test of Polyurethane Foams and Protective Coatings. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 76 63P Smith,Alvin ;
REPT. NO. CERL-TR-[illegible]-129
PROJ: DA-4-A-162719-AT-33
TASK: 4-A-162719-AT-3301

UNCLASSIFIED REPORT

DESCRIPTORS: *Expanded plast[illegible] *Fire resistant coatings, *Construction mater[illegible], *Polyurethane resins, Test methods, Theater level operations, Performance(Engineering), Flammability (U)
IDENTIFIERS: Portland cement, *Foamed in place construction (U)

IAC ACCESSION NUMBER: PL-024331
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
Foamed plastics offer a number of advantages in Theater of Operations (TO) construction. They can be shipped to a site in low-volume, high-density forms and converted to low-density, high-volume construction materials. The low-density forms thus made possess high strength and good stability and are typically excellent thermal insulators. They can be used either as primary structural materials (foam domes) or as secondary structural materials contributing to the rigidity and load-bearing capability of wood or metal framework (panelized buildings). The greatest drawback to use of foamed plastics is flammability; generally, such materials burn when subjected to fire, even with the best commercially available flame retardants incorporated. Protection of a structure (and its inhabitants) in which a foamed plastic has been used requires the development and evaluation of a protective coating to reduce flammability of the foamed plastic. The objective of this investigation was to develop a protective coating medium which will allow and encourage the use of foamed plastics in TO construction. Polyurethane foams were identified as the most probable candidates for TO construction; and because using available materials (U)

AD-A028 380 5/9 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Construction Scheduling of AFCS Facilities--Skill Report. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 76 29P Kim,Seung J. ;Nelson, Robert R. ;
REPT. NO. CERL-TR-C-72
PROJ: DA-4-A-763734-DT-34
TASK: 4-A-763734-DT-3404

UNCLASSIFIED REPORT

DESCRIPTORS: *Skills, *Construction, *Army planning, Military facilities, Manpower utilization, Jobs, Classification, Technicians, Ratings (U)

This report presents a list of skills to be used in construction planning of Army Facilities Components System (AFCS) facilities in the theater of operations (TO). The proposed skill list's categories include all the major construction skills that may have planning significance in AFCS TO construction projects. The list represents an upper limit on the ability of the user of AFCS data to break down labor requirements into more refined skill groupings. If necessary, it can be reduced to include fewer skills; this task is left to the planner having such a need. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A027 644 13/8 14/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development of a Weld Quality Monitor. (U)

DESCRIPTIVE NOTE: Interim rept.,
JUL 76 28P Weber,R. ;Kearney,F. ;
Joshi,S. ;
REPT. NO. CERL-IR-M-183
PROJ: DA-4-A-762719-AT-41
TASK: 4-A-762719-AT-4104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Nondestructive Testing for Field Welds.
DESCRIPTORS: *Monitors, *Nondestructive testing, *Welding, Welds, Quality control, Gas metal arc welding, Monitoring, Real time (U)

IAC ACCESSION NUMBER: NT-014520
IAC DOCUMENT TYPE: NTIAC -MICROFICHE--
A weld monitoring system has been developed based on conditioning the primary signals from the welding machine and comparing them with preset limits. A light is activated when a welding parameter such as voltage, current, or heat input is outside the control limits. The circuitry has been tested with simulated primary signals. The voltage channel has also been tested using primary signals from an automatic gas metal-arc welding machine. (U)

IAC SUBJECT TERMS: N--(U)DEVELOPMENT, WELDS, QUALITY, MONITORING, SYSTEMS, CONTROL, VOLTAGE, ELECTRIC CURRENTS, HEAT, ARC WELDS, AUTOMATION, MACHINES, WELDING, PARAMETERS;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A027 585 15/5 5/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Preparation and Review of DD Form 1391. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 76 44P Lev,Ovadia E. ;Stellhorn, William H. ;
REPT. NO. CERL-TR-P-69
PROJ: DA-4-A-762719-AT-41

UNCLASSIFIED REPORT

DESCRIPTORS: *Forms(Paper), *Construction, Preparation, Instructions, Military engineering, Computer programming, Computer applications (U)
IDENTIFIERS: Form 1391(DD) (U)

The Military Construction Project Data Sheet (DD Form 1391) is used to state requirements and justifications in support of funding requests for military construction projects. It is submitted for all projects requiring OSD approval, including major and minor new construction and certain projects involving Operations and Maintenance, restoration of damaged facilities, and nonappropriated fund construction. The purpose of this report is to formulate recommendations for computer-assisted processing of DD Form 1391 and to facilitate development of the recommended procedures. Preparation of the form by Army installations and its review by the Office of the Chief of Engineers (OCE) are described. The report also identifies the regulations, criteria, and data sources on which this process is based. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A027 584 5/1 15/5 13/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Construction Scheduling of AFCS Facilities Methodology Report. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 76 69P Kim,Seung J. ;
REPT. NO. CERL-TR-C-71
PROJ: DA-4-A-763734-DT-34
TASK: 4-A-763734-DT-3404

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Scheduling, *Military operations, Military engineering, Military facilities, Theater level operations, Field army, Data processing, Military planning, Battalion level organizations, Brigade level organizations, Military commanders (U)

The report presents the results of the first phase of a research project to develop two scheduling programs: one for the Office of the Chief of Engineers (OCE) and the other for engineer units. The first phase of the study aims to establish procedural frameworks for the two programs. Several existing computer programs were analyzed to see if their scheduling features can be adapted to the proposed programs. Based on this analysis and guidance received from representatives of the Army Facilities Components System (AFCS) and the Army Engineer School, the study developed a procedural framework for the scheduling programs, specifically a Critical Path Method (CPM) based scheduling technique for the program to be used at OCE and a priority-based resource scheduling method for the one to be used by engineer battalions, groups, brigades, or commands. (U)

AD-A027 431 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Computer-Aided Environmental Impact Analysis for Air Force Base Realignment Activities: User Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 76 77P Riggins,R. E. ;Jain,R. K. ;
REPT. NO. CERL-TR-N-4

UNCLASSIFIED REPORT

DESCRIPTORS: *Computer aided design, *Airports, *Environmental impact statements, Air Force facilities, Air Force planning, Computer applications, Military organizations, Manuals, Assessment, Environments (U)
IDENTIFIERS: Environmental impact computer systems, Environmental impact analysis, Assessment centers, Air Force bases (U)

The federal governments has requested that its agencies incorporate environmental considerations into the planning of new projects and activities. Environmental impact assessments and statements (EIA/EIS) provide a basis for review and analysis of a proposed project's environmental consequences. The Environmental Impact Computer System (EICS), developed by the U.S. Army Construction Engineering Research Laboratory, helps planners efficiently identify primary and secondary impacts of their proposed projects or activities and suggests ways to mitigate these impacts. This manual is designed to help Air Force personnel prepare EIAs and EISs using the EICS. Detailed instructions for accessing the mission change functional area of EICS are included as is an input form necessary for obtaining EICS output. The manual discusses in detail procedures necessary for using EICS output for environmental impact assessment and outlines the steps for preparing a proper and complete EIA/EIS. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A027 386 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Material Handling Equipment Selection Guide for Commissary Warehouses. (U)

DESCRIPTIVE NOTE: Final technical rept., MAY 76 27P DeCardy,John R. ;Brown, Gerald J. ;Rood,Omar E. , Jr;
REPT. NO. CERL-TR-P-68

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Jun 76, AD-A027 385.
DESCRIPTORS: *Military facilities, *Warehouses, *Materials handling equipment, Storage racks, Pallets, Logistics, Downtime, Cost analysis, Maintenance (U)
IDENTIFIERS: Space utilization, *Commissaries (U)

This report is a condensation of Material Handling Equipment for Commissary Warehouses (CERL Technical Report P-67) and is to be used in selecting efficient and economical Material Handling Equipment (MHE). This selection guide is based on a series of nomographs developed in accordance with basic assumptions about a 'typical' warehouse operation. A step-by-step procedure, which includes an example selection problem, guides the commissary officer in choosing MHE by using information obtained from his own operation. The commissary officer may determine estimates of such basic information as the volume of goods moved through the warehouse; receiving/stocking and picking standards in minutes per carton; MHE requirements; manpower requirements; MHE feasibility; MHE ownership and operating cost; and total cost of the MHE operations. The final equipment choice for a specific warehouse will depend solely on its intended application. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A027 385 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Material Handling Equipment for Commissary Warehouses. (U)

DESCRIPTIVE NOTE: Final rept., JUN 76 55P Brown,Gerald J. ;DeCardy, John R. ;Rood,Omar E. , Jr;
REPT. NO. CERL-TR-P-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated May 76, AD-A027 386.
DESCRIPTORS: *Military facilities, *Warehouses, *Materials handling equipment, Storage racks, Pallets, Logistics, Downtime, Cost analysis, Maintenance (U)
IDENTIFIERS: Space utilization, *Commissaries (U)

This report presents the findings of a material handling equipment (MHE) study performed to develop guidelines for efficient MHE selection in commissary warehouses. The significant factors in MHE selection are storage volume utilization, manpower requirements, purchase cost, operating cost, flexibility, and maintainability. A relative measure of performance under each factor is developed to determine feasibility and economy of equipment alternatives. Guidelines for equipment selection are provided and explained via an example of a standard warehouse configuration. Final choice of equipment for a specific warehouse depends solely on the application for which it will be used. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A027 384 13/13 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Seismic Design Methods for Military Facilities -- Preliminary Recommendations. (U)

DESCRIPTIVE NOTE: Interim rept.,
JUN 76 80P Stockdale,William K. ;
REPT. NO. CERL-IR-M-184
PROJ: DA-4-A-76719-AT-05
TASK: 4-A-76719-AT-0502

UNCLASSIFIED REPORT

DESCRIPTORS: *Military facilities, *Earthquake resistant structures, Earthquake engineering, Dynamic response, Seismic waves, Degrees of freedom, Damping, Structural response, Ground motion (U)

This report presents preliminary recommendations for the methods of structural analysis to be used in the design of critical facilities on military installations. The recommended dynamic analysis methods are described and discussed, and examples are presented which illustrate the elastic and inelastic response spectra methods. It is recommended that dynamic methods be used in all areas where the expected ground acceleration exceeds 0.10 g. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A027 383 13/3 11/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Review of the Weldability of Construction Materials. (U)

DESCRIPTIVE NOTE: Interim rept.,
JUN 76 27P Weber,R. A. ;Jackson,C. E. ;
REPT. NO. CERL-IR-M-168
PROJ: DA-4-A-162121-A-897
TASK: 4-A-162121-A-89702

UNCLASSIFIED REPORT

DESCRIPTORS: *Structural steel, *Weldability, Construction materials, State of the art (U)

IAC ACCESSION NUMBER: NT-014518
IAC DOCUMENT TYPE: NTIAC -MICROFICHE--

The report reviews the concept of weldability of construction materials. Metallurgical and mechanical properties influenced by welding are discussed, as are the effects of welding variables such as heat input, nugget area, and cooling rate. An experimental procedure is proposed to document significant welding parameter ranges. The results of the experimental procedure will provide a data base for other research on the nondestructive testing of field welds. (U)

IAC SUBJECT TERMS: N--(U)WELDS, WELDING, CONSTRUCTION, MATERIALS, MECHANICAL PROPERTIES, METALLURGY, HEAT, COOLING, EXPERIMENTAL DATA, PROCEDURES, DATA, RESEARCH, REVIEWS;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A027 382 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Erection Procedures for Prefabricated Expandable Foam/Wood Structures. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 76 36P Trent ,R. L. ;Whiteside,T. M. ;Roberts,J. ;
REPT. NO. CERL-IR-C-52
PROJ: DA-4-A-763734-DT-34
TASK: 4-A-763734-DT-3404

UNCLASSIFIED REPORT

DESCRIPTORS: *Military facilities, *Expandable structures, *Modular construction, Army equipment, Prefabricated buildings, Composite materials, Wood, Expanded plastics, Forward areas (U)

IAC ACCESSION NUMBER: PL-024866
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
This report, the fourth in a series covering development of multi-purpose structural components, presents the field-verified erection procedure for a modular foam/wood building system developed for use in the theater of operations (TO). The system is based on multiple use of modular panels for the floor, wall, and roof, structurally supported by foundation bents and roof trusses. The erection procedures are detailed for use by the Corps of Engineers troops and Project Officer assigned to field test the system at a U.S. Army Training and Doctrine Command (TRADOC) installation. Actual fabrication of the panels, including the foaming operation, is not included in this report. (U)

IAC SUBJECT TERMS: P--(U)Modular panels-Building construction, Modular panels-Roofing, Erection methods-Modular panels, Construction-Prefabricated structures, Expanded plastics-Prefabricated panels, Urethane/wood-Wall panels, Foam/wood-Floor panels, Erection-Prefabricated structures, ZZ Unlimited.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A027 139 5/1 5/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The Economic Impact Forecast System: Description and User Instructions. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 76 37P Webster,R. D. ;Mitchell,R. A. ;Welsh,R. L. ;Shannon,Ewa ;Anderson,M. L. ;
REPT. NO. CERL-TR-N-2
PROJ: DA-4-A-762720-A-896
TASK: 4-A-762720-A-89601

UNCLASSIFIED REPORT

DESCRIPTORS: *Environmental impact statements, *Information systems, *Army planning, Army Corps of Engineers, Economic analysis, Forecasting, Cost analysis, Housing(Dwellings), Construction, Military facilities, Military engineering, Systems approach, Sociology, Department of Defense, Army training, Law(Jurisprudence), Missions, Management planning and control (U)
IDENTIFIERS: *Environmental technical information system, ETIS(Environmental technical information system) (U)

The Economic Impact Forecast System (EIFS) uses information from the Department of Commerce (Bureau of Census and Bureau of Economic Analysis); Department of Defense; and Department of Health, Education, and Welfare to calculate for DoD projects or actions the economic impacts caused by military activities. Using export-based location quotient techniques as the basis of its predictions, EIFS estimates the impact that expenditure of federal dollars has on local businesses, households, and governments in the areas of employment, personal income, total business volume, housing revenues, housing and business investments, and government expenses. The system currently has four operational functional areas: construction, operations and maintenance, mission change, and training. As development continues, the prediction equations will be redefined and additional functional areas will be (U)

AD-A026 588 13/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Interim Feasibility Assessment Method for Solar Heating and Cooling of Army Buildings. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 76 51P Hittle,Doug ;Holshouser,D. ; Walton,G. ;
REPT. NO. CERL-TR-E-91
PROJ: RDT/E-4-A-763734-DT-08
TASK: RDT/E-4-A-763734-DT-0806

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar heating, *Solar energy, *Cooling, Buildings, Military facilities, Weather, Computerized simulation, Time dependence, Feasibility studies, Solar collectors, Life cycle costs (U)
IDENTIFIERS: *Solar cooling (U)

This report discusses design considerations for heating and cooling buildings with solar energy. General criteria are provided for selecting the components and configuration of such a system. The report presents parametric computer simulation studies for two buildings of typical construction at five locations in the United States. Hourly building heating and cooling loads were computed for each building at each site using the National Bureau of Standards Load Determining Program (NBSLD) and hourly weather data. Using these loads, hourly simulation studies were performed to determine the effects of collector type, collector area, collector tilt angle, thermal energy storage tank volume, and heat exchanger effectiveness on simulated solar heating and cooling system performance. The results of more than 200 one-year solar system simulations are presented. In addition, a dimensionless graph and methodology are provided which can be used to estimate solar heating and cooling system performance for buildings and sites other than those studied. The report provides an explanation and an example of an approach for determining the life cycle cost of a solar-equipped building as compared to a conventional installation.(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A026 173 13/2 13/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Vehicle Washing Operations and Wastewater Discharge, Fort Drum, NY - Findings and Recommendations. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 76 51P Fileccia,R. J. ;Benson,L. J. ;Conley,K. A. ;Matherly,J. E. ;
REPT. NO. CERL-TR-E-80
PROJ: DA-4-A-762720-A-896
TASK: 4-A-762720-A-89603

UNCLASSIFIED REPORT

DESCRIPTORS: *Waste water, *Vehicles, Cleaning, Sanitary engineering, Army equipment, Water pollution abatement, Discharge, Drainage, Cost estimates, Army training (U)

Army vehicle washing operations, washing facilities, and the wastewater discharges resulting from these activities were surveyed at Fort Drum, NY. On the basis of survey data and information supplied by post personnel, a concept design and cost estimates were prepared for a new consolidated washrack facility to replace existing on-post facilities. The recommended design incorporates hand-held, high-pressure/low-volume wash hoses for tracked vehicles and fixed-nozzle drive-through facilities for wheeled tactical equipment. The centralized wastewater treatment system proposed for the facility consists of a sedimentation basin equipped for mechanical free oil removal followed by filtration through a polishing filter. (Author) (U)

AD-A026 043 9/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

RFI Shielding Effectiveness of Steel Sheets with Partly Welded Seams, (U)

76 15P Honig,Ernest M. , Jr;

UNCLASSIFIED REPORT

DESCRIPTORS: *Welded joints, *Electromagnetic shielding, Defects(Materials), Cracks, Resonant frequency, Antennas, Guided missile silos (U)

Current specifications, largely unsupported by experimental data, require weld seams in electromagnetically shielded facilities to be radiographically defect-free. These specifications have necessitated spending $1,000,000 for inspection and weld rework at SAFEGUARD missile sites. In a study of the effect of weld defects on the shielding effectiveness of shielded enclosures containing welded seams, Carlson found that weld seams having weld defects under a critical size could provide adequate shielding effectiveness, and that repair of such seams was an unnecessary expense. He suggested that the effect of crack (or slot) width and length on shielding effectiveness be evaluated in a future study that would determine critical sizes for classes of defects and would investigate circumstances in which a flaw might act as resonant antenna. (Author) (U)

AD-A026 041 13/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Method for Estimating Solar Heating and Cooling System Performance, (U)

76 14P Hittle,Douglas C. ;Walton, George N. ;Holshouser,Donald F. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar heating, *Solar energy, *Air conditioning equipment, Buildings, Geographical distribution, Solar radiation, Computerized simulation, Climate (U)

During FY75 the Construction Engineering Research Laboratory, under funding from the Office of the Chief of Engineers, engaged in a research effort to develop a method for the preliminary determination of the feasibility of heating and cooling buildings with solar energy. The principle objective of the work effort was to provide a simple means for estimating the expected performance of a given solar heating and cooling system when applied to typical buildings in various regions of the Country. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A025 317 13/3 5/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Proceedings of the CIB W-65 Symposium on Organization and Management of Construction, 19-20 May 76, U.S. National Academy of Sciences, Washington, D. C. (U)

MAY 76 765P

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Management, Symposia, Algorithms, Optimization, Decision making, Assessment, Cost analysis, Computer applications, Management information systems, Construction materials, Productivity, Models, Risk analysis, India, Australia, Economics, User needs, Structural analysis (U)

The 51 papers presented in these proceedings describe three facets of the organization and management of construction: (1) the organizational forms for construction, (2) an evaluation of organizational forms, and (3) management methods in construction. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A025 209 13/13 11/2 19/4

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Ballistics Tests of Fibrous Concrete Dome and Plate Specimens. (U)

DESCRIPTIVE NOTE: Final rept., APR 76 45P Naus,D. J. ;Williamson,G. R. ;
REPT. NO. CERL-TR-M-179
PROJ: DA-4-A-162719-AT-33
TASK: 4-A-162719-AT-3301

UNCLASSIFIED REPORT

DESCRIPTORS: *Domes(Structural forms), *Concrete, *Structural analysis, Weapons effects, Ballistic testing, Plates, Weapon systems, Fiber reinforcement, Steel, Small arms, Mortars, Terminal ballistics, Resistance, Inflatable structures (U)

Fibrous concrete plate and inflation-formed dome specimens were fabricated in the laboratory and tested to evaluate their resistance to ballistics. Variables in the investigation included: weapon system (small arms, mortars, grenades, and explosives); range (0 to 200 yds); fiber volume content (0 to 3 percent); thickness (1 to 8 in.); type of fiber reinforcement (mild steel, drawn steel, and fiberglass); and angle of incidence (0 to 75 degrees). Test results indicated the following: (1) the inflation-formed domes provide adequate protection from mortars and grenades detonated at ranges of 5 ft or more; (2) the specimens reinforced with fiber are far superior to those without fibers; (3) material systems of the thickness considered do not provide effective protection against demolition charges such as Composition C4; (4) resistance to penetration increases with decreased angles of impact and increased range; and (5) the specimens reinforced with the more ductile steel fibers perform slightly better than those with glass fibers. (Author) (U)

AD-A025 203 11/6

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Initial Studies of In-Sem Fracture Using a Tensile Stage. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 76 34P Aleszka,James ;
REPT. NO. CERL-TR-M-181
PROJ: DA-4-A-761102-AT-23
TASK: 4-A-761102-AT-2302

UNCLASSIFIED REPORT

DESCRIPTORS: *Steel, *Fracture(Mechanics), Tensile properties, Iron alloys, Plastic deformation, Electron microscopy, Crack propagation, Plates, Scanning, Strain(Mechanics) (U)
IDENTIFIERS: HY-130 steel, A-36 steel, AX-110 welds, Scanning electron microscopy (U)

IAC ACCESSION NUMBER: MCIC-09586
IAC DOCUMENT TYPE: MCIC -HARD COPY--
Using a uniquely designed base, tensile tests were performed on A-36 and HY-130 steel plate specimens and a defective AX-110 weld deposit under vacuum inside a scanning electron microscope. Although the base is also designed to handle compression and bending tests, this initial investigation was confined to tensile loading. Results to date show that considerable plastic deformation occurs within the grains of the A-36 and HY-130 specimens prior to failure. Stringers of inclusions were found to serve as principal sites for crack initiation and void formation. The tensile stage was found to be successful in monitoring crack growth in specimens. (Author) (U)

IAC SUBJECT TERMS: M--(U)ENGINEERING STEEL, HY-130, PLATE, SEM, PLASTIC DEFORMATION, GRAIN STRUCTURE, FAILURE, LOADING, CRACK PROPAGATION, VOIDS, WELDS, ULTIMATE TENSILE STRENGTH, TENSILE YIELD STRENGTH, ELONGATION, FRACTURE, FRACTURE SURFACE.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A024 938 5/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development of the Military Construction Data System (MCDS). Part II. (U)

DESCRIPTIVE NOTE: Interim rept.,
APR 76 42P Stellhorn,William H. ;Chung, Kin-Man ;Wong,William ;
REPT. NO. CERL-IR-P-66
PROJ: DA-4-A-762719-AT-01
TASK: 4-A-762719-AT-0101

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Part 1, AD-A000 710.
DESCRIPTORS: *Information systems, *Construction, Engineering, Military facilities, Costs, Life cycles, Maintenance, Medical equipment, Integrated systems, Reliability, Compatibility, Computer programming, Data management, Data bases (U)
IDENTIFIERS: MCDS(Military Construction Data System), Military construction data system, System 2000 (U)

Three major activities in the on-going development of the Military Construction Data System are described. A revised structure for the data dictionary/directory is presented and the function of its various components explained. An experiment is described in which the contents of two data files maintained under the SYSTEM 2000 data base management software are transferred to a RAMIS installation. Finally a test interface between the MCDS data base and an independent application program is discussed. Recommendations for near-term development include the maintenance of selected 'live' data files and provision of retrieval services for users. (Author) (U)

AD-A024 910 13/3 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

An Analytical Model for Uniaxial Cyclic Inelastic Behavior of Reinforced Concrete. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 76 25P Sharma,Sushil K. ;
Bhattacharyya,Rabi K. ;
REPT. NO. CERL-TR-M-180
PROJ: RDT/E-4-A-161102-AT-23
TASK: 4-A-161102-AT-2302

UNCLASSIFIED REPORT

DESCRIPTORS: *Reinforced concrete, Strain(Mechanics), Cyclic tests, Deformation, Mathematical models, Stresses, Loads(Forces), Experimental data, Reinforcing materials, Steel, Earthquake resistant structures, Safety, Earthquake engineering (U)
IDENTIFIERS: Design (U)

The report presents an analytical model for uniaxial cyclic inelastic behavior of reinforced concrete. The model was synthesized from the analytical models for plain concrete and reinforcing steel. The parameters of the models were derived from extensive experimental data taken from the literature. Cyclic experimental tests on plain concrete and steel involving large inelastic strains were simulated by the plain concrete and reinforcing steel models; the experimental and analytical results showed close agreement. (U)

AD-A024 786 10/2 15/3.1 21/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The Feasibility of a Storable Propellant Turbine/High-Speed Alternator as a Compact Short-Life Power System for Hardened Ballistic Missile Defense (BMD) Installations. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 76 27P Moore,Nicholas R. ;
REPT. NO. CERL-TR-E-90

UNCLASSIFIED REPORT

DESCRIPTORS: *Hardened structures, *Power supplies, *Turbogenerators, *Storable rocket propellants, Alternators, Liquid propellants, Gas generating systems, Antimissile defense systems (U)
IDENTIFIERS: *Turboalternators, AC generators (U)

Power systems for use in Ballistic Missile Defense (BMD) installations must satisfy unusual requirements. The most significant of these are that the power system must not be adversely affected by strong pressure perturbations in the atmosphere, it must be small and lightweight since volume inside a BMD building is very expensive, and it must reliably fulfill the specified mission. Unfortunately, adaptation of conventional diesel and gas turbine power systems to meet these requirements is expensive. This report describes and technically evaluates a turboalternator power system which is uniquely suited for the BMD mission. This power system consists of an alternator driven by a small turbine which is powered by gaseous products from the decomposition of a single, stored liquid fuel. The system does not consume air from the atmosphere, nor does it require an external cooling system or heat sink. These characteristics give the turboalternator significant advantages which may lead to substantial cost savings over conventional diesel and gas turbine power systems when short operating times are required. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A024 751 15/5 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Disposal of Cleaning Debris. (U)

DESCRIPTIVE NOTE: Interim rept. Jul 74-Jun 75,
APR 76 85P KLOSTER,S. E. ;Mikucki,W. J. ;
REPT. NO. CERL-IR-E-77

UNCLASSIFIED REPORT

DESCRIPTORS: *Disposal, *Debris, *Waste disposal, Cleaning, Burning rate, Decomposition, Buried objects, Purchasing, Recycled materials, Processing, Air pollution (U)
IDENTIFIERS: *Disposal of cleaning debris, Cleaning debris, Unconfined burning, Confined burning, Burying refuse, Firewood, Mulch, Selling nonprocessed debris, Burying nonprocessed debris (U)

IAC ACCESSION NUMBER: PL-900778
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--

Most project managers at Corps of Engineers (COE) impoundments dispose of cleaning debris by unconfined burning. However, environmental legislation and enforcement trends indicate that unconfined burning will soon be eliminated as a means to dispose of cleaning debris in many areas of the United States. There are several methods to dispose of cleaning debris. These alternatives include, but are not limited to: (1) placing the debris on the ground to decompose; (2) burying the debris with or without processing; (3) selling the debris without processing; (4) processing the debris for sale as firewood, mulch, etc.; (5) burning the debris by confined or unconfined burning techniques. Eight sites were visited to collect site-specific data on a list of factors deemed to be essential in evaluating the disposal methods. Four site visits are described in detail while the remaining four are summarized. The study determined that each site must be considered individually, using social, economic, and physical factors to determine the most appropriate debris disposal method for the location. There is no universal debris removal or disposal method that can(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A024 381 11/6 11/3 13/10 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

First Annual Inspection of Buzzards Bay Pilings. (U)

DESCRIPTIVE NOTE: Interim rept.,
APR 76 32P Kumar,A. ;Hahin,C. ;
REPT. NO. CERL-IR-M-172
PROJ: CWIS-31204

UNCLASSIFIED REPORT

DESCRIPTORS: *Pile structures, *Protective coatings, *Cathodic protection, *Steel, Corrosion, Sea water, Fouling, Deterioration, Massachusetts (U)
IDENTIFIERS: Buzzards Bay (U)

This report presents the results of part of a study being conducted to determine the amount of coating deterioration on pilings in coastal areas. The 15-year study will consider the effects of sacrificial cathodic protection, temperature, and geography on coating deterioration in seawater. Results will be used to optimize coating selection. The first annual inspection of the pilings at Buzzards Bay, MA, was conducted from 24 to 28 July 1975. The inspection consisted of a visual evaluation of the piles and electrical measurements of the cathodic protection indices and corrosion potentials of the piles. The piles have developed slight biofouling in the tidal zone. Light guano covers the top 5 to 6 ft (1.5 to 1.8 m) of the pilings. Visual inspection of the piling areas above the water determined that all the piles had a rating of 10 according to ASTM G10-68 standards. Only one coating, system No. 12, suffered installation damage. All piles with sacrificial anodes showed adequate protecting potentials. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A024 303 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Environmental Impact Computer System Attribute Descriptor Package. Reference Document. (U)

DESCRIPTIVE NOTE: Final rept.
APR 76 800P
REPT. NO. CERL-TR-E-86
PROJ: DA-4-A-1621-A-896
TASK: 4-A-1621-A-89601

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-A008 989.
DESCRIPTORS: *Environmental impact statements, *Environmental protection, *Construction, *Military applications, Land use, Noise(Sound), Handbooks, Pollution, Wildlife, Computer applications, Data processing, Methodology, Ecology, Health, Science, Air pollution, Water pollution, Energy (U)
IDENTIFIERS: Environmental impact computer system, Attribute descriptor package (U)

IAC ACCESSION NUMBER: PL-900378
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report describes the objective, philosophy, and use of the Environmental Attribute Descriptor Package Reference Document to the user of the Environmental Impact Computer System (EICS). The report explains why descriptor packages and paragraphs were developed, how to use them, and how the, will help the user prepare Environmental Impact Assessments and Environmental Impact Statements for their projects and programs in a more economical and efficient manner. The report contains background information about EICS, describes the three environmental attribute levels, and provides a copy of all descriptor packages and paragraphs developed to date, separated by technical specialty. (U)

IAC SUBJECT TERMS: P--(U)Pollutants review-Environmental effects, ZZ MTD, ZZ Unlimited.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A024 141 5/2 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Access to the Military Construction Data System (MCDS): A User's Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 76 43P Ross,Anne H. ;
REPT. NO. CERL-TR-P-65
PROJ: DA-4-A-762719-AT-01
TASK: 4-A-762719-AT-0101

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Sep 74, AD-A000 710.
DESCRIPTORS: *Information retrieval, *Construction, *Military engineering, Manuals, Data bases, User needs, Computer programming, Words(Language), Classification, Identification, Index terms, Information systems (U)
IDENTIFIERS: MCDS(Military Construction Data System), Military construction data system, Key words, Objectives, Retrieval commands (U)

Procedures and examples are provided for accessing the Military Construction Data System (MCDS) Data Dictionary/Directory. Use of the keyword indexes, and several predefined retrieval commands is explained, and current lists of keywords and data element definitions are included. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A023 972 15/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Decor Guide for Commissary Store Facilities. (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 75 123P Brittain,Richard Gray ; Porter,Robert L. :
REPT. NO. CERL-TR-D-58

UNCLASSIFIED REPORT

DESCRIPTORS: *Military facilities, Planning, Engineering, Military personnel, Purchasing, Food, Clothing, Handbooks, Drawings, Pictures, Colors, Floors, Walls, Cost estimates (U)
IDENTIFIERS: Interior decorating, *Commissaries (U)

The guide presents interior commissary store decor schemes to be used by commissary officers and facilities engineers when improving and modernizing Army commissary facilities. These decor schemes are intended to create a shopping atmosphere by using 'functional decor': that is, decor that improves the overall appearance of the commissary facility and makes shopping more efficient and satisfying. The decor schemes accomplish this by using color to create and emphasize the character of each department within the commissary store. The decor schemes tend to make the total store more understandable and facilitate identification of the departments, allowing customers to locate and select desired merchandise more quickly. By simplifying the shopping environment, the schemes allow the merchandise to be the focal point of the store. The designs focus on improvement of existing facilities, but the concepts and items listed are adaptable and can be used effectively to decorate new facilities. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A023 750 13/13 14/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Industrialized Building Construction Time/Cost Model - First Quarter FY 76 Results. (U)

DESCRIPTIVE NOTE: Interim rept.,
APR 76 31P Poskus,K. K. ;
REPT. NO. CERL-IR-D-66
PROJ: DA-4-A-762719-ATA-1
TASK: 4-A-762719-ATA-101

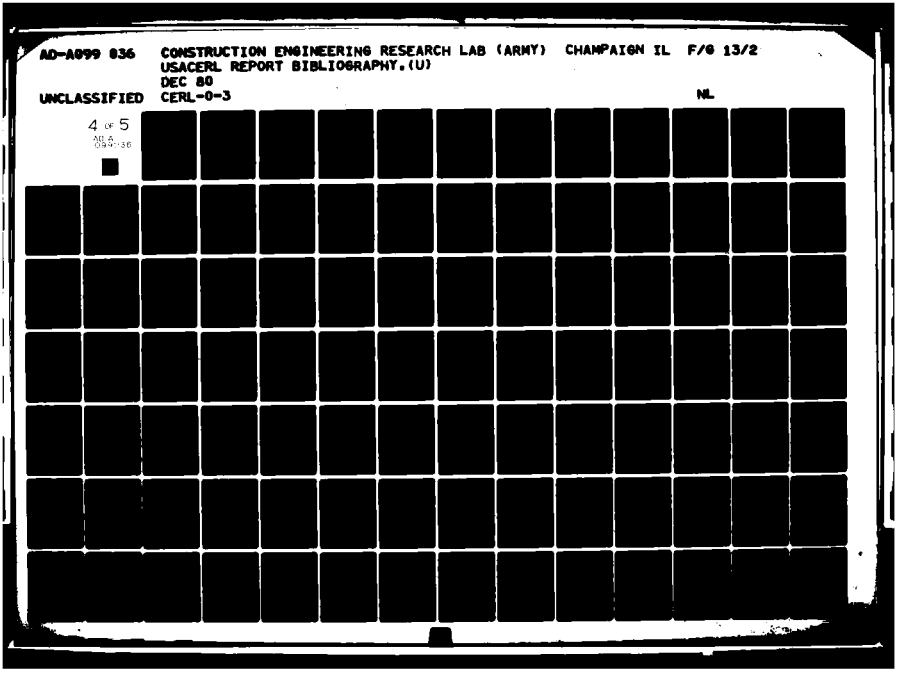
UNCLASSIFIED REPORT

DESCRIPTORS: *Modular construction, *Cost analysis, Prefabrication, Models, Construction, Time, Delivery, Questionnaires, Statistical analysis, Surveys, Housing projects, Prefabricated buildings (U)
IDENTIFIERS: Mobile homes, *Industrialized building (U)

The time/cost project was developed as a means of comparing the cost and delivery time of industrialized building with that of conventional building to form a basis for selecting the best type of facility construction. A new cost-estimating procedure was needed to provide cost estimates for industrialized building without reference to drawings or specifications. This report describes the results of a July 1975 survey administered to a sample of industrialized builders of housing products. The survey was designed to find those variables which could predict differences in the cost and delivery time of housing products. The statistical summaries of the three major types of housing producers (panelized, modular, mobile) are presented, along with tests for the significance of differences in physical plant, production time, and employee characteristics. A followup questionnaire was sent to respondents to clarify confusion in the 'skilled' versus 'unskilled' classification of employees. Since the survey did not contain a sufficient diversity of material types of erection time data to yield the anticipated results, this report discusses the future direction for the project. (Author) (U)

AD-A099 036 CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL F/G 13/2
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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A023 596 9/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Investigation of RF Coupling and Radiation Leakage Parameters of Some Typical Junction Box Circuitry Configurations. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 76 70P Adelman,J. ;Nielsen,P. ;
McCormack,R. ;
REPT. NO. CERL-TR-E-88

UNCLASSIFIED REPORT

DESCRIPTORS: *Junction boxes, *Electromagnetic interference, Leakage(Electrical), Coupling(Interaction), Electromagnetic compatibility, Transient radiation effects, Transmission lines, Electromagnetic pulses (U)

The objective of the study, composed of two experiments, was to collect baseline data that could be used to determine the degree of electrical coupling between circuits and RF leakage of some common junction box configurations. These experiments assume an empirical approach for measuring RF coupling and leakage parameters due to the complex geometry of the junction box circuitry configuration. The report presents a method for measuring these distributed parameters in order to calculate the values of amplitude and phase coupling for this simplified case from the model. These values are compared to the experimental measurements for the model to verify the experimental procedure. The results of this theory are then extended to the more complex structure of the cabling configuration within the conduit and the junction box. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A023 244 10/1 10/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Total Energy and Total Utility Systems for Conservation of Resources. (U)

DESCRIPTIVE NOTE: Interim rept. Jul 73-Jun 74,
MAR 76 33P Hittle,Douglas C. ;
REPT. NO. CERL-IR-E-61
PROJ: DA-4-A-76720-A-896
TASK: 4-A-76720-A-89602

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy management, *Waste management, Conservation, Resource management, Solid wastes, Liquid wastes, Heating, Cooling, Electric power production, Buildings, Military facilities, Electrical loads, Thermal utilization, Cost benefits, Data acquisition, Requirements, Feasibility studies, Assessment, Methodology (U)
IDENTIFIERS: *Total energy systems (U)

IAC ACCESSION NUMBER: PL-900858
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report describes the problems encountered in the feasibility assessment and design of total energy/total utility systems, outlines the general framework of a computational model for solving these problems and describes the data required to validate such a model. (Author) (U)

IAC SUBJECT TERMS: P--(U)Energy recovery, Design optimization, Residential applications, Buildings, Economics, Modeling, Computer programs, Heat recovery, Solid wastes, Municipal wastes, Incineration, Pyrolysis, Anaerobic digestion, Sludge, Military applications, ZZ MTDE, ZZ Unlimited.;

AD-A023 186 13/2 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

LIFE2 User's Manual. (U)

DESCRIPTIVE NOTE: Final technical rept., JAN 76 117P Lindow,E. S. ;Marvin,E. L. ;McManus,P. F. ;Brown,J. J. ;Kuo,F. ;
REPT. NO. CERL-TR-C-59
PROJ: DA-4-A-763734-DT-08
TASK: 4-A-763734-DT-0801

UNCLASSIFIED REPORT

DESCRIPTORS: *Pavements, *Computer programs, *Programming manuals, User needs, Computer aided design, Maintenance, Repair, Landing fields, Cost analysis, Roads, Computer files (U)
IDENTIFIERS: LIFE2 computer program (U)

This report describes a digital computer program that enables pavement designers and planners to analyze the consequences of available pavement design alternatives. The program includes analytical procedures for designing rigid and flexible pavements for airfields, roads, and streets. In addition, this program is capable of evaluating maintenance and repair strategies. The resulting combinations of design schemes and maintenance strategies are ranked by total cost over the design life of the pavement. The manual presents background information about the program's analytical methodology and provides detailed instructions for its operation and input preparation. (Author) (U)

AD-A022 844 9/3 6/10

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Fume Emissions from Coal-Tar Pitch. (U)

DESCRIPTIVE NOTE: Technical manuscript, JAN 76 109P Hittle,Douglas C. ;Stukel, James J. ;
REPT. NO. CERL-technical-Ms-E-84

UNCLASSIFIED REPORT

DESCRIPTORS: *Coal tar, *Fumes, *Occupational diseases, Roofs, Particle size, Spatial distribution, Concentration(Chemistry), Toxicity, Pitch(Material), Gas chromatography, Flow rate, Chemical composition, Time, Temperature, Chemical analysis, Air pollution, Mathematical models, Heat transfer, Physical properties, Chemical properties (U)

