

WESTERN

CONSTRUCTION

KING PUBLICATIONS

609 Mission Street

San Francisco 5, California

ANNUAL INDEX

Volume 26

January - December

1951



SUBJECT INDEX

a—Article; c—Conventions; n—News; p—Pictorial; s—Short

Airports

Airport built by government joint venture— <i>a</i>	Sept.	87
Master plan for airport development— <i>R. L. Webb, Jr.—a</i>	Feb.	62

Associations

ASCE chapter in Alaska, plans formulated— <i>n</i>	Sept.	104
Asphalt paving technologists discuss recent advances at Denver meeting— <i>c</i>	Mar.	79
Associated Equipment Distributors: a historical sketch covering 30 years— <i>A. F. Sersanous—a</i>	Jan.	80
AED holds first "All-Western" conference at Sun Valley— <i>c</i>	Nov.	145
AED national meet discusses distributor problems in mobilization effort— <i>c</i>	Mar.	118
Associated General Contractors: a historical sketch covering 32 years— <i>H. E. Foreman—a</i>	Jan.	83
AGC national convention considers problems due to defense emergency— <i>c</i>	Apr.	104
California Structural Engineers Association elects 1952 officers— <i>c</i>	Dec.	78
Concrete experts discuss practical field problems at American Concrete Institute meeting— <i>c</i>	Apr.	119
Intermountain AGC makes first scholarship award at Utah colleges— <i>n</i>	Feb.	86
Officers of Western associations for 1951— <i>n</i>	Mar.	89
Utah Highway Conference report— <i>c</i>	May	132
WASHO endorses test road for the West— <i>c</i>	Aug.	78

Book Reviews

Automotive and Construction Equipment— <i>Lindgren</i>	May	145
Cofferdams— <i>Prentis and White</i>	Feb.	134
Design of Flexible and Rigid Pavements— <i>Horonjeff and Jones</i>	Feb.	134
Earth Manual— <i>USBR</i>	Nov.	133
Elementary Theory and Design of Flexural Members— <i>Vawter and Clark</i>	Jan.	113
ESL Bibliography No. 8— <i>Engineering Societies Library</i>	Mar.	90
Factual Discussion of Motor Truck Operation, Regulation and Taxation— <i>U. S. Bureau of Public Roads</i>	May	145
Fontana Project— <i>TVA</i>	Jan.	113
Foundations of Structures— <i>Dunham</i>	Feb.	134
Heating, Ventilating and Air Conditioning Guide— <i>American Society of Heating and Ventilating Engineers</i>	May	145
Hydraulic Transients— <i>Rich</i>	Oct.	143
Introduction to the Design of Underground Openings for Defense— <i>Colorado School of Mines</i>	Aug.	131
Irrigation Engineering, Vol. I— <i>Houk</i>	Oct.	143
Mathematical Theory of Vibration in Suspension Bridges— <i>U. S. Bureau of Public Roads</i>	May	145
Mineral Wool Insulation Specifications and Standards— <i>Industrial Mineral Wool Institute</i>	Oct.	143
Pile Foundations— <i>Chellis</i>	Nov.	133
Procedure Handbook of Arc Welding— <i>Lincoln Electric Co.</i>	Jan.	113
Proceedings, California Institute on Street and Highway Problems. Feb. 1, 1957 Review Questions for Surveyors— <i>Brinker</i>	Nov.	133
Simplified Mechanics and Strength of Materials— <i>Parker</i>	Aug.	131
Soil Mechanics, Foundations, and Earth Structures— <i>Tschebotaroff</i>	Oct.	143
Soil Testing for Engineers— <i>Lambe</i>	Aug.	131
Standard Practices for Low and Medium Speed Stationary Diesel Engines— <i>Diesel Engine Manufacturers Assn.</i>	Nov.	133
Underpinning, Its Practice and Application— <i>Prentis and White</i>	Feb.	134
Welded Deck Highway Bridges— <i>Clark</i>	Mar.	132

Bridges

Abandoned Wyoming bridge moved to new site— <i>William G. Ainsley—a</i>	Mar.	67
Bridge of 335-ft. span floated to a new site— <i>a</i>	May	69
"Bundled" reinforcement for bridge in Washington— <i>Homer M. Hadley—a</i>	June	89
Cable spinning techniques, as exemplified at Tacoma Narrows Bridge— <i>Harold W. Mills—a</i>	Feb.	78
Montana's longest highway bridge nears completion— <i>Paul E. Poirier—a</i>	Apr.	84
Portland bridge approach construction solves Oregon's major traffic problem— <i>a</i>	June	67
Prepakt protects old bridge piers— <i>a</i>	Oct.	80
Prestressed concrete bridge at Los Angeles, Calif., erection procedure.....	Apr.	76
Puget Sound bridge with submerged tunnels and pontoons proposed— <i>Homer M. Hadley—a</i>	Feb.	85
Seattle builds 2-level Alaskan Way Viaduct to solve traffic problem— <i>H. Ward Tyler and Corwin A. Pilon—a</i>	Aug.	59
Timber-concrete bridge saves materials in British Columbia— <i>a</i>	Sept.	89
Treated timber bridge in Montana designed for loading of 100 tons— <i>R. F. DeGrace—a</i>	June	87
Welded bridge design that won award for Westerner— <i>a</i>	Feb.	75

Building

Butler "packaged" hangar design changes necessary for Alaskan weather conditions— <i>E. J. Glennen—a</i>	Dec.	60
Concrete warehouse 100% precast— <i>a</i>	Oct.	70
Garage-bomb shelter planned under Los Angeles Civic Center— <i>a</i>	Feb.	76
High strength bolts compete with rivets— <i>a</i>	Sept.	67
Inverted beam slab for world's largest suburban store— <i>p</i>	July	98
Lightweight aggregate volume tops records on Statler building project in Los Angeles— <i>a</i>	Aug.	72
Pershing Square underground garage in Los Angeles, first construction— <i>a</i>	July	61

Pershing Square underground garage in Los Angeles started— <i>n</i>	Mar.	100
Precast concrete wall panels for school trucked 210 mi. to site— <i>a</i>	Apr.	81
Precast panels made on assembly line— <i>a</i>	Nov.	74
Prestressed underpinning in sandy strata supports heavy buildings— <i>a</i>	Aug.	88
Tilt-up for placing precast walls— <i>a</i>	May	74
Vacuum lifter used efficiently for placing concrete wall panels— <i>a</i>	Aug.	84
Washington standardizes maintenance shop design— <i>K. G. Miller—a</i>	July	84

