

SELECTED TIME LINE OF EVENTS
CONCERNING THE WILLAMETTE RIVER BRIDGES
AT PORTLAND, OREGON - 1920-1935

May 15 1920 - The Oregon State Highway Commission investigates the Burnside Street Bridge, opened in 1894; report, signed by Oregon State Bridge Engineer Conde B. McCullough, finds the bridge unsafe.

Nov. 2 1920 - Charles Rudeen is voted into office as a Multnomah County Commissioner.

1922

Sept. 13 1922 - The Multnomah County Board of Commissioners (MCB) orders the district attorney to prepare a resolution to place proposals to build a high bridge at St. Johns, a high bridge at Sellwood, and a high bridge near Ross Island.

Sept. 20 1922 - Report and cost estimates submitted to the MCB by C.B. McCullough and Robert E. Kremers of the City Engineer's office. McCullough and Kremers submit estimates of different designs.

Sept. 25 1922 - The MCB calls for a bond election to vote \$3 million for the replacement of Burnside Street Bridge in the election of November 1922. The same date, the MCB calls for a bond election to vote \$1.6 million for the erection of a bridge across the Willamette at Ross Island.

Nov. 7 1922 - General Election - 66,560 votes for the Burnside Street Bridge; 9,456 against; 53,006 votes for the Ross Island Bridge; 20,005 votes against. Burnside approved for \$3 million; Ross Island for \$1.6 million.

Same date - Dow Walker and J.H. Rankin are voted into office as Multnomah County Commissioners.

Nov. 15 1922 - Robert Kremers applies to Multnomah County for the position of bridge engineer for Burnside and Ross Island bridges.

Nov. 20 1922 - Conde B. McCullough applies as bridge engineer for the project.

Nov. 22 1922 - J.A.L. Waddell, Kansas City, sends telegram offering services as bridge expert, his application for the job made by "Mr. Rowe."

1923

Jan. 26 1923 - Commissioner Dow Walker nominates Robert E. Kremers, chief of the city Bureau of Construction, as engineer to supervise the construction of the two new bridges. Commissioner Rudeen casts his vote with Walker. Commissioner Rankin votes no, and suggests Kremers be employed on a salary only basis, not to exceed \$10,000 per year during period of construction of Ross Island and Burnside bridges. Rankin suggests the county employ a firm of consulting engineers with national reputation and experience in actual bridge construction. Having the majority vote, Kremers is declared the successful applicant.

Feb. 1 1923 - The Chamber of Commerce and Taxpayers League appear before the MCB and request that action on Kremers' contract be postponed. Rankin moves appointment of Kremers be rescinded and any action postponed for ten days. Walker and Rudeen vote for postponement but do not rescind Kremers' contract.

Feb. 19 1923 - Rudeen and Walker recommend to the MCB they appoint an advisory engineering committee of seven to serve, without pay. They are Olaf Laurgaard, City Engineer; J.P. Newell, City Planning Commission; G.B. Hegardt, Portland Dock Commission; C.B. McCullough, Oregon State Highway Dept.; Major Richard Park, Corps of Engineers; F.I. Fuller, Portland Railway, Light & Power Co.; R.E. Kremers, Multnomah County. The committee is to conduct preliminary studies and report to the MCB. Rudeen and Walker make six recommendations in all, including that MCB employ as a consultant an engineer of nationally recognized ability and experience; that an architect or firm of architects be hired to collaborate with the engineers; and that the MCB hire Robert Kremers as Chief Engineer and as the personal advisor to the MCB to represent the board in all matters concerning the construction of Burnside and Ross Island bridges. James Polhemus, Chief Engineer of the Port of Portland, is added to the advisory engineering committee, making a total of eight members.

Feb. 26 1923 - Col. Frederick Mears of the U.S. Army Engineers appears before the MCB as local representative of Ralph Modjeski; submits two proposals for Burnside and Ross Island bridges, with Mears as engineer and Modjeski as consultant, "or vice versa." Rankin moves that the order of the board naming Kremers bridge engineer be rescinded, and Ralph Modjeski appointed as engineer in complete charge of the construction of the two new bridges. There was no second, and action was delayed pending receipt of a proposal from the Strauss Bascule Bridge Co. of Chicago, Ill. And other applicants.

March 5 1923 - W.E. Angier of firm Modjeski & Angier of Philadelphia, appears before board and submits proposals for work on the two new bridges. Board tells him to submit proposals in writing.

March 7 1923 - Col. Mears, 304 Wilcox Building, local representative of Modjeski, reads two proposals to the board. Mears adds, "Dr. Modjeski is a property owner in Portland and is also

licensed in his profession in the state of Oregon." The same date, Daniel Kern, 305 E. 15th St., Portland, appears before the MCB and enters a protest against Modjeski being chosen to design the new bridges, citing "alleged faulty construction of the Broadway Bridge." The same date, Ira G. Hedrick, Kansas City, and Robert Kremers, Portland, form a partnership with the name Hedrick & Kremers (H&K), offices at 250-1/2 Third [changed to 1130 S.W. Third, the location of the extant Multnomah County Detention Center, known as the Justice Center, 1120 S.W. Third]. The agreement is entered into the MCB board minutes, with M.E. Reed and J.D. Gallagher as witnesses. Hedrick signs first.

March 9 1923 - The MCB orders the appointment of Kremers rescinded. Commissioner Rankin moves that the partnership of H&K be employed as Chief Engineer of Multnomah County during the period of construction of the Burnside and Ross Island bridges. Appointment is approved.

March 14 1923 - The advisory committee recommends expediting widening and extending Burnside Street on both sides of the river.

March 21 1923 - The MCB signs a contract with H&K, with the engineering firm to plan and construct Burnside and Ross Island bridges. The contract is limited to \$180,000, unless more than one approach is ordered by the MCB.

March 26 1923 - The East Side Business Men's Club sends letter suggesting the old Burnside Bridge be moved to Sellwood, noting that "the old Morrison Street Bridge is still in use across the Chehalis River at Aberdeen, Washington, having been removed there about 25 years ago." The MCB orders copy sent to H&K.

April 25 1923 - The MCB, in joint session with city council, orders that Burnside Street be widened to 90 feet on the east side and "to a reasonable width to accommodate traffic on the west side."

June 6 1923 - Newell submits his report to the City Planning Commission about traffic on the proposed Burnside Bridge. On June 14, he submits a report to the same commission, recommending that the proposed Ross Island Bridge extend from Corbett and Woods Streets to East Seventh and Brooklyn, and to Ninth Street and Powell on the east.

Same date - H&K recommend, in a report to MCB, that the MCB hire Houghtaling and Dougan Co. as architects for Burnside and Ross Island bridges, for a fee of \$10,000. Action is deferred until H&K submit tentative designs for the new bridges.

June 11 1923 - The City Planning Commission notifies MCB that they have adopted City Engineer Laurgaard's recommendations dated June 6 1923 about width of the roadways on bridge approaches and bridges.