This study was intended to characterize the chemical and physical nature of coal-tar fumes emitted from spreading applications of coal tar and to determine a first estimate of the emission factor for coal-tar fumes under conditions similar to those found in the field. Three separate experiments were performed. The first resulted in the determination of a coal-tar fume particle size distribution. The second experiment resulted in the identification of the primary compounds found in collected tar fumes and a determination of their relative concentration. The third resulted in an estimate of coal-tar fume emission rates under various air flow conditions. These results may permit determination of the potential hazards to workers health and air quality associated with coal-tar-pitch products. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A022 698 13/2 5/1 9/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Computer-Aided Environmental Impact Analysis for Mission Change, Operations and Maintenance, and Training Activities: User Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
FEB 76 103P Riggins,R. ;Novak,E. ;
REPT. NO. CERL-TR-E-85
PROJ: DA-4-A-1621-A-896
TASK: 4-A-1621-A-89601

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Procedures for Evaluating Environmental Impacts of All Army Military Programs. See also report dated Mar 75, AD-A008 988.
DESCRIPTORS: *Environmental protection, *Army planning, *Computer applications, Missions, Modification, Impact, Assessment, Manuals, Army operations, Maintenance, Army training, Data acquisition (U)
IDENTIFIERS: *Environmental impact statements, Environmental impact computer system (U)

This manual (the second in a series) is designed to assist Army personnel in assessing EICS for three of the nine functional areas of Army activity: mission change, operations and maintenance, and training. The manual defines new terminology and provides a step-by-step outline for obtaining and using the system's output. Included in the instructions are designation of activity categories and activity descriptions for the three functional areas. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A022 697 13/3 7/4

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Operations Guide - Water and Cement Content of Fresh Concrete. (U)

DESCRIPTIVE NOTE: Final rept.,
FEB 76 30P Howdyshell,P. A. ;
REPT. NO. CERL-TR-M-177
PROJ: DA-4-A-762719-AT-05
TASK: 4-A-762719-AT-0503

UNCLASSIFIED REPORT

DESCRIPTORS: *Concrete, *Cements, *Water, Moisture content, Chemical analysis, Measurement, Field tests, Test equipment, Strength(Mechanics), Mobile (U)

This operations guide provides information needed to set up and operate the Kelly-Vail (K-V) system for determining water and cement content of fresh concrete. The guide describes the K-V system's capabilities, limitations, and accuracy; and details the required equipment, reagents, and procedures. A guide for analyzing test results and a description of two mobile field units are presented. The system's capability to estimate potential concrete strength is also discussed. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A022 656 5/1 13/2 13/3

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Construction Cost Engineering and Computation State of the Art, 1973. (U)

DESCRIPTIVE NOTE: Interim rept. Jul-Dec 72, DEC 73 131P Neely,Edgar S. , Jr;
REPT. NO. CERL-IR-P-10
PROJ: DA-4-A-062103-A-891
TASK: 4-A-062103-A-89106

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Improve Accuracy of Cost Estimate and Budget Data.
DESCRIPTORS: *Construction, *Cost estimates, Computer applications, Systems analysis, Planning, Engineering, Budgets, Operation, Maintenance (U)
IDENTIFIERS: *Cost engineering (U)

The state of the art in computerized construction cost engineering systems is presented. The report includes the format selected to describe each system. Six of the 15 computer systems reviewed are concisely defined with sample data, input forms, and report forms shown for each system. A comparison of all the systems completes the report. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A022 085 13/13 8/11

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Three-Dimensional Seismic Structural Analysis of Letterman Hospital. (U)

DESCRIPTIVE NOTE: Final rept., JAN 76 51P Prendergast,J. D. ;Choi,C. K. ;
REPT. NO. CERL-TR-M-175
PROJ: DA-4-A-76719-AT-05
TASK: 4-A-76719-AT-0502

UNCLASSIFIED REPORT

DESCRIPTORS: *Earthquake resistant structures, *Hospitals, *Seismic waves, Dynamic response, Spectrum analysis, Structural response, California, Structural engineering, Load distribution, Computerized simulation, Three dimensional, Two dimensional, Structural analysis, Military facilities, Time dependence, Structural members, Roofs, Walls, Reinforced concrete, Torsion, Damage assessment, Structural properties, Shear stresses, Vibration, Moment of inertia, Directional, Earthquakes, Ground motion, Damping (U)
IDENTIFIERS: Letterman general hospital, TABS computer program, *Earthquake engineering (U)

This report summarizes the results of a three-dimensional seismic analysis of the primary structural elements of Letterman Hospital, Presidio of San Francisco, performed using response spectrum modal analysis procedures. These results are compared with those of a two-dimensional analysis of the hospital performed by Agbabian Associates (AA), El Segundo, CA, which used time history modal analysis procedures. Overall agreement between the two analyses was good considering: (1) The difference in analysis methods; (2) The numerous instances where engineering judgment was required to idealize the complex structure and compute the required structural properties; and (3) The assumptions inherent in the computer programs. Both analyses, as compared to the original seismic design forces, provide: (1) More realistic estimates of the dynamic (U)

AD-A021 774 13/2 13/3 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Study of Articulated Concrete Revetment Mattress: Test and Analysis - Results of FY 1974 Program. (U)

DESCRIPTIVE NOTE: Final technical rept., JAN 76 70P Kearney,F. ;Prendergast,J. ;
REPT. NO. CERL-TR-M-94

UNCLASSIFIED REPORT

DESCRIPTORS: *Revetments, *Concrete, *Mats, Structural analysis, Wire, Reinforcement(Structures), Reinforced concrete, Banks(Waterways), Water erosion, Mississippi river (U)

This report presents (1) results of field and laboratory test measurements of the force levels in an articulated concrete revetment mattress (mat) during the placement process, and (2) a structural analysis of the mat. The purpose of this test and analysis program was to determine the feasibility of redesigning the wire fabric used in the mat. Study results show that a mattress with two (rather than three) 4000-lb longitudinal wires is structurally feasible. Further, it appears that testing may confirm that a two-wire, 3000-lb fabric would be adequate. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A021 651 13/2 13/3 13/8 13/13

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Bonding between Cement Hydrates and Steel. (U)

DESCRIPTIVE NOTE: Final rept., JAN 76 55P Schnittgrund,G. D. ;Scott, J. K. ;
REPT. NO. CERL-Technical-Ms-M-176
PROJ: DA-4-A-162121-A-897
TASK: 4-A-162121-A-89702

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Doctoral thesis.
DESCRIPTORS: *Bonding, *Cements, *Steel, Tensile strength, Hydrates, Calcium compounds, Silicates, Aluminum compounds, Ferrites, Interfaces, Electron microscopy (U)
IDENTIFIERS: Portland cement (U)

The bonding mechanics of steel to portland cement and its constituent compounds were studied by testing composite steel/paste bars in flexure. The interface was subsequently examined by scanning electron microscopy. Type I portland cement, tricalcium silicate, dicalcium silicate, and tetracalcium aluminoferrite exhibited strong bonding to low carbon steel; tricalcium aluminate demonstrated no measurable bond strength. The primary bonding mechanism between alite paste and steel was found to be chemical in nature. No significant influence of the surface roughness of the steel on the tensile bond strength to alite paste could be established. The weak link in the steel paste bar was a high water content region concentrated near the steel/paste interface. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A021 388 5/9

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Changes in the Cost and Availability of Construction Labor. (U)

DESCRIPTIVE NOTE: Interim rept.,
DEC 75 34P Poskus,Uldis R. ;Magnini, Michael ;
REPT. NO. CERL-IR-P-55
PROJ: DA-4-A-762719-AT-05
TASK: 4-A-762719-AT-05-02

UNCLASSIFIED REPORT

DESCRIPTORS: *Labor, *Construction, *Military requirements, Personnel, Forecasting, Technology, Manpower, Cost analysis, Salaries, Contracts (U)
IDENTIFIERS: Construction industry (U)

This report presents the results of a study which used the technique of regression or correlation analysis to investigate the future of construction labor and changes in its cost and availability. Projections of total employees on contract construction payrolls and hourly wages of construction workers on contract construction payrolls are based on selected independent variables and regression equations. Trend projections to the year 2000 are included for the independent and decendent variables. The impact of changes on the Corps of Engineers is discussed and the Corps' reaction alternatives outlined. The construction labor situation as of February 1975 is evaluated as a basis for prediction. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A020 951 13/3 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Technological Forecast: Changes in Availability and Cost of Construction Materials for Military Construction. (U)

DESCRIPTIVE NOTE: Interim rept.,
DEC 75 20P Poskus,Uldis R. ;
REPT. NO. CERL-IR-P-56
PROJ: DA-4-A-762719-AT-05
TASK: 4-A-762719-AT-0502

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Dec 74, AD-A003 991.
DESCRIPTORS: *Construction, *Military planning, *Forecasting, Construction materials, Technology, Economic analysis, Cost analysis, Projection (U)
IDENTIFIERS: Economic changes, Materials availability (U)

This report briefly analyzes the construction environment from 1 July 1974 to 30 December 1974 for possible changes in construction material costs and availabilities. Based on trends and expert opinion from industry literature, these costs and availabilities are projected to 1980. The resulting information is used to formulate conclusions which indicate potential problems that must be considered in planning future military construction programs. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A019 931 9/1 20/14 13/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

RFI Shielding Effectiveness of Steel Sheets with Partly Welded Seams. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 75 28P Honig,E. M. , Jr;
REPT. NO. CERL-TR-M-171
PROJ: DA-4-A-162118-A-880
TASK: 4-A-162118-A-88011

UNCLASSIFIED REPORT

DESCRIPTORS: *Electromagnetic shielding, *Radiofrequency interference, *Welds, Effectiveness, Steel, Sheets, Defects(Materials), Porosity, Cracks, Holes(Openings) (U)

This report presents the results of an investigation to determine the effect of six forms of incomplete welds containing slots and holes on the shielding effectiveness of shielded enclosures. The test specimens were butted plates and slotted plates (with and without tacked backing strips), wide-slot plates, and drilled plates. The plates were subjected to radio frequency interference (RFI) radiation from nominally 10 kHz to 10 GHz in frequency. Shielding effectiveness as a function of flaw size was determined for each defect class. Three critical, or transition, flaw sizes were determined for the three minimum specified shielding levels for each class of defect. Since through-thickness slots and holes are limiting, or worst, cases of cracks and porosity respectively, the critical flaw size determine the sizes of the cracks and porosity in welds that are not cost-effective to repair. Results showed that weld seams having unwelded, but tightly butted, lengths up to 4 1/2 in. (11.43 cm) afford at least 60 dB shielding effectiveness at all test frequencies. Slots of finite width seriously compromise shielding by acting as resonant radiators. Backing strips tacked (without burn-through) over welded seams have minor effect on shielding effectiveness. Holes up to 0.3 in. (0.762 cm) can be tolerated at all test frequencies since at least 60 dB shielding (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A019 930 13/5 11/6

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Fracture Characteristics of Structural Steels and Weldments. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 75 111P Aleszka,J. ;Kim,Y. G. ;
REPT. NO. CERL-TR-M-170
PROJ: DA-4-A-761102-AT-23
TASK: 4-A-761102-AT-2302

UNCLASSIFIED REPORT

DESCRIPTORS: *Weldments, *Structural steel, Fracture(Mechanics), Electron microscopes, Scanning, Tensile properties, Fatigue(Mechanics), Carbon steels, Hydrogen embrittlement, Impact tests, Impact strength, Defects(Materials) (U)

IAC ACCESSION NUMBER: MCIC-095341
IAC DOCUMENT TYPE: MCIC -HARD COPY--
This report presents the findings of a scanning electron microscope study of the tensile, fatigue, and impact fracture characteristics of a carbon steel; two high-strength, low-alloy steels; and a high-strength steel weldment. Tension and fatigue specimens were tested in as-received, hydrogen-embrittled, and temper-embrittled conditions, while impact specimens were tested in the as-received condition only. The failure mode of embrittled and unembrittled weldments containing induced weld defects was also studied. (U)

IAC SUBJECT TERMS: M--(U)HY-130, A36, A517F, AX-110, ENGINEERING STEEL, WELDS, WELD DEFECTS, TEMPERING, QUENCHING, GAS METAL ARC WELDING, TEMPERATURE EFFECT, LOW TEMPERATURES, TEMPER EMBRITTLEMENT, HYDROGEN EMBRITTLEMENT, FATIGUE PROPERTIES, INTERGRANULAR FRACTURE, MICROSTRUCTURE, FRACTURE SURFACE, PLASTIC DEFORMATION, CHARPY IMPACT, SCANNING ELECTRON MICROSCOPY, FATIGUE-STRESS NO. OF CYCLES.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A019 929 5/11 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Monitoring of the Fort Knox Industrialized BOQ Project--Design and Construction Phases. (U)

DESCRIPTIVE NOTE: Final rept., DEC 75 22P Hamilton,John C. ;Bryant, Dale A. ;Carroll,Michael G. ;
REPT. NO. CERL-TR-D-65
PROJ: DA-4-A-762719-AT-02
TASK: 4-A-762719-AT-0201

UNCLASSIFIED REPORT

DESCRIPTORS: *Housing(Dwellings), *Construction, *Army procurement, Army planning, Life cycles, Cost analysis, Contracts, Modular construction, Specifications, Military requirements, Military facilities, Concrete, Panels, Kitchens, Baths, Officer personnel, Kentucky, Methodology, Assessment, Monitoring (U)
IDENTIFIERS: Design, Aesthetics (U)

This report presents results of the monitorship of the construction and design of a demonstration project of industrialized building applied to Department of the Army construction requirements. The project was a 250-man bachelor officers' quarters (BOQ) at Fort Knox, KY, constructed by FCE-Dillon, Akron, OH, using their system of precast concrete panels and three-dimensional kitchen/bath modules. The experiences in design and production, one-step procurement, construction, and contract administration at Fort Knox are analyzed, and the cost per man housed is compared for BOQs in the FY 73 MCA program. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A018 953 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Design Guidelines for Recreational Roads. (U)

DESCRIPTIVE NOTE: Final rept., NOV 75 93P McNamara,James ;Moore,Alan ;Baerwald,John ;
REPT. NO. CERL-TR-D-63

UNCLASSIFIED REPORT

DESCRIPTORS: *Roads, *Reservoirs, Configurations, Utilization, Recreation, Construction (U)
IDENTIFIERS: Design, *Recreational roads (U)

The design guidelines are the result of a 2-yr study which included: A review of the state-of-the-art of recreational road design; development of geometric design controls including a functional classification scheme, representative design vehicles, and design speeds; proposed geometric design standards for alignment, sight distance, cross section elements, etc.; a discussion of roadway aesthetic design criteria; an examination of future recreational trends. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A018 951 13/3 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Evaluation of Alternate Wire Fabric Materials for Articulated Concrete Mattresses. (U)

DESCRIPTIVE NOTE: Final rept., NOV 75 38P Cox,Edward ;Hahin, Christopher ;Aleszka,James ;
REPT. NO. CERL-TR-M-169

UNCLASSIFIED REPORT

DESCRIPTORS: *Revetments, *Screens(Woven materials), *Reinforced concrete, Wire, Stainless steel, Carbon steels, Copper, Cladding, Tensile strength, Corrosion resistance, Plastic coatings, Mississippi River (U)
IDENTIFIERS: Ferrocement (U)

The objective of this study is to evaluate candidate wire fabric materials as alternatives to Copperweld and AISI 301 stainless steel in articulated concrete revetment mattresses. This will increase the number of materials which can perform satisfactorily as wire fabric, increase the number of wire fabric suppliers, and reduce the cost. This report is limited to wire fabric materials used in articulated concrete mats placed in fresh water on the Mississippi River above New Orleans. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A018 879 13/2 5/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Installation Solid Waste Survey Guidelines. (U)

DESCRIPTIVE NOTE: Final rept., OCT 75 69P Schanche,Gary W. ;Greep, Larry A. ;Donahue,Bernard ;
REPT. NO. CERL-TR-E-75
PROJ: DA-4-A-162121-A-896
TASK: 4-A-162121-A-89601

UNCLASSIFIED REPORT

DESCRIPTORS: *Waste management, *Solid wastes, *Waste disposal, Planning, Management engineering, Installation, Surveys, Sampling, Data acquisition, Composition(Property), Collecting methods, Manpower, Equipment (U)
IDENTIFIERS: *Solid waste disposal (U)

IAC ACCESSION NUMBER: PL-900259
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
This report is one of a series on air pollution, water pollution, and solid waste survey guidelines. It is primarily for the use of installation planning, operating, and maintenance personnel. Guidelines for development of a comprehensive solid waste management plan are presented. The report contains information on determination of legal constraints, characterization of specific waste sources, evaluation of current management programs, and establishment of survey requirements. Techniques for the determination of the physical composition of waste streams and the amounts of waste material are described, along with guidelines for developing sampling programs. (Author) (U)

IAC SUBJECT TERMS: P--(U)Solid waste pollution-Manufacturing plants, Industrial pollution-Design guides, Municipal pollution-Solid waste sampling, Solid waste pollution-Techniques review, ZZ MTD, ZZ Unlimited.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A018 716 9/2 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Users Manual for the Automated Military Construction Progress Reporting System (AMPRS). (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 75 173P Guiar,W. G. ;Fitzpatrick, J. E. ;Rood,E. A. ;Skarseth,R. ;LeBlanc, C. J. ;
REPT. NO. CERL-TR-P-47
PROJ: RDT/E-4-A762719-AT-01
TASK: 4-A-762719-AT-0102

UNCLASSIFIED REPORT

DESCRIPTORS: *Programming manuals, *Military engineering, *Construction, Machine coding, Data bases, Data processing security, Maintenance, Errors (U)
IDENTIFIERS: Updating (U)

This users manual presents procedures for acquiring and coding updated information for the Automated Military Construction Progress Reporting System (AMPRS). It is aimed at operations personnel in engineering, construction, and real estate who perform the acquisition and coding functions. This manual is one of five providing information and instructions for AMPRS. The other four manuals are: Executive summary for the Conversion Instruction for the AMPRS, ADP Manual for the AMPRS, Reference Manual for the AMPRS, and Converson Instructions for the AMPRS. (Author) (U)

AD-A018 716

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A018 439 9/2 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Conversion Instructions for the Automated Military Construction Progress Reporting System (AMPRS). (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 75 227P Guiar,W. G. ;Fitzpatrick, J. E. ;Rood,E. A. ;Skarseth,R. ;LeBlanc, C. J. ;
REPT. NO. CERL-TR-P-51
PROJ: RDT/E-4-A-762719-AT-01
TASK: 4-A-762719-AT-0102

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-A018 437 and AD-A018 438.
DESCRIPTORS: *Data management, *Military engineering, *Construction, *Management information systems, *Programming manuals, Computer operators, Conversion, Methodology, Data processing, Input output processing, Data bases, Files(Records), Maintenance, Computer programs, Flow charting, Programming languages, Digital computers, Automatic, Abstracts, Army planning, Instruction manuals, Reports (U)
IDENTIFIERS: *AMPRS system, Honeywell G437 computers, Cobol (U)

The Automated Military Construction Progress Reporting System (AMPRS) is a standard Corps system. The process of installing this system at a district or division must follow a specific set of instructions to avoid errors and the time wasted in correcting them. This report provides explicit guidance for converting any military design and construction progress reporting system within the Corps of Engineers to the AMPRS. The report is useful only before and during the conversion process. The Users Manual for the AMPRS, the ADP Manual for the AMPRS, the Reference Manual for the AMPRS, and the Executive Summary for the AMPRS are companion manuals that provide information about AMPRS, following conversion. (Author) (U)

AD-A018 439

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A018 438 9/2 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Reference Manual for the Automated Military Progress REporting System (AMPRS). (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 75 405P Poskus,Uldis R. ;Thurber, Lee ;
REPT. NO. CERL-TR-P-49
PROJ: RDT/E-4-A-762719-AT-01
TASK: 4-A-762719-AT-0102

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-A018 437 and AD-A018 439.
DESCRIPTORS: *Data management, *Military engineering, *Construction, *Management information systems, *Programming manuals, Dictionaries, Data storage systems, Computer files, Computer programs, Data bases, Files(Records), Coding, Tables(Data), Input output processing, Conversion, Digital computers, Automatic, Programming languages, Army planning, Instruction manuals, Reports (U)
IDENTIFIERS: *AMPRS system, Updating (U)

This reference manual for the Automated Military Construction Progress Reporting System (AMPRS) contains the Dictionary of Data Elements, Code Tables, Data Element - Report Matrix, Output Report Analysis, Residency of AMPRS Data Elements, and Sequential Table of 'P' and 'C' prefixed numbers. This manual is designed to assist OCE Divisions and Districts responsible for military construction in operating AMPRS. This is one of five system manuals for the AMPRS. Others are: Executive Summary for the AMPRS, USERS Manual for the AMPRS, ADP Manual for the AMPRS, and Conversion Instructions for the AMPRS. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A018 437 9/2 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

ADP Manual for the Automated Military Construction Progress Reporting System (AMPRS). (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 75 318P Guiar,W. G. ;Fitzpatrick, J. E. ;Rood,E. A. ;Skarseth,R. ;LeBlanc, C. J. ;
REPT. NO. CERL-TR-P-48
PROJ: RDT/E-4-A-7627A-AT-01
TASK: 4-A-762719-AT-0102

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-A018 438 and AD-A018 439.
DESCRIPTORS: *Data management, *Military engineering, *Construction, *Management information systems, *Programming manuals, Data storage systems, Data bases, Data processing, Input output processing, Files(Records), Maintenance, Computer operators, Programming languages, Digital computers, Automatic, Flow charting, Subroutines, Army planning, Instruction manuals, Reports (U)
IDENTIFIERS: *AMPRS system, Honeywell G437 computers, Cobol (U)

This manual presents procedures for using the Automated Military Construction Progress Reporting System. The information is directed toward the operators in the Data Processing Center. More detailed user instructions for the project managers and for engineering, construction, and real estate personnel may be found in the companion manuals: Users Manual for the AMPRS, Reference Manual for the AMPRS, Executive Summary for the AMPRS, and Conversion Instructions for the AMPRS. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A018 217 13/12

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Structural Fire Protection/Prevention Consolidation Study for Fayetteville, NC Area. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 75 28P Brown,David W. ;
REPT. NO. CERL-TR-P-54
PROJ: CERL-75-2

UNCLASSIFIED REPORT

DESCRIPTORS: *Fire fighting, *Fire protection, *Fire prevention, *Air force facilities, *Military facilities, Army operations, Air force operations, Operations research, Requirements, Manpower utilization, Efficiency, Costs, Joint military activities (U)
IDENTIFIERS: Fort Bragg, Pope air force base (U)

This study analyzed the structural firefighting requirements at Fort Bragg and Pope Air Force Base, located at Fayetteville, NC. The study requirements were (1) to evaluate present resources and requirements for structural fire protection and prevention, and (2) to determine if consolidation would result in substantial manpower or equipment reduction. Fire prevention/protection consolidation was to be evaluated both as an integral part of a joint facilities engineering consolidation organization and as a stand-alone consolidation organization. The results of the study indicate that because of the widespread locations of the Air Force and Army airfields and mission-essential facilities, both installations are manned at the minimum acceptable level of structural firefighting companies. Consolidation of the individual fire protection/prevention activities will not significantly reduce required equipment, manpower, or facilities. At most, anticipated annual savings of $88,801, or 4.6 percent, would result from the reduction of five supervisory positions after consolidation. However, these savings do not appear to warrant consolidation at this time, since command and reporting (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A017 329 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Pavement Inspection Reference Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
SEP 75 60P Shahin,Mahamed Y. ;Darter, Michael ;Rozanski,Francine M. ;
REPT. NO. CERL-TIP-C-48
PROJ: DA-4-K-078012-A00K-1
TASK: 4-K-078012-A0K-104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Mar 73, AD-758 447.
DESCRIPTORS: *Pavements, *Visual inspection, *Manuals, Maintenance, Deterioration, Repair, Asphalt, Concrete, Damage assessment (U)
IDENTIFIERS: Severity levels (U)

IAC ACCESSION NUMBER: NT-012183
IAC DOCUMENT TYPE: NTIAC -MICROFICHE--
This report is designed as an aid for the individual performing pavement inspections as part of an overall pavement maintenance and repair system. The types of distress found in asphalt- and concrete-surfaced pavements are presented; severity levels for each distress type are established and illustrated. The severity levels were based on the effect of the distress on maintenance and repair needs and priorities, ride quality, safety, and structural integrity. (U)

IAC SUBJECT TERMS: N--(U)*PAVEMENTS, INSPECTION, MAINTENANCE, REPAIRS, CONCRETE, SAFETY, STRUCTURAL INTEGRITY, ASPHALT;

AD-A017 328 13/2 5/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Development of an Installation Surfaced Area Maintenance and Repair Management System. (U)

DESCRIPTIVE NOTE: Technical information pamphlet (Final),
SEP 75 92P Shahin,Mohamed Y. ;Darter, Michael I. ;Rozanski,Francine M. ;Stark, Robert M. ;
REPT. NO. CERL-TIP-C-49
PROJ: DA-4-K-078012-AOK-1
TASK: 4-K-078012-AOK-104

UNCLASSIFIED REPORT

DESCRIPTORS: *Pavements, *Repair, Maintenance, Systems engineering, Management engineering, Visual inspection, Records, Decision making, Planning, Adaptive systems, Cost effectiveness (U)
IDENTIFIERS: Unpaved roads (U)

This pamphlet describes a newly developed pavement maintenance and repair management system designed to help maintenance personnel at an installation achieve the greatest benefit from funds expended. Procedures for the following six basic activities are detailed: dividing the pavement network into sections, inspecting pavement sections, recording pavement information, determining maintenance and repair needs, determining maintenance and repair priorities, and developing work plans. Although the system is designed for paved systems, it can be adapted for unpaved surfaces. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A017 045 13/13 8/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Concept Development for Structures on Expansive Soils by the Pattern Language Design Methodology. (U)

DESCRIPTIVE NOTE: Final rept.,
OCT 75 48P Prendergast,J. D. ;Stroman, W. R. ;Young,G. E. ;Hodge,J. W. ;
REPT. NO. CERL-TR-M-151
PROJ: DA-4-DM-78012-AOK-1
TASK: 4-D-M-78012-AOK-102

UNCLASSIFIED REPORT

DESCRIPTORS: *Buildings, Construction, Soil surveys, Site selection, Decision making, Soil tests, Foundations(Structures), Selection (U)
IDENTIFIERS: *Soil structure interactions, *Pattern language, Preliminary design, *Expansive soils (U)

The purpose of this project is two-fold: (1) to assemble information and data useful during the preliminary design phase of structure built on expansive soil; and (2) to organize and structure the information into a framework (pattern language) to focus the designer's attention on the applicable design information and data at the proper point in the design process. Development of the pattern language for this purpose produced 15 basic relationships (patterns) specifically related to the solution of design problems associated with construction on expansive soils. The basic patterns were organized into a (logic diagram-type) cascade to provide designers with a system which displays the interconnection among the patterns and enables them to preserve a view of the entire design process. For use in the preliminary design of structure on expansive soils, the pattern language design method is very instructive. It can be used to apprise and educate designers about the problems associated with designing buildings in expansive soils areas. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A017 040 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

An Analytical Model for Determining Energy Dissipation in Dynamically Loaded Structures. (U)

DESCRIPTIVE NOTE: Technical manuscript, OCT 75 37P McNamara,John F. ;Sharma, Sushil K. ;
REPT. NO. CERL-TM-M-165

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Joint Meeting of the U.S. - Japan Panel on Wind and Seismic Effects (6th), May 1974, Gaithersburg, Md.
DESCRIPTORS: *Construction materials, Steel, *Dynamic response, Earthquake resistant structures, Dynamic loads, Stress strain relations, Finite element analysis, Nonlinear systems (U)
IDENTIFIERS: Steel A-36, *Earthquake engineering, *Energy dissipation, Steel construction, Dynamic structural analysis (U)

An analytical procedure is developed which predicts nonlinear cyclic structural response under large reversals of plastic strains. The structure is discretized by means of the finite element approximation, and the material behavior is simulated by a refined analytical model which describes the realistic hysteretic stress-strain curves of A36 steel under arbitrary cycles of load. In order to test the validity of this material model some comparisons are made with experimental values of the inelastic response of a simply supported beam under cyclic bending. The model is subsequently used in the dynamic analysis of a portal frame subjected to a selection portion of the El Centro NS earthquake acceleration record. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A016 985 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Numerical Solution Schemes for Highly Nonlinear Static Structural Behavior. (U)

DESCRIPTIVE NOTE: Technical manuscript, OCT 75 28P McNamara,John F. ;
REPT. NO. CERL-TM-M-102

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at U.S. Army Numerical Analysis Conference, Philadelphia, Pa., Feb 13-16, 1974.
DESCRIPTORS: *Structures, Structural response, Loads(Forces), Cyclic tests, Finite element analysis, Stiffness, Earthquake resistant structures, Nonlinear systems (U)
IDENTIFIERS: *Cyclic loads, *Earthquake engineering (U)

The feasibility and accuracy of a number of solution schemes for problems of static nonlinear structural response are studied. The structure is modeled by the finite element method, and the nonlinearities are mainly those of material behavior, but large displacement effects are also considered. It is shown that accepted solution approaches do not work as expected in the case of cyclic behavior of the structure around its limit load level. Results from two different finite element structural models are compared with those of an experiment for a simply supported beam undergoing load reversals at its midpoint. This simple example illustrates the numerical problems encountered in analyzing engineering structures under severe lateral loads which initiate failure modes in the structure. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A016 984 5/1 12/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Development of Heuristic Procedures to Analyze the Production-Transportation Problem. (U)

DESCRIPTIVE NOTE: Technical manuscript, OCT 75 74P Worrel,Edward J. , III; Hogg,Gary L. ;
REPT. NO. CERL-TM-D-61

UNCLASSIFIED REPORT

DESCRIPTORS: *Management planning and control, *Industrial production, *Distribution theory, Inventory control, Transportation, Network flows, Cost analysis, Computerized simulation, Mathematical models, Decision making, Heuristic methods (U)
IDENTIFIERS: Transportation models, Out of kilter algorithm (U)

A methodology has been developed to systematically analyze a production-transportation problem subject to stochastic demand. First the problem is transformed into a network flow equivalent. Then flow data are generated through a series of simulation runs, using a simulation program developed around the out-of-kilter algorithm, GASP II subroutines, and demand determined by Monte Carlo procedures. The data are then interpreted using developed procedures to determine plant market pairs which could be candidates for increase/decrease of flow depending on established conditions. An example problem is provided to demonstrate the usefulness of the methodology and the data available after a simulation run. The example problem has been constructed with production costs and transportation costs between any plant-market pair being nonlinear. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A016 919 15/5 5/1 5/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Specification Preparation Methods--State of the Art. (U)

DESCRIPTIVE NOTE: Final technical rept., SEP 75 23P Neely,Edgar S. , Jr;
REPT. NO. CERL-TR-P-46
PROJ: DA-4-A-062103-A-891
TASK: 4-A-062103-A-89106

UNCLASSIFIED REPORT

DESCRIPTORS: *Military planning, *Specifications, *Computer applications, Cost analysis, On line systems, Questionnaires, Management planning and control, Management information systems, Logistics, Preparation (U)

This report presents the state of the art in construction specification preparation methods. Special emphasis is given to computerized preparation systems. The report explains the approach used to identify the current preparation methods, discusses the response and analysis to a Construction Specifications Institute (CSI) membership state-of-the-art survey, compares computerized preparation systems, presents the results from a cost analysis study, and summarizes the results and conclusions and makes recommendations. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A016 788 5/1 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CchampaIGN ILL

Construction Equipment Cost Guide. (U)

DESCRIPTIVE NOTE: Final rept.
OCT 75 108P Neely,E. ;
REPT. NO. CERL-TR-P-52

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction equipment, *Cost analysis, Contracts, Government procurement, Salaries, Rates, Operators(Personnel), Contract administration, Economic analysis, Profits (U)
IDENTIFIERS: *Construction management, *Ownership costs (U)

The purpose of this guide is to assist field pricing support personnel (estimators, negotiators, price analysts, auditors, etc.) in estimating construction equipment hourly ownership and operating rates. The guidance provided is in accordance with general concepts of the contract cost principles and procedures in Armed Services Procurement Regulations (ASPR Section 15) and Federal Procurement Regulations (FPR Part 1-15). The manual is intended for use in negotiated construction procurements which require an independent government estimate by regulation. The original construction contract is awarded as a result of an advertised procurement while contract modifications to advertised procurements are negotiated. The cost estimating concepts of these two procurement types are different. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A015 973 15/3.1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume VII: Data Base. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 241P Kao,A. ;Blackmon,R. ;
McDowell,E. ;
REPT. NO. CERL-TR-C-28-Vol-7
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89502

UNCLASSIFIED REPORT

Availability: Available in microfiche only.
SUPPLEMENTARY NOTE: See also Volume VI, AD-A010 632.
DESCRIPTORS: *Antimissile defense systems, *Hardened structures, *Computerized simulation, *Data bases, Heating, Ventilation, Air conditioning equipment, Facilities, Underground facilities, Power equipment, Computer programming (U)

This data base volume describes the data base developed to support the structural, power, mechanical (HVAC/PC), and miscellaneous modules. Assumptions and methods used to derive the data and formats used to store the data are documented. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A015 616 21/4 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Technical Evaluation Study: Solid Waste Heat Reclamation at Philadelphia Naval Shipyard, Philadelphia, Pa. (U)

DESCRIPTIVE NOTE: Technical rept., MAY 74 45P Rigo,H. G. ;
REPT. NO. CERL-TR-E-48

UNCLASSIFIED REPORT

DESCRIPTORS: *Solid wastes, *Fuels, Reclamation, *Incinerators, *Boilers, Waste disposal, Naval shore facilities, Garbage, Cost analysis, Waste treatment (U)
IDENTIFIERS: *Waste recycling, *Solid waste disposal, Refuse disposal, Heat recovery, Waste heat boilers, Philadelphia Naval Shipyard, Design (U)

This study was conducted to evaluate the solid waste disposal problems and to ascertain the economic and technical feasibility of solid waste heat reclamation incineration at Philadelphia Naval Shipyard, Philadelphia, PA. An analysis of the solid waste stream was performed, applicable standards were evaluated, and a technology review of cost/performance characteristics of current solid waste heat reclamation units, including processing of solid wastes and burning in existing boilers, was conducted. Recommendations were based on facility benefit-to-cost ratio considerations and operation success probabilities. It was found that steam generation through waste heat reclamation, by incineration or processing and using the refuse as a fuel in an existing boiler, was both technically and economically feasible. The latter method has the highest benefit-to-cost ratio (Alternative methods of disposing of on-base generated solid waste are also suggested. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A015 615 21/4 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Technical Evaluation Study: Energy-Recovery Solid Waste Incineration to Naval Station Mayport, Florida. (U)

DESCRIPTIVE NOTE: Technical rept., FEB 75 46P Hathaway,S. A. ;Rigo,H. G. ;
REPT. NO. CERL-TR-E-51

UNCLASSIFIED REPORT

DESCRIPTORS: *Solid wastes, *Fuels, *Reclamation, Naval shore facilities, Garbage, Waste disposal, Incinerators, Boilers, Electric power plants, Fuel oil, Cost analysis, Florida (U)
IDENTIFIERS: *Solid waste disposal, Refuse disposal, Fuel substitution, Oil wastes, Waste recycling, Design, Naval Station Mayport (U)

IAC ACCESSION NUMBER: PL-900504
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--

This study was undertaken to assess the feasibility of energy-recovery incineration of solid waste at Naval Station Mayport, Florida. It was found that use of solid waste as a fuel for steam generation at Naval Station Mayport is technically and economically feasible and environmentally compatible. The recommended system employs a clean-fuel fired, basket-grate incinerator in series with an energy-recovery train consisting of an afterburner and boiler. The afterburner fires fuel reclaimed at an on-station bilge and fuel tank waste oil treatment facility. Refuse-derived fuel (RDF) is fired one shift, five days per week, with the auxiliary burner assuming the load during nights and weekends. Production of 22,700 pounds of steam/hour can be achieved. The benefit-to-cost ratio of this system is 8:1. Through implementation of this system a net fuel savings of 345,800 gallons/yr can be achieved, excluding the amount of the reclaimed oil used. Design criteria are provided. (U)

IAC SUBJECT TERMS: P--(U)Steam generation-Waste oils, Incineration-RDF, Incineration-Solid wastes, Shipboard wastes-Energy recovery, RDF-Heat

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A015 614 21/4 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Technical Evaluation of the Feasibility of Burning Eco-Fuel at Philadelphia Naval Shipyard. (U)

DESCRIPTIVE NOTE: Letter rept.
JAN 74 55P
REPT. NO. CERL-LR-E-25

UNCLASSIFIED REPORT

DESCRIPTORS: *Boilers, *Garbage, *Fuels, Solid wastes, Performance(Engineering), Naval shore facilities, Combustion, Waste disposal, Reclamation (U)
IDENTIFIERS: Refuse disposal, Waste recycling, *Solid waste disposal (U)

IAC ACCESSION NUMBER: PL-900507
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
The purpose of the evaluation was to determine the economic and technical feasibility of firing Eco-fuel in the Navy-owned boilers at Phil NSY. Eco-fuel is prepared from municipal refuse and garbage. As part of the evaluation, any technical deficiencies were to be identified. A series of recommendations are made which would remedy any identified technical deficiencies. (U)

IAC SUBJECT TERMS: P--(U)Incineration-RDF, Combustion-RDF, Economics-Solid waste disposal, Burners-Municipal wastes, RDF-Steam generation, Synthesis-RDF, Ecology-Fuel, ZZ MTDE, ZZ Unlimited.;

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A015 613 13/2 10/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Technical Evaluation Study: Solid Waste Heat Reclamation at Naval Air Test Center Patuxent, Md. (U)

DESCRIPTIVE NOTE: Technical rept.,
NOV 74 45P Rigo,H. G. ;Quindry,G. E. ;
REPT. NO. CERL-TR-E-60

UNCLASSIFIED REPORT

DESCRIPTORS: *Waste disposal, *Naval air stations, *Fuels, Incinerators, Reclamation, Collection, Earth fills, Cost estimates, Trucks, Maryland, Solid wastes (U)
IDENTIFIERS: *Solid waste disposal, Sanitary landfills, Refuse disposal, Fuel substitution, Hauling, Routing, Naval Air Test Center (U)

IAC ACCESSION NUMBER: PL-900302
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
This study was initiated to evaluate the solid waste disposal system at Naval Air Test Center, Patuxent, MD, and to ascertain the feasibility of solid waste heat reclamation at the base. The solid waste stream was analyzed, applicable standards were evaluated, and the cost and performance characteristics of current solid waste heat reclamation units were reviewed. Recommendations were based on consideration of the facility benefit to cost ratio. It was found that continuing the current method of solid waste disposal, an on-base landfill operation, would be economically and environmentally sound. New solid waste collection equipment and altered procedures at the landfill site were recommended to substantially improve the economics and life expectancy of the on-base refuse management system. (U)

IAC SUBJECT TERMS: P--(U)Solid waste pollution-Recycling, Pollutants review-Survey, Municipal pollution-Incineration, ZZ MTD, ZZ Unlimited.;

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A015 469 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Technical Information Pamphlet on Fibrous Concrete Overlays--Fort Hood Project. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 75 20P Williamson,G. R. ;
REPT. NO. CERL-TR-M-147
PROJ: DA-4-A-764717-D-895
TASK: 4-A-764717-D-89504

UNCLASSIFIED REPORT

DESCRIPTORS: *Concrete, *Pavements, Overlays, Fibers, Reinforcing materials, Steel, Performance tests, Tracked vehicles (U)
IDENTIFIERS: *Ferrocement, Design, Steel reinforced composites (U)