Construction, Miscellaneous

Alaska construction, present and future— <i>Ralph Browne—a</i>	Jan.	87
Alaskan projects planned for 1952-1953— <i>n</i>	Dec.	66
Atom plant construction starts in Colorado— <i>n</i>	May	99
Concrete deck on 1,600 concrete piles joins San Francisco piers— <i>S. S. Gorman—a</i>	Oct.	65
Concrete mix design confusion: can field and office ever agree?— <i>George Conahey—a</i>	Dec.	57
Concrete plant supplies four jobs at Idaho atomic energy project— <i>J. Warren Evans</i>	Apr.	78
Construction volume predictions— <i>a</i>	Jan.	57
Dugway project for Army in Utah desert— <i>a</i>	July	81
Dugway proving grounds construction speeded— <i>n</i>	Apr.	108
Equipment development in the West during last 25 years— <i>a</i>	Jan.	93
Highlights of Western construction-engineering during last 25 years— <i>ps</i>	Jan.	61
History of Western Construction magazine in last 25 years— <i>a</i>	Jan.	59
Ingenious methods used by Western contractors during last 25 years— <i>p</i>	Jan.	90
Joint ventures: a history of this Western development— <i>W. E. Waste—a</i>	Jan.	77
Lessons in structural safety learned from 1949 Northwest earthquake, Part I— <i>Harlan H. Edwards—a</i>	Feb.	70
—Part II.....	Mar.	85
—Part III.....	Apr.	90
Personalities famous in Western construction-engineering during last 25 years— <i>ps</i>	Jan.	61
Prefabricated barrel culvert forms eliminate expensive built-in-place forming— <i>a</i>	July	66
Prestressing circular concrete structures by new method— <i>a</i>	Sept.	59
Protecting fresh concrete from freezing— <i>L. H. Tuthill—a</i>	Sept.	64
Reclamation construction reaches record in 1950— <i>n</i>	Mar.	77
Rip-rap substitute, asphaltic concrete tested on reservoir embankment— <i>a</i>	Nov.	73
Rip-rap substitute, soil-cement tested on reservoir embankment— <i>Floyd A. Baker—a</i>	Aug.	76
Rip-rap substitutes to be tested as asphaltic concrete and soil cement— <i>s</i>	May	100
Shield for laying pipe in wet trench quickly— <i>O. H. Folsom—a</i>	Aug.	57

Dam

Albeni Falls Dam, first concrete placed— <i>n</i>	Sept.	108
Bear River Dam design features as part of PG&E 2,100-ft. hydro plant— <i>T. J. Corwin and J. B. Cooke—a</i>	Mar.	63
Bonny Dam, earthfill structure, completed two years ahead of schedule— <i>Morris Droskin—a</i>	May	65
Boysen Dam embankment completed— <i>n</i>	Sept.	107
Boysen Dam project in Wyoming, design features and construction operations— <i>B. B. Kepford—a</i>	July	77
C. J. Strike Dam at half-way point— <i>n</i>	Sept.	108
C. J. Strike hydro plant completed in 13 months— <i>a</i>	Nov.	61
Cabinet Gorge Dam approved by FPC— <i>n</i>	Feb.	94
Cabinet Gorge diversion dam created by one big shot— <i>p</i>	Nov.	87
Cabinet Gorge diversion tunnels one-third completed— <i>n</i>	June	122
Cachuma Dam, placing 5,800,000-cu. yd. fill— <i>a</i>	Aug.	63
Canyon Ferry project stops for winter with second stage diversion works completed— <i>L. P. Sowles—a</i>	Dec.	53
Chief Joseph Dam, first bucket of concrete placed— <i>n</i>	Oct.	106
Chief Joseph Dam, 400 ton-per-hour aggregate plant erected— <i>a</i>	Sept.	84
Chief Joseph Dam intake channel cut from granite— <i>a</i>	Aug.	81
Dams of all types for "upstream engineering" built by Forest Service— <i>a</i>	Aug.	66
Davis Dam penstocks: design, fabrication and installation— <i>P. J. Bier—a</i>	Dec.	63
Feather River Dam considered by legislature in California— <i>a</i>	June	122
Feather River project bonds get governor's signature— <i>n</i>	Aug.	94
Feather River project, progress of planning— <i>n</i>	Oct.	78
Folsom Dam bid opening details— <i>n</i>	Oct.	100
Folsom Dam pre-bid details— <i>n</i>	Aug.	62
Grand Coulee spillway repairs made using special equipment— <i>Glenn R. Burrows—a</i>	Aug.	69
Hells Canyon Dam recommended— <i>n</i>	Nov.	78
Hungry Horse concreting sets new records— <i>n</i>	Sept.	104
Hungry Horse Dam, aggregate to concrete— <i>p</i>	July	97
Hungry Horse penstocks construction— <i>a</i>	May	79
Keyhole Dam in Wyoming, difficult work completed— <i>n</i>	Apr.	111
Lookout Point Dam work speeded by hi-line cableway— <i>a</i>	Aug.	82
McNary Dam cofferdam closure, how it was achieved with tetrahedron fill— <i>a</i>	Feb.	66
McNary Dam, tetrahedron fill achieves river diversion— <i>p</i>	Jan.	100
Palisades Dam construction approved— <i>n</i>	Aug.	100
Pine Flat aggregating plant operation— <i>a</i>	Sept.	71
Pine Flat batching plant features accuracy and speed— <i>a</i>	Oct.	76
Pine Flat work speeded by new cableway— <i>n</i>	Apr.	114
Reservoir No. 22 Dam in Colorado, preliminary work— <i>p</i>	July	76
Ross Dam, work advances on powerhouse and tunnel— <i>n</i>	July	72
Shadehill Dam completed 50% ahead of schedule.....	Oct.	78
Shasta Dam spillway repairs speeded by unique cableway system— <i>s</i>	Feb.	82
Whittier Narrows Dam, pre-placed aggregate for spillway grouted to form "Prepakt" concrete— <i>a</i>	July	69
Yale hydro project license issued to Portland firm— <i>n</i>	June	90