June 19 1923 - H&K submit plans and recommendations for Burnside and Ross Island bridges that are displayed to the public. H&K recommend that no portion of the new Burnside Bridge trusses, girders or supports project above the surface of the roadway; that it will carry two street railway tracks in the center of the bridge, that the bascule span will provide a net vertical clearance of 67.27 feet above City Datum when closed, "so that all river boats can pass under the bridge without raising the bascule"; that the roadway, "except possibly the bascule span," will be paved with sheet asphalt laid on a concrete base. They discuss the inadequate approach problems for all the city's Willamette River bridges. "As an example of what a structure will care for with proper approaches, we will mention the Dallas-Oak-Cliff Viaduct [Hedrick the designer for the Dalles-Oak-Cliff Bridge, see HAER NO. TX-33]. The report also recommends widening of Burnside Street, and requirements of the U.S. Army Engineers. They discuss "the Strauss pivoted counterweight trunnion and the Chicago type with fixed counterweight." H&K note the royalties and patent controversy in connection with the construction of bascule spans, both in Chicago and Seattle. They advise, "There is not a material difference in either the costs nor the merits of the two designs." Because of the royalty question, H&K recommend that the county, to be fully protected against infringement of patents and liability for damages, select the type it wants and then pay "a reasonable charge for royalties." Further, the county would do well to require the bascule company selected to furnish a surety bond "in such sum as will fully indemnify the county against any possible claims for royalties and infringements." H&K also report on Burnside's soil borings, and present estimates of quantities of material needed and costs for approaches for "Case No. 1" and "Case No. 2" of \$2,871,000 and \$2,767,000, respectively. They conclude 1) that a 60-foot roadway on the bridge between harbor lines is sufficient; 2) that the approaches and the side spans of the main bridge be built of concrete; 3) that the foundation conditions as determined by the tests and borings are safe for concrete construction; 4) that there is sufficient money to build a bridge with a 60' roadway, but not an eight-lane bridge; 5) that a trunnion bascule span be used; and 6) that the old bridge be removed before the work on the new structure is started. With the report are eight drawings: General Map; Hydrographic Map of River; Elevation and Plan, Steel Side spans; Elevation and Plan, Concrete Arch Side spans; General Elevation and Cross sections, 2 Concrete Arch spans, Steel Bascule and Concrete Approaches; General Elevation and Cross Sections, 2 Steel Truss Spans, Steel Bascule and Concrete Approaches; Cross-section, showing traffic, 60' roadway; Record of Borings.

For the Ross Island Bridge, H&K discuss location in depth since the bridge site had not yet been determined, but only that Ross Island "be constructed across the Willamette River, near the lower end of Ross Island." The bridge's purpose is provide "a means of communication between the residence district on the East side and the West side business district." The report discusses borings at Ross Island and provides estimates of cost for four designs, among them a concrete arch, and a bridge with steel superstructure and concrete substructure. H&K's report about Ross Island concludes 1) that the bridge extend from the intersection of Front (S.W. Naito Parkway) on the west, to the intersection of East Seventh Street and Brooklyn Street on the East; 2) that the foundation conditions are safe for concrete construction; 3) that the bridge be constructed with a forty foot width of roadway with five foot sidewalks; and 5) that an additional \$200,000 is need

to construct an adequate bridge at Ross Island. The four proposals are estimated at between \$1.9 and \$1.4 million.

July 2 1923 - MCB authorizes H&K to make application to the War Department for permit to construct the Ross Island Bridge.

July 9 1923 - Rankin moves to adopt resolution to hire architects. The MCB orders the resolution be adopted. The board also formally adopts the concrete type, and orders H&K to confer with O. Laugaard and Newell in connection with the proposed width of the Burnside Bridge, and the location of the trolley poles on the bridge, and to submit their written recommendations.

Same date - MCB orders notice given to interested parties about public meeting to consider construction of Ross Island Bridge about 1,000 feet below the foot of Ross Island.

July 13 1923 - The MCB considers the proposals of the Chicago Bascule Bridge Co., and the Strauss Bascule Bridge Co., and adopts recommendation of H&K to accept the proposal of the Strauss Co. H&K advise that the Strauss Co. could offer many designs and the Chicago Co. had only the fixed counterweight design to offer. Strauss Co. says it brings, "twenty years training of skilled men and a performance record of 244 bridges in daily service in every part of the globe."

Same date - The MCB fixes the width of Burnside Bridge at six lanes.

July 18 1923 - The MCB considers a letter sent by H&K with a map showing rights of way and easements necessary for the construction of the Burnside Bridge. The rights of way are to be acquired by the city in accordance with an agreement reached previously between the city and the county.

July 25 1923 - The MCB orders hiring Houghtaling and Dougan architects. Walker doesn't vote.

Same date - The MCB receives a letter from the city about the width of Ross Island Bridge and widening of streets to the bridge.

July 31 1923 - The Strauss Co. signs a contract with the MCB posts a \$25,000 surety bond for its work on Burnside Bridge and a contract to be signed with the MCB that is approved.

Aug. 20 1923 - H&K recommends that the MCB accept Type I of the bascules submitted by the Strauss Co., stating it would mean a saving of \$41,500.

Aug. 22 1923 - The MCB orders, by recommendation of H&K, that the grade on the west approach of Burnside Bridge be raised between 2nd and 3rd streets.

Aug. 23 1923 - A special conference is held between the City Council, J.H. Rankin (representing the MCB), H&K, and the City Engineer relative to the approaches to the new Burnside Bridge.

Aug. 27 1923 - The MCB considers H&K's proposal regarding advertising for cement and the advertising for substructure of Burnside and Ross Island bridges.

Sept. 10 1923 - The MCB signs a contract with H&K, with the engineering firm to study the feasibility of taking down the superstructure of the old Burnside Bridge, and re-erecting it across the Willamette River at Sellwood. If the county decides to proceed, the firm will complete plans and perform all the engineering for a total fee of 5% of the total cost of the completed work, not including the value of the old superstructure.

Oct. 22 1923 - Bids on substructure of Burnside and Ross Island bridges received, opened and read.

Oct. 29 1923 - All bids rejected for the substructure work on Burnside and Ross Island bridges due to excessive cost.

Nov. 6 1923 - Voters approve \$350,000 for a bridge at Sellwood.

Nov. 8 1923 - MCB orders that the plans for the Sellwood Bridge be prepared as soon as possible so that the bids for Sellwood can be advertised at the same time as the new bids are advertised for Burnside and Ross Island.

Nov. 16 - H&K apply to U.S. Engineers for a Burnside Bridge designed with side spans of steel, rather than concrete construction.

Nov. 19 1923 - MCB approves notice of a public hearing to be held on applications for approval of plans for proposed bridges at Sauvies Island [using 1894 Burnside swing span], Sellwood and modified plans for the construction of a bridge at Burnside Street, to be held Dec. 3 1923. [H&K also entered into an agreement for preparing plans and specifications for constructing a bridge across the Willamette Slough to Sauvies Island. Reference to the Sauvies Island contract is part of the termination agreement that severed all ties between Multnomah County and H&K that would be signed in July 1924.]

Dec. 3 1923 - The MCB signs a contract with H&K to prepare plans and specifications to perform all engineering and inspection work necessary to take down the old Burnside Street Bridge and to re-erect same at Sellwood. Fee is "5%, less \$2,000 from September 10 1923 contract."

Dec. 17 1923 - Regarding the matter of form of trusses for Burnside Bridge, Kremers appears before the MCB and presents plans for two types of steel spans for the bridge's side spans.

The board authorizes adopting steel arch spans with curved bottom chords at a cost not to exceed \$50,000.

Dec. 21 1923 - The city Dept. of Utilities, under Ordinance No. 4481, recommends water mains be constructed on Ross Island Bridge under the general contract as a part of the main structure of the bridge. MCB orders the proposal be accepted.

1924

Jan. 24 1924 - City of Portland adopts Ordinance No. 13704, to call a special municipal election approving sale of bonds to provide street access to new Burnside and Ross Island bridges, the Glisan Street approach to Steel Bridge and East Broadway from Crosby to Larrabee Street to Broadway Bridge. The estimate for widening streets and acquiring right of way for Burnside Street on west side to Third Street is \$973,000 and E. Burnside Street to Grand Ave. is \$197,000; for Ross Island, estimated at \$29,000 (west) and \$23,000 (east). Under the plan submitted to the voters, 75% of the total \$1.3 million will be covered by bonds and the rest by assessment.

March 1924 - In a special election, voters approve street access to Burnside, Ross Island, Steel and Broadway bridges.