The first full-scale nonexperimental steel fibrous concrete placement was completed in March 1974 at Fort Hood, TX. An overlay of 3,175 cu yd of concrete was placed on a Tactical Equipment Park adjacent to Building 9529. The existing pavement consisted of 5 to 7 in. of asphaltic concrete on a stabilized limestone base. The area is a maintenance hardstand for M-60 tanks, M-88 tank retrievers, and other tracked vehicles. Because of the severe wear and rutting caused by the action of the tracks, the flexible pavement surface has required replacement every 3 to 4 yr. Fibrous concrete was selected as a more lasting solution to the problem. This report details the placement procedures used on the Fort Hood project and recommends other suitable techniques. Cost and preliminary performance evaluations of the Fort Hood overlay are presented. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A015 020 13/2 5/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Procedures for Reviewing Environmental Impact Assessments and Statements for Construction Projects. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 75 26P Jain,R. K. ;Drobny,N. L. ;Chatterjee,S. ;
REPT. NO. CERL-TR-E-73
PROJ: DA-4-A-762720-A-896
TASK: 4-A-762720-A-89601

UNCLASSIFIED REPORT

DESCRIPTORS: *Environmental engineering, *Environmental protection, *Construction, *Reviews, Methodology, Civil engineering, Assessment, Factor analysis, Ratings, Specifications, Management planning and control, Army (U)
IDENTIFIERS: Guidelines, Environmental impact assessments, Environmental impact statements, Project screening factors, Factor rating criteria (U)

This report presents systematic procedures designed to assist administrative and staff personnel in quickly and accurately reviewing environmental impact assessments and statements (EIA/EIS). In addition, these guidelines will help the EIA/EIS preparer and reviewer assess the completeness and accuracy of the final document. The report describes the components of the review procedure and includes an example of illustrate its implementation. Project screening factors, suggested factor rating criteria, and methodology for ranking projects on three levels are presented in tabular form to facilitate understanding and application of the review process. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A014 945 13/8 20/11

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Isotropic-Kinematic Hardening Model for Elastic-Plastic Cyclic Structural Analysis. (U)

DESCRIPTIVE NOTE: Final rept., AUG 75 18P McNamara,John F. ;Sharma, Sushil K. ;
REPT. NO. CERL-TR-M-148
PROJ: DA-4-A-161102-AT-23
TASK: 4-A-161102-AT-2302

UNCLASSIFIED REPORT

DESCRIPTORS: *Hardening, *Plastic properties, *Structural properties, *Stress strain relations, Elastic properties, Steel, Kinematics, Theory (U)

This report outlines the use of a combined isotropic-kinematic hardening theory to analyze structures undergoing large reversals of plastic strain. The numerical work is based on the finite element method, and a suitable incremental stress-strain relation of combined hardening theory of plasticity is implemented; the theory requires only minor additions to the more common kinematic or isotropic hardening rules. The report shows the required parameters describing the kinematic and isotropic portions of the combined hardening theory can be extracted from cyclic mechanical tests. The theory is used to determine the cyclic response of a mild steel beam. the uniaxial arbitrary cyclic behavior of mild steel is very accurately modeled by a series of spring-slider elements. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A014 146 13/13 13/2 5/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Environmental Protection Guidelines for Construction Contract Specification Writers. (U)

DESCRIPTIVE NOTE: Final rept., JUL 75 124P Riggins,R. E. ;Fileccia,R. J. ;Hittle,D. C. ;Novak,E. W. ;Schomer,P. D. ;
REPT. NO. CERL-IR-E-72
PROJ: DA-4-A-162121-A-896
TASK: 4-A-162121-A-89605

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Environmental protection, *Contracts, Specifications, Methodology, *Management planning and control, Water pollution, Air pollution, Surveys, Noise pollution, Water quality, Noise reduction (U)
IDENTIFIERS: Guidelines, Landscape protection, Air pollution abatement, Water pollution abatement (U)

This report emphasizes the need for environmental provisions in construction contracts and develops related guidelines for construction contract specification writers. Factors which determine the types of environmental provisions needed in construction contracts are examined, and a format for the environmental section of construction contracts is developed. Environmental provisions are described and examples are given, with special emphasis upon landscape protection, air quality, water quality, and noise. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A014 141 11/4 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Resin Bound Aggregate Material Systems. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 75 22P Naus,D. J. ;
REPT. NO. CERL-TM-M-145

UNCLASSIFIED REPORT

DESCRIPTORS: *Reinforced plastics, Polyester plastics, Epoxy resins, Vinyl plastics, Concrete, Construction materials, Particle size, Binders, Modulus of elasticity, Building blocks(Engineering), Compressive properties, Tensile properties, Thermal expansion, Absorption, Water, Flexural properties, Fiber reinforced composites (U)
IDENTIFIERS: *Polymer concretes, *Aggregates, Fiberglass reinforced plastics (U)

IAC ACCESSION NUMBER: PL-023026
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
Data are presented on composition, strength, modulus of elasticity and thermal expansion for polymer concrete material systems. Resin systems included polyesters, epoxies, and vinyl esters. Fine and coarse aggregate fillers in volume fractions up to 0.85 were incorporated into the resin binders. Fiber reinforcement of various types, lengths, and contents was incorporated into several mixes. By a judicious selection of resin modifiers and filler materials a wide range of densities and strengths may be obtained. Material property data on coefficients of thermal expansion, bond strength, water absorption, and effect of elevated temperatures have been obtained. (U)

IAC SUBJECT TERMS: P--(U)Concrete/polymers-Mechanical properties, Composite blocks-Humidity effects, Concrete/polyesters-Flexural strength, ZZ Unlimited.;

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A014 140 15/3.1 9/2 16/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems: Operation and Maintenance Program (OANDM). (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 75 25P Koa,A. ;
REPT. NO. CERL-TR-C-46
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89502

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Apr 75, AD-A010 632.
DESCRIPTORS: *Antimissile defense systems, *Computerized simulation, Cost estimates, Computer programs, Maintenance, Hardened structures (U)
IDENTIFIERS: *OANDM computer program (U)

The Operation and Maintenance Program (Program OANDM) estimates the annual operation and maintenance cost of hardened facilities, such as Defense Unit, Tactical Operation Center, and Missile Field, for both initial and subsequent years. The cost is calculated on the total facility basis rather than on an individual item of equipment basis. Techniques used for developing the cost estimating relationships, a description of the computer program, instructions for using the computer program, and an example problem are presented. This program is to replace the original Program OANDM. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A013 403 8/7 13/13 20/6

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

A Scanning Electron Microscope Investigation of Statically Loaded Foundation Materials. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 75 45P Aufmuth,Raymond E. ;Aleszka, James C. ;
REPT. NO. CERL-TR-M-136

UNCLASSIFIED REPORT

DESCRIPTORS: *Rock mechanics, *Foundations(Structures), *Electron microscopy, Construction materials, Bending stress, Compression, Cracking(Fracturing), Crack propagation, Tension, Fracture(Mechanics), Surface properties, Microphotography, Video tape recording, Test methods, Failure (U)

Selected rock samples were prepared and tested to failure in bending, tension, and compression test modes within the vacuum stage of a scanning electron microscope. The load was applied very slowly so that crack initiation and growth could be observed. The latter was observed visually and was recorded by both photography and video tape. The cracked surfaces of the failed specimens were further evaluated by more standard methods; two evaluation techniques were used to determine the failure the mechanisms involved for each test mode and rock type studied. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A013 387 13/9 13/3 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Evaluation of Lunar Drilling Technology for Terrestrial Applications. Diamond Drill Bit Evaluation. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 75 54P Aufmuth,R. E. ;
REPT. NO. CERL-TR-M-138
PROJ: DA-4-A-162621-A-890

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-782 914.
DESCRIPTORS: *Drilling machines, *Drills, Technology, Diamonds, Drilling, Core sampling, Rock drilling, Performance(Engineering) (U)
IDENTIFIERS: *Technology utilization, *Technology transfer, Diamond drill bits, Commercial diamonds, Industrial diamonds (U)

This report presents the results of a study evaluating four diamond drill bits of the design developed for lunar exploration. Two of the bits were constructed with the original diamond drill bits for NASA, using gem quality, geometrically oriented diamonds. The other two bits were cast specifically for this study, using standard WA-1 industrial diamonds, randomly oriented. Identical rock materials, representing the three major rock classifications, were drilled with each of the bits until the bits were worn out or destroyed. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A013 380 11/6

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Fatigue Failure of Hydrogen-Embrittled High-Strength Steels. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 75 21P Kim,Y. G. ;Aleszka,J. ;
REPT. NO. CERL-TR-M-143
PROJ: DA-4-A-161102-B-52-E
TASK: 4-A-161102-B-52-E-09

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report of Characterization of Fracture of Engineering Materials.
DESCRIPTORS: *Steel, *Hydrogen embrittlement, Fatigue(Mechanics), Fracture(Mechanics), Cyclic tests, Crack propagation (U)
IDENTIFIERS: Steel HY-130, Steel T-1 (U)

This report studies the fatigue fracture behavior of two hydrogen-embrittled high-strength steels, HY-130 and T-1, under cyclic load conditions. The cathodically charged, quenched, and tempered martensitic steels were subjected to fatigue tests conducted at room temperature in air at 10 cycles per second in a tension-tension sinusoidal mode. Stereo viewing of SEM fractographs, in conjunction with optical microscopy, was used to identify the topography of the fatigue zone. The fatigue zone of hydrogen-embrittled samples displayed a dispersion of craters which were absent in the fatigue zone of unembrittled specimens. It is proposed that the crater-type fracture mode in hydrogen-embrittled steels under cyclic load conditions is formed by the simultaneous, sub-surface nucleation of transverse and longitudinal cracks. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A013 359 6/6 5/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

A Review and Analysis of Environmental Impact Assessment Methodologies. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 75 23P Jain,R. K. ;Urban,L. V.
;
REPT. NO. CERL-TR-E-69

UNCLASSIFIED REPORT

DESCRIPTORS: *Environments, *Reports, Technical writing, Impact, Assessment, Methodology, Quality, Project personnel, Standards, Land use, Adverse conditions, Forecasting, Environmental protection (U)
IDENTIFIERS: Environmental impact, Report writing (U)

Many methodologies have been developed to help the environmental impact assessment/statement (EIA/EIS) preparer fully respond to the Executive Office of the President, Council on Environmental Quality guidelines for EIA/EIS content. This report presents guidance for individual project evaluation for the purpose of choosing a methodology; methodology categorization by type of impact identification; and criteria for methodology evaluation. In addition, the document presents a brief, critical review and analysis of 19 methodologies, with the intent of showing their strengths and weaknesses in terms of individual project applicability and introducing the user to the variety of techniques being developed. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A012 732 13/13 13/2 8/11

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Modal Analysis Methods in Seismic Design for Buildings. (U)

DESCRIPTIVE NOTE: Final rept. Aug 74-Feb 75,
JUN 75 36P Stockdale,William K. ;
REPT. NO. CERL-TR-M-132
PROJ: DA-4-A-76719-AT-05
TASK: 4-A-76719-AT-0502

UNCLASSIFIED REPORT

DESCRIPTORS: *Earthquake resistant structures, *Civil engineering, Construction, Standards, Strength(General), Earthquakes, Seismic waves, Ground motion, Intensity, Degrees of freedom, Vibration, Damping, Shear stresses, Force(Mechanics), Military facilities, Hazards, Beams(Structural), Elastic properties, Manuals (U)

IDENTIFIERS: Modal ANALYSIS METHODS, Architectural engineering, Inelasticity, Building codes, SEAOC building code, Design (U)

This report is the first step in preparing a change to the tri-services manual TM 5-809-10, Seismic Design for Buildings. Changes in this manual are necessary to provide guidance for the design of critical military facilities which must remain functional after subjection to strong earthquakes. This report describes and discusses modal analysis methods used in the dynamic analysis of structures in conjunction with the earthquake response spectra and time history methods. Elastic and inelastic conditions are discussed, as well as structural damping and assumptions and limitations of the methods. Example calculations are included. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A012 731 11/2 1/5 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Fibrous Concrete Pavement Design Summary. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 75 15P Rice,John L. ;
REPT. NO. CERL-TR-M-134
PROJ: DA-4-A-062112-A-891
TASK: 4-A-062112-A-89104

UNCLASSIFIED REPORT

DESCRIPTORS: *Reinforced concrete, *Steel, *Metal fibers, *Landing fields, *Pavements, Stresses, Flexural properties, Elastic properties, Deflection, Construction, Joints, Foundations(Structures), Layers, Overlays, Drainage, Fibers (U)

This report presents interim design guidance for fibrous concrete pavements for airfields. The Corps of Engineers' current design procedures are modified to account for the peculiarities of fibrous concrete. Included in the report are discussions of design procedures for slabs on grade and overlays. No recommendations are presented concerning production of fibrous concrete; however, sources of information about mix designs, batching, and handling are noted in references cited within the report. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A012 729 18/6 16/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

EMP Shielding Properties of Conduit Systems and Related Hardware. (U)

DESCRIPTIVE NOTE: Final rept., JUN 75 102P Leverenz,D. J. ;Nielsen,P. H. ;McCormack,R. G. ;
REPT. NO. CERL-TR-C-19

UNCLASSIFIED REPORT

DESCRIPTORS: *Electromagnetic shielding, *Electromagnetic pulses, *Pipes, *Radiation hardening, Steel, Protective coverings, Electric cables, Transmission lines, Launching sites, Guided missile silos (U)
IDENTIFIERS: Safeguard antiballistic missile system, *Conduits (U)

This report presents the results obtained by CERL over the past 3 years under its investigation of the shielding properties on conduit systems, conduit-related hardware, and the effects of improper field assembly on the shielding of conduit systems. The measurements were made by injecting EMP-type current pulses onto test conduits and measuring the signal picked up on a sense wire inside the conduit. Results are presented for the measurement of both diffusion and leakage signals. The diffusion signal provides a base line for the conduit shielding since it is the optimum shielding obtainable for a given size and material of conduit. The leakage signals represent a degradation of the conduit shielding due to the insertion of conduit hardware required to assemble the conduit runs, or to the improper assembly of the conduit system. Included in the leakage study were various hardware items including couplings, unions, conduits of various sizes, flexible conduit, condulets, lock nuts, threaded hubs, and a variety of condulet gaskets. In addition, the effects of thread corrosion, use of different conductive compounds, various methods of compound application, welding near couplings, and the inadequate tightening of threaded joints were evaluated. The greatest single factor in the degradation of the shielding effectiveness of condui(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A012 728 13/13 13/2 8/11

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Guidelines for Developing Design Earthquake Response Spectra. (U)

DESCRIPTIVE NOTE: Final rept., JUN 75 362P Hays,Walter W. ;Algermissen, S. T. ;Espinosa,Alvaro F. ;Perkins,David M.;Rinehart,Wilbur A. ;
REPT. NO. CERL-TR-M-114
PROJ: CERL-72-32

UNCLASSIFIED REPORT

Availability: Microfiche copies only.
DESCRIPTORS: *Earthquake resistant structures, *Civil engineering, *Seismology, Construction, Site selection, Ground motion, Foundations(Structures), Earthquakes, Seismic waves, Propagation, Intensity, Power spectra, Loads(Forces), Shaking, Attenuation, Soils, Faults(Geology), Geological survey, Hospitals, Communications central, Electric power plants, Fire fighting, Military facilities, Architecture, State of the art, United States, Hazards (U)
IDENTIFIERS: Guidelines, Architectural engineering, Fire stations (U)

State-of-the-art information required for developing design earthquake response spectra is compiled and synthesized in a manual-like format to provide the user with general guidelines for estimating the ground motion load expected for sites of interest located throughout the United States. The information contained in this document constitutes a subset of the comprehensive body of knowledge available in the field. This subset is considered pertinent for a technical understanding of the theoretical and empirical bases currently used to develop design earthquake response spectra for use in construction, design, and evaluation of important facilities. These guidelines relate to the following analyses: (1) determination of seismicity parameters, (2) estimation of seismic attenuation functions, (3) estimation of maximum intensity of shaking, (4) estimation of ground motion response spectra, and (5) estimation of local soil amplification effects. Basic informatio (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A012 727 5/1 5/2 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Automated Design and Construction Progress Reporting Procedures. Volume II. (U)

DESCRIPTIVE NOTE: Interim technical rept. no. 4, Apr 72-Oct 73,
JAN 75 358P Lapp,Roger L. ;Poskus, Uldis R. ;
REPT. NO. CERL-IR-A-23-Vol-2
PROJ: DA-4-A-062103-A-891
TASK: 4-A-062103-A-89106

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-771 178.
DESCRIPTORS: *Management information systems, Military engineering, Data bases, Data storage systems, Construction, Computer aided design, Military facilities, Army planning, Reports, Methodology (U)
IDENTIFIERS: Automated reports (U)

This report describes progress to date in automating design and construction progress reporting procedures for Army constructed military facilities. An analysis of the major reports used by the Corps of Engineers in managing design and construction is presented. Representative reports to be automated have been selected from the various management levels of the Corps: Office of the Chief of Engineers, Division Offices, District Offices, and Field (Area or Resident) Offices. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A012 110 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

An Investigation of Techniques for Achieving Exposed Aggregate Surfaces for Site-Cast Concrete. (U)

DESCRIPTIVE NOTE: Final technical rept.,
JUN 75 22P Naus,Daniel J. ;Freeman, Randy ;Muir,Wayne ;Williamson,G. R. ;
REPT. NO. CERL-TR-M-61-Rev
PROJ: DA-4-DM-78012-AOK-1
TASK: 4-DM-78012-AOK-103

UNCLASSIFIED REPORT

DESCRIPTORS: *Concrete, *Surface finishing, *Buildings, Casting, Formulations, Costs, Military facilities, Army (U)
IDENTIFIERS: Aggregates (U)

This report describes techniques for producing acceptable exposed aggregate finishes for site-cast concrete, including chemical retardation and mechanical methods. Potentially promising techniques are evaluated with regard to labor requirements, material requirements, cost factors, and limitations. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099052

AD-A012 109 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Environmental Protection Guidelines for the Resident Engineer. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 75 43P Riggins,Robert E. ;
REPT. NO. CERL-TR-E-57
PROJ: DA-4-A-162121-A-896
TASK: 4-A-162121-A-89605

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Pollution, *Contract administration, Abatement, Air pollution, Water pollution, Waste disposal, Land use, Sites, Erosion, Monitoring, Vegetation (U)
IDENTIFIERS: Guideline development, Air pollution control, Water pollution control, Esthetics, Solid waste disposal, Environmental quality (U)

This report presents guidelines to assist resident engineers in monitoring compliance with the environmental provisions of construction contracts. It describes general environmental responsibilities of the resident engineer; sources of environmental pollution; techniques for providing environmental protection; and methods of evaluating a construction site for potential environmental problems. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A011 589 1/5 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

The Status of Development of a Maintenance Management System for Airfield Pavements. (U)

DESCRIPTIVE NOTE: Final rept. Jul 71-Jun 74,
MAY 75 76P McManus,P. F. ;
CONTRACT: F29601-71-X-0002
MONITOR: AFWL TR-74-154

UNCLASSIFIED REPORT

DESCRIPTORS: *Pavements, *Runways, *Preventive maintenance, Management, Failure(Mechanics), Cost effectiveness, Scheduling, Performance(Engineering), Detection, Computer programming, Military facilities, Civil engineeri (U)
IDENTIFIERS: PREDICT Computer program, PAVER computer program, Pavement distress (U)

The objective of the project is to develop methodology for determining cost-effective plans for preventive maintenance of airfield pavements so that functional requirements are met with a minimum of major repair and reconstruction effort. The approach for meeting these objectives is to create a computerized Maintenance Management System which will predict maintenance requirements, analyze alternative schedules of maintenance activities and determine cost-effective schedules, monitor actual pavement performance, and provide reports on the performance and cost of pavement facilities to all levels of command. At present, two computer codes are available, PREDICT And PAVER, which have been developed for this project and concurrent projects sponsored by the U.S. Army Corps of Engineers. These programs are recommended for use in test implementations at Air Force bases. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A011 235 15/3.1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume VIII. Operational Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 20P Kao,A. ;Blackmon,R. ;
McDowell,E. ;
REPT. NO. CERL-TR-C-28-Vol-8
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89502

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 6, AD-A010 632.
DESCRIPTORS: *Antimissile defense systems, *Hardened structures, *Computerized simulation, Heating, Ventilation, Air conditioning equipment, Underground facilities, Underground structures, Power equipment, FORTRAN, Control sequences, User needs, Computer programming (U)
IDENTIFIERS: FORTRAN 4 programming language (U)

This Operational Manual is the last of eight volumes of the Facility Simulation Model study. It describes the control cards required for operating the model. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A011 232 15/3.1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume VC. HVAC/PC Module: Program Listing. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 180P Kao,A. ;Blackmon,R. ;
McDowell,E. ;
REPT. NO. CERL-TR-C-28-Vol-5C
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89502

UNCLASSIFIED REPORT

Availability: Available in microfiche only.
SUPPLEMENTARY NOTE: See also Volume 5B, AD-A010 715.
DESCRIPTORS: *Antimissile defense systems, *Hardened structures, *Computerized simulation, Heating, Ventilation, Air conditioning equipment, Underground facilities, Underground structures, Blast loads, Dynamic response, User needs, Computer programs (U)
IDENTIFIERS: *Process cooling systems (U)

This HVAC/PC Module volume is divided into a user's manual, a program reference manual, and a program listing. In this program listing, the FORTRAN programs of three programs in the HVAC/PC Module are documented. These three programs are MAIN1 (HVAC1), HVAC2, and RSPNSR. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A011 231 15/3.1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume IVC. Power Module: Program Listing. (U)

DESCRIPTIVE NOTE: Final rept., APR 75 45P Kao,A. ;Blackmon,R. ; McDowell,E. ;Eng,D. ;
REPT. NO. CERL-TR-C-28-Vol-4C
PROJ: DA-4-A664717-C-895
TASK: 4-A-664717-D-89502

UNCLASSIFIED REPORT

Availability: Available in microfiche only.
SUPPLEMENTARY NOTE: See also Volume 4B, AD-A009 748.
DESCRIPTORS: *Antimissile defense systems, *Hardened structures, *Power supplies, *Computerized simulation, Diesel engines, Gas turbines, Fuel cells, Electric batteries, Turbogenerators, Alternators, FORTRAN, Computer programs (U)
IDENTIFIERS: POWERM computer program (U)

This Power Module volume is divided into a user's manual, a program reference manual, and a program listing. In this program listing, the FORTRAN program of one program in the Power Module is documented. This is Program POWERM. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A011 227 15/3.1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume IVA. Power Module: User's Manual. (U)

DESCRIPTIVE NOTE: Final rept., APR 75 53P Kao,A. ;Blackmon,R. ;Eng, D. ;McDowell,E. ;
REPT. NO. CERL-TR-C-28-Vol-4A
PROJ: DA-4-A664717-D-895
TASK: 4-A-664717-D-89502

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3C, AD-A010 713, and Volume 4B, AD-A009 748.
DESCRIPTORS: *Antimissile defense systems, *Hardened structures, *Power supplies, *Computerized simulation, Diesel engines, Gas turbines, Fuel cells, Electric batteries, Turbogenerators, Alternators, FORTRAN, User needs (U)

This Power Module Volume is divided into a user's manual, a program reference manual, and a program listing. In this user's manual, input formats are outlined for each power system: diesel engine, gas-turbine engine, turbo-alternator, fuel cells, and batteries. The module calculates the performance characteristics of each system and also selects commercially available power systems from a data base for both diesel and gas-turbine to meet the power output requirements. Five sample problems, one for each power system, illustrate the use of the Power Module. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A011 226 15/3.1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume IIIB. Structural Module: Program Reference Manual. (U)

DESCRIPTIVE NOTE: Final rept., APR 75 113P Kao,A. ;Blackmon,R. ; McDowell,E. ;
REPT. NO. CERL-TR-C-28-Vol-3B
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89502

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3A, AD-A009 747, and Volume 3C, AD-A010 713.
DESCRIPTORS: *Antimissile defense systems, *Hardened structures, *Computerized simulation, Structural response, Radiation shielding, Underground structures, Guided missile silos, Blast loads, Ground motion, User needs, Computer programming, Cost estimates (U)

This structural module volume is divided into a user's manual, a program reference manual, and a program listing. In this program reference manual, structural module design procedures are described, along with loading functions and radioactive shielding. Cost estimates and outrunning ground motion are outlined for a shock isolation program. Computer program descriptions are given for the five related structural modeles -- aboveground, belowground, dome, silo, and shock isolation. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A011 225 9/1 15/3.1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Results of RFI Testing of Safeguard Flexible Tunnel Section. (U)

DESCRIPTIVE NOTE: Final rept., MAY 75 24P Leverenz,D. J. ;McCormack, R. G. ;Nielsen,P. H. ;
REPT. NO. CERL-TR-C-16

UNCLASSIFIED REPORT

DESCRIPTORS: *Electromagnetic shielding, Tunnels, Flexible structures, Antimissile defense systems, Tests, Nuclear explosion damage, Electromagnetic pulses (U)
IDENTIFIERS: Safeguard antiballistic missile systems (U)

The report discusses results of the RFI shielding-effectiveness testing of a portion of the flexible tunnel section used for joining the equipment tunnels to the linear plate of the SAFEGUARD shielded enclosures. Test results are presented for several modifications to the tunnel section, including the mounting configuration to be used on site. These results indicate that, for most configurations, the shielding effectiveness of the tunnel section does meet the SAFEGUARD EMP specifications. Thus, the choise of configuration and material can be selected for construction convenience. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A011 224 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

The Design of a Plastic Structural System (ILIR). (U)

APR 75 97P Merritt,R. G. ;
REPT. NO. CERL-TR-M-121
PROJ: DA-A-91001904

UNCLASSIFIED REPORT

DESCRIPTORS: *Structural members, *Plastics, Structures, Structural properties, Materials, Loads(Forces) (U)
IDENTIFIERS: Design (U)

IAC ACCESSION NUMBER: PL-022495
IAC DOCUMENT TYPE: PLASTC -HARD COPY--

The report considers the use of plastic materials in the design of new structural systems. It presents a complete design for a 100-man bathhouse to be constructed of plastics. The preliminary design is based upon a uniformly distributed load of 50 lb/sq ft with a safety factor of design. Also included are a material selection scheme for the design of such facilities, a design summary, and a discussion of current methods of testing specimens made of plastic materials. (U)

IAC SUBJECT TERMS: P--(U)Structural plastics-Testing, FRP housing-Design, Wall panels-Failure analysis, Roof panel-FRP/polyester, Structural foam-Strength properties, ZZ Unlimited.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A011 223 9/1 15/3.1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Development and Evaluation of Repairs for EMP Leaks in Conduit Systems. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 78P Leverenz,D. J. ;McCormack, R. G. ;Nielsen,P. H. ;
REPT. NO. CERL-TR-C-17

UNCLASSIFIED REPORT

DESCRIPTORS: *Pipes, *Repair, *Electromagnetic shielding, Electromagnetic pulses, Leakage, Antimissile defense systems, Pipe fittings, Couplings (U)
IDENTIFIERS: Safeguard antiballistic missile systems (U)

The report discusses the development and evaluation of repairs for EMP leaks in conduit systems at the SAFEGUARD site. Repairs for 4-in. explosion-proof conduit unions, communications cable-gripper boxes, and non-RFI tight flexible conduit are studied. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A011 187 5/11 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Army Family Housing: Preferences and Attitudes About Housing Interiors. Volume III: Predictors of Satisfaction with Housing Interiors. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 145P Dressel,D. L. ;Brauer,R. L. ;Neathammer,R. D. ;Hahn,C. B. ;Gorham, R. S. ;
REPT. NO. CERL-TR-D-48-Vol-3
PROJ: DA-4-A-664-P-17895
TASK: 4-A-664-P-17895-03

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A007 741.
DESCRIPTORS: *Housing(Dwellings), *Military personnel, *Attitudes(Psychology), Surveys, Floors, Windows, Washers(Cleaners), Kitchen equipment and supplies, Predictions (U)

This is the final volume of a three-volume study on Army family housing occupants' preferences and attitudes about housing interiors. This volume presents priority matrices and prediction models for occupant satisfaction with family housing features, based on occupants' ratings of their present quarters. (U)

AD-A011 180 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Evaluation of Bentonite Clay for Waterproofing Foundation Walls Below Grade. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 75 48P Kanarowski,Stanley M. ;
REPT. NO. CERL-TR-M-93
PROJ: DA-4-A-162121-A-891
TASK: 4-A-162121-A-891-02

UNCLASSIFIED REPORT

DESCRIPTORS: *Waterproofing, *Clay minerals, Walls, Panels, Sprays, Cost estimates, Test methods, Construction materials (U)
IDENTIFIERS: *Bentonite (U)

Bentonite clay panels and bentonite spray are evaluated for waterproofing the exterior surface of foundation walls below grade. The evaluation is based on a field letter survey and contacts with users, architects, and installers of bentonite panels and applicators of bentonite spray. Two installations were observed to provide first-hand data. Both bentonite systems performed favorably at a cost comparable to conventional systems, but lower than most elastomeric systems. Product information, including responses from the field, cost comparisons, and advantages and limitations for both materials, is given. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A010 715 15/3.1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume VB: HVAC/PC Module: Program Reference Manual. (U)

DESCRIPTIVE NOTE: Final rept., APR 75 203P Kao,A. ;Blackmon,R. ; McDowell,E. ;
REPT. NO. CERL-TR-C-28-Vol-5B
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89502

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 5A dated Apr 75, AD-A010 714.
DESCRIPTORS: *Antimissile defense systems, *Underground facilities, *Hardened structures, Heating, Cooling and ventilating equipment, Air conditioning equipment, FORTRAN, Computer programming, Instruction manuals, Cost analysis (U)

The HVAC/PC Module volume is divided into a user's manual, a program reference manual, and a program listing. The HVAC/PC Module develops a conceptual design for the HVAC and PC system and estimates its initial and life-cycle costs. The computer programs, whose algorithms are explained herein, are capable of comparing various system configurations in terms of cost, performance, and reliability. Although HVAC/PC Programs 1 and 2 were designed to be used in conjunction with other modules (structural, power generation, electrical distribution, etc.), they can be used separately to design and analyze only the HVAC and PC systems of a given hardened facility. This program reference manual outlines the intended use of each program and explains the algorithms that make up each program part. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A010 714 15/3.1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume VA: HVAC/PC Module: User's Manual. (U)

DESCRIPTIVE NOTE: Final rept., APR 75 141P Kao,A. ;Blackmon,R. ; McDowell,E. ;
REPT. NO. CERL-TR-C-28-Vol-5A
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89502

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 4B dated Apr 75, AD-A009 748.
DESCRIPTORS: *Antimissile defense systems, *Underground facilities, *Hardened structures, Heating, Cooling and ventilating equipment, Air conditioning equipment, FORTRAN, Computer programming, User needs, Cost analysis (U)

This HVAC/PC module volume is divided into a user's manual, a program reference manual, and a program listing. The computer module presented in this user's manual is capable of conceptually designing and simulating heating, ventilation, and air conditioning (HVAC) systems and process cooling (PC) systems for hardened military facilities. The computer programs are capable of comparing various system configurations in terms of cost, performance, and reliability. This user's manual outlines the intended use of each program, and gives instructions for input data and examples of reports generated by the two programs. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A010 713 15/3.1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume IIIC: Structural Module: Program Listing. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 158P Kao,A. ;Blackmon,R. ;
McDowell,E. ;
REPT. NO. CERL-TR-C-28-Vol-3C
PROJ: DA-4-A-764717-D-895
TASK: 4-A-764717-D-89502

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3A dated Apr 75, AD-A009 747.
DESCRIPTORS: *Antimissile defense systems, *Underground facilities, *Hardened structures, Heating, Cooling and ventilating equipment, Air conditioning equipment, FORTRAN, Computer programs, Cost analysis (U)

This structural module volume is divided into a user's manual, a program reference manual, and a program listing. In this program listing, the FORTRAN programs of five programs in the structural module are documented. These five programs are Program BLDG, Program FRAME, Program DOME, Program SILO, and Program SISOL. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A010 632 15/3.1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume VI: Miscellaneous Module. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 83P Kao,A. ;Blackmon,R. ;
McDowell,E. ;
REPT. NO. CERL-TR-C-28
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89502

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume IV B, AD-A009 748.
DESCRIPTORS: *Antimissile defense systems, *Computerized simulation, Radar stations, Computer programs, Costs (U)
IDENTIFIERS: SITE computer program, OANDM computer program, AETPH computer program, VOLUME computer program (U)

This module consists of four unrelated programs: Program SITE which includes the sitework, off-site utilities, and real estate program; Program OANDM, which includes the operation and maintenance cost programs; Program AETPH, which includes architectural, structural, electrical, mechanical, and power items cost; and Program VOLUME, which is the structure selection program. The first three programs are designed to be used either separately or in conjunction with other modules for estimating a total facility cost. The fourth program is independent and not to be used in conjunction with the other programs in the simulation model. (U)

AD-A010 631 9/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

EMP Evaluation of Junction Boxes, Junction-Box Covers, and Gaskets. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 75 53P Leverenz,D. J. ;McCormack, R. G. ;Nielsen,P. H. ;
REPT. NO. CERL-TR-C-18
PROJ: LAO-CE-CERL-72-20

UNCLASSIFIED REPORT

DESCRIPTORS: *Junction boxes, *Electromagnetic shielding, Electromagnetic pulses, Radiofrequency interference, Gaskets, Coverings, Radiation hardening (U)
IDENTIFIERS: Evaluation (U)

This study reports test results from RFI testing of electrical junction boxes with bolt-on covers. A number of cover-gasket configurations were tested. Tests indicate that a large improvement in the shielding effectiveness of junction boxes can be obtained by increasing the number of cover bolts or using a Metex 'combo strip' gasket. A simple field fix that provides a large increase in shielding effectiveness can be made by doubling the number of cover bolts used on the junction boxes. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A010 630 15/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Experimental Verification of Ventilation Analysis Procedure. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 43P Burns,John J. , Jr;
REPT. NO. CERL-TR-C-29
PROJ: IAO-CE-CERL-73-1

UNCLASSIFIED REPORT

DESCRIPTORS: *Fallout shelters, *Environmental engineering, *Ventilation, Air flow, Model tests, Thermodynamics, Underground structures, Civil defense (U)

This report represents the results of an experiment to verify the adequacy of a supplement to ER 1190-1-2 and TR 20 (Volume 3), the Technical Manual for Ventilation Analysis Procedure. The purpose of the experiment was to predict the rate of induced air flow through a fallout shelter. The only applied force in the shelter is the sensible heat given off by its occupants. Induced air flows through three model chambers containing resistance heaters that simulated body heat air-flow speeds from 10 to 30 fpm were measured using thermistors. After demonstrating that the model test results would be similar to the flows expected in larger shelters of a similar geometry, test runs involving one and two chamber wall cutouts were conducted. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A010 629 20/1 13/2 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Construction Noise: Specification, Control, Measurement, and Mitigation. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 81P Schomer,P. D. ;Homans,B. ;
REPT. NO. CERL-TR-E-53
PROJ: DA-4-A-162121-A-896
TASK: 4-A-162121-A-89606

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Noise pollution, Construction equipment, Noise reduction, Acoustic measurement, Physiological effects, Specifications, Military requirements (U)
IDENTIFIERS: *Noise levels, *Noise abatement, Army Corps of Engineers (U)

In recent years, noise from construction sites has been an increasing problem for the Corps of Engineers. This report introduces noise as a problem, how it affects man, and Army requirements for the prevention of excessive noise. With this background, sample specifications are prepared to control construction-site noise and the means established to monitor compliance. Finally, information is given on state and local noise regulations and on noise-mitigation techniques. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A009 748 15/3.1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume IVB. Power Module. Program Reference Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 49P Kao,A. ;Blackmon,R. ;Eng, D. ;McDowell,E. ;
REPT. NO. CERL-TR-C-28-Vol-4B
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89502

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3A dated Apr 75, AD-A009 747.
DESCRIPTORS: *Antimissile defense systems, *Hardened structures, *Computerized simulation, Heating, Ventilation, Air Conditioning equipment, Facilities, Cost analysis, Underground facilities, Underground structures, User needs, Power equipment, Computer programming (U)

The Power Module volume is divided into a user's manual, a program reference manual, and a program listing. In this program reference manual, the procedures for calculating the performance characteristics of five power systems are described. The five power systems are: diesel engine, gas-turbine engine, turbo-alternator, fuel cells, and batteries. Descriptions of computer programs for each system are also given. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A009 747 15/3.1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume IIIA. Structural Module: User's Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 72P Kao,A. ;Blackmon,R. ;
McDowell,E. ;
REPT. NO. CERL-TR-C-28-Vol-3A
PROJ: DA-4-A-764717-D-895
TASK: 4-A-764717-D-89502

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2C dated Apr 75, AD-A009 746, and Volume 4B dated Apr 75, AD-A009 748.
DESCRIPTORS: *Antimissile defense systems, *Hardened structures, *Computerized simulation, Heating, Ventilation, Air conditioning equipment, Facilities, Cost analysis, Underground facilities, Underground structures, User needs, Guided missile silos, Computer programming (U)

This structural module volume is divided into a user's manual, a program reference manual, and a program listing. In this user's manual, the structural design module is characterized by five computer programs that classify structure types. Input formats are outlined for each type: aboveground rectangular, belowground rectangular, surface-flush silo, aboveground circular dome, and shock-isolation. Sample cost data are provided for each building element. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A009 746 15/3.1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume IIC. Executive Control Module: Program Listing. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 74P Kao,A. ;Blackmon,R. ;
McDowell,E. ;
REPT. NO. CERL-TR-C-28-Vol-2C
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89502

UNCLASSIFIED REPORT

Availability: Available in microfiche only.
SUPPLEMENTARY NOTE: See also Volume 2B dated Apr 75, AD-A009 745, and Volume 3A dated Apr 75, AD-A009 747.
DESCRIPTORS: *Antimissile defense systems, *Hardened structures, *Computerized simulation, Heating, Ventilation, Air conditioning equipment, Facilities, Cost analysis, Underground facilities, Underground structures, User needs, Computer programs, FORTRAN (U)
IDENTIFIERS: MAIN computer program, MAINMS computer program, MAINSTR computer program, MAINPWR computer program, INHVAC computer program (U)

This executive control module is divided into a user's manual, a program reference manual, and a program listing. In this program listing, the FORTRAN programs of five programs in the executive control module are documented. These five programs are Program MAIN, Program MAINMS, Program MAINSTR, Program MAINPWR, and Program INHVAC. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A009 745 15/3.1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume IIB. Executive Control Module: Program Reference Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 22P Kao,A. ;Blackmon,R. ;
McDowell,E. ;
REPT. NO. CERL-TR-C-28-Vol-2B
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89502

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2A dated Apr 75, AD-A009 744, and Volume 2C dated Apr 75, AD-A009 746.
DESCRIPTORS: *Antimissile defense systems, *Hardened structures, *Computerized simulation, Heating, Ventilation, Air conditioning equipment, Facilities, Cost analysis, Underground facilities, Underground structures, User needs, Flow charti (U)

This executive control module volume is divided into a user's manual, a program reference manual, and a program listing. In this program reference manual, programs for the simulation model in an Option II or III mode are described. Programs are divided into overlays in order to reduce the total amount of storage required during the execution of the model. Overlays are loaded into memory at zero, primary, and secondary levels. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A009 744 15/3.1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume IIA. Executive Control Module: User's Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 141P Kao,A. ;Blackmon,R. ;
McDowell,E. ;
REPT. NO. CERL-TR-C-28-Vol-2A
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89502