Engineering, Miscellaneous

	Issue	Page
Alaska dam site survey ends in "shipwreck"—a	Nov.	89
Benevolence razing attracts wide range of bids—n	Oct.	99
Catholic protection of metal structures—J. P. Collopy—a	Dec.	51
Concrete mix design confusion: can field and office ever agree?—George Conahey—a	Dec.	57
Construction Design Charts—James R. Griffith—a		
CXXVII—Length and distribution of fillet welds	Jan.	98
CXXVIII—Minimum percentage of spiral reinforcement	Feb.	89
CXXIX—Freezing velocity of water pipes	Mar.	98
CXXX—Flexural stress in iron pipe	Apr.	103
CXXXI—Selecting timber columns of Douglas fir	May	98
CXXXII—Wind loads on flag poles	June	120
CXXXIII—Estimated weight of welded steel roof trusses	July	96
CXXXIV—Column reinforcement for ratio	Aug.	90
CXXXV—Deflection of iron pipe	Sept.	95
CXXXVI—Net areas for riveted connections	Oct.	96
CXXXVII—Columns of Douglas fir	Nov.	94
CXXXVIII—Unit bond stresses in reinforced concrete	Dec.	74
Contract policies of Corps of Engineers—a	Apr.	93
Dam outlet pipe poses for its picture—G. M. Norris—a	Nov.	79
Engineer shortage discussion—s	Nov.	68
Engineering education, trends and needs—C. L. Eckel—a	Jan.	85
History of Western construction-engineering during last 25 years—ps	Jan.	61
History of Western Construction magazine in last 25 years—a	Jan.	59
Licensing for California engineers, letters and discussion	July	75
Licensing for California engineers, letters and discussion	Aug.	80
Licensing for California engineers, letters and discussion	Oct.	91
Licensing for California engineers, pro and con discussion of a certain case—a	Apr.	75
Parking structure proposed to straddle bridge approach at Portland—s	Nov.	81
Perlite concrete design standards established—s	Sept.	77
Personalities famous in Western construction-engineering during last 25 years—ps	Jan.	61
Prepakt concrete, history and principles—a	July	70
Charles H. Purcell, one of the West's great engineers, dies—n	Oct.	99
San Francisco Bay Area development, study sets up goals—a	Apr.	87
Structural design lessons learned from study of 1949 Northwest earthquake, Part I—Harlan H. Edwards—a	Feb.	70
—Part II	Mar.	85
—Part III	Apr.	90
Traffic engineering in Fresno, Calif.—Robert D. Kier—a	Mar.	82

Equipment Operation and Maintenance

All-metal frictions; their use on equipment—G. O. Abell—a	Mar.	91
Aluminum truck body hauls gravel with gain of 1/2 ton in legal payload—a	Sept.	83
Brush mowing machine controls roadside growth in Washington—K. G. Miller—a	Mar.	78
Cableways should be chosen to fit the job—s	May	95
Compressor equipment, how to get the most out of it—Edmond C. Powers—a	May	83
Concrete paving equipment, 50 years of improvement—Arthur A. Levison—a	June	101
Concrete vibrator operation suggestions—W. J. Miller—a	Oct.	88
Costs compared for wood and metal scaffolding on low building jobs—s	Apr.	100
Electric analyzer for pipeline networks—s	Nov.	84
Electric drive developed for heavy earthmoving equipment—a	Feb.	77
Equipment at work building Western highways—8 pages of short stories told with pictures—p	June	105
Highline used to install "snorkle" on nearly vertical canyon wall—s	Aug.	86
Ingersoll-Rand's new rotary type compressor—a	May	88
Keeping earthmovers rolling when going gets wet—s	May	82
Power cranes and shovels, a maintenance memo—A. E. York—a	Nov.	93
Power saws, how to get efficiency and output—William Dudley—a	July	82
Precision hand tool for re-grooving diesel pistons—s	Sept.	94
Rebuilt heavy construction equipment—p	Oct.	82
Saw cutting for better pavement patching—a	Oct.	75
Simple repair tools for salvaging tractor bellows seals—s	Sept.	107
Spring tonic for tractors saves repair dollars—s	May	82
Steam generator ready in 5 minutes at asphalt plant—p	Sept.	94
Two-way radio as a valuable construction job tool—Dale Samuelson—a	Feb.	68
Versatile excavator digs rows of holes on reservoir slope—s	May	90
V-shaped saw blade on bulldozer fells 24-in. trees—s	July	80

Highway and Street

Access road planned to Utah uranium, to cost \$1,000,000—n	Apr.	108
Alaskan road commission program to add 200 mi. of paved roads in 1951—George M. Tapley—a	June	74
Apportionment of Federal-aid highway funds in West—n	Aug.	93
Arizona breaks a mountain barrier on Superior-Miami highway—R. C. Perkins—a	Oct.	61
Cement stabilized base course replaces untreated rock—Frank J. Rossi and Fred M. Johnson—a	June	79
Cement-treated base job speeded by latest equipment—a	July	87
Cement-treated base placed during wet weather in Washington—Theron B. Stone—a	June	77
Concrete paving equipment, 50 years of improvement—Arthur A. Levison—a	June	101
Denver-Boulder turnpike, planning and first construction—Mark U. Watrous—a	Apr.	67
Earthquake-damaged road repaired by lower grade and adequate drainage—s	May	93
Economical asphalt paving in Spokane—Eugene H. Tuomy and Robert W. Leach—a	June	85
Equipment at work building Western highways—8 pages of short stories told with pictures—p	June	105
Extra uphill lane for slow trucks—William E. Willey—s	Oct.	63
Frickstad Viaduct in Oakland, Calif., built despite limited work space—a	Mar.	74
Full pavement for mountain roads has many advantages—F. N. Hveem and P. R. Watson, Jr.—a	June	73
Highway programs of Western States—a	June	97
How Washington determines priority for rebuilding secondary highways—a	June	81

	Issue	Page
Inspecting road and plant-mix jobs—Lew Wulff—a	Mar.	71
Maintenance of private logging road carrying up to 250,000-lb. loads—a	Sept.	68
Maintenance with portable plants for penetration macadam in Oregon—a	June	91
Mobile unit for drying paving aggregates—s	June	119
Model ordinance for cutting and backfilling city streets—a	June	93
New Mexico gas tax cut jeopardizes pay-as-you-go plan—n	Oct.	64
Old highway job in Washington combines asphalt-wheelbarrows—Henry J.—a	Oct.	79
Oregon uses local cinders in hot mix—a	Oct.	73
Portland bridge approach construction solves Oregon's major traffic problem—a	June	67
Road-mixer attachment spreads and compacts cement-stabilized base—s	June	119
Road-patching material is permanent, resists freezing—n	Sept.	70
Saw cutting for better pavement patching—a	Oct.	75
Scrapers make dirt pay for long hauls on highway job—a	Nov.	96
Seattle builds 2-level Alaskan Way Viaduct to solve traffic problem—H. Ward Tyler and Corwin A. Pilon—a	Aug.	59
Snowsheds of concrete built by Washington at Snoqualmie Pass—Mark S. Woodin—a	Feb.	59
State highway commission set-up changes in three Western states—n	Mar.	99
Street repair at low cost by level course or seal-coat—Richard Gallagher—a	Oct.	84
Strut fills stabilize highway over mud—Percy A. Main—a	Nov.	82
Uniform highway marking procedure in Colorado—a	June	70
Washington bond issue approved for highways—n	Apr.	114
Washington standardizes maintenance shop design—K. G. Miller—a	July	84
WASHO endorses test road for the West—a	Aug.	78
WASHO test road site selected in Idaho and design established for base and surface—n	Oct.	91
WASHO test road site to be in Idaho—n	Sept.	102
Wyoming's first major traffic route relocation, at Casper—a	Mar.	80
Wyoming's highway maintenance program and procedures—W. E. Sutton—a	June	83