April 1 1924 - Bids opened for Burnside, Ross Island and Sellwood bridges. Two bids are received on Burnside and one each on Ross Island and Sellwood bridges. J.H. Tillman bids \$2,820,000 on the Burnside, Parker and Banfield bid \$1,670,374 on the Ross Island, and the Union Bridge Co. bids \$377,500 on the Sellwood. The bid of the Pacific Bridge Co., the second Burnside Bridge bidder, is \$530,000 lower than that of J.H. Tillman, yet the MCB, against the advice of H&K, and the county attorney, awards contracts for all three bridges to Tillman and his associates six hours after the bids are opened.

April 5 1924 - Public controversy arises out of bridge bid awards. Commissioners rescind the contract awards for all three bridges.

May 10 1924 - A grand jury sitting in Portland indicts county commissioners Rudeen and Walker for "receiving and agreeing to receive a bribe" and at the same time indicts Kremers for "bribing and offering to bribe a public official." Both indictments result from alleged irregularities previous to the opening of bids and award of contracts on the construction of the three bridges across the Willamette.

May 16 1924 - Rudeen, Walker and Rankin are recalled by a majority vote at a special election held in Portland, after they had been indicted on fraud charges stemming out of the naming of Robert Kremers, also under indictment, as bridge engineer on the design and construction of three new bridges.

May 22 1924 - Amedee M. Smith, Grant Phegley and Erwin A. Taft, the newly appointed board of county commissioners, take office.

May 26 1924 - The new MCB voids the construction contracts for the three bridges on the grounds that they are unreasonably high and not within the bond issue. The county district attorney finds that the contracts with Houghtaling and Dougan and the Strauss Co. are valid. H&K had already received \$70,797.64, Strauss \$36,232.50 and Houghtaling & Dougan, \$3,260.95 for Burnside and \$1,739.15 for Ross Island.

May 31 1924 - The grand jury investigating the conditions under which three bridge contracts were let completed its work, returning 12 indictments, including two against Rudeen, one each against Walker and Rankin, for malfeasance in office. Rudeen, Walker and Kremers are also indicted one count each for bribery. Contractors who were awarded the contracts for the construction of the three bridges are also indicted on one count each for conspiracy in submitting collusive bids. The contractors are J.H. Tillman, awarded contract for construction of Burnside Bridge; C.J. Parker, president and T.H. Banfield, treasurer, Parker & Banfield, awarded contract for Ross Island Bridge; and George A. Sears, president and secretary and C.G. Huber, VP and treasurer of the Union Bridge Co., awarded the contract for Sellwood Bridge.

June 4 1924 - Trial of Dow Walker, on a charge of bribery in connection with award of engineering to H&K, begins.

Same date - Gustav Lindenthal, consulting engineer, New York City, signs his first agreement with Multnomah County: to examine the engineering plans for Burnside, Ross Island and Sellwood bridges for soundness of design. Fee is \$5,000, plus travel expenses for Lindenthal and one assistant.

June 16 1924 - Lindenthal sends telegram to the new MCB, "for the record," regarding his proposed examination of the three bridges. He notes that the Strong & McNaughton (sic) Trust co. had called his attention to the *Engineering News-Record* articles in their telegram to him.

June 20 1924 - Lindenthal arrives from New York City, stays at Benson Hotel.

July 1 1924 - Frank Fey of U.S. Steel, Pacific Coast Dept., writes to Lindenthal, address, Benson Hotel, Portland, responding to Lindenthal's request to furnish the estimated weights furnished by the Chicago office of U.S. Steel covering the structural steel and machinery for superstructure, per Design No. 2 for Burnside Bridge. Included are four 104-foot-long girders, which weigh a total of 334 tons, to be fabricated at U.S. Steel's Gary, Indiana plant and shipped by rail to Portland, as the girders cannot be handled by ship.

July 2, 1924 - Ira Hedrick is arrested for drunkenness. (*Oregon Daily Journal*, July 2 1924, 1.)

July 9 1924 - H&K sign a Multnomah County release, accepting \$25,000 payment for "settlement of all rights which it might have against said county arising out of contract or otherwise . . ." The release voids contracts dated March 21 1923, September 10 1923, December 3 1923, and a contract for construction of a bridge at Sellwood. As part of the deal, H&K agree to turn over all the tracings, data and other information or material "necessary or desirable to the county in the planning and construction of the said bridges, all property of said firm to be returned to it upon the completion of said bridges." [Lindenthal also takes over the office at 250-1/2 Third Street (changed to 1130 S.W. Third, now 1120 S.W. Third), and all or part of the H&K engineering staff.]

Same date - The MCB makes a statement for the record, that the bridge problem in its relation to engineers H&K and their contract with the county has two phases: 1) the possibility of corruption at the time the contract was made, and 2) whether the engineering services performed were adequate. They leave one to the courts. As to the engineering question, they noted that persons had questioned the foundation design, especially Ross Island's because of the sub-soil conditions indicated by the borings. The H&K design is a high level reinforced concrete structure, with its foundations resting on gravel "of a more or less loose composition." The commissioners voted to retain as their expert for a special report Mr. Gustav Lindenthal of New York City "who is a bridge engineer of international repute with an unbroken record extending over many years of successful achievements in bridge design and construction of the first magnitude." They list Lindenthal's achievements. His report is to follow within two weeks, for which he would be paid \$5,000, plus travel expenses for himself and one assistant.

July 11 1924 - In his preliminary report, Lindenthal says appropriateness and adequacy of design for a bridge, the features on which one desires to be particularly informed, are usually judged on four conditions in the following order: 1) location; 2) traffic capacity; 3) structural character; and 4) for a city bridge, the architectural features. Lindenthal recommends completion of the Burnside Bridge as designed by H&K, with some modifications, and the letting of the contract for its construction to the Pacific Bridge Co., the low bidder at the opening April 1. The new Burnside will have two piers, but of unusual thickness. The roadway on the new Burnside will be about 40 feet higher than the old bridge at the middle of the river, and 77.85 feet above city datum and with longer approaches on ascending grades. He also recommends complete redesign of the Ross Island as a steel span instead of a concrete arch structure; the redesign to lower the bridge from a proposed 135-foot overhead channel clearance to 80 feet, and the elimination of car tracks. He advises using new steel for the Sellwood Bridge, instead of the steel from the 1894 Burnside structure, and a new design of Sellwood to secure better architectural effects.

About the design used for Burnside, Lindenthal thought a different movable type might have been more aesthetically pleasing at a lower cost, but he recommends going along with this design. He wants starlings made of concrete for both sides of the Burnside's river piers to protect against ramming and to lessen scouring action, and that they be integral to the piers. If the cost of concrete protection was too great, he recommends piling and framed timber. Architecturally,

he was aiming for an unobstructed view from the roadway over the pier, a principal reason for the "costly bascule type." The "squatty massiveness of the piers in the middle of the river will appear in silhouette strangely out of proportion to the framed steel trusses resting on them. The employment of an architect for the artistic features is to be commended." "[the Burnside] . . . will certainly be the best looking among the structures now spanning and disfiguring the river." He recommends taking the bid of Pacific Bridge Co. for the construction of Burnside.

About the redesign of Ross Island, Lindenthal didn't believe the concrete structure H&K designed could be built within the amount budgeted, and that the river bottom was not good for foundations sunk by air process, as H&K had proposed. Regarding lowering the bridge, he thought the axis of the bridge should be on a straight line, and that for better appearance, the hump, due to the 135-foot height, should be taken out. He recommended widening Ross Island's sidewalks from five to eight feet wide.

About Sellwood Bridge, he advised against the use of the pin-connected through trusses from the old Burnside Bridge for two spans over the channel, which "would make only another eyesore above the river." He made the same recommendations regarding the approach for Sellwood for the same reason as the other two bridges: it would prove a good investment.