UNCLASSIFIED REPORT

Availability: Available in microfiche only.
SUPPLEMENTARY NOTE: See also Volume 1 dated Apr 75, AD-A009 743, and Volume 3 dated Apr 75, AD-A009 745.
DESCRIPTORS: *Antimissile defense systems, *Hardened structures, *Computerized simulation, Heating, Ventilation, Air conditioning equipment, Facilities, Cost analysis, Underground facilities, Underground structures, User needs, Computer programming (U)

This executive control module volume is divided into a user's manual, a program reference manual, and a program listing. In this user's manual, the operation of the simulation model in an Option II or III mode is described. Option II relates to structural shape and limiting the model to vary bay sizes; Option III relates to the establishment of requirements and the selection of the most economical structural shape. Options II and III cover three basic structural shapes: aboveground rectangular, belowground rectangular, and turret with belowground rectangular base structure. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099052

AD-A009 743 15/3.1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Facility Simulation Model for Advanced BMD Systems. Volume I. Executive Summary. (U)

DESCRIPTIVE NOTE: Technical rept.,
APR 75 14P Kao,A. ;Blackmon,R. ;
McDowell,E. ;
REPT. NO. CERL-TR-C-28-Vol-1
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89502

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2A dated Apr 75, AD-A009 744.
DESCRIPTORS: *Antimissile defense systems, *Hardened structures, *Computerized simulation, Heating, Ventilation, Air conditioning equipment, Facilities, Cost analysis, Underground facilities, Underground structures (U)

This Executive Summary introduces the eight volumes of the facility simulation model study. The objective of the study is to provide an automated, computerized, facility conceptual design simulation technique and cost model for ballistic missile defense systems. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A009 702 13/3 14/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Rapid Testing of Fresh Concrete. (U)

DESCRIPTIVE NOTE: Conference proceedings,
MAY 75 153P Howdyshell,Paul A. ;
REPT. NO. CERL-CP-M-128

UNCLASSIFIED REPORT

DESCRIPTORS: *Concrete, *Test methods, *Meetings, Cements, Water, Electrical properties, Thermal conductivity, Microwaves, Measurement, X rays, Neutron activation, Nondestructive testing, Gamma rays, Test equipment (U)
IDENTIFIERS: Neutron activation analysis (U)

IAC ACCESSION NUMBER: NT-010882
IAC DOCUMENT TYPE: NTIAC -MICROFICHE--
Quite a few methods have been recommended in the technical literature for the determination of the cement and water contents as well as the water/cement ratio of a fresh concrete. This paper discusses several of the published methods for determination of cement content, including the well-known Dunagan method and some of its variants, another mechanical method based on consistency measurements by two different techniques, and two physiocochemical methods. Although drying is simplest method for determining water content it is not accurate enough. Other methods of estimating the water content include calculating the weight of the solids in the concrete, using chemical means; measuring the electrical resistance or capacitance, or the thermal conductivity or the microwave absorption; and performing repeated consistency tests. The methods suggested for determination of the water/cement ratio are measuring essentially the water content. (U)

IAC SUBJECT TERMS: N--(U)*CONCRETE, *TEST METHODS, WATER, THERMAL CONDUCTIVITY, MOISTURE CONTENT, ELECTRICAL RESISTANCE, MICROWAVES;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A009 701 5/10 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Survey of Soldiers' Attitudes Toward Troop Housing. Volume II. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 279P Brauer,Roger L. ;
REPT. NO. CERL-TR-D-29

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A009 700.
DESCRIPTORS: *Soldiers, *Public opinion, Attitudes(Psychology), Barracks, Army personnel, Housing(Dwellings), Surveys, Questionnaires (U)
IDENTIFIERS: All volunteer military services (U)

The purpose of this study was to determine what changes in the condition of barracks were most desirable to enlisted men, to document these attitudes, and to obtain some understanding of the responses. To attain these goals, a survey was conducted at six U.S. Army posts and included a sample of about 2000 men, which was considered representative of the enlisted Army population. The major instrument in the study was a questionnaire that was completed by all men in the sample. For some respondents, a brief slide presentation, an activity diary, and a personality inventory were used in support of the questionnaire. Two architects provided a professional comparison of several barracks at each location. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A009 700 5/10 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Survey of Soldiers' Attitudes Toward Troop Housing. Volume I: Summary Report. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 28P Brauer,Roger L. ;
REPT. NO. CERL-TR-D-29

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A009 701.
DESCRIPTORS: *Soldiers, *Public opinion, Attitudes(Psychology), Barracks, Army personnel, Housing(Dwellings), Surveys (U)
IDENTIFIERS: All volunteer military services (U)

The report summarizes the major results of a survey which idenfified how enlisted men view their barracks conditions, which conditions they would like to see changed, and how attitudes about barracks are affected by background demographic factors. The men's ratings on 145 conditions are presented, together with a ranking of how important it is to change each condition. Major differences in attitudes about barracks are shown to relate to number of persons per room and factors such as age, pay grade, and intent to re-enlist. Recommendations are made for using information from this study in improving present conditions in constructing new barracks, and in evaluating the effectiveness of improvements. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A009 668 5/2 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Development of the Environmental Technical Information System. (U)

DESCRIPTIVE NOTE: Interim rept., APR 75 68P Webster,R. D. ;Welsh,R. L. ;Jain,R. K. ;
REPT. NO. CERL-IR-E-52
PROJ: DA-4-A-762720-A-896
TASK: 4-A-762720-A-89601

UNCLASSIFIED REPORT

DESCRIPTORS: *Information systems, *Environments, Impact, Computers, Data processing, Legislation, Economics, Military facilities (U)
IDENTIFIERS: Environmental impact (U)

The report presents the research to date on the development and refinement of two computer-aided technical information systems that the Army can use in environmental assessments. The Computerized Environmental Legislative Data System (CELDS) catalogues abstracts of environmental laws and statutes by geographic scope and keyword designation. CELDS includes quantifiable and objective standards and report or permit requirements of all active laws or regulations that may concern the Army. CELDS is complete for six states and for areas of federal jurisdiction, and data for another ten states are currently being collected and analyzed. The system will eventually include all 50 states. The Economic Impact Forecast System (EIFS) uses census bureau information on over 360 counties to calculate environmental impacts for construction on 64 Army installations. EIFS predicts how the expenditure of federal construction dollars will affect local businesses, households, and governments in the areas of employment, personal income, total business volume, housing revenues, housing and business investments, and government expenses. EIFS uses export-based location quotient techniques as the basis for its predictions. The system will be expanded in the future to cover areas other than construction and to include additional regions. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A009 667 15/5 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Problems, Repair Methods, Materials, and Equipment. (U)

DESCRIPTIVE NOTE: Final rept., APR 75 34P Kanarowski,Stanley M. ;
REPT. NO. CERL-TR-M-60
PROJ: DA-4-A-062112-A-891
TASK: 4-A-062112-A-89104

UNCLASSIFIED REPORT

DESCRIPTORS: *Shower facilities, *Construction materials, Leakage(Fluid), Repair, Waterproofing, Military facilities (U)

This study categorizes shower room leakage problems and presents an approach for locating water seepage sources. Repair methods or remedies are discussed as are repair materials and equipment, including plastic shower units. Manufacturers' addresses are also furnished. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A009 522 13/13 5/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Estimating the Life Expectancy of Facilities. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 74 52P Kirby,Jeffrey G. ;Grgas, John M. ;
REPT. NO. CERL-TR-P-36
PROJ: DA-4-DM-728012-AOK-1
TASK: 4-DM-728012-AOK-102

UNCLASSIFIED REPORT

DESCRIPTORS: *Buildings, *Life expectancy, Cost estimates, Mathematical models, Statistical analysis, Markov processes (U)
IDENTIFIERS: Economic analysis (U)

This technical report presents a model which predicts the expected remaining life of a building. Procedures for use of the model are described. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A008 997 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Waterproofing Materials for Prevention of Windblown Rain Penetration through Masonry Walls. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 47P Kanarowski,Stanley M. ;
REPT. NO. CERL-TR-M-75
PROJ: DA-4-A-062112-A-891
TASK: DA-4-A-062112-A-89104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Waterproofing Concrete and Masonry Military Facilities.
DESCRIPTORS: *Waterproofing, *Buildings, *Masonry, Maintenance, Formulations, Rain (U)

This report outlines the basic factors contributing to water seepage in buildings and presents the results of a field study. Basic information, including manufacturer's recommended use, is given for 272 masonry repair and waterproofing materials. Pertinent federal and ASTM waterproofing-related specifications are identified, and manufacturers are listed. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A008 996 13/2 13/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Failure Analysis of Tainter Gate Cable-Adjusting Bolts. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 75 28P Aleszka,James ;
REPT. NO. CERL-TR-M-120

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Corrosion Mitigation in Civil Works Projects.
DESCRIPTORS: *Dams, *Waterways, *Closures, *Bolts, *Failure, Ohio River, Heat treatment, Corrosion resistance, Kentucky (U)
IDENTIFIERS: Uniontown Dam, Uniontown Locks, Uniontown(Kentucky), Failure analysis, Locks(Waterways), Check structures (U)

The failure of cable-adjusting bolts on the Tainter gates at the Uniontown, KY, Locks and Dam is analyzed. The bolts were found to be embrittled as a result of improper heat treatment. This condition caused a loss in corrosion resistance and toughness, allowing stress corrosion cracks to develop in the bolts. Cavitation erosion pits were found at the site of some of this cracking. Corrective measures are recommended to restore the corrosion resistance and toughness of the embrittled bolts. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A008 988 13/2 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Computer-Aided Environmental Impact Analysis for Construction Activities: User Manual. (U)

DESCRIPTIVE NOTE: Technical rept.,
MAR 75 83P Urban,L. V. ;Balbach,H. E. ;Jain,R. K. ;Novak,E. W. ;Riggins,R. E. ;
REPT. NO. CERL-TR-E-50
PROJ: DA-4-A-1621-A-896
TASK: 4-A-1621-A-89601

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Procedures for Evaluating Environmental Impacts of All Army Military Programs.
DESCRIPTORS: *Environmental protection, *Construction, *Military applications, Instruction manuals, Methodology, Pollution, Wildlife, Land use, Computer applications, Data processing (U)
IDENTIFIERS: *Environmental impact statements, Environmental Impact Computer System (U)

The document is a manual designed to help Army personnel assess construction activities for preparation and review of Environmental Impact Assessments (EIA) and Environmental Impact Statements (EIS) by means of the Environmental Impact Computer System (EICS). This system has been developed and maintained by the U.S. Army Construction Engineering Research Laboratory (CERL). (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A007 742 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

An Evaluation of the Fracture of Plain Concrete, Fibrous Concrete, and Mortar Using the Scanning Electron Microscope. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 75 67P Aleszka,James ;Schnittgrund, Gary ;
REPT. NO. CERL-TR-M-122
PROJ: DA-4-A-161102-B-52-E
TASK: 4-A-161102-B-52-E-09

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Characterization of Fracture of Engineering Materials.
DESCRIPTORS: *Concrete, *Mortars, *Fracture(Mechanics), Fiber reinforced composites, Electron microscopy, Hydration, Tensile properties, Compressive properties, Flexural properties, Gels, Calcium compounds, Reinforced concrete (U)
IDENTIFIERS: Scanning electron microscopy, Steel fibers, Ettringite, *Fiber reinforced concretes (U)

The fracture surfaces of both plain and fiber-reinforced mortar and concrete are analyzed using the scanning electron microscope (SEM). Proper sample preparation techniques for SEM examination of mortar and concrete are discussed. Fracture surfaces of samples broken in splitting tensile, flexure, and compression tests are compared using SEM photomicrographs. Micromechanisms of failure are discussed for the different lists for samples cured 7, 14, 21, and 28 days. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A007 741 5/11 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Army Family Housing: Preferences and Attitudes about Housing Interiors. Volume II. Preferences. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 75 85P Dressel,D. L. ;Brauer,R. L. ;Neathammer,R. D. ;Hahn,C. B. ;Gorham, R. S. ;
REPT. NO. CERL-TR-D-48-Vol-2
PROJ: DA-4-A-664-P-17895
TASK: DA-4-A-664-P-1789503

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Feb 75, AD-A007 133.
DESCRIPTORS: *Housing(Dwellings), *Military personnel, *Attitudes(Psychology), Surveys, Windows, Floors, Washers(Cleaners), Questionnaires (U)

The report is the second volume of a three-volume study on Army family housing occupants' preferences and attitudes about housing interiors. Preferences for interior features are summarized, with listings of the specific issues and explanations of the differences in opinion among occupants at the 12 survey installations. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A007 152 1/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Pavement Functional Condition Indicators. (U)

DESCRIPTIVE NOTE: Final rept.,
FEB 75 96P Shahin,Mohamed Y. ;Darter, Michael I. ;
REPT. NO. CERL-TR-C-15
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89504

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Condition Indicators for Military Pavements.
DESCRIPTORS: *Pavements, *Runways, *Skidding, Military facilities, Performance(Engineering), Roughness, Slope, Test methods, Indicators, State of the art, Friction, Measurement, Acceptability (U)
IDENTIFIERS: Service life (U)

Functional performance is defined as the trend of the level of service provided to the pavement users through the initial life of the pavement and between major rehabilitations. The information presented in this report includes: (1) Identification of pavement functional condition indicators; (2) state of the art of measuring and evaluating the most significant functional indicators (roughness and skid resistance); and (3) preliminary concepts for incorporating functional consideration into pavement life-cycle analysis. The report covers pavements in general, with special consideration given to airfields. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A007 133 5/11 13/13 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Army Family Housing: Preferences and Attitudes About Housing Interiors. Volume I. Methodology and General Results. Preferences of Occupants in Military Family Housing. (U)

DESCRIPTIVE NOTE: Final rept.,
FEB 75 67P Dressel,D. L. ;Brauer,R. L. ;Neathammer,R. D. ;Hahn,C. B. ;Gorham, R. S. ;
REPT. NO. CERL-TR-D-48
PROJ: DA-4-A-664-P-17895
TASK: 4-A-664-P-1789503

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Apr 74, AD-777 769.
DESCRIPTORS: *Housing(Dwellings), *Military personnel, Surveys, Questionnaires, Data processing (U)
IDENTIFIERS: Interior decorating (U)

The report is the first volume of a three-volume study on Army family housing occupants' preferences and attitudes about housing interiors. The methodology and general results of a survey of occupants of military family housing are discussed. Also presented are the survey design, the data-gathering process, and an analysis of questionnaires. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO 99062

AD-A006 495 15/5 5/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Evaluation System for Proposed Theater of Operations Structures. Volume II. Technical Report. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 75 105P Ryan,T. C. ;
REPT. NO. CERL-TR-C-14-Vol-2
PROJ: DA-4-A-764717-D-895
TASK: 4-A-764717-D-89523

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD/A-006 014.
DESCRIPTORS: *Military facilities, *Military engineering, *Logistics planning, Buildings, Mechanical components, Maintainability, Packaging, Management information systems, Containerizing, Transportable, Relocation, Loads(Forces), Automation, Construction equipment, Benefits, Costs, Reviews, Manuals (U)
IDENTIFIERS: *Theater of operations, Scenarios, Furniture, Utilities, Recommendations (U)

This report, the second volume in a four-volume study, presents an evaluation system for proposed theater of operations structures. It includes a methodology for producing the system, an evaluator's manual, a building system data form, a scenario data form, a summary of survey results, and a glossary. A manual and automated procedure are included for giving an overall value rating to a proposed building system for a particular theater of operations. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A006 241 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Handbook for Environmental Impact Analysis. (U)

DESCRIPTIVE NOTE: Final rept.,
SEP 74 215P Jain,R. K. ;Urban,L. V. ;Stacey,G. S. ;
REPT. NO. CERL-TR-E-59

UNCLASSIFIED REPORT

DESCRIPTORS: *Environmental protection, *Handbooks, Assessment, Instructions, Law, Requirements, Decision making, Army operations, Construction, Maintenance, Army training, Army planning, Army research, Processing (U)
IDENTIFIERS: *Environmental impact assessments, National Environmental Policy Act 1969, *Environmental impact statements, Environmental surveys (U)

The handbook presents recommended procedures for use by Army personnel in the preparation and processing of environmental impact assessments (EIA) and statements (EIS). The procedures outline in step-by-step fashion the progressive actions necessary to satisfy the requirements of the National Environmental Policy Act of 1969 and the subsequent guidelines issued by the President's Council on Environmental Quality (CEQ) charging all federal agencies to utilize a systematic and interdisciplinary approach to incorporate environmental considerations into their decision-making process. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A006 145 15/5 5/1 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Evaluation System for Proposed Theater of Operations Structures. Volume III: User's Manual. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 75 66P Ryan,T. C. ;Tietz,L. C. ;
REPT. NO. CERL-TR-C-14-Vol-3
PROJ: DA-4-A-764717-D-895
TASK: 4-A-764717-D-89523

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD/A-006 014.
DESCRIPTORS: *Military facilities, *Military engineering, *Computer applications, Management information systems, Logistics planning, Buildings, Computer programs, Data processing, Automation, Systems engineering, Management planning and control, Problem solving, Reviews, Construction (U)
IDENTIFIERS: TOBSEP(Theater of Operations Building System Evaluation Procedure), Theater of operations building system evaluation procedure, Alternatives, TOBSEP computer program, Evaluation, Scenarios (U)

The TOBSEP (Theater of Operations Building System Evaluation Procedure) computer program allows the user to evaluate structures for potential use in the theater of operations. The instructions and program command language are presented in this volume--the third in a four-volume study. With the information contained herein, the program user can establish a building system data base for evaluating a wide range of alternative systems. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A006 015 13/2 8/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Load-Deflection Behavior of Lime-Stabilized Layers. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 75 59P Suddath,L. P. ;Thompson,M. R. ;
REPT. NO. CERL-TR-M-118
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89504

UNCLASSIFIED REPORT

DESCRIPTORS: *Pavements, *Soil stabilization, Construction materials, Soils, Compressive properties, Flexural strength, Dynamic loads, Deflection (U)
IDENTIFIERS: *Pavement layers, Soil lime mixtures (U)

The static and dynamic load-deflection response of soil-lime pavement layers was investigated. Soil-lime mixture layers 6, 9, and 12 in. thick were compacted over a stiff subgrade (k=450 psi/in.) and a soft subgrade (k=50 psi/in.). The soil-lime layers were statically and dynamically loaded after curing periods of 2, 14, 28, and 56 days. Supplemental subgrade soil and soil-lime mixture property data were also developed. The load-deflection data are summarized and analyzed. Various pavement behavior theories are evaluated to determine their capability to predict the load-deflection behavior of soil-lime pavement layers. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099052

AD-A006 014 15/5 5/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Evaluation System for Proposed Theater of Operations Structures. Volume I. Executive Summary. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 75 9P Tietz,L. ;
REPT. NO. CERL-TR-C-14
PROJ: DA-4-A-764717-D-895
TASK: 4-A-764717-D-89523

UNCLASSIFIED REPORT

DESCRIPTORS: *Military facilities, *Military engineering, *Logistics planning, Operations research, Buildings, Computer applications, Systems engineering, Mechanical engineering, Maintainability, Mobility, Containerizing, Construction, Materials, Structural properties, Environments, Costs (U)
IDENTIFIERS: *Theater of operations, Scenarios (U)

This Executive Summary, the first volume in a four-volume military construction study, introduces the other volumes of the Evaluation Model. The objective of this study is to develop and validate a procedure for identifying and evaluating building systems for potential theater of operations use. A computerized version of the evaluation process has been provided. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A005 576 13/3 7/4 14/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Evaluation of a Chemical Technique to Determine Water and Cement Content of Fresh Concrete. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 75 32P Howdyshell,P. A. ;
REPT. NO. CERL-TM-M-119
PROJ: DA-4-A-762719-AT-05
TASK: 4-A-762719-AT-0503

UNCLASSIFIED REPORT

DESCRIPTORS: *Concrete, Field tests, Water, Cements, Volumetric analysis, Quality control, Compressive properties, Sampling, Photometry (U)
IDENTIFIERS: Flame photometry (U)

This report presents information obtained from an evaluation of a chemical procedure for determining the water and cement content of a concrete in the plastic state. The procedure uses chloride ion titration to determine water content, and flame photometry (calcium signature) to determine cement content. This study evaluated the procedure to determine if it could be used to estimate concrete strength potential and to define to what extent test results are influenced by aggregate type, aggregate moisture conditions, aggregate absorption capacity, concrete mix proportions, mix time, and time of sampling. The field worthiness of the system was also evaluated. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A005 046 13/13 20/11

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Inflation Forming of Steel Fiber-Reinforced Concrete Domes. (U)

DESCRIPTIVE NOTE: Interim rept.,
DEC 74 23P Batson,Gordon B. ;
REPT. NO. CERL-IR-M-115
PROJ: DA-4-A-764717-D-895

UNCLASSIFIED REPORT

DESCRIPTORS: *Domes(Structural forms), *Reinforced concrete, *Inflatable structures, Shells(Structural forms), Fiber reinforcement, Stress testing, Loads(Forces) (U)
IDENTIFIERS: Reinforcing steels, Finite element analysis (U)

Inflation forming steel fiber-reinforced concrete shell structures suitable for shelters and fortification is shown to be a viable construction method. The technique of construction is based on experience gained building a series of 9-foot diameter domes of variable thicknesses. The preliminary stress analysis for a 28-foot diameter dome of variable thickness using a finite element method shows that the steel-fiber concrete is not highly stressed for the loads and boundary conditions investigated. The buckling analysis was not completed in time to be included in this report: preliminary values are presented. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A005 045 7/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Comparative Evaluation of Military and Commercial Ammonia Oxidation Plants Using the Pressure Process. (U)

DEC 74 75P Carter,Roy V. ;
REPT. NO. CERL-TR-E-63

UNCLASSIFIED REPORT

DESCRIPTORS: *Ammonia, *Oxidation, Nitric acid, Industrial plants, Manufacturing, Chemical industry (U)
IDENTIFIERS: *Nitric acid plants, Chemical plants, Design (U)

Military and commercially owned weak nitric acid manufacturing facilities using the ammonia oxidation process were surveyed to determine their similarities. Based on survey data, descriptions of the operations and design characteristics of 10 installations are presented. It was found that no significant differences exist among the ammonia oxidation processes. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A004 001 13/5 11/6

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Effects of Cluster Porosity on the Tensile Properties of Butt-Weldments in T-1 Steel. (U)

DESCRIPTIVE NOTE: Technical rept., NOV 74 32P Honig,E. M. , Jr;
REPT. NO. CERL-TR-M-109
PROJ: CERL-OK-1
TASK: OK-1-02

UNCLASSIFIED REPORT

DESCRIPTORS: *Steel, *Weldments, Butt welding, Welds, High strength alloys, Porosity, Tensile properties (U)
IDENTIFIERS: High strength steels, Steel A-517 (U)

The effects of cluster porosity on the tensile properties of T-1 steel butt-weldments were assessed in a program consisting of three phases of experimentation. In the first phase, cluster porosity was expressed as a percentage of the total cross section. In the second phase, cluster porosity was measured both in terms of the actual total area of pores and the area of the cluster (including metal ligaments, or webs, that connect pores). These two phases showed that the tensile strength of the welded metal is not significantly reduced if the area of pores and the cluster area are below critical sizes; however, ductility is rapidly reduced until these sizes are reached. The third phase established a partial correlation between cluster porosity size and the length of a center-crack in a plate. The J integral concept of fracture mechanics was used to examine the existence of a critical value of the J integral with which the critical pore area size (or other measure of cluster porosity) could be correlated. (U)

AD-A003 992 13/8 14/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Application of Acoustic Emission to Weld Monitoring. (U)

DESCRIPTIVE NOTE: Interim rept., DEC 74 17P Kumar,A. ;
REPT. NO. CERL-IR-M-117
PROJ: DA-4-A-162121-A-891
TASK: 4-A-162121-A-89103

UNCLASSIFIED REPORT

DESCRIPTORS: *Nondestructive testing, *Gas metal arc welding, Monitoring, Acoustic emissions, Acoustic waves, Real time, Welds, Feasibility studies, Cracks, Porosity, Defects(Materials), Steel (U)

IAC ACCESSION NUMBER: MCIC-093073 NT-009378
IAC DOCUMENT TYPE: MCIC -HARD COPY-- NTIAC - MICROFICHE--

The report discusses the feasibility of applying acoustic emission to real-time monitoring of gas metal arc welding. A state-of-the-art survey indicated that investigators had some success with detecting cracks, porosity, and slag inclusion during the welding of steels by monitoring acoustic emission. The presence of cracks was most easily detected in gas tungsten arc welding of stainless steels. Slag inclusions associated with roped bead in submerged arc welding can also be detected by acoustic emission. In the present work, cracks were introduced in a restrained weldment by hydrogen additions to the shielding gas. Selective filtering was used to increase the signal-to-noise ratio. Results show that the acoustic emission rate from cracks is much higher than that from the welding arc noise. A real-time weld monitor for detection of cracks in steel is therefore technically feasible. However, when porosity was introduced, the acoustic emission rate was about the same order as that from the welding arc noise. Thus, porosity could not be detected by the acoustic emission in a real-time weld monitoring situation. (U)

IAC SUBJECT TERMS: N--(U)*ACOUSTIC EMISSIONS, *WELDS, *DEFECTS(MATERIALS), FEASIBILITY STUDIES, STATE-OF-THE-ART
AD-A003 992

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A003 991 13/13 5/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Significance Ranking of Changes in the Building Industry. (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 74 30P Rood,Oman E. , Jr.;Mohl, Roger ;
REPT. NO. CERL-TR-P-31
PROJ: DA-4-A-162121-A-891
TASK: 4-A-162121-A-89101

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Industrial research, *Forecasting, *Technology, Reviews, Delphi techniques, Management planning and control, Optimization, Questionnaires, Industrial relations, Factor analysis (U)
IDENTIFIERS: CHANGE, Recommendations (U)

The report presents an example of a modified 'delphi' technique of technological forecasting. Governmental experts involved in the planning of construction were polled to ascertain those changes in the construction industry which have the most potential for impact. Results of the survey identified areas of most concern to government and thus the areas where future forecasting can be most beneficial to planners. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A003 833 13/3 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

The Impact of Materials Shortages on Military Construction. (U)

DESCRIPTIVE NOTE: Final technical rept.,
NOV 74 35P Howdyshell,Paul ;
REPT. NO. CERL-TR-M-106
PROJ: DA-4-A-162121-A-891
TASK: 4-A-162121-A-89101

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Engineering Studies and Investigations.
DESCRIPTORS: *Construction materials, *Military facilities, *Inflation(Economics), Forecasting, Construction, Military applications, Flexible structures, Logistics planning (U)
IDENTIFIERS: *Logistics management (U)

The report assesses the impact of material shortages on present and future military construction and suggests means and techniques of alleviating the impact. The report includes (1) a description of current and future material shortages, (2) a discussion of military construction as it relates to total U.S. construction, (3) an assessment of the impact of material shortages on military construction, and (4) recommended measures for reducing this impact. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A003 828 1 5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Design Guide for Post Construction Drainage Facilities. (U)

DESCRIPTIVE NOTE: Technical rept.,
NOV 74 [illegible] Cedergren,Harry R. ;
REPT. NO CERL-TR-C-[illegible]
PROJ: [illegible]
TASK: [illegible]

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Supersedes rept dated Nov 72, AD-[illegible]
DESCRIPTORS: *Military facilities, *Drainage, Design criteria, Guidelines, Airfields, Pavements, Subsurface drainage (U)
IDENTIFIERS: *Drainage facilities, Corps of Engineers, Interior drainage, Surface drainage (U)

The [illegible] guide presents criteria to assist Facility Engineers [illegible] Army's [illegible] facilities construction program. The guide [illegible] the [illegible] in the guide are [illegible] facility environments by [illegible], the appearance of [illegible], and [illegible]. Included in the guide are Standard Drawing Files, typical design drawings with detailed drawings, color options, and implementation worksheets; furniture and accessory index with discussions, photos and specific listings of materials; worksheets and cost data with contract information. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A003 237 1 5 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Methodology and Effectiveness of Drainage Systems for Airfield Pavements. (U)

DESCRIPTIVE NOTE: Technical rept.,
NOV 74 218P Cedergren,Harry R. ;
REPT. NO CERL-TR-C-13
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89504

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Systems Approach to [illegible], Pavements.
DESCRIPTORS: *Landing fields, *Pavements, *Drainage, Subsurface, Bases(Structures), Damage assessment, Traffic capability, Maintenance (U)
IDENTIFIERS: *Subsurface drainage (U)

This report presents the findings of a study performed to review the methodology and evaluate the effectiveness of drainage systems for airfield pavements. Official Pavement Evaluation and Condition Survey Reports were reviewed for military bases in Continental United States and a number of foreign countries; a number of airfields in the United States were inspected (some with a Waterways Experiment Station team); and test holes were drilled into heavy-duty pavement at three airfields. The testing consisted of measuring the in-place permeabilities of base and subgrade materials, and recording the saturation levels within pavements in relation to rainfall events. At a fourth Field Investigation site, discharges from pipes to a 'comprehensive underdrainage system' were measured in relation to rainfall events, to develop the time-lag characteristics of the drainage system. (U)

AD-A001 616 5/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

An Evaluation of Architectural Information Systems. (U)

DESCRIPTIVE NOTE: Interim rept. Jan-Mar 72, OCT 74 174P Lane,N. D. ;
REPT. NO. CERL-IR-D-41
CONTRACT: DACA88-73-M-0633
PROJ: DA-4-A-162121-A-891
TASK: 4-A-162121-A-89107

UNCLASSIFIED REPORT

DESCRIPTORS: *Information systems, *Architecture, *Military facilities, Data processing, Computer programming, Human factors engineering, Buildings, Subject indexing (U)

The report describes the basic components of an information system, those operations necessary for the storage, organization, and access to documents and the information contained within the documents. Concentration has been aimed primarily at the access process, which seems to be of greatest concern to CERL. The types of access which have been identified include indexing by subject heading, indexing by keywords-in-context, coordinate indexing, and the issue-based approach. Hierarchical classification, also of concern to CERL, has been identified as part of the organizational process, although its role in access is discussed briefly. Syntactic analysis is discussed as it applies to the other indexing systems, primarily as a modification of the keyword-in-context index, the automated subject heading index, and indirectly as the 'role' function in the coordinate index. The relational sentence concept, a preliminary approach proposed by CERL, is also reviewed and discussed. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A000 711 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Comparative Study of Consumer Attitudes at Three Air Force Dining Facilities. (U)

DESCRIPTIVE NOTE: Final rept., SEP 74 37P Gibbs,Wes ;
REPT. NO. CERL-IR-D-40
PROJ: DA-1-J-662713-AJA-5

UNCLASSIFIED REPORT

DESCRIPTORS: *Dining halls, *Food dispensing, Acceptability, Consumers, User needs, Air Force facilities, Questionnaires, Surveys (U)

An environmental design research study was conducted in dining facilities at three Air Force bases to determine if the results and conclusions of previous studies are applicable to the entire Air Force food service system. The investigation reported here was to determine if consumers' ratings of an ideal dining environment are consistent throughout the system. In this study 355 enlisted Air Force personnel completed the environmental evaluation survey, which included a measure of an ideal dining environment. Their ratings of an ideal dining environment were compared statistically across bases as a direct test of the hypothesis that differences in geographic location, climatic conditions, state of existing dining environment, and base mission would not significantly affect consumer attitudes about an ideal dining environment. (Modified author abstract) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD-A000 710 5/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Development of the Military Construction Data System (MCDS). Part I. (U)

DESCRIPTIVE NOTE: Final rept.,
SEP 74 85P Lee,Esther K. C. ;Britsky, M. A. ;
REPT. NO. CERL-TR-P-26
PROJ: DA-4-A-162121-A-891

UNCLASSIFIED REPORT

DESCRIPTORS: *Information systems, *Construction, Engineering, Military facilities, Costs, Life cycles, Maintenance, Medical equipment, Integrated systems, Reliability, Compatibility, Computer programming, Data management (U)
IDENTIFIERS: MCDS(Military Construction Data System), Military construction data system (U)

The report discusses the interrelationships of projects involving data-gathering and data-processing that are currently being developed at the U.S. Army Construction Engineering Research Laboratory (CERL) and lists the common data elements from these projects. Also examined is the Military Construction Data System (MCDS) Data Dictionary/Directory Model-its functions, data base structure, encoding and loading techniques, input/output retrieval commands, and updating methods-and sample retrievals. Finally, a data base management package evaluation scheme is presented, through which a data base management package developed by the Defense Intelligence Agency (DIA), called the MIDMS, was examined and selected as the most efficient implementation of the MCDS data bases. (Author) (U)

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SIZE OF COLLECTION AND/OR SPECIAL COLLECTIONS:
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DESCRIPTORS: *CONSTRUCTION, *MANAGEMENT, *CIVIL ENGINEERING, *ENVIRONMENTAL ENGINEERING, *ENERGY, SYSTEMS ENGINEERING, CONSTRUCTION MATERIALS, POLLUTION, ENVIRONMENTS, STRUCTURES, PAVEMENTS
SERVICES/MATERIALS: TYPES OF SERVICES, TECHNICAL ANSWERS, REFERRAL, LOANS(INTERLIBRARY)

PUBLICATIONS: THE LABORATORY'S TECHNICAL REPORTS ARE AVAILABLE THROUGH DTIC AND NTIS. A QUARTERLY NEWSLETTER, 'CERL REPORTS' IS AVAILABLE FREE FROM THE LABORATORY.

ANNOTATION: THE ARMY CONSTRUCTION ENGINEERING RESEARCH LABORATORY, PO BOX 4005, CHAMPAIGN, IL SPECIALIZES IN CONSTRUCTION MANAGEMENT, FACILITY AND INSTALLATION DESIGN AND PLANNING, OPERATION AND MAINTENANCE OF FACILITIES, CONSTRUCTION, FACILITY DEMOLITION AND DISPOSAL, ENVIRONMENTAL IMPACT OF ARMY ACTIVITIES, AIR, WATER AND NOISE POLLUTION.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 907 397L 13/2 14/2 8/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Nondestructive Testing of Concrete Pavements: Equipment Evaluation. (U)

DESCRIPTIVE NOTE: Technical rept., JAN 73 39P Geswein,Allen J. ;Rice, John L. ;
REPT. NO. CERL-TR-S-12
PROJ: DA-891
TASK: 89106

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only; Test and Evaluation; JAN 73. Other requests for this document must be referred to Office of the Chief of Engineers (Army), Attn: DAEN-MCE-D. Washington, D. C. 20314.
DESCRIPTORS: (*PAVEMENTS, NONDESTRUCTIVE TESTING), (*LANDING FIELDS, CONCRETE), (*LOADS(FORCES), *TEST EQUIPMENT), RUNWAYS, THICKNESS, TEST EQUIPMENT, PERFORMANCE(ENGINEERING), ACCEPTABILITY, FREQUENCY, VELOCITY, BAND PASS FILTERS, DEFLECTION, ACCURACY, DATA, ANALYSIS, SOIL MECHANICS (U)
IDENTIFIERS: DYNAFLECT MACHINE (U)

IAC ACCESSION NUMBER: NT-007404
IAC DOCUMENT TYPE: NTIAC -MICROFICHE--
This report presents the findings of an equipment evaluation study performed to assess the ability of the Dynaflect testing device to non-destructively evaluate rigid airfield pavements. The Dynaflect is designed to apply to the pavement a sinusoidal dynamic load with a peak-to-peak value of 1000 lb at a single frequency of 8 Hz. An array of geophones attached to the device senses the vertical velocity of the pavement, which is processed through a narrow band filter and integrated electronically to obtain deflection. The testing program consisted of collection of Dynaflect test results over a broad range of airfield pavement thicknesses, subgrade types and moduli, climatic conditions and geographic locales. These data were analyzed, then compared with the actual strength and thickness parameters of the various pavement structures to assess the accuracy of the Dynaflect's performance. (U)

IAC SUBJECT TERMS: N--(U)*CONCRETE, *PAVEMENTS, *TEST

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 894 873L 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Study of Causes of Pavement Deterioration. Investigation of Techniques and/or Methods to Retard 'D' Line Cracking in PCC Pavements and Structures. (U)

DESCRIPTIVE NOTE: Technical rept. Feb 68-Sep 71, APR 72 30P Edwards,E. E. ;
PROJ: AF-5224
TASK: 522401
MONITOR: AFWL TR-71-141

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only; Test and Evaluation: 22 Mar 72. Other requests for this document must be referred to Director, Air Force Weapons Lab., Attn: DEZ. Kirtland AFB, N. Mex. 87117.
DESCRIPTORS: (*PAVEMENTS, DETERIORATION), CONCRETE, CRACK PROPAGATION, AGING(MATERIALS), CRACKS, JOINTS, EPOXY RESINS, MICROSTRUCTURE, WEATHER, DRAINAGE, FREEZING, HEATING, ENVIRONMENT, MAINTENANCE, SAMPLING, ROADS, RUNWAYS, MILITARY ENGINEERING, REVIEWS (U)
IDENTIFIERS: D LINE CRACKING (U)

A survey was made to determine whether there is presently an effective means to control 'D' line cracking, and if not, what work is being done to overcome the problem. Through personal contacts and correspondence with Air Force, State Highway Departments, Corps of Engineers, universities and other interested agencies, present techniques for control or retardation of 'D' line cracking and research planned or in progress were determined. This report presents the results of the survey. In summary, the survey indicated that there is currently no method for preventing, retarding or controlling 'D' line cracking. Also only a very limited research effort is being directed toward solution of the problem. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 894 275L 13/2 11/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Study of Reflection Cracking in Asphaltic Concrete Overlay Pavements, Phase I. (U)

DESCRIPTIVE NOTE: Technical rept. Feb 68-Oct 71,
MAR 72 113P Kanarowski,Stanley M. ;
PROJ: AF-5224
TASK: 522401
MONITOR: AFWL TR-71-142

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only; Test and Evaluation; 14 Mar 72. Other requests for this document must be referred to Director, Air Force Weapons Lab., Attn: DEZ. Kirtland AFB, N. Mex. 87117.
DESCRIPTORS: (*PAVEMENTS, *CRACKS), (*CONCRETE, ASPHALT), CRACK PROPAGATION, REFLECTION, ROADS, LANDING FIELDS, MAINTENANCE, WIRE, PNEUMATIC DEVICES, HYDRAULIC EQUIPMENT, ADDITIVES, HAMMERS, BIBLIOGRAPHIES, REINFORCED CONCRETE, JOINTS, WELDING, INTERFACES, SEALS, ASBESTOS, SAND, DUST, LAMINATES (U)
IDENTIFIERS: REFLECTION CRACKIN IRE MESH (U)

This report encompasses the results of a literature search, a survey of state highway departments, and an on-site field inspection of techniques used by state and federal agencies to control reflection cracking in asphaltic concrete overlays principally on portland cement concrete pavements. Procedures were generally for the purpose of isolating the overlay from the effect of movement in the underlying pavement or reinforcing the overlay. These procedures are made more effective by measures designed to prevent or minimize the underlying pavement movement. The methods found helpful in reducing reflection cracking include wire mesh reinforcement in the asphaltic concrete (AC) overlay; use of bond-breakers between the portland cement concrete (PCC) and the AC overlay; addition of an aggregate base course over the PCC followed by an AC overlay; pretreatment of the old PCC, such as mudjacking, subsealing, or cracking the old pavement by heavy rolling or with a hydraulic or pneumatic hammer; use of additives and other modifications in the AC composition. Many of the (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 892 386L 8/13 13/2 1/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Stabilization for Pavements. (U)

DESCRIPTIVE NOTE: Technical rept. Feb 68-Jul 71,
FEB 72 87P Rice,J. L. ;
PROJ: AF-5224
TASK: 522401
MONITOR: AFWL TR-71-99