How It Was Done

Back hoe digs sewer trenches—p	July	92
Battery additive for increasing life expectancy—s	Feb.	83
Cableway system designed to speed Shasta Dam spillway apron repairs—s	Feb.	82
Camp moving vs. Western mountains—s	Oct.	94
Concrete buggy competition spurs placing of building floor slab—s	Apr.	96
Ditcher winched up-grade—p	Oct.	93
Driving pressure maintained under hard conditions by auxiliary boiler—s	Apr.	97
Electric-driven chain saw speeds pile topping—s	Apr.	97
Field or factory method of splicing steel conveyor cables—s	Dec.	76
Flexible metal structure solves bin-type retaining wall problem—s	June	115
Form tie does away with walers; is tie and spreader—s	Dec.	76
Hardening dozer blades by automatic methods—s	July	92
Helicor spot-welding solves problem of pipe protection—s	Apr.	100
Highline used to install "snorkle" on nearly vertical canyon wall—s	Aug.	86
Jumbo lathe solves specs problem for "camel" logs—a	Aug.	89
Laying 48-in. pipe on 80% grade—s	Sept.	82
Loader teams with truck trailers—p	Oct.	93
Logging hoist-tractor unit rips out street car tracks in a hurry—s	June	115
Mammoth trailer to transport 23-ft. tunnel liner sections—s	Feb.	84
Metal forms climb for concrete walls—p	Oct.	93
Mobile unit for drying paving aggregates—s	June	119
Orange peel bucket clears brush for road right-of-way—s	June	116
Pontoons replace float logs to defeat water-logging—n	Aug.	98
Roadmixer attachment spreads and compacts cement-stabilized base—s	June	119
Rollaway scaffolding suits short height jobs—s	Dec.	75
Safety strut keeps dump-truck box where it belongs—s	July	85
Sled-hopper for gutter paving—p	Dec.	75
Small hoist in truck-trailer eases heavy motor handling—s	Mar.	94
Stairway cantilevered from floor slabs, spandrel beams—s	Oct.	92
Steam generator ready in 5 minutes at asphalt plant—s	Sept.	94
Steel tunnel sections launched from ways; towed 125 mi. to job—s	Mar.	92
Telescopic steel forms for Broadway Tunnel concrete—p	Feb.	83
Tractors pull battleship anchor chain to clear heavy brush—p	Feb.	102
Ventilators in drain tunnels increase timber life—s	Mar.	94
Versatile excavator digs rows of holes on reservoir slope—s	May	90
V-shaped saw blade on bulldozer fells 24-in. trees—s	July	80
Water-filled tires wear well if used at low speeds—s	July	92
Water pipe installed leaving landscape intact—s	May	95

Irrigation and Reclamation

Asphalt membrane placed from above or below in Wyoming—a	Oct.	69
Asphaltic membrane lining on Columbia Basin Project, placing techniques—p	Sept.	62
Central Valley Project in full operation August 1—n	Aug.	100
Colorado River storage dam system approved—n	Mar.	99
Diversion dam and canals completed in New Mexico's Pecos River Valley—n	Sept.	70
Granby pumps deliver first water on Colorado-Big Thompson project—n	Sept.	61
Grand Coulee pumping plant in operation—n	July	98
Prefabricated asphalt canal lining reduces seepage loss by 92%—C. C. Warnick—a	Nov.	77
Purifying Soda Lake for irrigation project—Charles F. Thomas—a	Sept.	76
Reclamation construction reaches record in 1950—n	Mar.	77
Tracy pumping plant construction, pictorial review—p	May	86

Legal Decisions

Reports from the Courts—Howard S. Burnside		
Old buildings under new code—s	Jan.	97
Forfeiture of bid bond denied by trial court—s	Jan.	97
Mechanics lien valid to extent of work done—s	Jan.	97
Collapsible corporation tax advantage eliminated—s	Jan.	97

Contractor's funds advanced by U. S. taxed by state—s.....	Mar.	95
Liability from failure to beat freeze order—s.....	Mar.	95
Use of state highway funds for publicity—s.....	Mar.	95
Contractor bound by signed letter fixing top price—s.....	May	96
Who was employer in a contracting cooperative?—s.....	May	96
Steel weights computed by AISC code allowed—s.....	May	96
Discrimination against plumbing fixtures—s.....	July	93
Official immunity in firing engineering aide—s.....	July	93
Liability from operation of water system—s.....	July	93
Deflated dollar affects verdicts—s.....	July	93
Contractor's equipment taxed twice—s.....	Sept.	96
Contract for engineering services void, no funds—s.....	Sept.	96
Owner's liability for furnishing defective tools—s.....	Sept.	96

Power

BPA power to California; Northwest says "No!"—n.....	Mar.	117
Bear River, Calif., 2,100-ft. hydro plant— T. J. Corwin and J. B. Cooke—a.....	Mar.	63
Big Creek 4, Southern California hydro power development, design and construction—R. W. Spencer and P. B. Peacock—a.....	Apr.	70
C. J. Strike Dam, hydro plant built in 13 months—a.....	Nov.	61
Davis Dam penstocks: design, fabrication and installation— P. J. Bier—a.....	Dec.	63
Davis Dam reservoir fills, power plant in operation—n.....	Apr.	108
Pelton Dam project approved—n.....	Sept.	101
Powerhouse proposed at Grand Coulee, to cost \$150,000,000—n.....	Nov.	100
Southern California Edison plans \$40,000,000 power development—s.....	Nov.	90
Woodstave line replacement record on Idaho power project— Horace Gardner—a.....	Mar.	76
Yale hydro project license issued to Portland firm—n.....	June	90

Sewerage

Back hoe digs sewer trenches—p.....	July	92
Orange County, Calif., sewer project largest there in 20 years—n.....	Oct.	103
Sewer work at night beats traffic and flow troubles—s.....	Dec.	75
Solving trenching troubles in Arizona desert sand—a.....	Apr.	95
Springs slow tunnel operations on Portland interceptor sewer—a.....	Sept.	90