Same date - The MCB signs a contract with Lindenthal, to complete Burnside and design Ross Island and Sellwood bridges. Cost: \$119,000. If not finished in two years, MCB to pay \$2,000 per month; but in no event more than \$131,000 total.

July 14 1924 - L. B. Selley writes to MCB and says that even though Lindenthal has been recommended, he sends six letters of recommendation for J.A.L. Waddell.

July 21 1924 - Letter from Lindenthal, from the Palace Hotel, San Francisco, informing the MCB he has put M.E. Reed, Assistant Engineer, in charge of engineer's offices taken over from H&K until Hans Rode, Lindenthal's representative, arrives in Portland the first week in August. Meanwhile, Lindenthal sends "Mr. Cuneot" back to N.Y. with all necessary data to prepare redesigning of the Sellwood and Ross Island bridges.

Same date - MCB contracts with Pacific Bridge for erection of new Burnside Bridge superstructure, including bascule span; taking down old draw and removing old piers. Design No. 2, a trunnion bascule draw span with riveted steel truss fixed side spans, is selected. Contract with Pacific Bridge is for \$2,390,173.

July 23 1924 - MCB receives letters from Roy Klein, Oregon State Highway Engineer, Salem, dated July 15 and 19 1924. Klein questions whether Burnside Bridge meets Oregon standards. Because of Lindenthal's involvement, Klein waives a complete mathematical analysis and check of the design and approves the general plan, provided Lindenthal will furnish a certificate with his "unqualified endorsement" of the general plan, etc.

Aug. 4 1924 - Charles Swigert, Pacific Bridge Co. notifies Lindenthal by letter that dredging for the west pier of the bascule span of the Burnside Bridge is nearing completion, but that they need the right of way to finish. Strauss Co. wants formal advice direct from Lindenthal; it has not received the plans and specs. Letter from U.S. Steel needing specs approved.

Aug. 6 1924 - Lindenthal, from 8870 Pennsylvania Station, New York City, writes to Joseph Strauss, 225 North Michigan Avenue, Chicago, notifying Strauss that Lindenthal has taken charge of the construction of the Burnside Bridge; he requests Strauss to furnish the American Bridge Co. a set of plans for the bascule span so that shop drawings can be prepared.

Aug. 15 1924 - Pacific Bridge Co. sub-contracts with U.S. Steel for Burnside Bridge structural and cast steel and bascule machinery for \$733,459.

Aug. 18 1924 - The earliest dated Lindenthal engineering drawing for Burnside Bridge, "Details of Sway Bracing, L-58," is dated Aug. 18 1924.

Aug. 20 1924 - Swigert writes to Lindenthal, attention Hans Rode. Swigert is transmitting copy of a letter from the American Bridge Co. Swigert is checking to make sure that Lindenthal's drawing L-58 is a new drawing and supersedes sheet 58 originally prepared by H&K.

Aug. 21 1924 - Pacific Bridge awards subcontract to Lindstrom & Feigenson for tearing down and removing east approach of old Burnside Bridge, and constructing new east and west approaches on new Burnside Bridge.

Aug. 28 1924 - The earliest dated Lindenthal engineering drawing for Sellwood Bridge, "General Elevation and Plan, L-1," is dated Aug. 28 1924.

Sept. 3 1924 - Second set of Burnside bonds issued.

Same date - MCB signs order for Shanghai Building Co. to transport and store the 1894 Burnside Street Bridge at property leased from the Oregon-Washington Railroad & Navigation Co. on the west side of the Willamette, immediately north of Wood Street and east of Moody Street. The county placed the bridge on barges for Shanghai to move before 5 p.m., Sept. 6 1924. Shanghai to store in conditions approved by Lindenthal, for up to three years, at \$4 a ton, and storage @ \$100 a month for entire bridge and \$50 a month for half or less than half the bridge.

Sept. 6 1924 - Pacific Bridge subcontracts with Jaggar Sroufe Co. for electrical system for bascule span for a fee of \$39,000.

Sept. 15 1924 - Lindenthal writes from N.Y. that he has appointed Pittsburgh Testing Laboratories as inspector for Burnside steel work. Letter states "rolling of the steel will probably

take place at Pencoyd and Gary and the fabrication at Trenton and Ambridge. Most of the fabricated steelwork ready for erection will probably be shipped by way of the Panama Canal." The MCB approves.

Same date - Pacific Bridge submits bill for \$76,500 for dismantling the old Burnside Bridge.

Sept. 17 1924 - Letter from Local #310, Camp Cooks & Helpers Alliance, asking to be considered in connection with county work regarding possibility of camp established at Sellwood Bridge.

Same date - MCB receives letter from Lindenthal notifying board that Burnside's design is going forward, with only minor changes to present plans, and that he is redesigning Ross Island and Sellwood to bring their cost within the appropriation for same [designing to fit the dollars]. There will be continuous steel girders [trusses] for the superstructure of both bridges, "saving falsework in erection and giving more rigid structures." He notes their computation and design requires more time than ordinary trusses.

Same date - Newell reports on the question of substituting a low level versus high level bridge at Ross Island, with a survey of waterfront usage between Ross Island and Broadway Bridge. He notes Portland's commerce was originally centered at the foot of Stark Street, but that in 1924, 60% of the frontage devoted to deep-sea use is now north of Broadway Bridge, and that, New Orleans, like Portland, has deep water frontage of less than nine miles. In 1924, only 1-1/2 miles of waterfront south of Broadway Bridge is in active use by sea-going vessels and he advises that Portland has no need of harbor extension at excessive cost.

Same date - Six businesses write letters of protest against building bridges so low that they will interfere with future development of the upper harbor.

Sept. 22 1924 - The city asks the county for \$7,500 for trans-Willamette bridge study and study of land in six mile zone beyond city limits.

Same date - Rode submits report showing estimate of cost for Ross Island; he refers to a meeting held in the court house on Sept. 15 1924, at which a committee was named to investigate the clearances for Ross Island. They issued a report saying a bridge less than 120 feet would not be approved by authorities. Rode says a bridge of this height would cost \$2 million. Rode doesn't sign report because he says he holds a divergent view, as he doesn't think need has been shown for a 100-foot clearance above a 20-foot fixed flood stage (120'). He says a closer study may show that the best solution will be a continuous truss bridge with parallel chords, even if a grade of nearly 4% cannot then be avoided. Rode says it is impossible to construct a really satisfactory bridge within the present Port and government requirements. Rode submits cost estimates to MCB for four designs for Ross Island: 1) concrete approaches, six steel deck trusses, 80 foot clearance, \$1,690,000; 2) same as #1, but provides for conversion later to a lift span, \$1,947,000;

notes this design could not have water mains; 3) same design as #2, but put in lift now, \$2,127,000; 4) fixed span, same as #1, but with a second river span raised 55 feet, to give 135-foot clearance instead of 80 feet, \$1,865,000; #4 means climbing a 60-foot high steep hill. Water mains are an additional \$61,000. Rode recommends design #1. [The built bridge is a five-span continuous truss.]

Sept. 22 1924 - Telegram from Lindenthal to MCB dated Sept. 23, "Have today sent letter and plans for high Ross Island. Request no further action until received and considered." He recommends the low bridge in order to stay within the budget. Says he expects to report by Oct. 10 regarding costs and estimates.

Sept. 28 1924 - MCB, acting on recommendation of Rode, orders changing paint on Burnside Bridge from two graphite coats to one coat of graphite paint and a second coat of gray zinc lead paint, and allowing Pacific Bridge an additional \$1675, with Booth & Pomeroy Construction Co. to apply.

Oct. 8 1924 - The last dated Lindenthal engineering drawing for Sellwood Bridge is "Piers 16 & 22," dated Oct. 8, 1924. Burnside Bridge's piers are under construction.