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only; Test and Evaluation; Feb 72. Other requests for this document must be referred to Director, Air Force Weapons Lab., Attn: DEZ. Kirtland AFB, N. Mex. 87117.
DESCRIPTORS: (*SOILS, STABILIZATION), (*LANDING FIELDS, *PAVEMENTS), FOUNDATIONS(STRUCTURES), CONCRETE, DESIGN, PERFORMANCE(ENGINEERING), DEFLECTION, FAILURE(MECHANICS), LOADS(FORCES), STRAIN GAGES, TEST EQUIPMENT, SHEAR STRESSES, ELASTIC PROPERTIES, TEST METHODS (U)
IDENTIFIERS: FLEXIBLE PAVEMENTS, PAVEMENT BASES, PAVEMENTS, RIGIDITY, SOIL STABILIZATION (U)

Rigid and flexible pavement model tests were conducted to evaluate methods for assessing the structural benefits imparted to a pavement structure by stabilized elements. Current Corps of Engineers rigid pavement design and evaluation methods are based on stress in the concrete pavement as calculated by the Westergaard algorithm. This method appears applicable for pavements containing lime and bituminous stabilized layers only. Cement stabilized layers should be evaluated by an elastic layered algorithm. The California Bearing Ratio method of design and evaluation of flexible pavement structure appeared to yield satisfactory results for flexible pavements containing stabilized elements. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 890 034L 11/11

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Laboratory and Field Study of Rubber Removal Compounds. (U)

DESCRIPTIVE NOTE: Technical rept. Jan 69-Jul 71, NOV 71 39P Kemphues,Robert F. ;
PROJ: AF-6111A
TASK: 5.6
MONITOR: AFWL TR-71-79

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only; Test and Evaluation; Nov 71. Other requests for this document must be referred to Director, Air Force Weapons Lab., Attn: DEZ. Kirtland AFB, N. Mex. 87117.
DESCRIPTORS: (*CLEANING COMPOUNDS, *MATERIALS), (*EPOXY RESINS, MATERIALS), ELASTOMERS, SOLVENT ACTION, DEGRADATION, PAVEMENTS, TEST METHODS, (U)TEST METHODS (U)

IAC ACCESSION NUMBER: PL-017143
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
Use of a new material as a chemical rubber remover caused deterioration of epoxy resin concrete patches. The cause of deterioration was investigated. The results have shown that all rubber removers will cause deterioration of epoxy concrete patches which are porous and have a high aggregate- to-binder ratio. Deterioration can be prevented by sealing the patches, thus deterring absorption of the rubber remover. Although phenol is the primary ingredient of the remover that causes the deterioration of the epoxy resin, elimination of the phenol might not reduce deterioration and might reduce the effectiveness of chemical rubber removers. (Author, modified-PL) (U)

IAC SUBJECT TERMS: P--(U)Airfield pavement-Epoxy, Rubber deposit-Airfield pavement, Immersion test-Epoxy, Chemical analysis-Rubber removers, Deterioration-Epoxy, ZZ Controlled USGO;

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 880 626 11/9

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Epoxy Resin Cure Evaluation: Data Report. (U)

DESCRIPTIVE NOTE: Final rept. FEB 71 14P
REPT. NO. CERL-TR-M-5
PROJ: DA-4-A-062104-A-880, DASA-NWER-R13A191D.1
TASK: 4-A-062104-A-88005

UNCLASSIFIED REPORT

Distribution: No Foreign without approval of Director, Defense Atomic Support Agency, Washington, D. C. 20305.
DESCRIPTORS: (*EPOXY RESINS, AGING(MATERIALS)), (*ROCK, BONDING), TEMPERATURE, HUMIDITY, TENSILE PROPERTIES, MECHANICAL PROPERTIES (U)
IDENTIFIERS: HARDENED INSTALLATIONS (U)

IAC ACCESSION NUMBER: PL-016588
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
The objective of this work was to investigate the effect of varying thetemperature and time of cure at selected values of relative humidity on thetensile properties of epoxy resin system by laboratory techniques. The relativehumidities ranged from 30 to 100% (saturated). The time of cure ranged from30 to 180 days with tests at 30-day increments. The laboratory data suggestedthat the engineering properties of the epoxy resin system were sensitive totime and temperature of cure as well as relative humidity. The epoxy resinsystem performed well for environmental temperatures in the range of 50 to80 F with the relative humidity not exceeding 75%. (Author, modified-PL) (U)

IAC SUBJECT TERMS: P--(U)Adhesive-Epoxy, Bonding-Rock, Curing-Epoxy, Humidity effect-Epoxy, Temperature effect-Epoxy, Tensile strength-Epoxy, ZZ Controlled NOFORN;

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 870 723L 13/2 1/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CchampaIGN ILL

Serviceability of Repairs to Rigid Pavement. (U)

DESCRIPTIVE NOTE: Technical rept., MAR 70 72P Pace,George M. ;
PROJ: AF-921A
MONITOR: AFWL TR-69-51

UNCLASSIFIED REPORT

Distribution: USGO: others to Director, Air Force Weapons Lab., Attn: WLCT. Kirtland AFB, N. Mex. 87117.
DESCRIPTORS: (*LANDING FIELDS, PAVEMENTS), (*PAVEMENTS, MAINTAINABILITY), RUNWAYS, CONCRETE, FAILURE(MECHANICS), DEFORMATION, EXPANSION JOINTS, CRACKS, MAINTENANCE, EPOXY RESINS, BINDERS (U)

IAC ACCESSION NUMBER: PL-014818
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
Field survey data are reviewed and analyzed in regard to the methods and performance of repairs that have been used for concrete airfield pavements. The most prevalent types of rigid pavement defects or failures and the methods of repairs that have been observed are discussed. Comparisons are made between the performance of repairsons as determined by field inspection and that reported in a comprehensive survey conducted by the University of Arizona. (Author, modified-PL) (U)

IAC SUBJECT TERMS: P--(U)Airfield-Concrete/epoxy, Environmental effect-Concrete/epoxy, Pavement-Concrete/epoxy, Performance-Airfield pavement, Repair-Concrete/epoxy, ZZ Controlled NOFORN;

AD- 870 723L

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 867 374L 13/3 11/2 11/4

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Development and Evaluation of a High-Strength Polyester Synthetic Concrete. (U)

DESCRIPTIVE NOTE: Final technical rept., MAR 70 66P Bloss,Donald R. ;Hubbard, S. J. ;Gray,B. H. ;
REPT. NO. CERL-TR-M-2
MONITOR: SAMSO TR-69-294

UNCLASSIFIED REPORT

Distribution: USGO: others to Office of the Chief of Engineers (Army), Washington, D. C. 20314.
SUPPLEMENTARY NOTE: DDC Form 55 not necessary for document request.
DESCRIPTORS: (*POLYESTER PLASTICS, *CONCRETE), (*THERMOSETTING PLASTICS, CONCRETE), TEST METHODS, COMPRESSIVE PROPERTIES, COMPOSITE MATERIALS, MECHANICAL PROPERTIES (U)
IDENTIFIERS: CONCRETE BINDER POLYMERS, POLYESTER SYNTHETIC CONCRETE (U)

IAC ACCESSION NUMBER: PL-014754
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
A number of resin types with varying aggregates were evaluated. It was found that the strength of concrete was limited to about 15,000 psi using conventional aggregates. The most promising material, PPG 5119 IN COMBINATION WITH Type III cement, was found to be the only concrete to exeed the 20,000 psi compressive strength goal. The resin-cement ration was found to be optimum at about 1:2 by weight. Investigations revealed that the high- strength synthetic concrete's value lies in its compressive strength of 20,000 psi and above. The nominal modulus of elasticity after two days and at room temperature is about 1,400.00 psi. Direct tension values are in excess of 2000 psi. Major drawbacks of this material include exteme reduction of strength with temperature (6000 psi 210 F). Costs are in excess of $250 per cubic yard for materials alone, plus high placement costs due to special handling requirements. Handling is difficult because the material has a short pot life and must be mixed in small batches. It also has a (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 787 295 9/2 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Environmental Impact Computer System. (U)

DESCRIPTIVE NOTE: Final rept.,
SEP 74 113P Lee,E. Y. S. ;Jain,R. K. ;Lee,E. K. C. ;Goettel,B. ;
REPT. NO. CERL-TR-E-37
PROJ: DA-4-A-162121-A-896

UNCLASSIFIED REPORT

DESCRIPTORS: *Information systems, *Data management, *Environmental engineering, Information retrieval, Ecology, Computer programs, Data processing, FORTRAN (U)

This report describes a pilot program in the computer storage and retrieval of environmental impact information. The basic concepts related to implementation and the modes of access to the data are discussed. Also, an outline of the nature of data and the requirements for its management are given, followed by an expression of the reasons for choosing System 2000, a generalized data-base management system developed by MRI Systems Corporation, as the framework for the software. Lastly, the capabilities of this application of System 2000 are discussed in general terms, accompanied by an extensive set of specific examples and representative commands from the DA study, Procedures for Evaluating Environmental Impact of Army Military Programs, for which this computer system was initially developed. Several appendices, expanding on subjects mentioned in the report and serving as reference material, are provided. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 786 551 14/1 5/1 15/5 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Computer-Based Specifications: Cost Analysis Study. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 74 18P Poskus,Uldis R. ;
REPT. NO. CERL-TR-P-25
PROJ: DA-4-A-0612121-A-891
TASK: 4-A-0612121-A-89106

UNCLASSIFIED REPORT

DESCRIPTORS: *Cost analysis, *Data processing, *Construction, *Specifications, Magnetic tape, Typewriters, Personnel, Reviews, Computer applications, Optimization, Time studies, Benefits, Savings (U)
IDENTIFIERS: Army Corps of Engineers (U)

The computer-based specifications cost analysis study measured the absolute and relative efficiency of three methods of specification preparation: conventional typewriter based, magnetic tape selectric typewriter (MTST) based, and computer based. The computer-based method employed a keyboard/printer terminal linked to a time-sharing computer, using a text-editing computer program. The test procedure involved a controlled, repetitive preparation of representative samples of six Corps of Engineers guide specifications. The results indicate: (1) the computer-based method costs are 55 percent of MTST method costs and 39 percent of conventional typewriter method costs; (2) MTST costs are 72 percent of typewriter costs. (Modified author abstract) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 785 652 20/12 11/6

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

A Generalized Kinematic Hardening Theory, (U)

73 16P McDowell,E. L. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Hardening, *Stresses, *Fatigue(Mechanics), Life expectancy, Mathematical models (U)

The influence of inelastic behavior of materials ranges from the design of structures to survive earthquake motions to the design of minute machine parts for a specified expected service life. The scope of the present paper is limited to generalizing simple kinematic hardening theory so as to directly attack the question of fatigue life for realistic time-dependent three-dimensional stress states. This new theory of kinematic plastic flow defines an additional physical parameter, the stress hardening coefficient, which services as memory of the previous plastic states. For a specified material, the limiting value of the stress hardening coefficient can be determined from simple one-dimensional fatigue experiments. This limiting value of the stress hardening coefficient directly determines the service life for the material subjected to complex stress states. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 785 551 13/13 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

An Evaluation of Computer-Aided Architectural Systems. (U)

DESCRIPTIVE NOTE: Interim rept., AUG 74 37P Dains,R. B. ;Kelley,K. C. ;
REPT. NO. CERL-IR-D-31
PROJ: DA-4-A-062103-A-891
TASK: 4-A-062103-A-89106

UNCLASSIFIED REPORT

DESCRIPTORS: *Computer applications, *Architecture, State of the art, Allocations, Questionnaires (U)
IDENTIFIERS: *Computer aided design, *Structural design, Evaluation (U)

This report outlines the state-of-the-art in Computer-aided design, suggests a number of possible uses of computers to solve Corps design problems, and makes recommendations for the direction of future work. (Modified author abstract) (U)

AD- 784 092 13/3 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

The Use of Coral as an Aggregate for Portland Cement Concrete Structures. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 74 43P Howdyshell,P. A. ;
REPT. NO. CERL-TR-M-88
PROJ: DA-4-DM-78012-A-OK-1
TASK: 4-DM-78012-A-OK-102

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction materials, *Coral, Concrete, Construction, Structures, Deterioration, Military engineering, Pacific Ocean Islands (U)
IDENTIFIERS: *Aggregates(Materials), Evaluation (U)

The investigation documents the experience gained by the Corps of Engineers and the Navy since World War II in the use of coral as an aggregate for portland cement concrete. The approach was to evaluate relevant literature and construction and inspection records, visit construction and material preparation sites, evaluate existing coral concrete structures, and analyze coral aggregate and coral concrete samples in the laboratory. The results of the investigation indicate that coral has successfully been used as an aggregate for concrete in vertical construction. The only significant type of deterioration observed in coral concrete structures was the cracking and spalling of concrete associated with corroding reinforcing steel. The severity of the corrosion-spalling problem was sufficient in some cases to affect structural integrity, while in other cases little or no deterioration was observed. For the most part specifications and construction techniques currently being used for production of coral aggregate and coral concrete are similar to specifications and techniques for conventional aggregate and concrete. (Author) (U)

AD- 784 059 5/11

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Occupants Opinions of Military Housing: Responses to Open-Ended Questions in Army Portion of Tri-Services Survey. (U)

DESCRIPTIVE NOTE: Final rept.,
AUG 74 103P Brauer,R. L. ;Dressel,D. L. ;
REPT. NO. CERL-TR-D-27
PROJ: DA-4-A-764717-D-895
TASK: 4-A-764717-D-89503

UNCLASSIFIED REPORT

DESCRIPTORS: *Housing(Dwellings), *Military facilities, *Attitudes(Psychology), Surveys, Questionnaires, Reaction(Psychology), Army personnel (U)
IDENTIFIERS: Trends, Tri-services housing survey (U)

Comments to three open-ended questions from 1004 Questionnaires of the Army portion of the Tri-Services Housing Survey were content-analyzed and the results were tabulated. Although no single comment category showed an overwhelming consensus, several trends were evident. The results are discussed. It is suggested that pilot do-it-yourself projects should be initiated so that housing occupants can identify with their housing through personal involvement. (Modified author abstract) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 784 056 15/5 5/10

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Comparison of Consumer Satisfaction Before and After Dining Facility Renovations at Travis AFB, California. (U)

DESCRIPTIVE NOTE: Technical rept.,
JUL 74 50P Gibbs,Wes ;
REPT. NO. CERL-TR-D-28
PROJ: DA-1-J-662713-AJA-5

UNCLASSIFIED REPORT

DESCRIPTORS: *Dining halls, *Air Force facilities, *Attitudes(Psychology), *Consumers, Air Force personnel, Surveys, Modification, Statistical data, Variations, Environmental engineering (U)
IDENTIFIERS: *Satisfaction, Comparison, Before and after studies (U)

The report presents results of an environmental design experiment conducted at three dining facilities at Travis AFB, CA, to test the hypothesis that interior decor renovations to Air Force dining facilities will improve consumer satisfaction. This approach implies that greater utilization and participation will result. Two measures of consumer satisfaction were developed for this study: direct and indirect. The measurements before and after renovation were compared statistically to determine significant changes in consumer satisfaction. The measurements were also compared statistically to determine if significant differences existed among the three facilities studied. (Modified author abstract) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 784 055 13/3 7/4 11/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Laboratory Evaluation of a Chemical Technique to Determine Water and Cement Content of Fresh Concrete. (U)

DESCRIPTIVE NOTE: Interim rept.,
JUL 74 43P Howdyshell,P. A. ;
REPT. NO. CERL-IR-M-97
PROJ: DA-4-A-062103-A-891
TASK: 4-A-062103-A-89103

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Rapid Testing-Plastic PCC.
DESCRIPTORS: *Concrete, *Volumetric analysis, *Cements, Strength(General), Plastic properties, Calcium, Chemical analysis (U)
IDENTIFIERS: *Flame photometry, *Moisture content, Performance evaluation (U)

The report presents information obtained from laboratory evaluation of a chemical procedure for determining the water and cement content of a concrete in the plastic state. The procedure uses chloride ion titration to determine water content, and flame photometry (calcium signature) to determine cement content. This study evaluated the procedure to determine if it could be used to estimate concrete strength potential and to define to what extent test results are influenced by aggregate type, aggregate moisture conditions, aggregate absorption capacity, concrete mix proportions, mix time, and time of sampling. Results indicate that the procedure can rapidly (approximately 15 minutes) determine the water and cement content of fresh concrete and that it can be used to predict strength potential with an accuracy equal to that of predicting strength from known mix proporations. (Modified author abstract) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 782 914 13/9 13/3 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Evaluation of Lunar Drilling Technology for Terrestrial Applications. (U)

DESCRIPTIVE NOTE: Final rept.,
JUL 74 20P Aufmuth,R. E. ;
REPT. NO. CERL-TR-M-96
PROJ: DA-4-A-162121-A-890

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-781 944.
DESCRIPTORS: *Drilling machines, Technology, Drills, Boreholes, Core sampling, Field tests, Concrete, Fibers (U)
IDENTIFIERS: *Technology utilization, *Technology transfer, Dry drilling, Drill stems (U)

This report presents results of a laboratory evaluation of a NASA-developed drill system for obtaining test core samples of concrete, rock, and soil materials for nondestructive testing. Excellent test cores from a variety of materials were obtained at drilling rates greater than normally achieved with conventional systems. Additional tests are required to assess the cost effectiveness of the system. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 782 913 13/2 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

A Heuristic Model for Predicting Bridge Construction Requirements. (U)

DESCRIPTIVE NOTE: Technical manuscript,
JUL 74 119P Ryan,T. C. ;
REPT. NO. CERL-TM-C-3

UNCLASSIFIED REPORT

DESCRIPTORS: *Bridges, *Construction, Heuristic methods, Decision making, Site selection, Military requirements, Predictions, Computerized simulation, Theses (U)

Research is directed to formulating a bridge and resource requirements simulation model for use by program managers concerned with the ground lines-of-communication sector of the construction industry. Bridge alternatives are designed and selected to reduce the obstacle effect of the terrain such that commodities flow (traffic) along the line-of-communication (highway) is improved. The resulting tool provides a heuristic high-resolution model for policy testing and decision making in a highly dynamic system involving non-commensurable objectives such as cost, time and manpower. The problem of predicting bridge and resource requirements is defined through a systematic analysis of the bridge construction system's purpose, components, constraints and required information. Examples of the need for accurate prediction of requirements are discussed for both the civilian and military applications. (Modified author abstract) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 782 912 15/5 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Information Storage and Retrieval System for Life Expectancy of Facilities, (U)

MAY 74 97P Lee,E. K. C. ;Kirby,J. G. ;Grgas,J. M. ;
REPT. NO. CERL-TR-P-22
PROJ: CERL-OK-1
TASK: OK-1-02

UNCLASSIFIED REPORT

DESCRIPTORS: *Military facilities, *Life expectancy, *Data bases, Data processing, Construction materials, Logistics, Inventory control, Life cycles, Information retrieval (U)

The report presents the results of a preliminary data bank developed to store information necessary to use the CERL Life Expectancy Model, and also to provide information source for life cycle cost studies. The data base structure is explained, and the results obtained from sample retrieval commands are illustrated. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 782 911 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

User Manual for the Acquisition and Evaluation of Operational Blast Noise Data. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 74 140P Homans,B. ;McBryan,J. ; Schomer,P. ;
REPT. NO. CERL-TR-E-42
PROJ: DA-4-A-162121-A-896
TASK: 4-A-162121-A-89606

UNCLASSIFIED REPORT

DESCRIPTORS: *Military facilities, *Noise pollution, *Manuals, Blast, Construction, Contours, Maps, Land forms, Population, Data acquisition, Data processing, Computer programming, Predictions, Noise reduction (U)

The report presents the means for acquiring operational blast noise information and evaluating the resulting contours. Forms introduced and explained to facilitate the compilation of data included the Target Data Sheet, Firing Point Data Sheet, and Attachment Sheet. Overlays to be constructed in order to evaluate the contours consist of generalized land-use and population density map overlays. The means is given to interpret the contours according to currently accepted classification systems. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 781 944 13/9 13/3 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Evaluation of Lunar Drilling Technology for Terrestrial Applications -- Field Study. (U)

DESCRIPTIVE NOTE: Final technical rept., JUL 74 34P Aufmuth,R. E. ;
REPT. NO. CERL-TR-M-92
PROJ: DA-4-A-162121-A-890

UNCLASSIFIED REPORT

DESCRIPTORS: *Drilling machines, Technology, Drills, Boreholes, Core sampling, Field tests, Arizona, New Mexico (U)
IDENTIFIERS: *Technology utilization, *Technology transfer, Dry drilling, Drill stems (U)

The report presents results of the field evaluation of a NASA-developed drill system which requires no cooling or lubricating agents. Performance of the NASA system was evaluated at sites in Arizona and New Mexico consisting of volcanic and igneous intrusives. Although the NASA system performed well in most of the materials encountered (at a drill rate of approximately 2 inches per minute), presence of unexpected moisture at several sites retarded efficient progress. Conclusions are presented concerning the nature and scope of laboratory tests suggested and justified by the field test results. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 780 802 11/6

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Cyclic Mechanical Tests and an Appropriate Analytical Stress-Strain Model for A36 Steel. (U)

DESCRIPTIVE NOTE: Final rept., MAY 74 61P Martin,J. F. ;
REPT. NO. CERL-TR-M-86
PROJ: DA-4-A-161102-B-52-E
TASK: 4-A-161102-B-52-E-09

UNCLASSIFIED REPORT

DESCRIPTORS: *Steel, *Stress strain relations, Cycles, Computer programs, Test methods (U)
IDENTIFIERS: Finite element analysis, Steel A-36 (U)

The report establishes the monotonic and steady-state cyclic stress-strain properties for smooth, uniaxially-loaded specimens of A36 steel. Transient characteristics of cyclic hardening and softening and cyclic relaxation of mean stress are investigated. Deflection versus load and strain versus load are reported for a simple beam subjected to three-point bending. Six computer programs are included. These programs were developed to fit specific needs of the finite element program for determining energy dissipation in dynamically loaded structures. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 780 801 11/6 20/12

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

A New Look at Structural Energy Dissipation. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 74 63P Plummer,F. B. , Jr;
REPT. NO. CERL-TM-M-82
PROJ: DA-4-061102-B-52-E
TASK: 4-A-061102-B-52-E-09

UNCLASSIFIED REPORT

DESCRIPTORS: *Dynamic loads, *Steel, Energy, Dissipation, FORTRAN, Computerized simulation, Stresses, Stress strain relations, Computer programs (U)
IDENTIFIERS: Finite element analysis, Steel A-36, *Energy dissipation (U)

The investigation is the first step of a continuing study on energy dissipation in large, dynamically loaded structures. Work is directed at qualitatively and quantitatively defining the dissipative properties of complex structural systems, with a view toward improving the considerations of energy dissipation and nonlinear response in the seismic analysis and design of buildings. The present study deals with the extension of finite element methods to provide an analytical means for determining energy dissipation caused by cyclic plasticity in cyclically loaded structures. A computer-based cyclic stress-strain simulation model is developed which serves as the basis for the finite element constitutive relation. The model's behavior incorporates hysteretic material behavior and load history effects. It is experimentally verified for A-36 steel. (Modified author abstract) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 780 800 15/5 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Wood Design Parameters for Theater of Operations Applications. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 74 55P Heidersbach,R. H. , Jr;
REPT. NO. CERL-TR-M-80
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89501

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report of AFCS-Design Parameters for T.O. Material Applications.
DESCRIPTORS: *Military facilities, *Forward areas, *Construction materials, *Wood, Lumber, Construction, Specifications, Stresses (U)
IDENTIFIERS: Design parameters (U)

The report presents the results of a study of the wood design parameters used in developing standard and non-standard designs for use in theater of operations (T.O.) construction. Of prime importance was the requirement to determine if present design guidance for wood structures in the T.O. is adequate, taking into consideration the diverse environments wherein T.O. structures may be built. Another consideration was to determine if present wood design parameters should be altered in view of the limited requirements for short-term T.O. applications. Recommended alterations to present design and supply procedures are presented in tabular form along with explanations as to why present practice should be changed. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 779 511 15/5 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Selection and Design Criteria for the Army Facilities Components System. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 74 42P Dessouky,M. I. ;Ryan,T. C. ;
REPT. NO. CERL-TR-P-21
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89501

UNCLASSIFIED REPORT

DESCRIPTORS: *Army operations, *Military facilities, Construction, Construction materials, Modular construction, Management planning and control, Management information systems, Cost analysis (U)
IDENTIFIERS: Design criteria, AFCS(Army Facilities Component System), Army facilities component system (U)

The report presents a proposed procedure for the selection and design of components for the Army Facilities Component System (AFCS). It examines the present AFCS planning process and discusses methods for incorporating state of the art changes in construction techniques, materials, and planning. Examples using the present and proposed procedures are outlined and facilities designs, including cost and effort comparisons between the systems, are analyzed. Descriptions of the data base and the management information system for the proposed procedure are provided. Conclusions derived and advantages recognized from the proposed procedure are discussed. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 779 510 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Structures on Expansive Soils. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 74 56P Jobes,W. P. ;Stroman,W. R. ;
REPT. NO. CERL-TR-M-81
PROJ: DA-4-DM-78012-AOK-1
TASK: 4-DM-78012-AOK-102

UNCLASSIFIED REPORT

DESCRIPTORS: *Foundations(Structures), *Soil mechanics, *Structures, Superstructures, Expansion, Interactions, Soil stabilization, Reinforced concrete, Moisture, Failure(Mechanics), Cracks, Drainage, Structural members, Tension (U)
IDENTIFIERS: *Structural design, *Expansive soils, Soil structure interactions, Design (U)

The purpose of the project was to establish reasonable criteria for the successful design of structures in expansive soils areas. Damage to foundations and superstructures caused by expansion of soil is discussed. The importance of preventing infiltration of water into the soil beneath and around foundations is emphasized, and means of preventing this infiltration are discussed. Design of details of the various parts of foundations and superstructures is reviewed, and recommendations are made concerning practices to be followed. Inspection of the construction to insure compliance with the intent of the design is critical if the structure is to remain sound. (Author) (U)

AD- 779 509 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Technical Evaluation Study Solid Waste Generation and Disposal Red River Army Depot, Texarkana, Texas. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 74 26P Rigo,H. G. ;Nelson,D. N. ;Elbl,M. E. ;
REPT. NO. CERL-TR-E-33

UNCLASSIFIED REPORT

DESCRIPTORS: *Solid waste disposal, *Military facilities, *Texas, Earth fills, Incinerators, Combustion, Scrubbers, Costs, Air pollution (U)
IDENTIFIERS: Sanitary landfills, Heat recovery, Waste recycling, Texarkana(Texas), Red River Army Depot (U)

IAC ACCESSION NUMBER: PL-900253
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
The study was initiated to evaluate the solid waste disposal problems at Red River Army Depot, Texarkana, TX, and to develop design criteria for disposal of solid waste generated on the base. The problem scope was expanded to include solid waste generated at Lone Star Army Ammunition Plant, Texarkana, TX, since both bases share a common landfill. A technology review was conducted, applicable standards were evaluated, and sampling and analysis of the waste streams was performed. Pyrolysis, power recovery incineration, and recycle and landfill techniques were examined. The abatement method selected for the ultimate disposal of waste was power recovery incineration. This decision was based on relative life-cycle costs of the alternatives considered. Design criteria were prepared for a power recovery incinerator complex utilizing parallel rotary kiln incinerators, a package boiler, and a scrubber. (Author) (U)

IAC SUBJECT TERMS: P--(U)Industrial pollution-Techniques review, Ordnance pollution-Manufacturing plants, Design guide-Incineration, Waste water pollution-Water sampling, Ordnance pollution-Cost analysis, ZZ MTD, ZZ Unlimited.;

AD- 778 162 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Industrial Wastewaters, Red River Army Depot, Texarkana, Texas. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 74 77P Fileccia,R. J. ;Matherly, J. E. ;Porte,H. A. ;
REPT. NO. CERL-TR-E-24

UNCLASSIFIED REPORT

DESCRIPTORS: *Waste treatment, *Military facilities, Industries, Standards, Removal, Oils, Greases, Phosphates, pH factor, Classification, Costs, Collection, Pumps, Maintenance (U)
IDENTIFIERS: Red River Army Depot, Texarkana(Texas), Design criteria, *Industrial waste treatment (U)

IAC ACCESSION NUMBER: PL-900144
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
The study describes industrial wastewaters discharged from the maintenance area of Red River Army Depot, Texarkana, TX. Design criteria for industrial wastewater treatment facilities and recommendations for reducing industrial wastewater volume are provided. Field and laboratory studies and measurements are made with regard to the character and treatment of wastewater. Design criteria for a treatment facility to afford free oil and grease removal, phosphate removal, and pH adjustment are generated. The treatment is to precede biological treatment in an existing secondary treatment facility at Lone Star Army Ammunition Plant. (Modified author abstract) (U)

IAC SUBJECT TERMS: P--(U)Ordnance pollution-Water sampling, Waste water pollution-Physical techniques, Pollutants-Cost analysis, ZZ MTD, ZZ Unlimited.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 778 156 13/13 8/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Foundations for Family Housing. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 74 109P Bowles,J. E. ;
REPT. NO. CERL-TR-D-20
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89503

UNCLASSIFIED REPORT

DESCRIPTORS: *Housing(Dwellings), *Foundations(Structures), Sites, Soil science, Superstructures, Structural mechanics, Environmental engineering, Cost analysis (U)
IDENTIFIERS: *Soil engineering (U)

The report presents in abbreviated form information necessary to select appropriate foundations for family housing for various site conditions, climates, and construction methods. Included are a comprehensive survey of foundations presently used for family housing, a review of the soil mechanics used in foundation design, a discussion of current forms of house construction, and examples of cost computations for some typical foundations. Also included are several tables which facilitate the selection of an appropriate foundation type. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 777 769 5/11 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Attitudes and Preferences of Occupants of Military Family Housing Communities. Volume I. Executive Digest. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 74 68P Knight,R. C. ;Neathammer, R. D. ;Pfeister,J. L. ;Dinnat,R. M. ;
REPT. NO. CERL-TR-D-22
PROJ: DA-4-A-664-P-17895
TASK: 4-A-664-P-1789503

UNCLASSIFIED REPORT

DESCRIPTORS: *Urban planning, *Housing(Dwellings), *Military personnel, Questionnaires, Surveys, Assessment (U)
IDENTIFIERS: Residential buildings, Houses (U)

Planners, designers, and managers are the key agents through which housing needs and preferences of the military family are satisfied. At present, there is no pertinent, up-to-date mechanism which provides these agents with useful information about such needs and preferences. The results of this study are a first step toward establishing a system of timely information. Occupants of on-post family housing were surveyed by questionnaire. It contains a brief description of the survey, selected findings, and inferences drawn from the findings. (Modified author abstract) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 777 768 8/7 8/13 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

A Systematic Determination of Engineering Criteria for Rock. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 74 46P Aufmuth,Raymond E. ;
REPT. NO. CERL-TR-M-79
PROJ: DA-CERL-OK-1
TASK: OK-1-02

UNCLASSIFIED REPORT

DESCRIPTORS: *Rock mechanics, *Engineering geology, Test methods, Classification, Indexes(Ratios), Tables(Data), Tensile strength, Elastic properties, Hardness, Compressive properties, Shear properties (U)
IDENTIFIERS: Criteria, Computer aided analysis (U)

This Systematic Determination of Engineering Criteria for Rock was developed to provide a language which presents the engineering characteristics of a particular rock in a brief, concise and relevant manner. The system combines the lithology and the mechanical properties of the intact rock to make the information more meaningful and useful to engineers and contractors. Data was obtained and accurately determined from field index tests performed at the borehole sites. Examples of the use of the proposed criteria are illustrated by use of previously published data and from field information. (Modified author abstract) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 777 544 11/6

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Multiple Connectivity and the J Integral of Fracture Mechanics. (U)

DESCRIPTIVE NOTE: Technical manuscript,
APR 74 14P Honig,E. M. , Jr;
REPT. NO. CERL-TM-M-85
PROJ: DA-4-DM-728012-AOK-1
TASK: 4-DM-728012-AOK-102

UNCLASSIFIED REPORT

DESCRIPTORS: *Fracture(Mechanics), *Welds, Steel, Porosity, Numerical analysis (U)
IDENTIFIERS: J integrals (U)

The path independence of Rice's J integral has been clearly shown for an integration path lying in a simply connected region, in addition to the presumption of elasticity or deformation plasticity. Because welded metals may contain voids, such as cluster porosity and small cracks in the vicinity of a major crack tip in the weld zone, the question of path independence of the J integral in a multiply connected region is of considerable interest. The report shows that the J integral incurs a finite increment, at each increase in connectivity, with respect to the integral value at the next lower connectivity. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 776 367 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Electromagnetic Shielding of Structures. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 74 23P Nielsen,Paul ;
REPT. NO. CERL-TR-E-29
PROJ: CERL-OK-1
TASK: OK-1-03

UNCLASSIFIED REPORT

DESCRIPTORS: *Structures, *Electromagnetic shielding, Shielding, Construction (U)
IDENTIFIERS: Design (U)

Electromagnetic shielding of large volumes is possible with structures fabricated from low-resistance, high-permeability materials. Structural non-uniformities, such as doors, power and signal entry ports, and air conditioning ducts tend to degrade shielding effectiveness. These and a number of other construction details must be properly handled to avoid excessive shielding degradation. These details are discussed in this report. An annotated bibliography of publications on the subject of electromagnetic shielding is included. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 775 812 8/13 11/9

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

The Soil-Polymer System. (U)

DESCRIPTIVE NOTE: Technical manuscript (Final),
JAN 74 56P Aufmuth,Raymond E. ;
REPT. NO. CERL-TM-M-72
PROJ: DA-4-A-061101-A-91-D

UNCLASSIFIED REPORT

DESCRIPTORS: *Polymers, *Soil stabilization, Clay minerals, Water, Adsorption, Moisture, Irradiation, Soil mechanics, Bonding, X ray diffraction, Chemical analysis, Polymethyl methacrylate, Styrene plastics, Catalysis (U)

It was shown that polymerization in or with both soils and pure clay minerals greatly enhances their strength characteristics, reduces their susceptability to adsorption of water and resulting swelling, and provides a durable surface for a number of potential applications. Also, the monomer catalyst system may be field-implemented into materials which have a moisture content near or at the required for optimum compaction. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 775 430 5/5 5/10

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Employee-Attitude and Office Environment Analyses for the Development of Human and Architectural Requirements for the Buffalo District Office, Buffalo, N.Y. Buffalo Office Study Part I. (U)

DESCRIPTIVE NOTE: Final rept.,
FEB 74 95P Gibbs,Wes , Jr.;
REPT. NO. CERL-TR-D-17
PROJ: DA-4-A-062103-A-891

UNCLASSIFIED REPORT

DESCRIPTORS: *Attitudes(Psychology), *Human factors engineering, Environments, Architecture, Questionnaires, Assessment, Personnel (U)
IDENTIFIERS: Organizational climate (U)

The report presents Part I of an evaluation of 143 office employees' attitudes toward their work-area environments and an assessment of their office resource, facility, and service requirements. The study was conducted during July-October 1973 at the Buffalo District Office of the U.S. Army Corps of Engineers, Buffalo, N.Y. The measurement techniques of three analyses to determine the human and architectural requirements of an office environment were demonstrated, and the results of the analyses were documented for an Architectural Requirement Manual (Part II) for the design of the Buffalo District Office Environment. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 774 849 9/2 13/2 1/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

User Manual for LIFE1 Computer Program. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 74 54P Willmer,J. ;McManus,P. ; Marvin,E. ;
REPT. NO. CERL-TR-S-28
PROJ: RDT/E-4-A-664717-D-895
TASK: 4-A-664717-D-89504

UNCLASSIFIED REPORT

DESCRIPTORS: *Pavements, *Landing fields, *Computer programming, User needs, Digital simulation, Landing fields, Foundations(Structures), Maintenance, Decision making, FORTRAN (U)
IDENTIFIERS: LIFE1 computer program, *Design criteria (U)

The report describes a digital computer program that enables airfield-pavement designers and planners to analyze the consequences of available decision alternatives. The program allows different design schemes and strategies for maintaining the proposed pavement systems. Costs of construction and maintenance are estimated, and the various combinations of design schemes and maintenance strategies are ranked by total costs over the design-life of the pavement. Instructions are provided for program operation and input preparation for use with CDC 6000 series computer systems. The program is written in FORTRAN Extended. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 774 847 13/13 14/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Nondestructive Testing of Construction Materials and Operations. (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 73 68P Sevall,George W. , Jr;
REPT. NO. CERL-TR-M-67

UNCLASSIFIED REPORT

DESCRIPTORS: *Nondestructive testing, *Construction, *Construction materials, Test methods, Joints, Defects(Materials), Joining (U)

The report reviews nondestructive testing methods applicable to the construction industry. Established methods and methods still in development are included. Recently developed methods were evaluated from initial reports and prototype applications. A number of the new methods show promise in reducing inspection time or presenting information previously unobtainable. Existing and developing methods are also classified according to the construction materials and operations they test. The report is designed to help not only those interested in the field of nondestructive testing, but also those concerned with specific applications. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 774 299 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Air Pollution Engineering Source Evaluation of Ammonia Oxidation Plant Number 10, Holston Army Ammunition Plant, Kingsport, Tennessee. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 74 15P Carter,Roy V. ;Conley, Kathy ;
REPT. NO. CERL-TR-E-23

UNCLASSIFIED REPORT

DESCRIPTORS: *Air pollution, *Nitrogen oxides, Flue gases, Gas analysis, Ammonia, Tables(Data), Industrial plants (U)
IDENTIFIERS: *Nitric acid plants, Air pollution control (U)

IAC ACCESSION NUMBER: PL-900500
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
Air pollutant emissions from the Ammonia Oxidation Plant, Holston Army Ammunition Plant, Kingsport, Tennessee, were analyzed during the study. Testing was performed to define the concentration and emission rates of free ammonia, oxides of nitrogen (NOx) and oxides of sulfur (SOx) contained in the exit gases. Process and production data for the weak nitric acid manufacturing facility are included. Sampling and analytical techniques employed during the survey are described in detail. (Modified author abstract) (U)

IAC SUBJECT TERMS: P--(U)Air pollution-Source review, NOx-Air sampling, SOx-Air sampling, Ordnance pollution-Manufacturing plants, Ammonia-Analysis, Holston Army Ammunition Plant, ZZ MTD, ZZ Unlimited.;

AD- 773 716 14/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

The Effect of Weld Defects on RFI Shielding Effectiveness. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 74 18P Carlson,Kenneth W. ;
REPT. NO. CERL-TR-M-43
PROJ: IAO-CE-CERL-73-2

UNCLASSIFIED REPORT

DESCRIPTORS: *Nondestructive testing, *Electromagnetic shielding, *Welds, Defects(Materials), Trade off analyses, Test facilities, Chambers (U)

Many specifications for electromagnetically shielded facilities require that weld seams be 100 percent defect-free though very little data is available to support this requirement. Such high levels of quality control are expensive and time consuming. The investigation determines the effect of weld defects on the shielding effectiveness of shielded enclosures containing welded seams. More specifically, the amount of shielding degradation as a function of type and size of weld defects in Electromagnetic Pulse shielded enclosures was desired for RFI frequencies of 10 KHZ to 10 GHZ. Defects were intentionally implanted in welded 11-gage steel panels. The panels were then tested in a high-quality RFI-sealed shielded enclosure to ascertain the RFI attenuation characteristics of the defect. (Modified author abstract) (U)

AD- 773 715 13/3 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Development of a Design Manual for Concrete Floor Slabs on Grade. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 74 29P Rice,J. L. ;Eberhardt,A. C. ;Varga,L. ;
REPT. NO. CERL-TR-S-27