Tunnel

Appropriation of \$50,000 asked for study of toll tunnel through Cascades—n.....	Mar.	68
Arizona breaks a mountain barrier on Superior-Miami highway—R. C. Perkins—a.....	Oct.	61
Cabinet Gorge diversion tunnels one-third completed—n.....	June	122
Concrete-steel-lined pressure tunnel for San Francisco aqueduct—a.....	Nov.	85
Eklutna Tunnel in Alaska award, \$17,348,865—n.....	Nov.	98
Frenchman Hills tunnel project started—n.....	July	100
Modern tunneling practice, Part I—Rush T. Sill—a.....	Nov.	69
Modern tunneling practice, Part II—Rush T. Sill—a.....	Dec.	67
Owens Gorge tunnel driving project completed—p.....	Dec.	77
Record tunnel advance at mining pit in Utah— Charles Hageman—a.....	July	74
Springs slow tunnel operations on Portland interceptor sewer—a.....	Sept.	90
Tecolote Tunnel advanced 4 mi. in tough going through Coast Range—a.....	Sept.	78
Telescopic steel forms for Broadway Tunnel concrete—p.....	Feb.	83

Water Supply

Baldwin Hills Reservoir completed and dedicated—n.....	June	122
Central Utah project, a long range plan—n.....	Aug.	93
Colorado River storage dam system approved—n.....	Mar.	99
Concrete-steel-lined pressure tunnel for San Francisco aqueduct—a.....	Nov.	85
First reservoir of wire wrapped prestressed concrete for EBMUD—a.....	Mar.	69
Gunitite-asphalt-gunitite for reservoir lining—a.....	Aug.	75
Mortar lining 11-ft. steel siphons; first Western in-place lining, on Los Angeles Aqueduct—James G. Cowan—a.....	May	72
"Paul Bunyan" canal to bring water from North for Southern California—a.....	July	73
Predicting and preventing Columbia River floods—a.....	May	85
Reservoir roof built first, excavation completed later, at Tustin, Calif.—C. R. Browning—a.....	Nov.	66
Run-off forecasts—1951 water supply in Western States— R. A. Work and Clyde E. Houston—a.....	May	76
Run-off forecasts revised—a.....	June	124
Salt Lake aqueduct completed—a.....	Sept.	80
San Francisco aqueduct expansion nears completion—n.....	Sept.	101

AUTHOR'S INDEX

Abell, G. O.—Modern all-metal frictions; their use on equipment—a.....	Mar.	91
Ainsley, William G.—Abandoned bridge in Wyoming moved to a new site—a.....	Mar.	67
Baker, Floyd A.—First soil-cement laid in Colorado—a.....	Aug.	76
Bier, P. J.—Davis Dam penstocks: design, fabrication and installation—a.....	Dec.	63
Browne, Ralph—Alaska construction, present and future—a.....	Jan.	87
Browning, C. R.—Building the roof first and digging the reservoir later—a.....	Nov.	66
Burnside, Howard S.—Reports from the Courts—a (See subject index for itemized list of decisions)		
Burrows, Glenn R.—Use of special equipment for spillway repairs at Grand Coulee—a.....	Aug.	69
Collopy, J. P.—Cathodic protection of steel during the national emergency—a.....	Dec.	51
Conahey, George—Confusion in concrete: can field and office ever agree?—a.....	Dec.	57
Cooke, J. B., and T. J. Corwin—PG&E Bear River, Calif., 2,100-ft. hydro plant—a.....	Mar.	63
Corwin, T. J., and J. B. Cooke—PG&E Bear River, Calif., 2,100-ft. hydro plant—a.....	Mar.	63
Cowan, James G.—Mortar lining 11-ft. steel siphons on Los Angeles Aqueduct—a.....	May	72
DeGrace, R. F.—Treated timber bridge in Montana designed for loading 100 tons—a.....	June	87
Droskin, Morris—Bonny Dam, earthfill structure, completed 2 years ahead of schedule—a.....	May	65
Dudley, William—How to get efficiency and output from your power saws—a.....	July	82
Eckel, C. E.—Trends and needs of engineering education—a.....	Jan.	85
Edwards, Harlan H.—Structural design lessons learned from Northwest earthquake effects, Part I—a.....	Feb.	70
—Part II.....	Mar.	85
—Part III.....	Apr.	90
Evans, J. Warren—Concrete plant at Idaho atomic energy project—a.....	Apr.	78
Folsom, O. H.—Fast way to lay pipe in wet trench—a.....	Aug.	57
Foreman, H. E.—A history of the Associated General Contractors—a.....	Jan.	83
Gallagher, Richard—Low cost street repair by level course or seal coat—a.....	Oct.	84
Gardner, Horace—Woodstave line replacement on Idaho power project—a.....	Mar.	76
Glennen, E. J.—Alaskan weather dictates changes in Butler "packaged" hangar design—a.....	Dec.	60
Gorman, S. S.—Two San Francisco piers combined with concrete deck on 1,600 concrete piles—a.....	Oct.	65
Griffith, James R.—Construction Design Charts—a (See subject index for itemized list of charts)		
Hadley, Homer M.—Bridge with "bundled" reinforcement in Washington—a.....	June	89
Hadley, Homer M.—Puget Sound bridging with submerged tunnels proposed—a.....	Feb.	85
Hageman, Charles—Record tunnel advance at mining pit in Utah—a.....	July	74
Hills, Harold W.—Cable spinning techniques at Tacoma Narrows Bridge—a.....	Feb.	78
Houston, Clyde E., and R. A. Work—Run-off forecasts in West—a.....	May	76
Hveem, F. N., and P. R. Watson, Jr.—Full pavement for mountain roads has many advantages—a.....	June	73