Oct. 15 1924 - Pacific Bridge enters into an agreement with MCB regarding construction of starlings for Burnside Bridge Piers No. 2 and No. 3.

Oct. 1925 - Burnside Bridge under construction.

Oct. 24 1924 - The War Department approves plans for Sellwood Bridge.

Oct. 27 1924 - Lindenthal, in a letter to the president of the Portland Chamber of Commerce, makes recommendations regarding laying out side streets adjacent to Burnside Bridge approaches. Approaches should have on each side a new street 40 feet wide 1) to make space under approaches accessible so it can be used for parking purposes 2) bridge approach is a funnel (no entrances to buildings and stores fronting on the approaches) 3) purchasing property for these parallel roads would be profitable investment for city, suitable for erection of "higher class buildings."

Oct. 29 1924 - Final \$2,500 paid H&K, \$1700 from the county road fund and \$800 paid from the Burnside Bridge street fund.

Nov. 4 1924 - General election, bridge bonds approved for completion of Ross Island and Sellwood bridges, \$500,000 total; 66,832 for, 26,517 against.

Nov. 5 1924 - Lindenthal submits report for Sellwood, estimated to cost \$437,925.

Dec. 6 1924 - U.S. Steel ships the first structural steel from its Ambridge plant for Burnside Bridge.

Dec. 10 1924 - Pacific Bridge, general contractor for Burnside Bridge, subcontracts with Booth & Pomeroy to erect steel and install bascule machinery for a fee of \$151,371.

1925

Jan. 7 1925 - Eight bids received and opened for Sellwood Bridge; plans not yet completed for Ross Island. Gilpin Construction low bidder with \$442,500, beating out Booth & Pomeroy by \$27,000 and Parker & Banfield by \$7,084.

Jan. 12 1925 - Associated Industries of Oregon opposes changes of Ross Island from concrete to steel because of loss of Oregon products by Oregon labor. The letter gives 11 reasons why concrete is better and mentions that the Oregon State Highway Department has almost entirely abandoned steel bridge construction.

Jan. 12 1925 - MCB receives notice that Portland Cement Association's Chicago office is sending a structural engineer to call on Lindenthal in New York City regarding Ross Island. Lindenthal meets with F.R. McMillan. In a letter to Portland Cement Association, Chicago office about meeting with Lindenthal, McMillan gives a history of Ross Island events, and mentions current Lindenthal work with concrete, including replacement of third generation Pennsylvania Railroad bridges with concrete. ". . . in any case the County is being advised, as it rarely happens that counties are, by an expert who ranks so high and who knows his stuff so thoroughly that they should be congratulated." MCB authorizes Lindenthal to continue work on steel design for Ross Island and to complete at as early a date as possible.

Jan. 19 1925 - Rode asks the MCB to instruct Pacific Bridge Co. to remove two plate girder bridges from the east approach of the old Burnside Bridge and place them on railroad cars. [They were to be used at Sellwood.]

Jan. 21 1925 - Newell submits plans for proposed west approach to Ross Island Bridge. It is a straight bridge, preserving "desirable features of former plans, namely: diversion of northbound highway traffic under the approach and provision for traffic from industrial district on Macadam St. to reach the bridge on grades not exceeding 5%." It is changed from former plans in that the bridge proper will end at Hood Street with an embankment from there to Kelly St., where a 50-foot viaduct will carry traffic over the highway. Newell makes other west end recommendations.

Jan. 26 1925 - Notice of public hearing announced for Feb. 5 1926 at the Custom House for approval of revised plans for a steel bridge at Ross Island.

Feb. 2 1925 - Board orders Lindenthal to make application to War Department for permit to construct Ross Island.

Feb. 17-25 1925 - The earliest dated Lindenthal engineering drawings for Ross Island Bridge are "Framing Plan, L-12," Feb. 17 1925; "Footings, Towers 7, 8, 13, 17 & 21, L-4," Feb. 24 1925; "Record of Borings, L-4," Feb. 25 1925.

April 20 1925 - Rode submits approval by U.S. Secretary of War for location and plans of Ross Island Bridge dated April 1925.

May 4 1925 - Rode reports to the MCB about the collapse of Crib No. 4 on Burnside Bridge on April 11 1925 at 8 a.m. The struts connecting the opposite walls of the crib had suddenly buckled and the walls had lost their supports, and were then pushed in by water pressure. "The timber crib was not loaded down sufficiently to overcome its buoyancy." The concrete seal was not damaged and two workmen in the crib at the time of the collapse escaped injury.

May 13 1925 - The placing of the north column of Bent No. 28 at the east approach of the Burnside Bridge made it necessary for the Spokane Portland & Seattle Railway Co. to move its track westerly six feet. The railroad turns in a bill for \$401.15.

Same date - Rode reports that the Princess Hotel at the west end of the Burnside Bridge, owned by the Weinhard Estate, has been moved to clear the right-of-way for the bridge. The MCB orders the estate paid \$57,990, per the agreement of Dec. 5 1924.

May 26 1925 - Bids are opened for construction of Ross Island Bridge. The two bidders for the main span are Booth & Pomeroy and Gilpin Construction, with Booth & Pomeroy the low bidder at \$1,135,843. Five bids are received for the approaches, with Lindstrom & Feigenson low at \$505,550. Lindenthal recommends to the board that Ross Island be let in two separate contracts.

May 28 1925 - The District Attorney recommends awarding contracts to Booth and Pomeroy as general contractor for main spans of Ross Island (\$1,135,843), and Lindstrom & Feigenson as general contractor for approaches (\$505,000).

June 8 1925 - The MCB signs contract with Lindstrom & Feigenson for Ross Island approaches.

June 11 1925 - The MCB and Lindenthal enter into an agreement regarding additional engineering services for Ross Island and Sellwood. Lindenthal to be paid an additional \$27,000, with \$10,000 due on July 10 1925 and \$17,000 at completion.

June 17 1925 - Letter from Lindenthal to MCB that Rode will be off during July and August 1925. M.E. Reed, assistant engineer, will have general supervision of construction work for Burnside and Sellwood, and also for survey of three sites for proposed bridges between Broadway Bridge and St. Johns. Kurt Siecke will be in charge of office work and Ross Island Bridge.

June 24 1925 - Contracts awarded for Ross Island to Booth & Pomeroy, prime contractor for river spans, for \$1,135,843, and to Lindstrom & Feigenson, prime contractor for approaches, for \$505,550.

July 1 1925 - It is decided that Booth & Pomeroy, the prime contractor for Ross Island, will deliver the fill for the west end of the bridge.

July 2 1925 - The MCB signs a contract with D.B. McBride to remove and wreck the three-story, reinforced concrete Bates Building, at 176-184 East Burnside Street.

July 15 1925 - Booth and Pomeroy subcontracts with U.S. Steel, Pacific Coast office, to furnish structural steel (main span) for Ross Island Bridge, according to plans by Lindenthal numbered L-33 through L-38. U.S. Steel fee is \$443,859.

July 20 1925 - MCB receives letter from M.E. Reed regarding concrete encasement of structural steel on the east approach of Burnside.

July 22 1925 - The District Attorney advises MCB that the firm of Houghtaling and Dougan has dissolved. Future payments are to be made to Houghtaling.

July 27 1925 - M.E. Reed writes to MCB about substituting gray lead paint for black graphite for final field coat on Burnside Bridge with contractor W.P. Fuller, with 3,400 tons of steel to be painted with 2,500 gallons of paint. "Graphite paint being a carbon of great density is indestructible by fire, and is not affected by acids, alkalis, gasses, nor by climatic changes," and, he says, it prevents rusting.

Aug. 1 1925 - Regarding the west end of Ross Island Bridge, the MCB finds J.F. Shea, at \$10,660, low bidder for reconstruction of Thomas Creek Sewer on S.W. Moody and Woods streets and for connecting sewer on Woods Street.