UNCLASSIFIED REPORT

DESCRIPTORS: *Floors, *Concrete, *Manuals, Construction materials, Dynamic loads, Flexural strength, Foundations(Structures), Life(Durability), Static loads (U)
IDENTIFIERS: *Design criteria, *Design standards, Concrete floor slabs (U)

The report describes a study preparing a design manual for concrete slabs on grade subjected to moderate to heavy loads. Existing design procedures were reviewed, theoretical studies were made, and an interim manual was prepared. Information in existing manuals was critically reviewed and applicable material used extensively in the preparation. Assumptions made in the manuals with regard to type and volume of vehicular traffic were re-examined on the basis of a field survey and revised when necessary. (Author) (U)

AD- 773 714 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Sanitary Landfill. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 74 31P Nelson,D. L. ;
REPT. NO. CERL-TR-E-22
PROJ: DA-4-A-062103-A-891
TASK: 4-A-062103-A-89103

UNCLASSIFIED REPORT

DESCRIPTORS: *Earth fills, *Solid waste disposal, Sanitary engineering, Site selection, Refuse disposal, Hydrology, Geology, Climate, Reviews, Costs, Compacting, Numerical analysis, Ground water, Water pollution, Decomposition (U)
IDENTIFIERS: Design (U)

IAC ACCESSION NUMBER: PL-900350
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
A literature review provided information on the operation and design of sanitary landfills. Operational parameters reviewed included basic methods of operation, compaction procedures and expected in-place refuse densities, cover requirements, and site improvements. The engineering design considerations summarized were refuse decomposition (including production and control of leachate and gas); the use of information on hydrology, geology, climatology, and waste characteristics to evaluate and classify sanitary landfill sites; possible uses for a completed landfill site; and equipment and cost data. A novel mathematical analysis was performed to define optimum cell shape and size and minimum cover conditions in terms of the various, physical parameters of the landfill. (Modified author abstract) (U)

IAC SUBJECT TERMS: P--(U)Solid waste pollution-Design guides, Solid waste pollution-Techniques review, ZZ MTD, ZZ Unlimited.;

AD- 773 690 5/10

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Predicting Community Response to Blast Noise. (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 73 98P Schomer,Paul D. ;
REPT. NO. CERL-TR-E-17
PROJ: DA-4-A-062212
TASK: 4-A-06221205

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Sound and Vibration Tolerance Limits--Residential Areas.
DESCRIPTORS: *Noise(Sound), *Community relations, *Blast, *Explosives, *Noise pollution, Attitudes(Psychology), Mathematical prediction, Computer programming, Overpressure, Artillery fire, Ground level, Airburst, Underground explosions (U)
IDENTIFIERS: *Annoyance (U)

The report presents a preliminary method for predicting levels of annoyance from artillery or blast noise in the environs of a military base. The means are given to relate various artillery pieces to a TNT equivalent and to normalize the overpressure from detonating various quantities of TNT to the overpressure from the detonation of one pound of TNT. Buried charges and aboveground detonations are also considered. Various ways to predict probable blast overpressure and frequency spectrum as a function of distance are discussed. (Modified author abstract) (U)

AD- 772 896 6/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Automated Scheduling of Maintenance Events: Status of Fitzsimons Hospital Study. (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 73 139P Vokac,Thomas J. ;Colver, Richard J. ;
REPT. NO. CERL-TR-A-22
PROJ: RDT/E-4-A-062103-A-891
TASK: 4-A-062103-A-89104

UNCLASSIFIED REPORT

DESCRIPTORS: *Hospitals, *Scheduling, *Maintenance, Computers, Computer programming, Data processing (U)
IDENTIFIERS: Computer aided analysis (U)

The report documents the collection and analysis of equipment maintenance data at Fitzsimons Army General Hospital, Denver, Colorado, between Jul 1972 and February 1973. The report contains initial data collection and analysis for planning, scheduling, and monitoring of maintenance resources and their utilization through application of a Construction Engineering Research Laboratory (CERL)-developed maintenance simulation system, Onsite Management Records System (OMRS); and analyzing maintenance data to determine availability/reliability (A/R) of critical systems using A/R programs developed for analysis of Ballistic Missile Defense support systems. Results included identification of equipment and required maintenance events, preliminary scheduling runs, and the identification of requirements for effective, onsite A/R analysis. (Author) (U)

AD- 772 895 11/9

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Mechanical Behavior of Viscoelastic Materials. (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 73 86P Naus,Dan ;
REPT. NO. CERL-TR-M-68
PROJ: DA-4-A-062112-A-891
TASK: 4-A-062112-A-891

UNCLASSIFIED REPORT

DESCRIPTORS: *Polymers, Mechanical properties, Polymethyl methacrylate, Tensile properties, Creep, Loads(Forces), Fracture(Mechanics), Crack propagation, Structural properties, Deformation (U)
IDENTIFIERS: Stress relaxation (U)

IAC ACCESSION NUMBER: PL-021735
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--

This investigation was thus conducted to provide a better understanding of viscoelastic material behavior. The behavior of a typical viscoelastic material, PMMA, was evaluated when subjected to various load rates, magnitude of load, or magnitude of strain. The results indicate that the behavior of the viscoelastic material, PMMA, (i.e., tensile creep, stress relaxation, and fracture toughness properties) is dependent on time, stress, and strain. The results also indicate that viscoelastic materials are able to adsorb large amounts of energy, exhibit large tensile strains prior to fracture, exhibit increasing ultimate tensile strength values with increased rates of deformation, relax to relieve stresses resulting from induced displacements, provide resistance to crack propagation. Also, a qualitative fracture model was developed using rheological models in conjunction with a rigid-plastic cracked strip model to describe material behavior near a flaw. The model was related to the tensile and fracture behavior of viscoelastic materials. (Author, modified-PL) (U)

IAC SUBJECT TERMS: P--(U)PMMA-Fracture behavior, PMMA-Tensile stress/strain, ZZ Unlimited;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 772 894 13/2 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Technical Evaluation Study of the Consolidated Field Maintenance Facility at Fort Bragg, N.C. (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 73 38P Rosenfield,M. J. ;Davis,M. L. ;Schomer,P. ;Eiol,M. ;
REPT. NO. CERL-TR-E-15

UNCLASSIFIED REPORT

DESCRIPTORS: *Air pollution, *waste management, *Water pollution, *Military facilities, Control, Noise pollution, Solid wastes, Wastes, Cost estimates, Oils, Gasoline, Storage tanks, Paints, Waste water, Dust control, North Carolina (U)
IDENTIFIERS: Fort Bragg (U)

The study identifies potential pollution sources and control equipment requirements for the proposed Consolidated Field Maintenance Facility at Fort Bragg, N.C. An inventory determined processes and operations which were to be incorporated in the new facility. Air pollution, water, noise, and solid wastes which might emanate from the facility are identified. Recommendations are given to provide pollution control for the following: gasoline storage tanks, paint spray booths, woodworking shops, waste oils and lubricants, washrack waste water, dynamometers, and body shop. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 772 893 13/2 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Technical Evaluation Study, Solid Waste Generation and Disposal, Watervliet Arsenal, Watervliet, N.Y. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 74 24P Rigo,H. G. ;
REPT. NO. CERL-TR-E-7

UNCLASSIFIED REPORT

DESCRIPTORS: *Solid waste disposal, *Incinerators, *Military facilities, Boilers, Air pollution, Cost estimates, Electrostatic precipitation, Control, New York (U)
IDENTIFIERS: Heat recovery, Design, Watervliet Arsenal (U)

The study was initiated to evaluate the solid waste disposal problems at Watervliet Arsenal, Watervliet, New York and to develop design criteria for the disposal of the solid waste generated on the base. Since a design had recently been completed for a new incinerator plant for the Arsenal, a major portion of the study was to evaluate the proposed design. A technology review was conducted, applicable standards were evaluated, and analysis of the waste stream was performed. The applicability of boiler conversion, recycle techniques and landfill processes were examined. The abatement method selected for the ultimate disposal of the waste was power recovery incineration. This decision was based on the relative life cycle cost of the alternatives considered and on the reliability of specific furnace configurations. Design criteria were prepared for modifying the existing incinerator design to incorporate a package boiler and to modify the air pollution control scheme from low energy scrubbing to an electrostatic precipitator. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 771 909 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Evaluation of Projects for Counter-Seasonality Measures. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 73 33P Halpin,D. ;Melin,J. ;
Neathammer,R. ;
REPT. NO. CERL-TR-P-15
PROJ: DA-4-A-062112-A-891

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Seasonal variations, Cold weather, Employment, Labor, Scheduling, Decision making, Bibliographies (U)
IDENTIFIERS: *Construction seasonality, *Uninterrupted construction, Critical path methods, Computer aided analysis (U)

The report addresses the Corps of Engineers' response to seasonality in construction, and develops a method which allows for the evaluation of project selection in implementing measures to combat seasonal effects. The evaluation is based on the project's network representation and its sensitivity to various start dates and counter-seasonality methods. (Modified author abstract) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 771 908 11/4 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Compression Characteristics and Structural Beam Design Analysis of Steel Fiber Reinforced Concrete. (U)

DESCRIPTIVE NOTE: Final rept. Jul 72-Jan 73,
DEC 73 43P Williamson,Gilbert R. ;
REPT. NO. CERL-TR-M-62
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89504, 4-A-664717-D-89523

UNCLASSIFIED REPORT

DESCRIPTORS: *Reinforced concrete, Steel, Fiber reinforcement, Compression, Strength, Beams(Structural), Modulus of elasticity (U)
IDENTIFIERS: Mortars(Material) (U)

The report studies the effect of steel fibers on the static compression strength of concrete and mortar. Using 6 x 12 in., 4 x 8 in., and 3 x 6 in. cylinders, 180 tests were conducted on three different mixes: sand, 3/8 in. maximum aggregate, and 3/4 in. maximum aggregate. Data that indicate the strength of the fiber concrete may vary inversely with the sand content. Values for Young's modulus and Poisson's ratio for the various fiber percentages are also given. It is suggested that fibers can be used economically in flexural members. A cost comparison of a reinforced concrete beam with stirrups versus a reinforced concrete beam with fibers with no stirrups is presented. (Modified author abstract) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 771 906 11/6

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Directional Transformation in Steel--Texture Behavior and Martensite Morphology. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 73 25P Kim,Y. G. ;Quattrone,R. ; Wayman,C. M. ;
REPT. NO. CERL-TM-M-58
PROJ: DA-4-A-061101-A-91-D

UNCLASSIFIED REPORT

DESCRIPTORS: *Steel, *Fiber metallurgy, Transformations, Directional, Martensite, Austenite, Deformation, Grain structure(Metallurgy) (U)
IDENTIFIERS: Steel 2 Mn 27Ni (U)

IAC ACCESSION NUMBER: MCIC-089247
IAC DOCUMENT TYPE: MCIC -HARD COPY--
Previous work has shown that certain Fe-Ni-Mn alloys may be suitable for producing an aligned martensite. These alloys are austenitic at room temperature and transform into lath martensite with low Ms and Md temperatures. The work is concerned with the texture behavior of the austenite in Fe -27% Ni -2% Mn and the morphology of the martensite in Fe -27% Ni -2% Mn. The austenitic deformation texture at 200C, 400C, 600C and 800C was found to be (100) (011), which is reported to be a typical deformation texture for bcc metals, but is not known to have ever been previously reported for a fcc material. (Modified author abstract) (U)

IAC SUBJECT TERMS: M--(U)FE-25NI, FE-27NI, MANGANESE ADDITION, AUSTENITE, MARTENSITE, DEFORMATION, TEXTURE, SHEAR STRESS, ROLLING, ANNEALING, TRANSFORMATION, ROLLING TEMPERATURE, MICROSTRUCTURE, PHOTOMICROGRAPHS.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 771 178 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Automated Design and Construction Progress Reporting Procedures. Volume I. (U)

DESCRIPTIVE NOTE: Interim technical rept. no. 4, Apr 72-Oct 73,
DEC 73 75P Lapp,Roger L. ;Poskus, Uldis R. ;
REPT. NO. CERL-IR-A-23
PROJ: DA-4-A-062103-A-891
TASK: 4-A-062103-A-89106

UNCLASSIFIED REPORT

DESCRIPTORS: *Military engineering, *Reports, *Army, *Automation, *Methodology, Computer programming, Construction, Vocabulary, Data bases, Data acquisition, Classification, Output, Input, Economic analysis, Forms(Paper) (U)
IDENTIFIERS: Recommendations (U)

The report describes progress to date in automating design and construction progress reporting procedures for Army constructed military facilities. An analysis of the major reports used by the Corps of Engineers in managing design and construction is presented. 350 data terms have been selected for inclusion in an automated data base. 265 of these data elements have been included in ten output reports which comprise a basic reporting system. The data elements are related herein to the output reports in which they appear by an element-report matrix. The data elements are defined in a data dictionary. Supporting the data dictionary is a set of code tables for those data terms which are ordinarily reported in coded form. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 771 160 1 5 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Computer Program for the Finite Element Analysis of Concrete Airfield Pavements. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 73 92P Eberhardt,A. C. ;Willmer, J. L. ;
REPT. NO. CERL-TR-S-26
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89504

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on the Dynamic Interaction of Aircraft Pavement Systems.
DESCRIPTORS: *Airfields, *Pavements, *Concrete, *Computer programs, Loads(Forces), Landing gear, FORTRAN, Mathematical models, Stresses, Strain(Mechanics), Statics (U)
IDENTIFIERS: CDC 6000 computers, IBM 360 computers, UNIVAC 1108 computers, Finite element analysis (U)

The report describes a digital computer program for the finite element analysis of jointed concrete airfield pavements. The program is designed to analyze the static response of a pavement to heavy multi-wheel aircraft gear loads. An equivalent plate theory is used to determine the effect of a stabilized base or a structural overlay on the total response of a pavement system. The subsoil is modeled as a Winkler foundation, i.e., only forces and deformations in the vertical direction are considered. (Modified author abstract) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 771 062 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Environmental Impact Assessment Study for Army Military Programs. (U)

DESCRIPTIVE NOTE: Interim rept. Apr-Dec 72,
DEC 73 172P Jain,R. K. ;Lewis,T. A. ;Urban,L. V. ;Balbach,H. E. ;
REPT. NO. CERL-IR-D-13
PROJ: DA-4-A-162121-A-896

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Procedures for Evaluating Environmental Impacts of All Military Programs.
DESCRIPTORS: *Environments, *Pollution, *Army, Assessment, Impact, Computer programming, Methodology, Ecology, Public health, Air pollution, Water pollution, Economics, Sociology, Noise pollution, Transportation (U)
IDENTIFIERS: Environmental Impact Statements (U)

IAC ACCESSION NUMBER: PL-900435
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
The development of systematic procedures that can be used by personnel at all levels of the Army to prepare and review realistic and meaningful environmental impact assessments and statements for Army military programs are presented. Army programs were grouped into the Army functional areas of construction, research and development, real estate acquisition or outleases of land, mission change, procurement, training, administration and support, industrial activities, and operation, maintenance and repair. A systematic procedure was formulated whereby basic activities associated with implementing Army programs were developed for each functional area. A computer-aided assessment system was developed for identifying potential environmental impacts by relating the Army activities from the functional areas to attributes contained in eleven technical areas of specialty used to describe the environment. (U)

IAC SUBJECT TERMS: P--(U)Pollutants review-Techniques review, Pollutants-Survey, Pollutants-Computer

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 770 927 12/3 15/5 15/7

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Guidance for Selection of Equipment Fleet. (U)

DESCRIPTIVE NOTE: Technical rept., OCT 73 38P Rood,Omar E. , Jr;
REPT. NO. CERL-TR-P-18
PROJ: DA-4-A-664717-D-895

UNCLASSIFIED REPORT

DESCRIPTORS: *Army operations, *Construction equipment, *Costs, Earth handling equipment, Road building equipment, Decision making, Production control, Mathematical models (U)
IDENTIFIERS: Cost estimating relationships (U)

The report presents a guide for equipment fleet selection that will enable military engineers to accomplish their Theater of Operations construction projects at the lowest cost to the taxpayer. The equipment selection guide is presented in card format, which, after review and field-testing by the Engineer School, should be distributed to field engineers. The report also presents the consideration, methodology, and models used in the development of this equipment selection card. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 770 395 7/4

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

An Extended Evaluation of a Particulate Precipitating Heat Transfer Surface. (U)

DESCRIPTIVE NOTE: Technical manuscript, NOV 73 285P Rigo,H. G. ;
REPT. NO. CERL-TM-E-20

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Doctoral thesis.
DESCRIPTORS: *Particles, *Scrubbers, Aerosols, Separation, Heat transfer, Surfaces, Kinetic energy, Phase studies, Reynolds numbers, NAVIER STOKES equations, Diffusion, Computer programs, Gas flow, Theses (U)
IDENTIFIERS: *Air pollution control (U)

The laminar Navier-Stokes equations were solved for Reynolds Numbers ranging between zero and 3000,000 over a typical element in an array of laterally disposed cavity bearing, piecewise continuous, front step-back steps. An inertial particle tracking model was coupled with the flow field solution to predict collection efficiency. Qualitative experimental confirmation of the flow field was obtained from flow visualization experiments. Experimental analysis of the fractional aerosol capture efficiency of the flow obstruction indicates that for small particles in turbulent flow, diffusion governs collection. The heat transfer effectiveness of the geometry was estimated within 6% of the experimental values using a novel coupling of the Chapman-Korst cavity flow model and the equivalent wedge similarity solution. (Modified author abstract) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 770 374 5/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

An Integrated Approach to Construction Management. (U)

DESCRIPTIVE NOTE: Final rept.,
NOV 73 160P Richards,J. L. ;
REPT. NO. CERL-TM-P-19

UNCLASSIFIED REPORT

DESCRIPTORS: *Construction, *Management planning and control, Decision making, Multiple operation, Scheduling, Dynamic programming, Computer programming, Man machine systems, Costs, Mathematical models, Matrices(Mathematics), Stochastic processes, Optimization (U)
IDENTIFIERS: *Construction management, *Critical path method, Network analysis(Management) (U)

The research developed an integrated approach to construction management that provides an optimal decision-making tool for improving the cost-effectiveness of management organizations. The construction problem is defined in terms of the management processes of planning, scheduling, and controlling construction operations. These processes evaluate the time-cost tradeoffs of alternative courses of action when resources are limited. The integrated approach reflects the true state of the decision-maker in hierarchical management organizations of dynamic construction systems. A new network-based project analysis model was developed that integrates the total costs of construction operations. A rigorous mathematical formulation of the model provides a basis for an optimal solution method using an implicit enumeration, computer routine. The integrated approach was applied to a sample project to yield optimal project and resource schedules. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 769 600 13/11 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Theater of Operations Water Supply--
Feasibility of Manufacturing and Using Plastic Pipe in the Theater of Operations. (U)

DESCRIPTIVE NOTE: Technical rept.,
OCT 73 171P Mikucki,Walter J. ;
REPT. NO. CERL-TR-E-16
PROJ: DA-4A-664717-D-895

UNCLASSIFIED REPORT

DESCRIPTORS: (*Water pipes, Plastics), (*Extrusion, Water pipes), Manufacturing, Pipe fittings, Feasibility studies, Pilot plants, Military operations, Tactical warfare, Utilization (U)
IDENTIFIERS: Plastic pipes (U)

IAC ACCESSION NUMBER: PL-020222
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This study determined the feasibility of manufacturing and using plastic pipe and fittings for potable water distribution systems in the theater of operations. Available plastic pipe, fitting production, fabrication methods, and equipment were reviewed. Concepts were developed for extruding plastic pipe up to 6 in. in diameter and fabricating fittings from pipe stock. Comparison of shipping weight and volume, material cost, and installation manhours for purchased metal, plastic pipe, and theater of operations-produced plastic pipe was made using 1500-man and 3000-man troop camp bills of materials as a basis. The comparison showed that the portable plant concept was most economical and that the use of plastic pipe would significantly reduce installation manhours. (Author, modified-PL) (U)

IAC SUBJECT TERMS: P--(U)Plastics-Pipes, Thermoplastics-Extrusion, Plastics-Fabrication, Thermoplastics-Military application, ZZ Unlimited.;

AD- [illegible] 9/2 15/3.1

[illegible] ARMY ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Documentation of Extended Analysis and Planning Subroutines for Onsite Management Records System (OMRS) - September 1972. (U)

DESCRIPTIVE NOTE: Technical rept.,
SEP 73 125P Pritsker,A. Alan B. ;
Trent,Robert L. ;Seum,Charles S. ;
REPT. NO. CERL-TR-A-21

UNCLASSIFIED REPORT

DESCRIPTORS: (*Maintenance, Logistics planning), (*Management information systems, Computer programs), Subroutines, FORTRAN, Information retrieval, Scheduling, Antimissile defense system (U)
IDENTIFIERS: Safeguard antiballistic missile systems (U)

The objective of the project is to develop a computerized maintenance logistics data system, specifically to support onsite operation of the Tactical Support Equipment (TSE) complements of the SAFEGUARD Ballistic Missile Defense System. The development has been implemented in two phases; the first phase directed at providing automated methods for analyzing and forecasting maintenance resource requirements, the second phase at onsite operational scheduling of maintenance manpower and record-keeping. The computer routines to achieve the first phase of the project were documented in April 1972. At that time, recommendations for improvements in the method and efficiency of the procedures were made. The report documents the extensions and improvements to the routines and records the status of the development as of 1 September 1972. Detailed descriptions of program variables, subprograms, and comment statements are provided. Input formats are specified and examples of output reports are presented. (Author) (U)

AD- 768 721 13/4 20/11 9/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Stiffness Matrix Reduction for Large Structural Systems Using Cholesky Decomposition. (U)

DESCRIPTIVE NOTE: Interim rept.,
OCT 73 29P Holze,Gordon ;
REPT. NO. CERL-IR-S-24
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89501

UNCLASSIFIED REPORT

DESCRIPTORS: (*CONTAINERS, STRUCTURAL PROPERTIES), MATRICES(MATHEMATICS), LOADS(FORCES), COMPUTER PROGRAMS (U)
IDENTIFIERS: *STIFFNESS METHODS, MATRIX METHODS, *STRUCTURAL ANALYSIS, DEGREES OF FREEDOM, *SHIPPING CONTAINERS, FINITE ELEMENT ANALYSIS, CHOLESKY DECOMPOSITION (U)

Using a method similar to that proposed by Rosen and Rubinstein, a computer program was written to reduce the stiffness matrix of a multi-degree of freedom system down to an equivalent stiffness matrix involving a smaller number of degrees of freedom. Since this method uses Cholesky decomposition instead of the more common matrix inversion, it is useful for substructure problems in which a large number of degrees of freedom are to be condensed and eliminated. The computer program in Appendix B is most efficient when used for a large degree of freedom system with a sparse stiffness matrix. An example problem is explained in Appendix C to demonstrate the use of the program. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 768 720 13/13 15/3.1 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Metallic Shear Walls for BMD Ground Support Systems. (U)

DESCRIPTIVE NOTE: Interim rept., AUG 73 32P Quattrone,R. ;Merritt,R. ;
REPT. NO. CERL-IR-M-32
PROJ: IAO-CE-CERL-71-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*BUILDINGS, WALLS), (*WALLS, METAL PLATES), (*ANTIMISSILE DEFENSE SYSTEMS, LAUNCHING SITES), STEEL, SHEAR STRESSES, MODULUS OF ELASTICITY, COSTS, ELECTROMAGNETIC PULSES, ELECTROMAGNETIC SHIELDING (U)
IDENTIFIERS: *HARDENED INSTALLATIONS, *SHEAR WALLS, COMPUTER AIDED DESIGN (U)

The report considers the economic feasibility of using metallic interior shear wall elements in place of conventional reinforced concrete shear wall elements in hardened facilities. A simplified, aboveground two story building is designed using both conventional concrete and metallic shear wall elements. Five combinations of weapon yield and overpressure are used to size the building elements. Three wall configurations are considered: reinforced concrete, low yield strength steel (A-36), and high yield strength steel (A-514). Total facility and shear wall costs are compared. Based upon a somewhat limited use of metallic materials, it is nonetheless clearly indicated that the use of metallic interior shear walls can substantially reduce facility structural costs by as much as nine percent at low overpressures. Comparing the in-place wall costs, savings on the order of 50 percent are possible under some design requirements and metallic material properties. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 768 098 13/3 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

CMP Instructions, Specifications, and Example. (U)

DESCRIPTIVE NOTE: Technical rept., SEP 73 108P Johnson,E. R. ;
REPT. NO. CERL-TR-P-9
PROJ: DA-4-A-664717-D-895

UNCLASSIFIED REPORT

DESCRIPTORS: (*CONSTRUCTION, *SCHEDULING), (*MILITARY FACILITIES, CONSTRUCTION), LOGISTICS, CONSTRUCTION MATERIALS, EARTH HANDLING EQUIPMENT, TIME STUDIES, PLANNING, MANAGEMENT PLANNING AND CONTROL, COMPUTER PROGRAMS (U)
IDENTIFIERS: CMP(CONSTRUCTION MANAGEMENT PROCEDURES), CONSTRUCTION MANAGEMENT PROCEDURES, COMPUTERIZED SIMULATION (U)

The problem was to develop a construction scheduling model for the Army Functional Component System (AFCS) which could be used by engineers in the field, theater-of-operation planners, and base development planners. To fulfill this requirement a Facility Scheduling Model and an Installation Tabulation Model were developed. Also included are instructions for architects and engineers and an example of the model. The Installation Tabulation Model duration was compared with duration derived by the CERL Construction Management Procedure (CMP) Computer Simulation Model. The comparison results in a recommended 1.35 multiplication factor for the Installation Tabulation Model. (Author) (U)

AD- 767 531 13/3 11/4

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Polymer Impregnated Fibrous Cellular Concrete for BMD Facilities. (U)

DESCRIPTIVE NOTE: Technical rept.,
JUL 73 23P Price,Eddie ;Lott,J. L. ;
REPT. NO. CERL-TR-M-31
PROJ: DA-4-A-062104-A-880
TASK: 4-A-062104-A-88002

UNCLASSIFIED REPORT

DESCRIPTORS: (*REINFORCED CONCRETE, IMPREGNATION), REINFORCING MATERIALS, STEEL, FIBERS, FOAM, POLYESTER PLASTICS, STYRENE PLASTICS, STRUCTURAL PROPERTIES, COMPOSITE MATERIALS (U)
IDENTIFIERS: CELLULAR CONCRETES, CONCRETE POLYMER COMPOSITES (U)

The objective of the study was to evaluate the structural behavior of Polymer-impregnated, fibrous cellular concrete (PFCC) elements to see if further consideration of the use of such material systems is warranted for BMD facilities. A fibrous cellular concrete was impregnated with polyester resin to obtain polymer-impregnated, fibrous cellular concrete (PFCC) test specimens. Structural behavior was examined by testing simply supported beams; material behavior was determined by compression cylinder tests. Flexural behavior was evaluated based on the observed behavior of PFCC and steel reinforcing bars. (Modified author abstract) (U)

AD- 767 530 1/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Technological Forecasting: A Case Study of Long-Term Requirements for Rigid Airfield Pavement Systems. (U)

DESCRIPTIVE NOTE: Technical rept.,
AUG 73 54P Pananos,William J. ;
REPT. NO. CERL-TR-A-19
PROJ: DA-4-A-062112-A-891
TASK: 4-A-062112-A-89112

UNCLASSIFIED REPORT

DESCRIPTORS: (*LANDING FIELDS, *PAVEMENTS), DESIGN, MANAGEMENT PLANNING AND CONTROL, CONSTRUCTION, OPERATION, MAINTENANCE (U)
IDENTIFIERS: FORECASTING (U)

The report presents the in-action example of the Delphi method of technological forcasting, which involves polling expert opinion. Experts in the planning, design, construction, and operation of airfields were polled to develop a forecast of technical capabilities in those areas. The results demonstrate how the wide range of information obtainable from expert opinion can be conveniently presented to planners. An analysis of the convergence of opinion after two rounds of questioning indicates that more than one round may be unnecessary to obtain the subjective type of information discussed in the forecast. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 767 529 13/2 15/5 5/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

A Data-Based Methodology for Specifying Construction Project Durations. (U)

DESCRIPTIVE NOTE: Technical rept., AUG 73 24P Halpin,D. W. ;DeLong,C. E. ;
REPT. NO. CERL-TR-P-14

UNCLASSIFIED REPORT

DESCRIPTORS: (*CONSTRUCTION, *SCHEDULING), (*MILITARY FACILITIES, CONSTRUCTION), CONTRACTS, MANPOWER, TIME STUDIES, CONSTRUCTION MATERIALS, LABOR UNIONS, MILITARY PROCUREMENT, LEAD TIME, PLANNING, MATHEMATICAL MODELS, DATA PROCESSING, MANAGEMENT PLANNING AND CONTROL (U)
IDENTIFIERS: NEGOTIATIONS, *CONTRACT ADMINISTRATION, *CONTRACT TERMS, COST OVERRUNS (U)

The report presents a method of determining the construction contract performance times for military construction projects. This method is based on information that is regularly reported as feedback during the execution of a construction contract for military construction, Army projects. By organizing the data from the manpower-utilization feedback reports, a model is formulated and mathematically derived. An example of data reduction is presented, and the results of applying the methodology to these projects are reported. A proposal of implementation of the methodology in U.S. Army Corps of Engineers' district offices is presented. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 766 725 15/5 5/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Construction Time Overruns. (U)

DESCRIPTIVE NOTE: Technical rept., AUG 73 78P Halpin,D. W. ;Neathammer, R. D. ;
REPT. NO. CERL-TR-P-16
PROJ: DA-4-DM-78012-A0K-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*CONSTRUCTION, *TIME STUDIES), (*MILITARY FACILITIES, *CONTRACTS), LANDING FIELDS, BUILDINGS, ARMY PROCUREMENT, REGRESSION ANALYSIS, ANALYSIS OF VARIANC (U)
IDENTIFIERS: CONTRACT TERMS (U)

The actual time required to complete construction on military facilities is often greater than the time contractually specified. There are several reasons for these 'overruns' or time extensions: designer changes/errors, user changes, weather, strikes, late deliveries, etc. These time extensions were studied by examining a sample of contracts throughout CONUS from the time period July 1967 - June 1970. Based on the 221 contracts evaluated it is estimated that for an average contract, an additional 27% of the specified construction time will be allowed as time extensions. (Author) (U)

AD- 766 706 13/2 13/5 1/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Keyed Joint Performance Under Heavy Load Aircraft. (U)

DESCRIPTIVE NOTE: Technical manuscript, AUG 73 14P Rice,John L. ;
REPT. NO. CERL-TM-S-13

UNCLASSIFIED REPORT

DESCRIPTORS: (*JOINTS, PERFORMANCE(ENGINEERING)), (*PAVEMENTS, JOINTS), (*JET TRANSPORT PLANES, AIRCRAFT LANDINGS), LOADS(FORCES), RUNWAYS, MODEL TESTS, CONCRETE (U)
IDENTIFIERS: *KEYED JOINTS, C-5A AIRCRAFT, C-5 AIRCRAFT (U)

The poor performance of keyed longitudinal construction joints in rigid airfield pavements under simulated C-5A traffic operations is presented. The data presented were collected from a full scale test track pavement supported on a low strength subgrade. No deficiencies in materials or construction were found which would have adversely affected the performance of the keyed joint. The failures observed in the keyed joint demonstrate that a balanced design will result using the Corps of Engineers keyed joint dimensions. (Author) (U)

AD- 766 299 8/13 19/6

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Soil Stabilization Investigation for 155 mm Towed Howitzer Firing Pads. (U)

DESCRIPTIVE NOTE: Technical manuscript, JUL 73 45P Kelly,William T. ;
REPT. NO. CERL-TM-M-53

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOILS, STABILIZATION), (*FOUNDATIONS(STRUCTURES), *HOWITZERS), SUPPORTS, CALCIUM OXIDES, FEASIBILITY STUDIES, MOISTURE, COMPRESSIVE PROPERTIES, FLEXURAL STRENGTH, AGING(MATERIALS), MODULUS OF ELASTICITY, LOADS(FORCES), DEFORMATION, REGRESSION ANALYSIS, ACCEPTABILITY (U)
IDENTIFIERS: *SOIL STABILIZATION (U)

The 155 mm Howitzer is placed in its firing configuration by jacking it off its road wheels onto a base place support. The trails are spread and the trail spades are dug into the ground. During normal firing, the recoil of the weapon is absorbed by the base plate, recoil mechanism, and trail spades. Frequently, the Howitzer must be positioned in soils which have low shear strength and/or high water content. When the Howitzer recoils, the trail spades shear the soil permitting excessive lateral displacement. This can lead to inaccurate artillery fire or even a cease fire condition during a fire mission. The objective of this study was to determine the feasibility of using lime-soil stabilization as a technique to provide a stable firing platform for the 155 mm Howitzer. Variables evaluated included lime content, moisture content, compactive effort, and curing time; all factors bearing on field construction and operations. (Modified author abstract) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 765 477 5/10

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Dining Facility User-Attitudes and Environmental Design Research at Travis AFB, California. (U)

DESCRIPTIVE NOTE: Preliminary rept., JUN 73 86P Gibbs,W. , Jr.;Cramer,R. W. ;
REPT. NO. CERL-PR-D-5
PROJ: DA-1-J-662713-AJ-45, DA-4-A-062103-A-891
TASK: 4-A-062103-A-89107

UNCLASSIFIED REPORT

DESCRIPTORS: (*FOOD DISPENSING, *AIR FORCE), (*AIR FORCE PERSONNEL, *ATTITUDES(PSYCHOLOGY)), MILITARY FACILITIES, ENVIRONMENT, DESIGN, SOCIOMETRICS, MEASUREMENT, QUESTIONNAIRES, PHOTOGRAPHY, VISUAL INSPECTION (U)
IDENTIFIERS: INTERVIEWS, TIME LAPSE PHOTOGRAPHY (U)

The report presents the research to date on user satisfaction as it relates to the social and physical environments of three dining facilities at Travis Air Force Base, California. Research Stage 1 consisted of the measurement of users' attitudes and behaviors in the three existing dining environments. Data was collected from 296 questionnaires, 125 interviews, time-lapse photography, and trained observers. Research Stage 2, the development of renovation designs, utilized the resulting relationships by translating the information into designer-usable statements or hypotheses. Negative attitudes were linked to specific key stations of the existing facility. These attitude-key station hypotheses were the basis for the development of specific design intentions. Research Stage 3, will be a post-renovation evaluation. (Modified author abstract) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 765 476 10/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Advanced Electrical Power Generation and Distribution Concepts for Military Facilities. (U)

DESCRIPTIVE NOTE: Preliminary rept. JUN 73 133P
REPT. NO. CERL-PR-E-13
PROJ: DA-4-A-062112-A-891
TASK: 4-A-062112-A-89102

UNCLASSIFIED REPORT

DESCRIPTORS: (*ELECTRIC POWER PRODUCTION, MILITARY REQUIREMENTS), PREDICTIONS, POWER PLANTS(ESTABLISHMENTS), POWER EQUIPMENT, GENERATORS, TRANSMISSION LINES, ABUNDANCE (U)

The report describes probable technical advancement of electrical power generation systems in the 1980-1990 time period for application in fixed or semi-fixed military facilities in the power range of 250 kw to 50,000 kw. Subjects covered include commercial power reliability, uninterruptible power system, conventional steam, diesel, gas turbine (open and closed cycle) generators and distribution systems for currently available equipment. Advanced power systems include nuclear reactors, batteries and fuel cells, magnetohydrodynamic systems, fusion systems, solar power systems and direct conversion systems of the thermoelectric and thermionic type. (Modified author abstract) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 765 473 13/3 13/13 16/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Cost Performance Analysis of Portland Cement Concrete-Fibrous Polyester Concrete Material System (Sandwich Panels). (U)

DESCRIPTIVE NOTE: Technical rept., JUL 73 75P Naus,Dan ;Plummer,Fred ; Merritt,Ron ;
REPT. NO. CERL-TR-M-45
PROJ: DA-4-KO-78012-AOK-2
TASK: 4-KO-78012-AOK-202

UNCLASSIFIED REPORT

DESCRIPTORS: (*CONCRETE, COSTS), (*UNDERGROUND STRUCTURES, *SANDWICH PANELS), POLYESTER PLASTICS, CONSTRUCTION MATERIALS, REINFORCING MATERIALS, COMPOSITE MATERIALS, LOADS(FORCES), DEFORMATION, COST EFFECTIVENESS (U)
IDENTIFIERS: POLYESTER FIBERS, PORTLAND CEMENTS, HARDENED INSTALLATIONS, CONCRETE POLYMER COMPOSITES (U)

Structural and shielding costs for hardened facilities represent a substantial portion of the construction effort in both cost and time. Presently, the selection of a material is made a priori in favor of reinforced concrete and steel which places limitations on conceptual designs. Potential does exist for reducing construction time and cost of hardened facilities by using new material systems which have been successfully formulated to meet given functional and performance requirements. The material system investigated using analytical and experimental techniques consisted of a conventional portland cement concrete beam which had a layer of fibrous polyester concrete at the compression surface. The analytical results were used to determine the cost-performance feasibility of the reinforced concrete-fibrous polyester concrete material system. The performance analysis results indicate that the reinforced concrete-fibrous polyester concrete material system is performance effective when using ultimate strength design procedures and thus can be used to produce smaller and lighter weight structural elements that are more deployable than the conventional reinforced concrete(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 765 420 5/10

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

A Methodological Investigation of the Use of the Semantic Differential and Time-Lapse Photography to Measure Attitude and Behavior in a Dining Hall at Chanute AFB. (Evaluation of Occupant Interaction with Facility Environments). (U)

DESCRIPTIVE NOTE: Technical rept., JUN 73 30P Lozar,Charles C. ;
REPT. NO. CERL-TR-D-9
PROJ: DA-4-A-062112-A-891

UNCLASSIFIED REPORT

DESCRIPTORS: (*MILITARY RATIONS, *ATTITUDES(PSYCHOLOGY)), (*BEHAVIOR, AIR FORCE PERSONNEL), TEST METHODS, QUESTIONNAIRES, PHOTOGRAPHY, MEASUREMENT, SEMANTICS, ENVIRONMENT (U)

The study evaluates use of (a) the semantic differential and (b) the time-lapse camera in describing attitudes and behavior in a military dining environment. In the first part of the study a semantic differential questionnaire was used to measure respondents' attitudes toward visual sequences in old and new dining halls at Chanute AFB, Illinois. The second part applied the technique of time-lapse photography to overt behavioral analysis in a dining hall. The objective was to develop the technique for overt behavioral analysis by describing overt behavioral patterns, queuing situations, conflict and accident areas, and table preference patterns in the food acquisition and eating areas. Four-second interval photography was employed at the noon and evening meals. (Modified author abstract) (U)

AD- 764 452 13/13 14/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Initial Quality and Life-Cycle Costs in Military Family Housing. (U)

DESCRIPTIVE NOTE: Technical rept.,
JUN 73 24P Bagby,D. Gordon ;
REPT. NO. CERL-TR-D-8
PROJ: DA-4-A-664717-D-895

UNCLASSIFIED REPORT

DESCRIPTORS: (*MILITARY PERSONNEL, HOUSING(DWELLINGS)), (*HOUSING(DWELLINGS), *COSTS), MAINTENANCE, CONSTRUCTION, ENGINEERING (U)