Johnson, Fred M., and Frank J. Rossi—Street surfacing cost reduced 38%—a.....	June	79
Keptford, B. B.—Boysen Dam design and construction—a.....	July	77
Kier, Robert D.—Putting traffic engineering to work in Fresno, Calif.—a.....	Mar.	82
Leach, Robert W., and Eugene H. Tuomy—Economical asphalt paving in Spokane—a.....	June	85
Levison, Arthur A.—Fifty years of improvement in concrete paving equipment—a.....	June	101
Main, Percy A.—Struts stabilize highway over mud—a.....	Nov.	82
Miller, K. G.—Washington standardizes maintenance shop design—a.....	July	84
Miller, K. G.—Washington's heavy-duty brush mowing machine—a.....	Mar.	78
Miller, W. J.—Tips on the best use of concrete vibrators—a.....	Oct.	88
Norris, G. M.—A pipe poses for its picture—a.....	Nov.	79
Peacock, P. B., and R. W. Spencer—Complete story of Big Creek 4, Southern California hydro-power development—a.....	Apr.	70
Perkins, R. C.—Arizona breaks a mountain barrier—a.....	Oct.	61
Pilon, Corwin A., and H. W. Tyler—Seattle builds 2-level expressway—a.....	July	59
Poirier, Paul E.—Montana's longest highway bridge—a.....	Apr.	84
Powers, Edmund C.—Get the most from your compressor equipment—a.....	May	83
Rossi, Frank J., and Fred M. Johnson—Street surfacing cost reduced 38%—a.....	June	79
Samuelson, Dale—Two-way radio as a valuable job tool—a.....	Feb.	68
Sersanous, A. F.—A history of the Associated Equipment Distributors—a.....	Jan.	81
Sill, Rush T.—Modern tunneling practice—Part I—a.....	Nov.	69
Sill, Rush T.—Modern tunneling practice, Part II—a.....	Dec.	67
Sowles, L. P.—Canyon Ferry Dam construction—a.....	Dec.	53
Spencer, R. W., and P. B. Peacock—Complete story of Big Creek 4 hydro-power development in Southern California—a.....	Apr.	70
Stone, Theron B.—Wet weather problems for placing cement-treated base in Washington—a.....	June	77
Sutton, W. E.—Wyoming's highway maintenance program and procedures—a.....	June	83
Tapley, George M.—Alaskan road commission program to add 200 mi. of paved roads in 1951—a.....	June	74
Thomas, Charles F.—Purifying Soda Lake for irrigation project—a.....	Sept.	76
Tuomy, Eugene H., and Robert W. Leach—Economical asphalt paving in Spokane—a.....	June	85
Tuthill, L. H.—Short cuts for protecting fresh concrete from freezing—a.....	Sept.	64
Tyler, H. Ward and C. A. Pilon—Seattle builds 2-level expressway—a.....	Aug.	59
Warnick, C. C.—Prefab asphalt canal lining reduces seepage loss by 92%—a.....	Nov.	77
Waste, W. E.—A history of joint ventures—a.....	Jan.	77
Watrous, Mark U.—West's first modern turnpike—a.....	Apr.	67
Watson, P. R., Jr., and F. N. Hveem—Full pavement for mountain roads has many advantages—a.....	June	73
Webb, R. L., Jr.—Master plan for airport development in California—a.....	Feb.	62
Wiley, William E.—An extra uphill lane for slow trucks—a.....	Oct.	63
Woodin, Mark S.—Washington builds concrete snowsheds at Snoqualmie Pass—a.....	Feb.	59
Work, R. A., and Clyde E. Houston—Run-off forecasts in West—a.....	May	76
Wulff, Lew—Inspecting road and plant-mix jobs—a.....	Mar.	71
York, A. E.—A maintenance memo on power cranes and shovels—a.....	Nov.	93

UNIT BID SUMMARY INDEX

Street and Road Work Grading and Surfacing

	Issue	Page
Arizona		
Gila Co.—Seal coat on existing bituminous surface.....	Dec.	95
Mojave Co.—Grade, drain. and bitum. road-mix, 5 mi.....	June	150
Navajo Co.—Grade and crushed stone surf. 8.0 mi.....	Oct.	138
Topock Co.—Grade and drain. roadway over new alignment.....	Mar.	133
Yavapai Co.—Heavy grading for new roadway.....	Nov.	131
California		
Glenn Co.—Plant-mix surf. on cement-treated subgrade, 1.1 mi.....	Aug.	128
Los Angeles Co.—Grade, plant-mix surf. and structures on 6-lane Santa Ana Freeway.....	Jan.	128
Modoc Co.—Gravel base and road-mix surf., 12.4 mi.....	July	118
San Diego Co.—Bitum. surf. treatment and seal-coating, 1.1 mi.....	June	150
Colorado		
Adams Co.—Grading and MC plant-mix surf.....	Nov.	129
Larimer and Grand Cos.—Bitum. surfacing and stabilization.....	Feb.	122
Montezuma Co.—Grade, drain. and select borrow subgrade, 1.6 mi.....	Sept.	140
San Miguel and Montrose Cos.—Road-mix surf. 10.5 mi.....	Oct.	136
Idaho		
Kootenai Co.—Crushed rock surfacing on 3.4 mi.....	Dec.	94
Montana		
Deer Lodge and Silver Bow Cos.—Grade and plant-mix bitum. surf., 4.3 mi.....	June	148
Gallatin, Park and Meagher Cos.— $\frac{3}{4}$ -in. crushed gravel in stockpile.....	June	150
Lincoln and Flathead Cos.—Gravel surf. and road-mix oiling, 9.4 mi.....	Nov.	130
Richland Co.—Grading, gravel surf. and drainage structures, 7.3 mi.....	Aug.	124
Nevada		
Esmeralda and Nye Cos.—Excavation, haul, culverts and road-mix asph. surf., 20 mi.....	Jan.	132
Ormsby Co.—Concrete curbs, gutters and incidental work in Carson City.....	Jan.	130
Washoe Co.—Road-mix surf., 26.7 mi.....	Nov.	130
New Mexico		
Bernalillo Co.—Clearing, grading and asphaltic surfacing 7.95 mi.....	Mar.	133
Curry Co.—Base preparation and 55 mi. of road-mix asph. surf.....	Jan.	130
Sandoval Co.—Crushed stone base, bitum. surf. access road to Los Alamos project.....	May	126
Oregon		
Hood River and Wasco Cos.—Hydraulic embankment and drainage on Columbia River Highway.....	July	118
Klamath Co.—Grading, cinder surfacing and concrete bridge construction.....	Dec.	95
Lane Co.—Heavy grading and drain. on Pacific Highway.....	July	122
Lincoln Co.—Grade and bitum. macadam surf. on Oregon Coast Highway.....	June	146
Union Co.—Grade, drain. and cinder topping on 6 mi.....	Apr.	147
Utah		
Iron and Washington Cos.—Crushed rock base and road-mix bitum. surf. 11 mi.....	Mar.	132
Kane Co.—Grade, gravel base course and bitum. surf., 0.7 mi.....	Oct.	136
Tooele Co.—Plant-mix bitum. surf., 8.7 mi.....	June	148
Utah and Wasatch Cos.—Road-mixed bitum. surf., 6.5 mi.....	Aug.	126
Washington		
Cowlitz Co.—Clearing, heavy excavation for grading and drainage, 2.4 mi.....	Mar.	132
Cowlitz, Lewis, Wahkiakum and Pacific Cos.—Asphalt cement repair work, 34.5 mi.....	Aug.	124
Grays Harbor Co.—Stockpiling crushed stone, screenings and ballast.....	July	120
Lewis Co.—Bitum. penetration macadam surfacing, 4.8 mi.....	Sept.	139
Wyoming		
Fremont and Teton Cos.—Grading, crushed gravel base and cutback asphalt seal, 18.1 mi.....	Sept.	139
Goshen Co.—Grading, drain. and crushed gravel base and structures, 11 mi.....	Feb.	124
Natrona Co.—Heavy grading, drainage and selected material surf. on 6 mi.....	Apr.	146