Aug. 10 1925 - MCB approves the Lindstrom & Feigenson (general contractor for the construction of the approaches to the Ross Island Bridge) subcontract dated July 6, 1925 with Pacific Bridge to construct Piers 24 and 25, for a fee of \$50,000, and to furnish and drive all piling in all footings for the West Approach, for a fee of \$11,700, based on an estimate of 23,400 linear feet of piling, and to furnish and drive all piling for falsework on east side approaches at actual cost, plus 10%.

Same agreement, the MCB approves Lindstrom & Feigenson, the general contractor for the approaches to the Ross Island Bridge, to subcontract with Parker-Schram Co. for work on Ross Island as follows: 1) west approach, excavate for footings for Bents 1-23, and place concrete in footings for Bents 1-23; construct handrail 2,967 feet @ \$4 a foot, and construct 34 lamp posts @ \$40 each; 2) east approach, excavate for footings for Bents 27-29, place concrete in footings

for Bents 27-29; construct reinforced abutment and concrete wall, and construct handrail 1182 feet @ \$4 a foot; 3) west end main river span, excavate 1,344 cu. yards for Pier No. 1 to el. 33; and 4) place reinforcing steel in footings for Bents 1-23, 27-29 and Pier No. 1, approximately 43 tons @ \$10 a ton. [Lindstrom & Feigenson had signed the agreement with Parker-Schram June 29, 1925.]

Same date - MCB approves Booth & Pomeroy, general contractor for Ross Island Bridge, main span, to subcontract with Pacific Bridge for a fee of \$43,859. Pacific Bridge to make and install Piers 1-6, concrete deck and lamp posts, and handrails of main river spans, plus one cent per pound for all anchor bolts and drillages imbedded in concrete of Piers 1-6.

Aug. 1 1925 - Letter from Lindenthal to M.E. Reed. Lindenthal has Reed's letter of August 1, regarding paint for Burnside. Lindenthal had discussed with Rode while in Portland his objections to black finishing coat of paint, instead deciding on grey finishing coat for all three bridges alike. Reasons: "Black steel absorbs much more heat than a lighter color. When parts of the steel structure are in the sun and others in the shade, the difference in the temperature stresses may cause warping and inert stresses, which can never be completely eradicated, but neither must they be accentuated to the detriment of the structure."

Aug. 12 1925 - MCB orders adopting Lindenthal's recommendation; color for Burnside Bridge to be changed from black to gray.

Aug. 17 1925 - City Ordinance 47464, passed by City Council, among other things, directs Burnside Street should be constructed by the county from the east side of Third Street to join with westerly portion of the bridge approach as noted in contract with Pacific Bridge Co., and that the grades of Burnside and Second streets will be fixed so that all grades are less than 4%, with elevations agreed upon with owners.

Oct. 8 1925 - *Engineering News-Record* publishes "Timber Cribs Floated to Place for Bridge Piers, Foundation Work on Burnside Bridge at Portland, Ore., Involves Use of Cribs, 68x78 Ft. in Plan and 80 Ft. High," vol. 95, 584.

Nov. 9 1925 - The MCB signs an agreement with Lindstrom & Feigenson for a second contract for approach ends on Burnside Bridge, per their low bid of \$505,550. ["Contract and Specifics and Proposal for the Completion of Approaches to the Burnside Bridge at Portland, Oregon."]

Nov. 23 1925 - MCB receives letter from Rode requesting Pacific Bridge Co. to insert four cross frames in side spans of Burnside Bridge, as per Rode's drawing dating Nov. 7 1925.

Dec. 2 1925 - Dan J. Malarkey appears before MCB on behalf of the American Cement Manufacturer's Assoc., asking about inspection of foreign-made cement being followed per the

contract for use of Belgian cement. Rode advises foreign-made cement is inspected in Europe by Robert Hunt, American representative.

Dec. 7 1925 - Rode asks the MCB to intervene with Oregon State Land Board so SLB would waive its fees for taking from "any navigable stream in this county any gravel or sand." Rode wants waiver for all three bridges.

Dec. 14, 1925 - The day before Sellwood Bridge opens, Newell, of the planning commission, submits a report to Lindenthal titled, "Future Bridges Over Portland Harbor," concluding that a new bridge would be eventually required between Broadway Bridge and Swan Island, in North Portland. He calls this the Interstate Bridge. He recommends replacement of Morrison, improvement of Broadway, and improvement of Hawthorne Bridge. Newell also recommends improving Broadway Bridge as the first order of business.

SELLWOOD OPENS - December 15 1925

1926

Jan. 4 1926 - Portland Electric Power sends blueprints showing proposed location of streetcar tracks to be constructed on easterly and westerly filled portions of Burnside Bridge approaches.

Jan. 11 1926 - Rode concurs with Newell that a ramp to the west end of Ross Island be built on Grover Street, rather than Woods Street.

Jan. 18 1926 - Lindenthal submits bill for surveys, investigation and report on proposed bridges over Willamette River between Broadway and St. Johns [on file in Wilson Rare Book Room, Multnomah County Central Library].

Jan. 27 1926 - MCB orders sale of \$500,000 Burnside Street Bridge bonds, series D, as the fourth and final installment of \$3 million bonds authorized by voters. Bonds are also ordered sold for Ross Island.

March 2 1926 - Rode reports to the MCB about the increased cost of increasing clearance on the proposed North Portland [downstream] bridges above low water from 160 feet to 182 feet, due to a requirement of the Port Commission.

Same date - Rode instructs Lindstrom & Feigenson to construct stairs at Front Street to Burnside Bridge.

April 7 1926 - Lindenthal prepares an estimate for reconstruction of Broadway Bridge and addition of Lovejoy Ramp, for a total cost, to include engineering, of \$920,000.

April 28 1926 - MCB authorizes Reed to buy a hand-operated siren and install on Burnside Bridge for try-out as a warning signal from the bridge operator to boat pilots in case bridge fails to operate.

May 21 1926 - Hans Rode reports, under Lindenthal's name, to Amedee Smith, chairman, MCB, a written summary of work completed on Burnside Bridge through that date. The total bridge cost, not including the right of way, is "about \$2,940,000."

May 24 1926 - Reed appears before MCB. Board concurs it is not necessary to paint traffic lines on Burnside Bridge at this time. Bridge to be opened up without them, and if found later lines necessary, "the police department would be glad to paint same."

BURNSIDE BRIDGE OPENS - May 28 1926

Same date - Letter from Clifford Paine, of Strauss's office, to Lindenthal, "During the past week the writer has made a thorough inspection of Burnside Bridge bascule and directed the making of several adjustments."

June 7 1926 - Letter from Rode about advertising bids for plans and specs for completing east approaches for Ross Island, including depression of Grand Avenue. He recommends bids be advertised in "Daily Journal of Commerce" and four daily Portland newspapers.

June 23 1926 - Portland Electric Power Co. (PEPCO) suggests general order requiring all [street] cars crossing the Willamette River bridges slow down to speed not exceeding four mph be modified, permitting speed of 10 mph on Burnside Bridge only.

Same date - Rode reports to the MCB about the three proposed North Portland bridges, per Lindenthal's designs.

June 26 1926 - MCB denies PEPCO request.

June 30 1926 - Bids received for east approaches to Ross Island Bridge. The Parker Schram Co., 515 Couch Building, is the low bidder at \$25,840.

July 14 1926 - Rode notifies MCB that he is leaving Portland from July 15 through mid-September; that M.E. Reed, as principal assistant engineer, to be in charge.

July 28 1926 - Agreement between the county and Parker Schram for completing east approach to Ross Island, including depression of Grand Avenue, for \$25,840; contract approved by District Attorney.