The study demonstrates one approach to the problem of obtaining the best military family housing for the money. The study uses only one characteristic of the house--exterior wall material--to illustrate the approach. The same technique can be applied to other characteristics as data becomes available. Based on exterior wall material, seven house types were established. Comparison was made of the initial quality and life-cycle costs of houses possessing these characteristics. Estimates were made of maintenance costs for each house type over a 35-year life-span from empirical data collected in Los Alamos, New Mexico. An examination of housing sales-price data in Champaign, Illinois, produced estimates of the initial cost of each house type. Combining the maintenance and initial cost estimates provided measures of their life-cycle costs. Conclusions regarding the initial quality of the seven house types were drawn from the same housing sales-price data in the Champaign area. Finally comparisons between house types were made with respect to the initial quality and life-cycle cost of each type. The results of these comparisons provided a basis for ordering exterior wall materials for use in housing construction. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 764 243 1/5 1/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Aircraft-Pavement Interaction Studies, Phase I: A Finite-Element Model of a Jointed Concrete Pavement on a Non-Linear Viscous Subgrade (Dynamic Interaction of Aircraft-Pavement Systems). (U)

DESCRIPTIVE NOTE: Preliminary rept. Jul 71-Jul 72,
JUN 73 30P Eberhardt,Arthur C. ;
REPT. NO. CERL-PR-S-19
PROJ: DA-4-A-664717-D-895

UNCLASSIFIED REPORT

DESCRIPTORS: (*PAVEMENTS, INTERACTIONS), (*LANDING FIELDS, *AIRCRAFT LANDINGS), CONCRETE, JOINTS, LOADS(FORCES), LOAD DISTRIBUTION, LANDING GEAR, LANDING IMPACT, NUMERICAL ANALYSIS (U)
IDENTIFIERS: FINITE ELEMENT ANALYSIS, DYNAMIC RESPONSE (U)

The report describes a finite-element procedure for analyzing multilayered concrete airfield pavements. An 'equivalent plate' theory is used to account for the increased stiffness provided by a stabilized base or a structural overlay. The stiffness is also adjusted to provide for the effects of various bond levels developed between the pavement layers. The finite-element pavement model was developed to aid the study of airfield-pavement interaction and especially to help analyze surface deformations resulting from multi-wheel aircraft loads. Pavement joints are given finite dimensions and treated as separate entities to permit more accurate determination of stress at an edge in a jointed pavement. Subsoil material can be modeled as a linear elastic, non-linear, or non-linear viscous material. (Modified author abstract) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 763 912 13/2 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Stabilization for Pavements. (U)

DESCRIPTIVE NOTE: Technical rept.,
MAY 73 40P Rice,J. L. ;
REPT. NO. CERL-TR-S-11

UNCLASSIFIED REPORT

DESCRIPTORS: (*PAVEMENTS, STABILIZATION), CONCRETE, ASPHALT, FAILURE(MECHANICS), CRACKS, STRESSES, MODEL TESTS (U)
IDENTIFIERS: CALIFORNIA BEARING RATIO, FLEXIBLE PAVEMENTS, CONCRETE PAVEMENTS (U)

Rigid and flexible pavement model tests were conducted to evaluate methods for assessing the structural benefits imparted to a pavement structure by stabilized elements. Current Corps of Engineers rigid pavement design and evaluation methods are based on stress in the concrete pavement as calculated by the Westergaard algorithm. This method appears applicable for pavements containing lime and bituminous stabilized layers only. Cement stabilized layers should be evaluated by an elastic layered algorithm. The California Bearing Ratio method of design and evaluation of flexible pavement structure appeared to yield satisfactory results for flexible pavements containing stabilized elements. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 763 902 13/11

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Plastic Pipe for Interior and Exterior Cold Water Distribution Systems. (U)

DESCRIPTIVE NOTE: Technical rept.,
MAY 73 31P Mikucki,Walter J. ;
REPT. NO. CERL-TR-E-14
PROJ: CERL-OK-1
TASK: OK-1-02

UNCLASSIFIED REPORT

DESCRIPTORS: (*PIPES, PLASTICS), WATER, ACCEPTABILITY, POLYETHYLENE PLASTICS, POLYVINYL CHLORIDE, ACRYLONITRILE POLYMERS, BUTADIENES, STYRENE PLASTICS (U)
IDENTIFIERS: *PLASTIC PIPES (U)

IAC ACCESSION NUMBER: PL-019647
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
This report evaluates the suitability of unreinforced plastic piping for use in small diameter (less than or equal to 4 in.), interior and exterior potable cold water distribution systems. Special consideration was directed toward the storage, handling, fabrication and installation techniques peculiar to plastic pipe. Also included are guidelines for the design and installation of plastic piping systems. Three major resins were considered: ABS, PVC and PE. PE PIPE IS SUITABLE ONLY FOR LOW PRESSURE APPLICATIONS; PVC and ABS pipe meet the study criteria of being able to withstand a pressure of 150 lb/in.2 (Author, modified-PL) (U)

IAC SUBJECT TERMS: P--(U)Pipe-Polyethylene thermoplastic, Pipe-ABS thermoplastic, Pipe-PVC thermoplastic, Water distribution system-Pipe, Chemical resistance-Polyethylene, Chemical resistance-ABS, Chemical resistance-PVC, Impact strength-Polyethylene, Impact strength-ABS, Impact strength-PVC, Fabrication-Pipe, Thermal expansion-Pipe, Cost-Pipe, ZZ Unlimited;

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 763 212 1/5 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Proceedings, Allerton Park Conference on Systems Approach to Airfield Pavements, 23-26 March 1970 (Rational Pavement Design). (U)

DESCRIPTIVE NOTE: Technical rept., JUN 73 507P Woodhead,R. W. ;Wortman,R. H. ;
REPT. NO. CERL-TR-P-5
PROJ: DA-4-A-062112-A-891

UNCLASSIFIED REPORT

DESCRIPTORS: (*RUNWAYS, PAVEMENTS), (*PAVEMENTS, DESIGN), SYSTEMS ENGINEERING, STRUCTURAL PROPERTIES, FLEXURAL STRENGTH, CONCRETE, REINFORCED CONCRETE, FAILURE(MECHANICS), SOIL MECHANICS, LOADS(FORCES), MATHEMATICAL MODELS, FRACTURE(MECHANICS), SYMPOSIA (U)
IDENTIFIERS: SOIL STABILIZATION, DYNAMIC LOADS (U)

Prior to the 1970's, design methodology for airfield pavements represented empirical and theoretical extrapolation of pavement strength based on structural considerations and slab support, with judgment factors to compensate for lack of technology and differences in user requirements. With the great weight range and variations in ground control characteristics of modern aircraft, this combination of judgment and theory no longer adequately serves the pavement designer in meeting the user needs. New approaches and concepts are needed to bring pavement design up to the level of sophistication of aircraft design. Design problems must be related to needs of a wide range of users over extended periods of time and service conditions. (Modified author abstract) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 762 552 13/2 8/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Lime-Cement Combination Stabilization. (U)

DESCRIPTIVE NOTE: Technical manuscript, MAY 73 40P Suddath,Lovick P. ;
REPT. NO. CERL-TM-M-47

UNCLASSIFIED REPORT

DESCRIPTORS: (*CLAY, STABILIZATION), (*CONSTRUCTION, CLAY), DENSITY, CEMENTS, COMPRESSIVE PROPERTIES, WEAR RESISTANCE, ARMY RESEARCH (U)
IDENTIFIERS: WORKABILITY, SOIL STABILIZATION (U)

Soil stabilization is used extensively in road and airfield construction. In particular, soil-cement appears to be a favorite among the engineers. As the plasticity of a soil increases, the ability to adequately mix the cement with the soil becomes a critical factor. Also the quantity of cement required to stabilize the soil becomes excessive. The objective of the study was to determine the effect of reduced compacted density on the durability of cement stabilized clays, pretreated with lime. The reduction in density did not impair the durability of cement stabilized clay soils, which were pretreated with lime. Most of the test results indicated an improved resistance to freeze-thaw. An evaluation of the unconfined compressive strength results obtained during freeze-thaw shows that lime pretreatment improved the strengths. (Modified author abstract) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO 099062

AD- 762 551 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Air Cargo Support Facilities for Army Airlift Operations. (U)

DESCRIPTIVE NOTE: Technical rept., MAY 73 29P Stahl,Charles S. ;
REPT. NO. CERL-TR-A-16
PROJ: DA-4-A-664717-D-895

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR TRANSPORTATION, *GROUND SUPPORT EQUIPMENT), (*CARGO, AIR TRANSPORTATION), (*ARMY OPERATIONS, LOGISTICS), STORAGE, HANDLING, HOISTS, CONVEYORS, PALLETS, CONTAINERS, FORKLIFT VEHICLES (U)

The report analyzes cargo handling systems currently in use at air freight terminals. The study includes the conventional procedures which use conveyors or forklifts, pallets or containers, as well as an experimental towline-towcart Dortech system. Various operational areas within a terminal, such as the truck or aircraft loading and unloading docks, pallet buildup and breakdown stations, and the consolidation area are described in detail. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 762 194 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

The effects of Stress History on the Resilient Response of Soils. (U)

DESCRIPTIVE NOTE: Technical rept., JUN 73 221P Allen,John J. ;
REPT. NO. CERL-TR-M-49
PROJ: DA-2-0-061102-B-33-G
MONITOR: AROD I-465.1-E

UNCLASSIFIED REPORT

DESCRIPTORS: (*CONSTRUCTION MATERIALS, *MODULUS OF ELASTICITY), (*PAVEMENTS, STRESSES), RESPONSE, ROCK, GRAVEL, PRESSURE, DENSITY, TEST EQUIPMENT, LOADS(FORCES), REGRESSION ANALYSIS (U)
IDENTIFIERS: POISSON RATIO, *RESILIENCE, FINITE ELEMENT ANALYSIS, *FLEXIBLE PAVEMENTS, *GRANULAR MATERIALS (U)

The project investigated the effects of non-constant lateral pressures on the resilient response of granular materials. Three materials (crushed stone, gravel, and a blend of crushed stone and gravel) at three levels of density were subjected to repeated dynamic lateral and axial stresses in a specially designed and fabricated triaxial chamber. The same specimens were also tested at constant confining pressure and repeated dynamic axial stresses. The influence on the resilient response of the materials of such factors as stress history, stress pulse duration, stress sequence, density level, and material type was investigated. Predictive equations for the resilient modulus and resilient Poisson's ratio were developed by means of nonlinear regression analyses of the laboratory data. A sensitivity analysis of typical flexible pavement sections was carried out using a non-linear finite sensitivity analysis; it was possible to ascertain the significance of the laboratory results as regards pavements response to dynamic loading. (Author) (U)

AD- 762 114 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Polymer Concrete-Reinforced Concrete Composite Beams. (U)

DESCRIPTIVE NOTE: Technical manuscript, MAY 73 37P Lott,James ;Naus,Dan ; Howdyshell,Paul ;
REPT. NO. CERL-TM-M-48

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the American Concrete Inst. Annual Meeting Held in Atlantic City, N. J., 5-9 Mar 73.
DESCRIPTORS: (*BEAMS(STRUCTURAL), REINFORCED CONCRETE), REINFORCING MATERIALS, POLYESTER PLASTICS, SANDWICH CONSTRUCTION, LOADS(FORCES), CREEP, STRUCTURAL PROPERTIES, DEFLECTION, COST EFFECTIVENESS (U)
IDENTIFIERS: *COMPOSITE BEAMS, CONCRETE POLYMER COMPOSITES (U)

IAC ACCESSION NUMBER: PL-019241
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
Composite beams consisting of reinforced concrete and a layer or cap of polyester concrete in the region of high compressive stress are tested and evaluated. The creep characteristics of polyester concrete were evaluated using 1000 hour creep tests, and the effect of sustained load on the ultimate compressive strength was also determined. Composite beams which were 6 by 6.5 by 64 in. (15.2 by 16.5 by 162.6 cm) were fabricated by capping precast reinforced concrete beams with a layer of fibrous polyester concrete of various given thicknesses. The composite beams were subjected to third-point loads on a simply supported length of 57 inches (145 cm). Load-deflection behavior and ultimate strength were determined for various combinations of reinforcement and depth of fibrous polyester concrete cap. Experimental and analytical results indicate that the fibrous polyester concrete composite beams are performance and material cost effective relative to reinforced concrete beams with the same percentage of tensile reinforcement. (Author-PL) (U)

IAC SUBJECT TERMS: P--(U)Compressive strength-Polyester concrete, Creep-Polyester concrete, Beam-

AD- 762 114

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 762 113 13/3 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Polymerized Lightweight Structural Elements. (U)

DESCRIPTIVE NOTE: Technical manuscript, MAY 73 11P Lott,James L. ;Birkimer,D. ;
REPT. NO. CERL-TM-M-46

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Conference on Radiation and Isotope Techniques in Civil Engineering, Brussells (Belgium) 28-30 Oct 70.
DESCRIPTORS: (*REINFORCED CONCRETE, PLASTICS), (*STRUCTURAL MEMBERS, REINFORCED CONCRETE), REINFORCING MATERIALS, POLYMERS, IMPREGNATION, FILLING, COMPRESSIVE PROPERTIES, TENSILE PROPERTIES, MODULUS OF ELASTICITY, LOADS(FORCES), THERMAL INSULATION (U)

IAC ACCESSION NUMBER: PL-019648
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
Impregnation of concrete materials with polymers was extended to include the impregnation of lightweight foam concretes. All specimens that were polymerized were impregnated with a promoted 60 percent polyester-40 percent styrene resin, which had a viscosity of approximately 700 cps at room temperature. Filling approximately 90 percent of the extensive void system of the foam concrete with a polymer increased the compressive strength from 202 psi to 3250 psi, the splitting tensile strength from 30 psi to 1008 psi, and the modulus of elasticity from 100,000 psi to 425,000 psi. Beam structural elements were partially impregnated to produce a 'sandwich panel' element which can utilize the foam concrete core to act as an insulator and as a spacer to separate the polymer impregnated surface regions; and can utilize the polymer impregnated surface regions to resist loadings. The sandwich element produced thus utilizes materials efficiently to satisfy the multiple functional requirements of load and of environment. (Author, modified-PL) (U)

IAC SUBJECT TERMS: P--(U)Impregnation, Polymer Concrete, Concrete, Polyester, Styrene, Foam Concrete, Sandwich panels, Compressive strength,

AD- 762 113

AD- 761 077 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Technical Information Pamphlet on Use of Fibrous Concrete (Applicability of Fibrous Concrete for Military Facilities). (U)

DESCRIPTIVE NOTE: Preliminary rept., MAY 73 16P Williamson,G. R. ;Gray,B. H. ;
REPT. NO. CERL-PR-M-44
PROJ: DA-A-4664717-D-895
TASK: A-4664717-D-89523

UNCLASSIFIED REPORT

DESCRIPTORS: (*REINFORCED CONCRETE, HANDBOOKS), STEEL, MANUFACTURING, WEAR RESISTANCE, TRAFFICABILITY, COSTS, AGING(MATERIALS), FIBERS (U)
IDENTIFIERS: STEEL FIBERS (U)

The report discusses various guidelines for the use of fibrous (steel fibers) concrete by field personnel. Included are definitions of the nature of fibrous concrete, reasons for using it, properties and characteristics of the material, types and sources of steel fibers, and concrete mix design procedures. The report specifically discusses methods for handling and batching steel fibers, concrete quality control, and concrete placing, finishing, and curing. Explanations of promising applications, costs, and sources of assistance are provided. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 760 490 13/2 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Evaluation of a Field-Type Incinerator for Human Waste (Theater of Operations Sewage Treatment Systems). (U)

DESCRIPTIVE NOTE: Technical rept., MAR 73 66P Matherly,J. ;
REPT. NO. CERL-TR-E-10
PROJ: DA-4-A-666717-D-895

UNCLASSIFIED REPORT

DESCRIPTORS: (*TOILET FACILITIES, *SANITARY ENGINEERING), (*INCINERATORS, SANITARY ENGINEERING), ODORS, SMOKE, PARTICLES, BACTERIA, URINE, WASTES(SANITARY ENGINEERING), PERFORMANCE(ENGINEERING), MILITARY REQUIREMENTS (U)
IDENTIFIERS: SEWAGE TREATMENT, FECES (U)

The report presents results and an evaluation of efforts to modify the burn-out latrine to improve its operational characteristics while maintaining simplicity of fabrications. Modifications to the burn-out latrine, developed by Illinois Institute of Technology Research Institute, consist primarily of a method of metering fuel into a waste container, and the addition of a burner stack assembly designed to reduce smoke by improving air-fuel mixture, detention time, and other pertinent considerations. These modifications were fabricated, operated, and tested under field conditions. (Modified author abstract) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 760 489 15/5 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Life Expectancy of Facilities. (U)

DESCRIPTIVE NOTE: Preliminary rept.,
APR 73 30P Kirby,Jeffrey G. ;
REPT. NO. CERL-PR-A-14
PROJ: CERL-OK-1
TASK: OK-1-02

UNCLASSIFIED REPORT

DESCRIPTORS: (*BUILDINGS, LIFE EXPECTANCY), (*MILITARY FACILITIES, BUILDINGS), HOUSING DWELLINGS), MAINTENANCE, MAINTAINABILITY, REGRESSION ANALYSIS, COSTS, PLANNING, MATHEMATICAL MODELS, COMPUTER PROGRAMS (U)

The preliminary report presents a life expectancy of facilities model and explains how to employ the model. Maintenance information on various building materials will be collected from a sample of 286 facilities at six different CONUS locations. The report also outlines the initial features of a data bank to store the maintenance cost information. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 760 185 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

DECOR Catalog for Dining Facilities. (U)

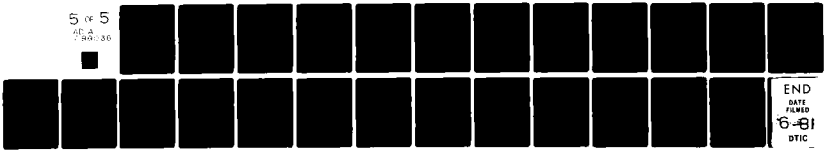
DESCRIPTIVE NOTE: Technical rept.,
NOV 72 107P Hintz,Norman C. ;Cramer,R. W. ;
REPT. NO. CERL-TR-D-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*MILITARY FACILITIES, *FOOD DISPENSING), CATALOGS, DESIGN, COSTS (U)
IDENTIFIERS: FURNITURE (U)

The catalog presents interior design concepts for dining facilities to assist installation and unit commanders in implementing the Army dining facilities improvement program. These designs are intended to improve the dining environment of the soldier by alleviating those things which he considers undesirable, such as drabness, noise, the appearance of crowdedness and lack of privacy. Although the designs are limited to the dining area and are tailored to existing building types, the concepts are adaptable to the design of new construction. It is intended that this publication serve as a design and planning guide from which a variety of coordinated decor packages can be developed. Including are dining facility layouts, an illustrated furniture and accessory index, correlation and cost data, color schemes, renderings of typical completed facilities, and comprehensive instructions to catalog users. Catalog revisions will be periodically issued as new materials and techniques are introduced. (Author) (U)

AD-A099 036 CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL F/G 13/2
USACERL REPORT BIBLIOGRAPHY.(U)
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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 759 486 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Computer Simulation and Validation of the Travis Freight Terminal Facility. (U)

DESCRIPTIVE NOTE: Technical rept.,
MAR 73 24P McNamee,Lawrence P. ;
REPT. NO. CERL-TR-A-13
PROJ: DA-4-A-664717-D-895

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR FORCE EQUIPMENT, HANDLING), (*CARGO, HANDLING), FORKLIFT VEHICLES, CONVEYORS, MATHEMATICAL MODELS, QUEUEING THEORY, GRAPHICS, MILITARY FACILITIES (U)
IDENTIFIERS: NETWORK FLOWS, *FREIGHT TERMINALS, TRAVIS AIR FORCE BASE, COMPUTERIZED SIMULATION (U)

A GERTS IIIQ computer simulation model of the Travis Air Force Base Air Freight facility is developed to describe the functional characteristics of cargo flow into, within, and out of the terminal. The simulation parameters incorporated in the model are derived from data obtained through on-site observations, communication with Travis personnel, and study of long-term operational records. Good agreement between simulation results and cargo terminal data is achieved. An example of how the simulation model can be used to analyze and possibly improve cargo operations is also included. It is shown that very little increase in throughput is obtained by moving general cargo with forklifts instead of with a conveyor system. Employing forklifts exclusively, however, requires more men to process the same amount of cargo. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 759 132 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Materials and Procedures for the Repair of Spalls in Concrete. (U)

DESCRIPTIVE NOTE: Technical rept.,
MAR 73 22P Kemphues,Robert F. ;
REPT. NO. CERL-TR-M-40
PROJ: DA-4-DM78012-AOK-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*CONCRETE, MAINTENANCE), DAMAGE, CEMENTS, EPOXY RESINS, GROUT (U)
IDENTIFIERS: EXPANDING CEMENTS (U)

IAC ACCESSION NUMBER: PL-019244
IAC DOCUMENT TYPE: PLASTC -HARD COPY--
Old and new materials used for repairing damaged or deteriorated concrete are studied and evaluated. Results of surveys are analyzed and an evaluation matrix is developed to show performance ratings for repair materials used on certain types of concrete elements. Results indicate that large damaged areas can be successfully and economically repaired using a good quality, low slump, portland cement concrete bonded to the old concrete with an epoxy resin grout. Small spalls and specialized areas can be best repaired with an epoxy resin mortar. Surface preparation must be completed and manufacturer's directions for mixing and curing followed. Expansive cements and new modified latex materials show promise, but field data is insufficient to draw conclusions. (Author-PL) (U)

IAC SUBJECT TERMS: P--(U)Repair-Concrete, Spalling-Concrete, Grouting-Epoxy, Grouting-Polyester, Grouting-Urethane, ZZ Unlimited;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 758 447 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Pavement Distress Identification and Repair. (U)

DESCRIPTIVE NOTE: Technical rept.,
MAR 73 140P Barenberg,Ernest J. ;
Bartholomew,Charles L. ;Herrin,Moreland ;
REPT. NO. CERL-TR-P-6
CONTRACT: DACA88-71-C-0013

UNCLASSIFIED REPORT

DESCRIPTORS: (*PAVEMENTS, MAINTENANCE), DEGRADATION, IDENTIFICATION, STATE-OF-THE-ART REVIEWS (U)

The report is a comprehensive state-of-the-art report on pavement distress, its identification and repair. It presents information to enable technically trained, but relatively inexperienced, personnel to identify pavement distress types in the field and plan repair or maintenance work accordingly. (Author Modified Abstract) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 758 152 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

An Economic Feasibility Study of Fayetteville, North Carolina, Treating Fort Bragg's Wastewater. (U)

DESCRIPTIVE NOTE: Technical rept.,
MAR 73 28P Nelson,D. ;Matherly,J. E. ;
REPT. NO. CERL-TR-E-9

UNCLASSIFIED REPORT

DESCRIPTORS: (*SANITARY ENGINEERING, *MILITARY FACILITIES), NORTH CAROLINA, COSTS, STANDARDS, EFFECTIVENESS, CLASSIFICATION (U)
IDENTIFIERS: OPERATING COSTS, ACTIVATED SLUDGE PROCESS, PERFORMANCE EVALUATION, SECONDARY SEWAGE TREATMENT, SEWAGE TREATMENT PLANTS, COST COMPARISON, COST ESTIMATES (U)

The study evaluates the economic feasibility of Ft. Bragg, NC. entering into a cooperative wastewater treatment system with the Public Works Commission of the City of Fayetteville, N.C. Present and anticipated standards applicable to Ft. Bragg wastewater treatment plant effluent were defined. The condition and efficiency of both the plant and the collection system were assessed from existing information. Proposed schemes of Ft. Bragg's joining with Fayetteville for purposes of wastewater treatment were identified and defined. Cost estimates for the feasible alternatives were generated for comparison. (U)

AD- 758 151 5/9 5/10

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Cost Effectiveness of Three Different Interior Open-Type Offices. (U)

DESCRIPTIVE NOTE: Technical rept., MAR 73 26P Dinnat,R. M. ;Gibbs,W. , Jr;
REPT. NO. CERL-TR-D-2

UNCLASSIFIED REPORT

DESCRIPTORS: (*OFFICE BUILDINGS, *EMPLOYEE RELATIONS), (*ENVIRONMENT, ATTITUDES(PSYCHOLOGY)), COST EFFECTIVENESS, REVIEWS, PERFORMANCE(ENGINEERING), QUESTIONNAIRES, COSTS, STATISTICAL ANALYSIS (U)
IDENTIFIERS: RESOURCES, EVALUATION (U)

The report presents an evaluation of three different open-type interior office environments at the U. S. Army Construction Engineering Research Laboratory, Champaign, Ill. The Action office, the GSA Partition office, and the Open Plan office, all containing the same kinds of research activities, were evaluated with respect to cost-effectiveness. Effectiveness was assessed by comparing measures of performance and physical resources among the three offices. Performance was measured indirectly through the occupants' attitudes about their offices. Cost-effectiveness was assessed by comparing the offices' effectiveness ranks with their cost per occupant. (Author Modified Abstract) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 757 630 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Fracture Mechanics Applicability to Portland Cement Concretes. (U)

DESCRIPTIVE NOTE: Technical manuscript, MAR 73 26P Naus,D. J. ;
REPT. NO. CERL-TM-M-42

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Army Science Conference held at U.S. Military Academy, West Point, N. Y., 21 Jun 1972.
DESCRIPTORS: (*CONCRETE, FRACTURE(MECHANICS)), CEMENTS, CERAMIC MATERIALS, DEFECTS(MATERIALS), CRACK PROPAGATION, FAILURE(MECHANICS), DEFORMATION, MODEL TESTS, STRAIN(MECHANICS), TEST METHODS, EXPERIMENTAL DATA (U)
IDENTIFIERS: PORTLAND CEMENTS (U)

In the investigation, the applicability of linear-elastic fracture mechanics to portland cement pastes, mortars, and concretes was determined by the fabrication, testing, and analysis of plate specimens containing a precast flaw. A model was developed which provides a qualitative measure of the size of the microcracking zone which occurs in concrete. Experimental results are correlated with the model. (Author Modified Abstract) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 757 629 1/5 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

A Stochastic Network to Model Air Cargo Terminals. (U)

DESCRIPTIVE NOTE: Technical manscript, FEB 73 20P Porte,Howard A. ;Happ,W. W. ;Lee,C. T. ;McNamee,L. P. ;
REPT. NO. CERL-TM-A-7

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Army Science Conference, West Point, N. Y., 20-23 Jun 72.
DESCRIPTORS: (*TERMINAL FLIGHT FACILITIES, CONTROL SYSTEMS), (*AIR TRANSPORTATION, *CARGO), QUEUEING THEORY, DECISION MAKING, TRANSPORT AIRCRAFT, HANDLING, LOGISTICS, WAREHOUSES, MILITARY FACILITIES (U)
IDENTIFIERS: COMPUTER AIDED ANALYSIS, COMPUTERIZED SIMULATION (U)

Bottlenecks of the material handling operation of an air cargo terminal are investigated by the stochastic network method of GERT IIIQ. The relationship of the GERTS IIIQ network model to construction specification is discussed. Operations bottlenecks are identified and corrected through modification of facility constraints. (Author Modified Abstract) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 757 628 1/5 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Activity Networks to Model Transportation Systems Subject to Facility Constraints. (U)

DESCRIPTIVE NOTE: Technical manuscript, FEB 73 14P Porte,Howard A. ;Happ,W. W. ;
REPT. NO. CERL-TM-A-6
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89504

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Annual Allerton Conference on Circuit and System Theory (9th), Monticello, Ill., 6-8 Oct 71.
DESCRIPTORS: (*TERMINAL FLIGHT FACILITIES, CONTROL SYSTEMS), (*AIR TRANSPORTATION, *CARGO), QUEUEING THEORY, DECISION MAKING, TRANSPORT AIRCRAFT, HANDLING, LOGISTICS, WAREHOUSES, MILITARY FACILITIES (U)
IDENTIFIERS: COMPUTER AIDED ANALYSIS, COMPUTERIZED SIMULATION (U)

Cargo flow through an air cargo terminal is modeled as an activity network by utilizing: deterministic and probabilistic decision-making elements as nodes, activities or branches which relate the nodes and whose characteristics determine the magnitude and delay of commodity flow, and a set of statistical monitors to count events and to perform statistical evaluations at strategic points of the network. (Author) (U)

AD- 757 627 5/2 5/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Initial Report on Systemizing Information to Identify and Relate Behavioral and Physical Design Parameters. (U)

DESCRIPTIVE NOTE: Preliminary rept., MAR 73 8P Dressel,David L. ;Brauer, Roger L. ;
REPT. NO. CERL-PR-D-4
PROJ: DA-4-A-062103-A-891

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on identification and classification of Human heeds in the military facility.
DESCRIPTORS: (*INFORMATION RETRIEVAL, HUMAN FACTORS ENGINEERING), (*HUMAN FACTORS ENGINEERING, MILITARY FACILITIES), BUILDINGS, DESIGN, BEHAVIOR, COMPUTERS (U)
IDENTIFIERS: *INFORMATION SYSTEMS (U)

The preliminary report summarizes progress to date on development of an information system to service the identification and classification of human needs in the military facility. The system will be used to develop information for design decisions. At present, behavioral and design theories have been reviewed, and have played an important part in formulating the pilot information system. The system is responsive to the requirements of both the researcher and the designer, with data categorized and translated through the 'relationship sentence.' Amenable to computer input, storage and data retrieval, the relationship sentence is a statement of relation between constraints, user activities, and physical characteristics. The structure of the relationship sentence is thought to be complete enoughfor easy gathering of data from existing studies, yet sufficiently flexible to allow categorization of behavioral data in varying degrees of explicitness. The output from the system is intended to be compatible with developing computer-aided design programs if not an integral part of such program. Discussed in this report is the structure and function of the information system, its relation to information science and computer-aided architecture, and work required for its further (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 757 208 1/5 13/12

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Inspection of Pavement Grooving. (U)

DESCRIPTIVE NOTE: Technical rept. Dec 71-Jan 72, FEB 73 50P Gunkel,Robert C. ;
PROJ: AF-6111A
TASK: 5.3
MONITOR: AFWL TR-72-149

UNCLASSIFIED REPORT

DESCRIPTORS: (*SKIDDING, CONTROL), (*PAVEMENTS, SKIDDING), (*LANDING FIELDS, PAVEMENTS), SURFACE ROUGHNESS, AIRPORTS, MAINTENANCE, DETERIORATION, VISUAL INSPECTION (U)
IDENTIFIERS: *PAVEMENT GROOVING (U)

A reinspection of grooved pavements at four commercial and one military airfield was conduced by the Construction Engineering Research Laboratory (CERL) in December 1971 and January 1972. The inspection included grooving in both portland cement concrete (PCC) asphaltic concrete (AC) pavements which had been grooved approximately 4 1/2 years prior to this inspection. Grooves in all PCC pavements were considered to be in excellent condition with no evidence of deterioration on the pavement surface. At one airfield, Kansas City Municipal, numerous surface voids were noted which were due mainly to weathering out of poor quality materials. Many of these surface defects apparently were present at the time of grooving; however, it was apparent that some of the surface defects had developed recently. (Author Modified Abstract) (U)

AD- 757 169 15/5 15/3.1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Optimization of Resource Allocation in Maintenance Management Logistics Systems. (U)

DESCRIPTIVE NOTE: Technical manuscript, FEB 73 23P Trent,R. L. ;Martin,E. ; Wine,J. C. ;
REPT. NO. CERL-TM-A-9

UNCLASSIFIED REPORT

DESCRIPTORS: (*LOGISTICS, OPTIMIZATION), (*ANTIMISSILE DEFENSE SYSTEMS, LOGISTICS), MANAGEMENT PLANNING AND CONTROL, MANPOWER, SCHEDULING, SYSTEMS ENGINEERING, MAINTENANCE (U)
IDENTIFIERS: *LOGISTICS MANAGEMENT, *MAINTENANCE MANAGEMENT, RESOURCE ALLOCATION, SAFEGUARD ANTIBALLISTIC MISSILE SYSTEMS (U)

System availability and cost constraints imposed on tactical weapon systems necessitate corresponding care in the design and implementation of their associated maintenance management systems. It is necessary to forecast maintenance manpower staffing levels required to ensure consistent system performance within operational goals, and to perform comparative analyses of total program costs, including supportive resources. Examples of the constraints and types of rules imposed on a resource allocation system designed for application to the SAFEGUARD Ballistic Missile Defense System is described. Based upon these rules, a computerized management system is designed which meets maintenance planning and operational requirements. (Author Modified Abstract) (U)

AD- 756 384 13/3 13/2 1/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Fibrous Concrete - Construction Material for the Seventies (May 1-3, 1972). (U)

DESCRIPTIVE NOTE: Conference proceedings, DEC 72 237P Gray,S. H. ;Williamson,G. R. ;Batson,G. B. ;
REPT. NO. CERL-TR-M-28

UNCLASSIFIED REPORT

DESCRIPTORS: (*REINFORCED CONCRETE, SYMPOSIA), (*PAVEMENTS, REINFORCED CONCRETE), STATE-OF-THE-ART REVIEWS, MIXTURES, STEEL, GLASS TEXTILES, FLEXURAL STRENGTH, PERFORMANCE(ENGINEERING), DESIGN, ROADS, CONSTRUCTION, RUNWAYS (U)
IDENTIFIERS: CONCRETE CONSTRUCTION (U)

IAC ACCESSION NUMBER: PL-020758
IAC DOCUMENT TYPE: PLASTC -HARD COPY--

This Conference Proceedings contains many of the papers presented at the May 1972 Fibrous Concrete Conference sponsored by the U.S. Army Corps of Engineers. The conference emphasized fibrous concrete as a construction material for the 1970's. Two papers are of interest to PLASTEC. (Author, modified-PL) (U)

IAC SUBJECT TERMS: P--(U)Fibers-Concrete, ZZ Conference 72, ZZ Unlimited.;

AD- 755 526 1/5 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

An Analysis of Pickett's Solution to Westergaard's Equation for Rigid Pavements. (U)

DESCRIPTIVE NOTE: Technical rept., JAN 73 12P Eberhardt,A. C. ;
REPT. NO. CERL-TR-S-14
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89504

UNCLASSIFIED REPORT

DESCRIPTORS: (*RUNWAYS, PAVEMENTS), (*PAVEMENTS, LOADS(FORCES)), CONCRETE, STRESSES, FLEXURAL STRENGTH, THICKNESS, MATHEMATICAL ANALYSIS (U)
IDENTIFIERS: COMPUTER AIDED ANALYSIS (U)

Influence coefficients used by the Corps of Engineers for the development of design curves for rigid airfield pavements have been re-computed and extended to permit an expanded and more accurate analysis of large military aircraft such as the C-5A. Calculations were performed using a digital computer in conjunction with a more refined numerical integration technique. Results are compared with the original influence coefficients, and the impact of the more accurate extended table of influence coefficients is evaluated by employing the new and old influence coefficients to calculate edge stress resulting from several representative aircraft gear loads. It is also demonstrated that further accuracy can be obtained by using a non-linear interpolation scheme derived from a bivarient quadratic regression analysis in place of a linear interpolation procedure to extract intermediate values from the table of influence coefficients. Finally, other areas of research which may possibly lead to improvements in the Corps design procedure for rigid airfield pavements are suggested. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 755 525 12/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Laplace Transform Inversion by Fourier Series Expansion. (U)

DESCRIPTIVE NOTE: Technical manuscript, FEB 73 24P Marvin,Eugene L. ;
REPT. NO. CERL-TM-P-4

UNCLASSIFIED REPORT

DESCRIPTORS: (*INTEGRAL TRANSFORMS, FOURIER ANALYSIS), SERIES(MATHEMATICS), BOUNDARY VALUE PROBLEMS, APPROXIMATION(MATHEMATICS), NUMERICAL INTEGRATION, GRAPHICS, ALGORITHMS, COMPUTER PROGRAMMING, BOUNDARY VALUE PROBLEMS (U)
IDENTIFIERS: *LAPLACE TRANSFORMATION, NUMERICAL INTEGRATION, MATHEMATICAL ANALYSIS (U)

A computerized algorithm that may be used for performing the Laplace and double Laplace-Handel inverse integral transformations is presented. The theoretical basis of the algorithm is given, and the results of numerical tests performed on the transformed images of known solution functions are shown. The general application of the algorithm to real problems is discussed, and experience gained in applying it is presented. The application of the algorithm in the solution of initial-boundary value problems is treated specifically. (Author) (U)

AD- 755 524 13/5 13/8

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

The Introduction of Discontinuities in High Strength Steel Weldments. (U)

DESCRIPTIVE NOTE: Preliminary rept., DEC 72 12P Carlson,K. W. ;Lawrence,F. V. , Jr.;Radziminski,J. B. ;
REPT. NO. CERL-PR-M-27
PROJ: DA-4-DM-78012-AOK-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Addenda to rept. no. CERL-TR-M-24 dated Sep 72, AD-749 459.
DESCRIPTORS: (*WELDS, *RADIOGRAPHY), NONDESTRUCTIVE TESTING, DEFECTS(MATERIALS), STEREOPHOTOGRAPHY, STEEL, POROSITY, SLAGS, HYDROGEN EMBRITTLEMENT, IMPURITIES (U)
IDENTIFIERS: WELD DEFECTS, WELDMENTS, *STEREORADIOGRAPHY (U)

IAC ACCESSION NUMBER: MCIC-086250 NT-007390
IAC DOCUMENT TYPE: MCIC -HARD COPY-- NTIAC - MICROFICHE--

The objective of this study was to develop methods for consistently creating porosity, slag inclusions, lack of fusion, and hydrogen cross-cracking discontinuities in welds to evaluate their effects on the properties of welds. To accomplish this objective, weld deposition procedures were altered systematically to develop welding techniques capable of producing a specific discontinuity type and size. The techniques used included both electrical and mechanical perturbations of the welding parameters. It proved possible to implant weld discontinuities with good reproducibility. It was found, however, that mechanical perturbations were more reliable for accurate reproduction of discontinuities. (Author) (U)

IAC SUBJECT TERMS: N--(U)*WELDS, *FABRICATED DEFECTS, STEEL, POROSITY, SLAGS, INCLUSIONS, WELD INTEGRITY, RADIOGRAPHY;

AD- 755 523 5/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

An Introduction to Technological Forecasting. (U)

DESCRIPTIVE NOTE: Technical rept., FEB 73 9P Pananos,William J. ;
REPT. NO. CERL-TR-A-12
PROJ: DA-4-A-062112-A-891

UNCLASSIFIED REPORT

DESCRIPTORS: (*SCIENTIFIC RESEARCH, *MANAGEMENT PLANNING AND CONTROL), PREDICTIONS, ANALYSIS OF VARIANCE, CORRELATION TECHNIQUES, TIME SERIES ANALYSIS, INSTRUCTION MANUALS (U)
IDENTIFIERS: *FORECASTING, *TECHNOLOGY (U)

The report describes to persons engaged in planning (in the Corps of Engineers and elsewhere), what technological forecasting is and how it is used. Technological forecasting is an activity which accompanies long-range planning. It is distinguished from planning by its end result, which is descriptive -- whereas a plan is prescriptive. A forecast may either precede the planning process, in which case it is defined as exploratory; or follow it, in which case it is described as evaluative. An exploratory forecast and an evaluative forecast prepared for the same plan will differ in both scope and detail. (Author) (U)

AD- 753 927 1/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

The User Requirements for an Airfield Pavement System. (U)

DESCRIPTIVE NOTE: Technical rept., JAN 73 25P Pfeister,J. L. ;
REPT. NO. CERL-TR-P-7
PROJ: DA-4-A-062112-A-891

UNCLASSIFIED REPORT

DESCRIPTORS: (*PAVEMENTS, ACCEPTABILITY), (*RUNWAYS, PAVEMENTS), DESIGN, SPECIFICATIONS, MILITARY REQUIREMENTS, MATHEMATICAL MODELS, MAINTENANCE PERSONNEL, QUALITY CONTROL, REVIEWS, AVIATION PERSONNEL (U)