Paving

California		
Los Angeles Co.—Grade and pave with asphaltic concrete, 0.5 mi.....	June	148
Los Angeles Co.—Grade and pave with asphaltic concrete, 2.3 mi.....	Oct.	138
Los Angeles Co.—PCC on cement-treated subgrade, 1.5 mi. of Ramona Freeway.....	Apr.	146
Merced and Stanislaus Cos.—PCC on cement-treated subgrade, 5.6 mi.....	May	128
Monterey Co.—PCC on imported subbase, 5.2 mi.....	June	146
San Diego Co.—PCC paving on cement-treated subgrade, 2.2 mi. long, nr. Carlsbad.....	Aug.	122
San Mateo Co.—Widening and paving highway, 3.2 mi.....	Feb.	125

Oregon	Issue	Page
Coos Co.—Grade and asphaltic concrete paving.....	Mar.	130
Douglas Co.—Grading, drainage, asphaltic concrete paving and concrete bridges.....	Feb.	124
Hood River Co.—Grading, asphaltic concrete paving and oil mat surf., 3.7 mi.....	May	126
Lake, Harney and Deschutes Cos.—Grading, widening and paving, Central Oregon Highway.....	Aug.	124

Washington

Cowlitz Co.—9-in. PCC pavement on Primary State Hwy. No. 1.....	Oct.	138
Pierce Co.—Grading, drainage and asphaltic concrete pavement, 1.4 mi.....	July	120
Spokane Co.—Grading and asphaltic concrete paving, 4.4 mi.....	Oct.	136
Walla Walla Co.—Asphaltic concrete pavement, 3.7 mi.....	June	146

Bridge

Alaska		
Fairbanks—Four steel I-beam bridges on Richardson Highway.....	Apr.	136

California

Alameda Co.—Bascule bridge across San Leandro Bay.....	July	116
Amador Co.—Concrete T-beam bridge across Dry Creek.....	June	152
Humboldt Co.—Concrete and steel bridge on North Fork of Mad River.....	Sept.	136
Kern Co.—Concrete slab bridge across Goose Lake slough.....	July	116
Kings Co.—Concrete bridge across Kings River.....	Feb.	120
Los Angeles Co.—Approaches and 3 bridges on Colorado Freeway, Pasadena.....	June	152
Los Angeles Co.—Concrete box girder over-crossing, Hollywood Freeway.....	Apr.	138
Los Angeles Co.—Concrete bridge across San Gabriel River.....	Sept.	136
Los Angeles Co.—Five concrete grade separation bridges on Harbor Freeway.....	Feb.	122
Los Angeles Co.—PCC paving and cement-treated subgrade and 4 grade separation structures for 6-lane freeway.....	Oct.	132
Los Angeles Co.—Steel and concrete bridge across Rio Hondo.....	Oct.	132
Los Angeles Co.—Steel and concrete bridge across San Gabriel River.....	May	124
Marin Co.—Plant-mix surfacing 5.5 mi. and 2 concrete bridges.....	Mar.	127
Riverside Co.—Reinforced concrete bridge on concrete pile bents across the Coachella Valley storm drain.....	Apr.	140
San Joaquin Co.—Bridge concrete slab.....	Nov.	124
Sonoma Co.—Concrete box culvert at Sleephouse Creek.....	Sept.	138
Tulare Co.—Concrete slab bridge across Deep Creek, nr. Visalia.....	Aug.	128

Montana

Yellowstone Co.—Steel and concrete bridge, 106 ft., at Automatic Creek.....	Mar.	130
---	------	-----

New Mexico

Catron Co.—Structural steel beam bridge.....	Mar.	124
--	------	-----

Oregon

Coos Co.—Concrete and steel bridge over Coos River.....	Apr.	138
Lane Co.—Concrete over-crossing on Pacific Highway.....	June	154
Lane Co.—Superstructure for steel truss and girder span railroad bridge.....	Feb.	120
Marion and Polk Cos.—Concrete viaduct approaches, 2,442 lin. ft., Marion Street.....	Mar.	130

Utah

Garfield Co.—Concrete box culvert, 12 x 18 ft.....	July	116
Morgan Co.—Small concrete bridge, 20-ft. span.....	Oct.	132
Sevier Co.—Grading, road-mix surfacing and concrete box girder bridge.....	Dec.	94

Washington

Benton and Franklin Cos.—Substructure for Columbia River Bridge, Pasco.....	Oct.	132
Grays Harbor Co.—Concrete deck on timber substructure.....	Nov.	124
Jefferson Co.—Concrete bridge, County Road Portage Canal Bridge.....	July	116
King Co.—Second section of Alaskan Way Viaduct, Pike to King St. in Seattle.....	Mar.	127
Lewis Co.—Concrete and steel bridge across the Skookumchuck River at Centralia.....	May	124
Lewis Co.—Steel and concrete bridge, precast concrete piling, across Salzer Creek.....	Apr.	138
Pacific Co.—Rebuilding small timber bridge.....	Dec.	94
Skagit Co.—Structural steel bridge.....	Jan.	130

Wyoming

Hot Springs Co.—Continuous concrete slab bridges over Owl Creek.....	Oct.	134
Lincoln Co.—Three-span I-beam bridge over the Mansfork River.....	Apr.	140

Water Supply

California		
Calaveras Co.—Water system; mains, fire hydrants, service connections.....	Aug.	118
Los Angeles Co.—Furnishing and installing concrete pipe, etc. for Silver Lake outlet line.....	Apr.	134