Aug. 18 1926 - Rode sends cablegram from Oslo, Norway, advising the MCB that he will arrive in Portland on Sept. 20 1926.

Sept. 13 1926 - International Hod Carriers and Building Laborers Union sends letter regarding rates of pay for workmen performing building laborers work on R.I. by Lindstrom and Feigenson for less than prevailing rate of \$5.40 per day.

Same date - The Ross Island Bridge's center span, with cantilevered ends, are successfully closed.

Same date - Letter from Laurgaard, City Engineer, regarding improvement of Corbett Street, near west approach of Ross Island. County had agreed to pay \$16,972 toward improvement of Corbett Street. Plans and specs for improvement were filed by City Engineer on Aug. 20 1926, for an estimated cost of \$146,365. Edlefsen-Wygangdt Co. are lowest bidders and selected to do the work. Fill immediately west of the bridge is made from material excavated from the Willamette River. The MCB orders payment made to the city of \$16,972.

Sept. 20 1926 - Rode returns to Portland.

Same date - The MCB receives bill from Tayer-Shaver Gulley Machine Co. for repairs on interlock of Burnside Bridge, approved and submitted by Reed.

Sept. 22 1926 - Rode writes to "Dear Mr. Lindenthal," c/o Pennsylvania Station, enclosing the Sept. 22 "Oregonian" showing that the MCB is proposing bond issues in the amount of \$6,750,000 for the Interstate Avenue Bridge, \$4 million for the St. Johns Bridge, and \$750,000 for the Broadway Bridge, or a total of \$11,500,000. He adds a P.S. "The Ross Island arch was closed successfully about a week ago. The cantilever ends come together within about a quarter of an inch"

Nov. 2 1926 - Bond election approves Broadway reconstruction and Lovejoy Viaduct. Two other bridges are defeated: St. Johns (37,222 votes against, 34,387 for), Interstate Avenue (40,331 votes against, 30,570 for).

Nov. 8 1926 - Report from Rode to the MCB in reference to letter from District Engineer Coiner of the U.S. Army Engineers regarding clearance on Burnside Bridge. Coiner advises final inspection of Burnside was made and all clearances satisfactory, except the vertical clearance at the center of the bascule span was found to be only 64.8 feet instead of 67.27 feet as called for in the permit.

Rode reports that on drawing sheet no. 1, submitted to engineer on Nov. 16, 1923, and on revised sheet No. 1-A submitted May 7, 1924, clearance is actually given as 67.27 feet, and should have been given as 64.17. Discrepancy of 3.1 ft. is the difference between City of Portland datum and

the U.S. Engineers datum. City of Portland datum is used on all bridge plans except those submitted to the War Dept., where U.S. Engineers datum must be used. By mistake, the one clearance figure at the center of the bascule span referred to City datum on approval plans. Rode stated he would see what must be done to secure approval of the War Department.

Nov. 15 1926 - Lindenthal signs contract with the MCB for work on Broadway Bridge and the Lovejoy Viaduct.

Dec. 1 1926 - Rode recommends remaining steel at Shanghai yard be sold to Booth and Pomeroy for \$5.25 per ton, or \$1,575.

Dec. 7 1926 - Sauvie Island voices concern about "something in the newspaper" regarding 1894 Burnside. They understood that the county was holding the steel of the former 1894 draw to connect the island with the mainland. Item is referred to Commissioner Phegley for attention.

Dec. 13 1926 - Bills submitted for work on Burnside Bridge approved by Rode, including from Jaggar Sroufe Co. for furnishing and installing a new submarine power cable to bridge for \$1672.43.

Dec. 15 1926 - Rode submits approved bills from Oregon Brass Works of \$165 for two cast bronze name plates.

ROSS ISLAND BRIDGE OPENS - Dec. 21 1926

1927

Jan. 10 1927 - Rode submits approved bills from Jaggar Sroufe of \$1,332,28, for lighting Ross Island Bridge.

Same date - Lindenthal requests final payment for engineering services under contracts of July 11 1924 and June 14 1925, per bill of \$30,000. His letter notes that all three bridges, Sellwood, Burnside and Ross Island are complete.

Jan. 12 1927 - Feigenson and Lindstrom and their sub-contractors have complied with \$5.40 wage and their bill can be paid.

Jan. 17 1927 - Rode recommends changes and additions to electrical equipment of Burnside Bridge, i.e. substituting 30 to 1 ratio worm gear for gate operating motors, etc.

Jan. 26 1927 - The last dated Lindenthal engineering drawing for Ross Island Bridge is "Misc. Details, L-30A," Jan. 26 1927.

Jan. 31 1927 - The MCB orders payment of \$30,000 to Lindenthal [District Attorney Myers had been in Washington, D.C. on a Supreme Court case, delaying payment] on 7/11/24 and 6/14/25 contracts. Lindenthal notes that Ross Island, Sellwood and Burnside bridges are complete.

Same date - Lindenthal submits bill of \$4,000 as part of Nov. 15, 1926 Broadway Bridge contract.

Feb. 14 1927 - The MCB receives letter from Lindenthal regarding alterations on Broadway Bridge. He advises against sixth lane on Broadway, as "it would not add to capacity and would be a waste of money without corresponding result. There is, besides, the grave objection of weakening the structure and tinkering with the operating mechanism, which of itself would lead to trouble and expense."

About Burnside, Lindenthal says it appears certain troubles come from electrical mechanism. He has informed Strauss Co. that they must send an expert to overhaul the "whole operating machinery." Lindenthal cannot come to Portland "hardly before May," because "important affairs require my continuous presence here." Lindenthal concludes that Rode is in constant touch with him and feels Rode can direct the work in Portland as if he (Lindenthal) were present.

Feb. 23 1927 - The War Department approves Burnside Bridge as built.

Same date - Regarding precasts for the railing of Ross Island Bridge and forms for railing and posts: The County Roadmaster recommends the offer of firm Rhynder and Porter Co. to deliver same for \$250 be accepted.

Feb. 28 1927 - Final payment is issued to Houghtaling and Dougan. W.A. Robbins is assigned to receive payment.

March 22 1927 - Rode reports that Ross Island has been inspected and accepted by the Corps of Engineers as meeting conditions of the permit under which it was constructed.

May 2 1927 - Bid awarded to Wallace Bridge Co. for furnishing structural steel for Broadway for \$145,980. Wallace subcontracts with U.S. Steel.

May 4 1927 - Letter from Joseph Strauss, 307 North Michigan Ave., Chicago, regarding his interview with the MCB in Portland. He says he did meet with Rode, but did not inspect the Burnside Bridge at that time. "It seems that the bridge is working quite satisfactorily now and that there has been no further trouble. It also appears from my conversation with Mr. Rode that the center locks have never actually failed to function but that there was some fear in Mr. Rode's mind that they would fail to function and it was for this reason that he suggested a larger motor. Since, however, the motors are more than ample for the services to be performed, and since the

introduction of heavier machinery would over-stress the lock gear, we have suggested to Mr. Rode that it would be best not to substitute the heavier motors, leaving the matter until our Mr. Paine can come out and mailed a detailed inspection, which we hope will be within the next few months." Strauss says it is desirable to make certain that the bridge's piers had not settled, and suggests the county make a check of alignment. "This is always desirable after the bridge has been in service for some time where the foundations are not on rock" He adds that the bridge "should be handled only by the most experienced and capable operators" and that, "the ordinary electrician is not competent to operate and maintain a structure of this character." Strauss suggests a special operating and maintenance crew just for Burnside. Doing so, he says, would prevent a reoccurrence of "such causes as were responsible for the failure of the bridge to operate on the two occasions in the past."

June 27 1927 - The final statements of Pacific Bridge, Booth & Pomeroy and U.S. Steel Co. for Ross Island are submitted.

July 18 1927 - Bill from City of Portland for planting turn-around at east end of Ross Island submitted, in accordance with Reed's instructions, for \$1,000.