The evolution of a systems approach to the design and evaluation of airfield pavements necessitated the establishment of a set (or sets) of quantified user requirements, which could be used to define the critical parameters of the pavement-aircraft-airfield pavements systems, but also generated a hierarchy of users, and delineated the respective needs of the primary users. (Author) (U)

AD- 753 925 1/5 9/2 15/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Development of a Standard Data Base and Computer Simulation Model for an Air Cargo Terminal. (U)

DESCRIPTIVE NOTE: Technical rept., JAN 73 50P McNamee,Lawrence P. ;Lee, Chao ;
REPT. NO. CERL-TR-A-8
PROJ: DA-4-A-664717-D-895
TASK: 4-A-664717-D-89504
MONITOR: CPG 73-0029

UNCLASSIFIED REPORT

DESCRIPTORS: (*TERMINAL FLIGHT FACILITIES, *CARGO), (*COMPUTER PROGRAMMING, HANDLING), QUEUEING THEORY, STOCHASTIC PROCESSES, MILITARY TRANSPORTATION, MATHEMATICAL MODELS, DATA PROCESSING (U)
IDENTIFIERS: NETWORK FLOWS, COMPUTERIZED SIMULATION (U)

The traditional methods of renovating air cargo terminals are to replace material handling equipment with more efficient machinery, and to make additions to the existing terminal complex. However, with the introduction and forecasted increase in the Jumbo Cargo Jet concept, these methods become unfeasible. Recent studies in the aerospace industry predict that 10 to 20 times the cargo tonnage of today will be in circulation by 1985, reflecting the urgent need for new designs based on a flexible, long-range, heavy volume systems approach. In order that design is addressed with the proper criteria considered, an exhaustive study of cargo handling facilities is needed. The report provides a GERTS 3Q simulation model for a Dortech air cargo facility and presents a recommendation for the development of a compatible Army-Air Force Air Cargo Data Base System. (Author) (U)

AD- 752 454 13/3 11/4

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Creep Characteristics of Polyester Concretes. (U)

DESCRIPTIVE NOTE: Technical rept., NOV 72 20P Howdyshell,P. A. ;
REPT. NO. CERL-TR-M-23
PROJ: DA-4-DM-8012-AOK-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*CONCRETE, *POLYESTER PLASTICS), (*COMPOSITE MATERIALS, POLYESTER PLASTICS), REINFORCED PLASTICS, QUARTZ, CEMENTS, CREEP, CONSTRUCTION MATERIALS (U)
IDENTIFIERS: PARTICULATE COMPOSITES, *FILLED THERMOSET MOLDING MATERIALS, FILLED COMPOSITES (U)

IAC ACCESSION NUMBER: PL-018177
IAC DOCUMENT TYPE: PLASTC -HARD COPY--

The purpose of this project was to determine the nature, magnitude, and factors influencing the creep of particle-filled polyesters, and to what extent creep affects the usefulness of the material in concrete- type applications. Tests were conducted on an aggregate-and a cement particle-filled polyester to determine compressive creep characteristics. The evaluation consisted of using laboratory test techniques that directly relate to the evaluation of creep in portland cement concrete. Results indicated that particle-filled polyesters are visco-elastic in nature and creep when subjected to sustained loads. While the creep strains of the filled polyesters were similar in nature and magnitude to what could be expected from equivalently-loaded portland cement concrete, the creep characteristics of the polyesters appeared to be very sensitive to small temperature variations. Also, the polyesters exhibited creep failure tendencies at lower stress-to- strength ratios than would be expected from portland cement concretes. (Author-PL) (U)

IAC SUBJECT TERMS: P--(U)Building-Concrete/polyester, Creep-Concrete/polyester, Viscoelasticity-Concrete/polyester, Failure analysis-Concrete/polyester, Fracture-Concrete/polyester, Stress

AD- 751 177 8/7 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Tentative Field Engineering Index for Rocks. (U)

DESCRIPTIVE NOTE: Technical manuscript., NOV 72 29P Aufmuth,Raymond E. ;
REPT. NO. CERL-TM-M-29
PROJ: DA-4-DM-78012-AOK-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*ROCK, *INDEXES), UNDERGROUND STRUCTURES, STRUCTURES, FAILURE(MECHANICS), CLASSIFICATION, ENGINEERING GEOLOGY (U)

Knowledge of rock properties is essential to the design of structures utilizing the rock mass as part of the structural system and to the construction process in terms of excavation methods and prevention of rock failures. The determination of rock properties relevant to design and the quick dissemination of this knowledge, in a meaningful form to the user, are important in terms of design and construction management. A Field Engineering Index for Rock has been developed in order to provide a language by means of which the engineering characteristics of a particular rock may be presented in a brief, concise and relevant manner. The Engineering Index combines the lithology and the mechanical properties of the intact rock, to make the information more meaningful and useful to engineers and contractors Data for the Engineering Index is obtained and accurately determined from field tests performed at the borehole site. Examples of the proposed Engineering Index System are illustrated by use of previously published data and from field information. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 751 172 14/2 20/11

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Feasibility of Applying Fringe Multiplication Techniques to Stress Analysis in Three Dimensions. (U)

DESCRIPTIVE NOTE: Final technical rept.,
JUL 72 22P Hubbard,John H. ;
REPT. NO. CERL-TR-S-9
PROJ: CERL-XY-1
TASK: XY-1-06

UNCLASSIFIED REPORT

DESCRIPTORS: (*STRESSES, PHOTOELASTICITY), NONDESTRUCTIVE TESTING, EXPERIMENTAL DESIGN, TEST EQUIPMENT, FEASIBILITY STUDIES (U)
IDENTIFIERS: STRESSES (U)

The report presents an evaluation of the fringe multiplication technique as an adjunct to the frozen stress approach of three dimensional experimental stress analysis. A model of the intersection of two horseshoe shaped tunnels was constructed and loaded at an elevated temperature. Slices were cut from the model for study. Isochromatic fringe multiplication up to and including 7X was obtained on selected slices. The fringe sharpening technique was demonstrated. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 750 386 15/5 15/3.1 5/1

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Optimization of Resource Allocation in Maintenance Management Logistics Systems, (U)

72 19P Trent,Robert L. ;Martin, Elmer C. ;Wine,Jack C. , Sr;

UNCLASSIFIED REPORT

DESCRIPTORS: (*LOGISTICS, *MANAGEMENT PLANNING AND CONTROL), (*ANTIMISSILE DEFENSE SYSTEMS, LOGISTICS), MANPOWER, SCHEDULING, MAINTENANCE, SPARE PARTS, INVENTORY CONTROL, MANAGEMENT PLANNING AND CONTROL, DATA PROCESSING (U)
IDENTIFIERS: FORECASTING (U)

The report describes the multiphasic development of an integrated logistic suppor system specifically designed to forecast maintenance manpower staffing levels, and supportive resource requirements, and to provide operational scheduling for the maintenance of the Tactical Support Equipment (TSE) associated with the various sites of the SAFEGUARD BMD System. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 750 365 15/5 12/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

A Stochastic Network to Model Air Cargo Terminals, (U)

72 16P Porte,H. A. ;Happ,W. W. ;Lee,C. T. ;McNamee,L. P. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*CARGO, *HANDLING), (*AIRPORTS, CARGO), STOCHASTIC PROCESSES, QUEUEING THEORY, INVENTORY CONTROL, WAREHOUSES, MATHEMATICAL MODELS (U)
IDENTIFIERS: NETWORK FLOWS, COMPUTERIZED SIMULATION (U)

In recent years design approaches to aircargo terminal operations had to be reexamined in order to cope with the vast increases in the cargo handling requirements due to the introduction of jumbo jets. Although a new cargo handling system proposed by Dortech would seem to handle the large cargo commitments, virtually no evaluation of its functional capabilities had been verified by actual design or by in depth computer simulation studies. Relevant computer studies include: the simulation of aircargo input/output cargo flow patterns, and the development of a GERTS IIIQ simulation model of a Dortech type aircargo facility. In the paper an in depth parameter study of the Dortech approach to aircargo handling is presented by means of a GERTS IIIQ simulation model. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 750 356 13/3

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Fracture Mechanics Applicability to Portland Cement Concretes, (U)

72 16P Naus,Dan Jay ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*CONCRETE, FRACTURE(MECHANICS)), CRACK PROPAGATION, LOADS(FORCES), DEFORMATION, ELASTIC PROPERTIES, DEFECTS(MATERIALS), STRESSES, STRAIN(MECHANICS), THICKNESS (U)
IDENTIFIERS: *PORTLAND CEMENTS (U)

The applicability of linear-elastic fracture mechanics to cement paste, mortar, and concrete was determined by the fabrication, testing, and analysis of plate specimens, each containing a precast flaw and loading hole extending through the thickness of the specimen and located at the center of the specimen. A rigid plastic cracked strip model was developed to provide an estimate of the microcracking zone that exists in the region of a crack tip in cement paste, mortar or concrete. The experimental results were correlated with the model. (Author) (U)

AD- 749 459 13/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

The Examination of Discontinuities in Welds by Stereoradiography. (U)

DESCRIPTIVE NOTE: Technical rept., SEP 72 16P Carlson,K. W. ;Lawrence,F. V. ;
REPT. NO. CERL-TR-M-24
PROJ: RTD/E-4-A-062112-A-891, DA-4-DM-78012-AOK-1
TASK: 4-A-062112-A-89106, 4-DM-78012-AOK-102

UNCLASSIFIED REPORT

DESCRIPTORS: (*WELDS, RADIOGRAPHY), NONDESTRUCTIVE TESTING, DEFECTS(MATERIALS), STEREOPHOTOGRAPHY, COMPUTER PROGRAMS (U)
IDENTIFIERS: *STEREORADIOGRAPHY (U)

IAC ACCESSION NUMBER: MCIC-085229
IAC DOCUMENT TYPE: MCIC -HARD COPY--

Since welds are rarely defect-free, it is desirable to quantify the effects of defects on the mechanical properties of welds and to develop a field inspection procedure more reliable, more complete, faster, and less costly than that currently in use. This investigation of the feasibility and practicability of stereoradiography was to satisfy the latter objective. Stereoradiography, unlike normal incidence radiography or ultrasonic inspection, permits direct three-dimensional observation of internal flaws. Stereoradiography entails obtaining an x-ray exposure at two known positions of the object with respect to the x-ray tube and viewing the stereo-pair through a stereo-viewer (stereoscope). By accurately measuring the parallax differences resulting from the specimen (or x-ray tube) shift, one may calculate the weld flaw's depth below the plate surface using photogrammetric principles. To evaluate this technique, ten pores in a defective weldment were measured at three different times. The results were compared to determine how well an observer could reproduce his measurements. The weld was sectioned, and the actual pore depths were measured directly. These results were compared to the (U)

AD- 749 458 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Inspection of Pile Driving Operations. (U)

DESCRIPTIVE NOTE: Technical rept., JUL 72 62P Davisson,M. T. ;
REPT. NO. CERL-TR-M-22
PROJ: DA-4-DM-78012-AOK-1
TASK: 4-DM-78012-AOK-102

UNCLASSIFIED REPORT

DESCRIPTORS: (*FOUNDATIONS(STRUCTURES), QUALITY CONTROL), (*CONSTRUCTION, INDUSTRIAL EQUIPMENT), PERSONNEL MANAGEMENT, SALARIES, CONSTRUCTION MATERIAL (U)
IDENTIFIERS: PILE DRIVING, PILE DRIVERS (U)

The inspection of pile driving operations involves the accumulation and interpretation of technical data and the simultaneous recording of pay item data. The manual is designed to explain the range of tasks inspectors must perform and to put the tasks in the broader perspective of the entire pile driving operation. The manual begins by explaining pre-construction organization, then the pile driving operation, and finally the data that the inspector must record. Two appendices include additional technical information on pile drivers, both the hammer and vibratory types. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 748 408 11/6

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Directional Transformations in Steel - Alloy Development. (U)

DESCRIPTIVE NOTE: Preliminary rept., JUL 72 17P Quattrone,R. ;Muntner,M. S. ;Wayman,C. M. :
REPT. NO. CERL-PR-M-21
PROJ: DA-4-A-061101-A-91-D, DA-17062105-A-328

UNCLASSIFIED REPORT

DESCRIPTORS: (*STEEL, PHASE STUDIES), AUSTENITE, MARTENSITE, TRANSFORMATIONS, MICROSTRUCTURE, NICKEL ALLOYS, MANGANESE ALLOYS (U)
IDENTIFIERS: HIGH STRENGTH ALLOYS, STEEL (U)

IAC ACCESSION NUMBER: MCIC-085302
IAC DOCUMENT TYPE: MCIC -HARD COPY--

The study is part of an overall project to develop techniques for producing directional martensite in steel and to assess the properties of such a material. The objective of the work reported herein was to select suitable ferrous alloys. Analyses of the texturing and transformation behavior of austenite were conducted to determine the composition ranges which might be suitable for transformation to directional martensite. On the basis of these analyses, it was concluded that satisfactory alloys would be characterized by a stable austenite with a low M sub s and M sub d and a lath transformation product. (Author) (U)

IAC SUBJECT TERMS: M--(U)Iron Alloys, 24Ni Steel, 25Ni Steel, Manganese Addition, Microstructure, Martensite, Transformation, Electrical Resistivity.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 745 902 8/13 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Stabilization of Contaminated Clays. (U)

DESCRIPTIVE NOTE: Final technical rept., JUN 72 16P Aufmuth,Raymond E. ;
REPT. NO. CERL-TR-M-19
PROJ: CERL-OK-1
TASK: OK-1-02

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOIL MECHANICS, COMPRESSIVE PROPERTIES), (*CLAY MINERALS, STABILIZATION), KAOLINITE, MONTMORILLONITE, CHEMICAL ANALYSIS, PLASTIC PROPERTIES, FOUNDATIONS(STRUCTURES) (U)
IDENTIFIERS: SOIL CLASSIFICATION, *SOIL STABILIZATION, ILLITE (U)

Three basic clay minerals -- kaolinite, illite and montmorillonite -- were investigated to determine the feasibility of stabilizing or otherwise improving selected engineering properties using lime or cement. Treatment with lime developed greater unconfined compressive strengths, lower densities with increased moisture, and greater resistance to moisture and ice penetration, than with the natural clay minerals. Treating kaoline and illite with cement produced improved strengths and resistance to wet-dry and freeze-thaw cycling. However cement was not effective in improving these properties in montmorillonite because of the clay's fineness, crystallinity and large surface area. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 745 901 8/13 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Stabilization Studies of Southeast Asian Soils: Vietnam. (U)

DESCRIPTIVE NOTE: Final technical rept., JUN 72 18P Aufmuth,Raymond E. ;
REPT. NO. CERL-TR-M-17
PROJ: CERL-OK-1
TASK: OK-1-02

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-745 902.
DESCRIPTORS: (*SOIL MECHANICS, VIETNAM), CHEMICAL ANALYSIS, GRANITE, BASALT, STABILIZATION, PLASTIC PROPERTIES, COMPRESSIVE PROPERTIES, FOUNDATIONS(STRUCTURES) (U)
IDENTIFIERS: *LATERITE SOILS, ALLUVIUM, *SOIL STABILIZATION, SOILS (U)

The report summarizes the results of an investigation to determine physical, chemical and selected engineering properties of six Southeast Asian soils encountered in pavement facility construction. Lime and cement manufactured in the United States were used to stabilize or otherwise improve the engineering characteristics (plasticity, moisture-density, and California Bearing Ratio) of the soils. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 745 408 8/13 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Stabilization Studies: Afghanistan Soils. (U)

DESCRIPTIVE NOTE: Final rept., JUN 72 17P Aufmuth,Raymond E. ;
REPT. NO. CERL-TR-M-18

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOILS, STABILIZATION), (*AFGHANISTAN, SOILS), FEASIBILITY STUDIES, LIMESTONE, CEMENTS, MOISTURE, WEAR RESISTANCE, ICE, CHEMICAL REACTIONS, FLEXURAL STRENGTH, TEST METHODS, BASALT (U)
IDENTIFIERS: SOIL STABILIZATION (U)

The report summarizes a study of the feasibility of stabilizing or otherwise improving for construction purposes three unsuitable soils found in Afghanistan. The stabilizing agents used were lime and cement commercially available in Afghanistan. Test results indicated that all three soils can be effectively stabilized with the addition of lime or cement. All three soils are reactive with lime or cement and will readily combine to increase strength and durability with the resulting stabilized soils being suitable for construction. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 742 781 13/8

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Investigation of Techniques for Butt Splicing Rebars. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 72 37P Ford,W. D. ;
REPT. NO. CERL-TR-T-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*STEEL, JOINTS), BONDING, WELDING, TEST METHODS, COSTS, TIME, PERFORMANCE(ENGINEERING) (U)
IDENTIFIERS: BUTT WELDING, WELDS, SPLICING, STRUCTURAL STEEL, EVALUATION (U)

The objective of the study was to investigate, test, and evaluate methods of butt splicing reinforcing bars, including mechanical splices, thermit splices, and welded splices on 408, 432, and 437 structural steel. Tests were performed to evaluate comparatively the tensile behavior of the connection, conductivity, and cost-time factor of fabrication. Test results are presented in graphical and tabular form. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 742 214 13/2 1/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Small-Scale Static Load Model Study: Behavior of Rigid Pavement Loaded Near the Edge. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 72 28P Behrmann,Ruth M. ;
REPT. NO. CERL-TR-S-4
PROJ: AF-5224

UNCLASSIFIED REPORT

DESCRIPTORS: (*PAVEMENTS, STRESSES), (*RUNWAYS, LOADS(FORCES)), MODEL TESTS, SCALE, SIMULATION, STRAIN(MECHANICS), TEST METHODS, STRAIN GAGES, GYPSUM (U)
IDENTIFIERS: *PAVEMENTS, *RIGIDITY (U)

The report presents the results of a small-scale static load model study of aircraft runway pavements. It examines the effects of loading a rigid slab on an elastic foundation in the transitional area between the edge and interior o the slab. The model was a 0.130-in. thick Hydrostone slab supported by a 12 in. thick layer of natural rubber. The slab was instrumented with Type A-7, SR-4 electrical strain gages mounted along one centerline of the slab. The strain gages were positioned to indicate strains parallel and perpendicular to the edge, from the edge to the center of the slab. The behavior of the slab was observed by noting the change in strain effected by loads applied statically through circular footprints at various points along the instrumented centerline. The results are presented in non-dimensional terms. (U)

AD- 742 213 8/13 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Stabilization of Inorganic Silts: Panamanian Soils. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 72 17P Aufmuth,Raymond E. ;
REPT. NO. CERL-TR-M-15

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOILS, STABILIZATION), (*ROADS, PANAMA), SILT, STABILIZATION, FEASIBILITY STUDIES, PHYSICAL PROPERTIES, CHEMICAL PROPERTIES, CONSTRUCTION, ADDITIVES, CALCIUM OXIDES, CEMENTS, EFFECTIVENESS (U)
IDENTIFIERS: EVALUATION (U)

Soil stabilization studies were conducted on two soil types from differnet slide areas along the Boyd-Roosevelt Highway, Panama. Physical and chemical properties of the soils were evaluated to determine if the soils could be stabilized or otherwise improved for construction purposes. Selected engineering properties, unconfined compressive strength and California bearing ratio (CBR), were determined for the soils in their natural state and after mixing them with lime and cement. Soil improvements resulting from the stabilizing agents were evaluated. (U)

AD- 742 212 1/5 11/9

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Coefficient of Linear Thermal Expansion of Epoxy Resin Mortars. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 72 16P Kemphues,Robert F. ;
REPT. NO. CERL-TR-M-14
PROJ: AF-5224
TASK: 522402

UNCLASSIFIED REPORT

DESCRIPTORS: (*EPOXY RESINS, THERMAL EXPANSION), (*RUNWAYS, MAINTENANCE), SHEAR STRESSES, SHRINKAGE, CONCRETE, FAILURE(MECHANICS), CONSTRUCTION MATERIALS, MOISTURE, TEMPERATURE (U)
IDENTIFIERS: AGGREGATES, PORTLAND CEMENTS (U)

IAC ACCESSION NUMBER: PL-018172
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--

This study has revealed that there is a significant difference in the coefficients of linear thermal expansion of the various epoxy resin mortar systems tested; they are two-to-four times greater than the accepted value for portland cement concrete. As expected, the coefficient decreases with an increase in aggregate content for dry, unsaturated specimens. However, it appears that there is an optimum aggregate content for saturated specimens after which the coefficient increases as aggregate content is increased. Absorbed moisture increases the coefficient of thermal expansion; therefore epoxy resin mortars and concretes should be designed to prevent absorption by selection of the proper aggregate-to-binder ratio and by placement techniques that will provide a dense impermeable patch. Maximum shrinkage is generally achieved within two months when curing occurs at 73 F and a relative humidity of 55%. Pavement temperatures during and shortly after repair is made, may influence the amount of stresses that develop in the resin concrete due to curing. (Author, modified-PL) (U)

IAC SUBJECT TERMS: P--(U)Thermal expansion-Epoxy, Physical properties-Epoxy, Mortars-Epoxy, Curing-Epoxy, Mixing-Epoxy, Casting-Epoxy, Moisture absorption-Epoxy, ZZ Unlimited;
AD- 742 212

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 741 358 13/3 11/4 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Fiber Reinforced Concrete a General Discussion of Field Problems and Applications. (U)

DESCRIPTIVE NOTE: Technical manuscript., APR 72 19P Gray,Bobby H. ;
REPT. NO. CERL-TM-M-12

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Revision OF REPORT DATED Dec 71.
DESCRIPTORS: (*REINFORCED CONCRETE, FIBERS), (*PAVEMENTS, REINFORCED CONCRETE), REINFORCING MATERIALS, STEEL, STRUCTURAL MEMBERS, MECHANICAL PROPERTIES, PROCESSING (U)
IDENTIFIERS: *FIBER REINFORCED CONCRETE, *STEEL FIBERS (U)

The paper presents field problem, which are associated with the use of a concrete containing randomly oriented uniformly distributed short lengths of fibers (fibrous concrete). Mix formulation and field handling characteristics often determine whether a new material is suitable for an application. Any alterations in the standard procedures will be reflected in different uses of the material. The results of mix formulation and field handling experience with the use of fibrous concrete are presented and several possible applications are discussed. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 741 357 13/3 13/2 11/4

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Fibrous Concrete for Pavement Applications. (U)

DESCRIPTIVE NOTE: Preliminary rept., APR 72 17P Gray,Bobby H. ;
REPT. NO. CERL-PR-M-13
PROJ: DA-4-A-062112-A-891

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Revision of report dated Feb 72.
DESCRIPTORS: (*REINFORCED CONCRETE, FIBERS), (*PAVEMENTS, REINFORCED CONCRETE), STEEL, REINFORCING MATERIALS, MECHANICAL PROPERTIES, WEAR RESISTANCE (U)
IDENTIFIERS: PORTLAND CEMENT, *FIBER REINFORCED CONCRETE, *STEEL FIBERS (U)

A new paving material was introduced which provides outstanding performance from thin pavement sections. The material is called fibrous concrete and is composed of conventional portland cement concrete materials with steel fibers randomly dispersed throughout the concrete mass. The material exhibits highly desirable behavioral properties for pavement applications. High first crack strength, ability to carry load after cracking, ability to arrest cracks and high spall resistance and ductility are some of the advantages offered by fibrous concrete over conventional concrete. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 732 855 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Study on the Potential Use of Industrialized Building for the Department of the Army. Volume III: Appendices. (U)

AUG 71 161P Bagby,D. Gordon ;Dinnat, Robert M. ;Moyer,Christopher A. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-732 854.
DESCRIPTORS: (*ARMY, *PREFABRICATED BUILDINGS), CONSTRUCTION, PERFORMANCE(ENGINEERING), STRUCTURES, WALLS, ROOFS, PANELS(STRUCTURAL), STANDARDS, SANITARY ENGINEERING, HEATING, COOLING + VENTILATING EQUIPMENT, ELECTRICAL EQUIPMENT (U)
IDENTIFIERS: RECOMMENDATIONS, *INDUSTRIALIZED BUILDINGS (U)

Recommended construction criteria in industrialized building systems are given for subsystems, including structure, exterior walls, roof/ceilings, floors, interior partitions, plumbing, HVAC, and electrical equipment. Comments and recommendations are included. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 732 854 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Study on the Potential Use of Industrialized Building for the Department of the Army. Volume II: Narrative, (U)

AUG 71 128P Bagby,D. Gordon ;Dinnat, Robert M. ;Moyer,Christopher A. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-732 853 and Volume 3, AD-732 855.
DESCRIPTORS: (*ARMY, *PREFABRICATED BUILDINGS), CONSTRUCTION, SYSTEMS ENGINEERING, MANUFACTURING METHODS, REVIEWS, COSTS, DESIGN, COMPATIBILITY, ARMY PROCUREMENT, CLASSIFICATION, PERFORMANCE(ENGINEERING), DATA PROCESSING SYSTEMS (U)
IDENTIFIERS: *INDUSTRIALIZED BUILDINGS (U)

The study had six principal goals: (1) To provide background information on the history, characteristics and direction of industralized building; (2) To measure the present capabilities of the industrialized building industry and assess its probable response to programmed military construction; (3) To identify industrialized building systems suitable for employment in the Army's military construction program; (4) To suggest locations most amenable to industrialized building; (5) To identify and discuss possible procurement and implementation procedures; and (6) To provide comparisons between conventional and industrialized construction costs and construction durations. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 732 853 13/13

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Study on the Potential use of Industrialized Building for the Department of the Army. Volume I: Summary. (U)

DESCRIPTIVE NOTE: Final rept., AUG 71 11P Bagby,D. Gordon ;Dinnat, Robert M. ;Moyer,Christopher A. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-732 854.
DESCRIPTORS: (*ARMY, *PREFABRICATED BUILDINGS), CONSTRUCTION, INDUSTRIES, ARMY PROCUREMENT, COST EFFECTIVENESS, SYSTEMS ENGINEERING, CORRELATION TECHNIQUES (U)
IDENTIFIERS: *INDUSTRIALIZED BUILDINGS (U)

The study had six principal objectives: To provide background information on the history, characteristics and direction of industrialized building; To measure and document the present capabilities of the industrialized building; To identify industrialized building systems suitable for employment in the Army's military construction program; To suggest locations where industrialized building is likely to be most economical; To identify and discuss possible procurement and implementation procedures; and To provide comparisons between conventional and industrialized construction costs and construction durations. The number was ascertained of the firms within the continental United States which evidenced the requisite design, procurement policies, and production capabilities to meet immediate military construction needs. Additional firm products were tabulated that were suitable for use in selected building types in particular geographical regions. Joint purchasing consortiums with some civilian agencies proximate to military installations are noted as possible during the intermediate range MCA Program. Cost comparisons are made. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 729 661 8/13 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Stabilization Studies: Turkish Soils. (U)

DESCRIPTIVE NOTE: Final technical rept., JUL 71 14P Aufmuth,Raymond E. ;
REPT. NO. CERL-TR-M-8

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOILS, STABILIZATION), (*PAVEMENTS, CONSTRUCTION), PHYSICAL PROPERTIES, CHEMICAL PROPERTIES, COMPRESSIVE PROPERTIES, CALCIUM COMPOUNDS, OXIDES, CLASSIFICATION, MOISTURE, LOADING(MECHANICS), DENSITY, CEMENTS (U)
IDENTIFIERS: BEARING STRENGTH, *SOIL STABILIZATION (U)

The report summarizes the results of a study to determine the physico-chemical and strength properties of three Turkish soils and to determine methods of improving these properties. Lime and cement obtained locally were used as stabilization agents for soils no. 1 and no. 2; U.S. lime and Turkish cement were used with soil no. 3. Soil no. 1 (from Uskumro) was stabilized with lime, but no strength increase was obtained with the addition of cement. Soil no. 2 (from Umraniye) showed no reaction with lime, but demonstrated a considerable strength increase with the addition of cement. Soil no. 3 (from Incirlick) is reactive with both lime and cement and could be effectively stabilized by both. (Author) (U)

AD- 729 660 11/6

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Feasibility of Producing Directionally Transformed Martensite in Steel. (U)

DESCRIPTIVE NOTE: Preliminary rept., JUN 71 16P Quattrone,Robert ;Wayman,C. Marvin ;
REPT. NO. CERL-PR-M-7

UNCLASSIFIED REPORT

DESCRIPTORS: (*STEEL, PHASE STUDIES), GRAIN STRUCTURES(METALLURGY), MARTENSITE, HARDENING, FEASIBILITY STUDIES (U)
IDENTIFIERS: ORDER DISORDER TRANSFORMATIONS (U)

IAC ACCESSION NUMBER: MCIC-082218
IAC DOCUMENT TYPE: MCIC -HARD COPY--
The feasibility of and possible techniques for strengthening steel by using directional martensite are explored in this report. On the basis of an analysis of the austenite to martensite transformation, it appears that martensite can be oriented if (a) its parent, austenite, can first be oriented and (b) the activity of habit planes can be controlled. It is believed that the first of these can be accomplished by forming deformation and/or annealing textures, and the second, by using a martensite morphology with a low habit plane multiplicity and straining in a specific crystallographic direction during transformation. Steels strengthened by this technique may obtain ultra-high strength and stiffness by a mechanism similar to fiber reinforcement. Applications for such a material include high-strength wires, protective construction and site hardening, and light-weight armor. (Author) (U)

IAC SUBJECT TERMS: M--(U)FE-30NI, FE-32NI, ENGINEERING STEELS, PLATE, CARBON ADDITION, DEFORMATION, ANNEALING, MARTENSITE TRANSFORMATION, STRENGTHENING, STIFFNESS, FATIGUE PROPERTIES;

AD- 728 169 13/3 11/9

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

A Feasibility Study on the Use of Foam-in-Place Urethane Insulation in Masonry Cavity Walls. (U)

DESCRIPTIVE NOTE: Final rept., JUN 71 24P Martino,Anthony C. ;
REPT. NO. CERL-TR-A-2
PROJ: CERL-OK-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*THERMAL INSULATION, *EXPANDED PLASTICS), (*CONSTRUCTION MATERIALS, THERMAL INSULATION), (*ISOCYANATE PLASTICS, EXPANDED PLASTICS), TEST METHODS, COSTS, MOISTURE, PHYSICAL PROPERTIES, TOXICITY, SPECIFICATIONS, ECONOMICS (U)

IAC ACCESSION NUMBER: PL-017868
IAC DOCUMENT TYPE: PLASTC -MICROFICHE--
A thorough survey of manufacturers, system suppliers, and installation contractors of foam products was conducted to determine the physical properties and technical nature of the application. Building codes and standard military and federal specifications were researched to investigate the acceptance of urethane foam insulation in masonry cavity walls. Installation and operating cost estimates were made for the various insulation systems in temperature zones of - 20 F, 0 F, and 20 F. This investigation revealed that rigid urethane foam has impressive physical properties. It has an excellent thermal efficiency and a high strength low weight ratio, and its closed cell nature gives it good moisture resistance and stability. Although small- scale ASTM tests give urethane a non-burning rating. Factory Mutual Research Corporation demonstrated that urethane will support combustion when the ignition source is removed. However, Factory Mutual concludes that foamed-in-place urethane that completely fills a wall cavity does not significantly contribute to the fire hazard of a building. Major drawbacks of the application include adverse effects of hot and cold temperatures, moisture, and humidity on foam quality, health and safety problems in installation, and high applicatio (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 724 132 1/5 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Airfield Pavement Systems. (U)

DESCRIPTIVE NOTE: Final rept.,
APR 71 23P Murphree,E. Lile , Jr.;
Woodhead,Ronald W. ;Wortman,Robert H. ;
REPT. NO. CERL-TM-P-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the American Society of Civil Engineers National Meeting on Transportation held in Boston, Mass., 13-17 Jul 70.
DESCRIPTORS: (*LANDING FIELDS, *PAVEMENTS), LOADS(FORCES), JET TRANSPORT PLANES, SYSTEMS ENGINEERING, MANAGEMENT PLANNING AND CONTROL, AVIATION SAFETY, COST EFFECTIVENESS, HUMAN FACTORS ENGINEERING, STATISTICAL ANALYSIS (U)
IDENTIFIERS: CRITERIA (U)

The current airfield pavement design procedures were introduced nearly thirty years ago. At that time, structural support problems had a dominant effect on design procedures. When other requirements were considered in the design process, they were treated in an ad-hoc manner as difficulties arose. With the arrival of the jumbo jets, the importance of the pavement to the air transport system is apparent. The aerospace industry predicts 5 times the passenger miles and 10 to 20 times the cargo tonnage by 1985 as today. Airplanes are expected to be twice the size and weight of those currently flying. The demands of these large, heavy, high performance aircraft will be more rigorous than those of today and a new and comprehensive look at the pavement's role is needed. The systems approach holds the key to an integrated plan for design, construction, operation, and maintenance of airfield pavements. (Author) (U)

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AD- 720 993 8/13 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Burma Soils. A Study of the Effects of Lime and Cement on Paddy and Laterite Material. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 71 20P Schomaker,Norbert B. ;
Aufmuth,Raymond E. ;
REPT. NO. CERL-TR-M-6

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOILS, *BURMA), (*ROADS, CONSTRUCTION), STRUCTURAL PROPERTIES, FOUNDATIONS(STRUCTURES), STABILIZATION, CALCIUM COMPOUNDS, CARBONATES, CEMENTS, TRAFFICABILITY, COMPRESSINE PROPERTIES (U)
IDENTIFIERS: LATERITE SOILS, *SOIL STABILIZATION (U)

Laboratory tests were performed on samples of paddy and laterite soils obtained from the proposed right-of-way of the Rangoon-Mandalay Highway, Burma. These tests were conducted to determine the basic engineering properties of the soils and to evaluate the feasibility of stabilizing these soils with lime and cement. The addition of lime to these soils had little beneficial effect on either soil. This was due to the non-reactive nature of the soils and the poor stabilizing quality of the lime available in Burma. Special tests using American lime indicated a strength increase of about 300% over the natural soil strength, compared to an increase of less than 100% with Burma lime. Addition of cement, on the order of 6% by dry weight of soil, effectively stabilizes both soils. Unconfined compressive strengths of both are increased on the order of 300%. (Author) (U)

AD- 715 400 13/2

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Strength and Durability of Stabilized Layers under Existing Pavements. (U)

DESCRIPTIVE NOTE: Final technical rept., OCT 70 16P Aufmuth,Raymond E. ;
REPT. NO. CERL-TR-M-4

UNCLASSIFIED REPORT

DESCRIPTORS: (*PAVEMENTS, FOUNDATIONS(STRUCTURES)), (*SOILS, STABILIZATION), CEMENTS, LIMESTONE, CARBONATES, WEAR RESISTANCE, COMPRESSIVE PROPERTIES, MOISTURE, DENSITY, SHEAR STRESSES, CLASSIFICATION, SITE SELECTION, PERFORMANCE(ENGINEERING), X RAY DIFFRACTION, AGING(MATERIALS) (U)
IDENTIFIERS: BEARING STRENGTH, SOIL STABILIZATION (U)

The report summarizes the results of a field and laboratory study to evaluate the strength and durability of stabilized layers under existing pavements. Eight sites in different geographic and climatic regions of the country were tested, using lime and cement as the stabilizing agents. Tests performed on the subgrade were laboratory and field California Bearing Ratio, unconfined compression, moisture-density, classification, and x-ray diffraction analysis. (Author) (U)

AD- 711 526 20/11 13/13 14/5

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

FEASIBILITY STUDY OF PHOTOMECHANICS TECHNIQUES APPLIED TO STRESS ANALYSIS IN THREE DIMENSIONS. (U)

DESCRIPTIVE NOTE: Final rept., OCT 69 77P Hubbard,John H. ;
REPT. NO. CERL-TR-4-84

UNCLASSIFIED REPORT

DESCRIPTORS: (*PHOTOELASTICITY, STEREOPHOTOGRAPHY), (*UNDERGROUND STRUCTURES, STRESSES), FEASIBILITY STUDIES, MODEL TESTS, LOADS(FORCES), PHOTOGRAPHS, PHOTOGRAPHY, LASERS (U)
IDENTIFIERS: *HOLOGRAPHY (U)

The report presents the results of a study into the experimental techniques of full field representation applicable to stress analysis in three dimensions. The simple case of the distribution of stress on the boundary of a circular discontinuity in an elastic half space was examined from the viewpoint of existing theory and verified by model analysis employing eight experimental approaches. Two models were two dimensional in nature and provided an experimental standard for the other models as well as a demonstration of the flexibility of experimental stress analysis. The most accurate representation of stress distribution for the three dimensional models were the Frozen Stress and Scatterred Light models. Less accurate representations were obtained with the Composite, Embedded Polariscope and Embedded Moire Models. Finally, the feasibility was investigated of applying the techniques of Holography to photoelastic model. Each of these approaches is discussed in detail, and the advantages and disadvantages of each critically examined. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099032

AD- 710 982 1/5 13/1

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

DEVELOPMENT STUDY FOR A VFR HELIPORT STANDARD LIGHTING SYSTEM. (U)

DESCRIPTIVE NOTE: Final technical rept.,
AUG 70 135P Morrow,T. H. , Jr;
REPT. NO. CERL-TR-M-3

UNCLASSIFIED REPORT

DESCRIPTORS: (*HELIPORTS, *LIGHTING EQUIPMENT), BEACONS, VISUAL PERCEPTION, FLIGHT CONTROL SYSTEMS, TEST METHODS, CONFIGURATION, INCANDESCENT LAMPS, APPROACH, NIGHT LANDINGS, SIMULATION, NIGHT FLIGHT, QUESTIONNAIRES, ARMY RESEARCH (U)
IDENTIFIERS: *VISUAL FLIGHT RULES (U)

The report describes a four part study directed toward a standard lighting system for heliport under visual flight rule (VFR) conditions. The investigation includes a laboratory model study, a preliminary field layout and two helipad installation tests using actual helicopter flight operations. Results were analyzed by pilot questionnaires and interims. Tentative recommendations for further testing are presented including all particulars of a heliport lighting system. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 099062

AD- 695 719 11/4 20/11 13/2

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

CRITICAL NORMAL FRACTURE STRAIN OF PLAIN AND STEEL WIRE FIBROUS-REINFORCED CONCRETE. (U)

DESCRIPTIVE NOTE: Final rept.,
OCT 69 212P Birkimer,Donald L. ;
REPT. NO. M-1
PROJ: DASA-NWER-R13B193

UNCLASSIFIED REPORT

DESCRIPTORS: (*FIBERS, REINFORCING MATERIALS), (*REINFORCED CONCRETE, STRAIN(MECHANICS)), FRACTURE(MECHANICS), WIRE, STEEL, IMPACT TESTS, TENSILE PROPERTIES, MODULUS OF ELASTICITY, SYNTHETIC FIBERS, STANDARDS, COMPRESSIVE PROPERTIES, FLEXURAL STRENGTH, MILITARY REQUIREMENTS (U)
IDENTIFIERS: *FIBER REINFORCED CONCRETE (U)

The report presents the results of a series of eighty-one impact tests performed on 5.1 x 88.9-cm (2.0 x 35.0-in.) cylindrical test specimens. The cylinders consisted of either plain or steel wire fibrous-reinforced concrete. Basic properties relating to the concrete test specimens used were quantitatively evaluated: static ultimate tensile strength and the corresponding ultimate tensile strain; static initial Young's modulus of elasticity; static ultimate unconfined compressive strength, specific gravity, mass density; seismic velocity; dynamic Young's modulus of elasticity. Histograms for the frequency distributions of basic material properties show variations of these properties within the experiment. The results revealed that the critical normal fracture strain (critical value of tensile strain which causes fracture of the material) of the materials tested is functionally dependent on the rise times of the straining pulse. The results also showed that the critical normal fracture strain of plain concrete can be increased by the inclusion of the randomly placed steel wire fibre of the type tested. (Author) (U)

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