Idaho	Issue	Page
Bonneville Co.—Water mains, service connections, and sewer lines at Idaho Falls AEC headquarters.....	Nov.	122
Montana		
Valley Co.—Twelve-inch water distribution system.....	July	124
Sewerage		
Alaska		
Ketchikan—Concrete, cement-asbestos and vitrified clay sewer pipe	Feb.	114
Arizona		
Pima Co.—Vitrified clay sewer installation.....	July	122
California		
Monterey Co.—Sewage disposal system for Monterey.....	Apr.	142
San Mateo Co.—Sewage pumping station, force main and treatment plant	May	122
Idaho		
Canyon Co.—Sewer line construction.....	Mar.	122
Oregon		
Douglas Co.—Sewer system for Myrtle Creek.....	Aug.	118
Multnomah Co.—Tunnel, concrete lining and concrete sewer pipe in place	Mar.	122
Dam		
Arizona		
Davis Dam Project—Complete stilling basin at Davis Dam.....	Aug.	120
Davis Dam Project—Stilling basin and other channel excavation on Davis Dam	Nov.	128
California		
Cachuma Project—Glen Anne earthfill dam with asphaltic concrete protection layer on upstream face.....	Oct.	140
Folsom Project—Folsom Dam, main portion, 8,439,000 cu. yd. of embankment and 1,030,000 cu. yd. of mass concrete.....	Oct.	128
Sacramento, El Dorado and Placer Cos.—Earthwork for power facilities, Folsom Dam.....	Aug.	120
Colorado		
Colorado-Big Thompson Project—Drilling and grouting foundations at Granby Dam.....	July	118
Colorado-Big Thompson Project—Rattlesnake Dam, rolled earthfill embankment with concrete cut-off wall.....	Nov.	126
Idaho		
Bonner Co.—Initial rock excavation and cofferdam construction, Albeni Falls Dam.....	Mar.	122
Montana		
Flathead Co.—Completion of Hungry Horse Dam power plant and switchyard (Part I).....	May	128
Oregon		
Columbia River—Third step (completion) contract for McNary Dam	June	154
Lane Co.—Revetment test channel at Dorena Dam.....	Aug.	122
Willamette River Basin Project—Big Cliff concrete and gravity dam and powerhouse.....	Sept.	134
Willow Creek Dam—Earthfill dam, 682,000 cu. yd. of fill.....	Oct.	142
Texas		
Rio Grande Co.—Falcon Dam, rolled earthfill, 5 mi. long.....	Jan.	124
Wyoming		
Missouri River Basin Project—Grouting construction joints at Kortès Dam.....	July	118

Irrigation

Arizona		
Gila Project—Earthwork, canal lining and structures on Wellton-Mohawk Canal.....	Sept.	128
Gila Project—Norton siphon on the Mohawk Canal, Gila Project.....	July	124
Yuma Co.—Furnishing and installing radial gates and hoists for Wellton-Mohawk Canal.....	Apr.	140
California		
Coachella Valley—Reinforced concrete pipe for laterals and sublaterals	Feb.	116
Colorado		
Colorado-Big Thompson Project—Earthwork, canal lining, tunnel and structures, Horsetooth Feeder Canal.....	Sept.	128
Larimer Co.—Earthwork, concrete canal lining and structures, Poudre supply canal.....	Mar.	124
Washington		
Columbia Basin Project—Canal excavation and asphaltic membrane lining on East Low Canal.....	Aug.	128
Columbia Basin Project—Canal excavation, compaction, and diversion structures for Potholes East Canal.....	Nov.	122
Columbia Basin Project—Earthwork and canal lining for main canal	Feb.	120
Columbia Basin Project—Earthwork and structures for canal and wasteway, East Low Canal.....	July	122

Power

Alaska	Issue	Page
Eklutna Project—Excavation, concrete lining and structures for Eklutna tunnel.....	Sept.	130
Colorado		
Colorado-Big Thompson Project—Steel penstock, Pole Hill power plant	Sept.	132
Larimer Co.—Transmission Line, 115-kv. for Colorado-Big Thompson Project	July	126
Montana		
Hungry Horse Project—Completion of switchyard at Hungry Horse Dam.....	July	124
Oregon		
Willamette River Basin Project—100-ton indoor bridge crane at Big Cliff Dam.....	Sept.	132

Waterway

California		
San Diego Co.—Footings and pile work for anchorage at San Diego.....	Apr.	142
New Mexico		
Middle Rio Grande Project—River channel excavation, timber piling and structures	Nov.	122
Oregon		
Coos Co.—Dredging navigable channel in Coos Bay.....	Aug.	118
Willamette River Basin—Bank protection works on Willamette River	Aug.	118
Washington		
Cowlitz Co.—Pile dike and revetment repair along Columbia River	Feb.	116

Tunnel

Alaska		
Eklutna Project—Eklutna Tunnel intake struct., excavation, conc. and steel placement, penstock, dam alterations, gate installation	Nov.	120
California		
Cachuma Project—Sheffield Tunnel excavation, tunnel supports, concrete, grout, metal work, access shafts.....	Nov.	121
Santa Barbara Co.—Concrete-lined highway tunnel in Gaviota Gorge	Sept.	138
Colorado		
Larimer Co.—Bald Mountain 1.3-mi. pressure tunnel, excavation and reinf. concrete lining.....	Feb.	112
Washington		
Grant Co.—Frenchman Hills 1.7-mi. irrigation tunnel, excavation and steel and conc. lining.....	Feb.	112

Building

Alaska		
Eklutna Project—Thirty temporary residences and utilities.....	Sept.	140
Eklutna Project—Warehouse building on the Eklutna Project.....	May	122
Arizona		
Davis Dam Project—Headquarters building on Davis Dam Project.....	Oct.	134
Colorado		
Larimer Co.—System dispatchers building at Flatiron.....	May	122

Miscellaneous

Arizona		
Pinal Co.—Replacing concrete fords with concr. box culverts, nr. Florence Junction.....	Mar.	134
California		
Mariposa Co.—17.7 mi. new construction on Yosemite All-Year Highway with rip-rap and grouted rock toe walls.....	Aug.	126
Idaho		
Butte Co.—Railroad spur and siding.....	Mar.	136
Oregon		
Lane Co.—Hauling and stockpiling crushed rock.....	Dec.	95
Lane Co.—Main line and shoofly railroad, 16 mi.....	Mar.	134
Washington		
Clallam Co.—Rip-rap for State Highway 9 at Lake Crescent.....	Mar.	134
Columbia Basin Project—Armor and rip-rap channel slope protection, Grand Coulee Dam.....	Sept.	130
King Co.—Aerial topographic survey of highway route.....	Dec.	95
Pend Oreille Co.—Diamond core drilling, near Newport.....	July	127
Yakima Co.—Aerial topographic survey of highway route.....	Oct.	142