Same date, bid for second and final contract for Broadway Bridge awarded to Parker & Banfield for \$312,630, beating out Lindstrom & Feigenson bid of \$326,630.

July 27 1927 - Lindenthal recommends Raymond Concrete Pile Co. to drive the piling for the foundations of the Broadway Bridge ramp.

July 30 1927 - Letter from Rode to Parker & Banfield this date advises Parker & Banfield, the same contractor that had been disqualified from the Burnside, Ross Island and Sellwood bridge projects in 1923, that Rode was leaving Portland, with Reed in charge of the Portland office and field work, and N.W. Reese and John Zoss the assistant engineers.

Aug. 1 1927 - Rode submits final statements for Burnside, Ross Island and Sellwood bridges as of July 20, 1927.

Burnside, monies available	\$3,029,709.53
Net expenditures to date	<u>2,964,539.76</u>
Available for future	\$ 65,169.77

Bill submitted July 20 1927 for "sundry expenses," Burnside Bridge, of \$15,570.76

Ross Island, monies available	\$1,613,227.00
Net expenditures to date	<u>1,599,306.96</u>

Charged to Ross Island and Sellwood combination fund \$338,161.48

Available for future \$ 13,920.04

Aug. 4 1927 - The MCB sends letter to all Oregon state county courts west of the Cascades; highway commissions of Oregon, Washington, Idaho and Montana; loggers and logging supply dealers listed in the Portland telephone directory: Broadway span for sale, dimensions, 127'7/8," width overall, 70 feet. Everyone to respond to Lindenthal, c/o the Portland office.

Aug. 10 1927 - In an extra work contract, Parker and Banfield are instructed to paint Broadway Bridge gray, "The paint to be of a gray of the same specifications as used on the Ross Island Bridge."

Aug. 31 1927 - Correspondence from Laurgaard regarding harbor wall.

Oct. 5 1927 - Lindenthal offers to overhaul Broadway's bascule span machinery. He gives a quote to redesign the rail joints at the center of the bascule span so that the leaves can be operated independently of one another.

Oct. 5 1927 - Jaggar Sroufe is low bidder at \$11,890 and awarded the contract for lighting the truss spans of Broadway Bridge.

Nov. 7 1927 - Reed gives the MCB an estimated cost of Broadway Bridge improvement as of

Oct. 15 1927 of \$728,510 out of \$775,000 available, with \$46,490 balance remaining.

Dec. 5 1927 - One land of the roadway opens on the main span of the Broadway Bridge to vehicles and streetcars.

Dec. 16 1927 - Reed sends letter to the MCB advising that Lindenthal intends to close his Portland office by December 31, with all employees released, including Reed. The MCB complains about a lack of representation by Lindenthal in Portland, contrary to Lindenthal's contract. Lindenthal writes back, suggesting that the county hire Reed. Letters cross, and Lindenthal agrees to pay Reed's salary for an additional month, through January 31, 1928.

1928

Jan. 31 1928 - Lindenthal pays M.E. Reed's salary through January 31 1928. The Portland office closes that day.

Feb. 1 1928 - Lindenthal submits final \$5,000 bill to the MCB.

Feb. 15 1928 - Reed submits final accounting for Parker and Banfield.

April 18 1928 - First mention of Reed as "County Bridge Engineer."

1933

Sept. 8-Oct. 5 1933 - The last known correspondence to Multnomah County is believed to be an exchange of letters between Lindenthal, with letterhead typed Jersey City, N.J. to Grant Phegley (by then the Multnomah County commission chair), and G.W. Buck, the county roadmaster. Lindenthal writes that the Technical Museum for Industry and Trade in Vienna has requested large photographs of the Ross Island Bridge and Burnside Bridge, for their archives. Lindenthal wants to know if such photos exist; if so, in what size, and at what cost. Buck sends Lindenthal two photographs taken by the Brubaker Aerial Surveys Co. of Portland. The correspondence concludes with Lindenthal's letter of Oct. 5 to Buck: "Even if enlarged, as mentioned in your letter, the views of the bridges would be too small for the purpose of the Museum in Vienna . . . I wish to thank you for the photographs, which give such a splendid aerial view of Portland, but cannot be used as bridge pictures. P.S. Please send me bill for photographs. G.L."

1934-35

Lindenthal falls ill in 1934, and on July 31 1935, at the age of 85, he dies at Mutuchen, New Jersey. His memoir, published in a journal of the American Society of Civil Engineers, is co-written by F.H. Frankland, whose name and initials first appear on the Burnside drawings on Feb. 12 1924, under "Made by." This was during the time the Hedrick & Kremers team was still in operation. Frankland's name appears on several Ross Island and Sellwood drawings during the course of their design and erection.

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During the 1920s, the actions of the Multnomah County Commissioners were recorded in bound legal-size "Bridge" journals. There are 11 volumes of these journals, most with their own keys, at the County's Ford Building Record Center, S.E. 11th and Division. Actions involving the Burnside, Ross Island and Sellwood bridges took place between Aug. 9 1922 and Dec. 12 1927, with all entries for the three in date order. The journals especially germane to Burnside, Ross Island and Sellwood are: "Burnside and Ross Island Bridges," vol. 1, Aug. 9 1922 to Dec. 29 1924, 1-400; "Burnside and Ross Island Bridges," vol. 2, Dec. 29 1924 to Dec. 12 1927, 1-376; and "Ross Island and Sellwood Bridges, April 25 1923 to Aug. 1 1927, 1-192. Also applicable to Lindenthal's activities while in Portland is "Broadway Bridge Reconstruction and Lovejoy Ramp, April 4 1926 to Nov. 5 1928, 1-140. Lesser use was made of "Columbia River Interstate Bridge Commission, three volumes, Nov. 11 1913 to Feb. 10 1920, 1-295; Mar. 3 1920 to Oct. 14 1924, 1-300; and Oct. 14 1924 to June 8 1944, 1-438-1/2. Other journals available but not consulted included "Columbia River Interstate Bridge Commission," "St. Johns Bridge," "Morrison Street Bridge," and "Hawthorne Bridge Approaches."

In the late 1980's, the county collected its bridge engineering drawings, now totaling nearly 7,000 shop and contract drawings. All drawings were recorded on microfilm, with one image each on an index-type card and labeled with the individual drawing title. The entire collection is listed, bridge by bridge, drawing by drawing, in a master "Bridge Drawings" index book. This book, microfilm index cards and drawings are located at the county's Bridge Engineering and Maintenance offices, 1403 S.E. Water Avenue, with all drawings kept in flat files in a locked vault. An additional set of the microfilm index cards is stored in a vault at the county's Yeon Shop offices, S.E. 190th facility. The bulk of the county's historic transportation-related files reside at Yeon Shops, S.E. 190th facility, but some records are located at the county's Ford Building, 2505 S.E. 11th.

Other Selected sources:

"Transcript from Journal of County Commissioners of Multnomah County, Pertaining to Construction of Ross Island and Burnside Bridge," dated Sept. 13 1924 to Jan. 23 1924, Files, Multnomah County, Ford Building.

"Collusion Suspected in Portland Bridge Awards," *Engineering News-Record*, April 24 1924, vol. 92, 740.

"Three Indicted in Portland Bridge Tangle," *ibid.*, May 15 1924, vol. 92, 873.

"Portland Bridge Scandal Causes Recall of County Commission," *ibid.*, May 22 1924, 912.

"Portland Bridge Scandal Leads to Twelve Indictments," *ibid.*, June 12 1924, 1036.

"Commissioners Void Portland Contracts," *ibid.*, June 19 1924, 1074.

"Lindenthal to examine Plans for Portland Bridges," *ibid.*, June 16 1926, 1115.

"Lindenthal Advises Redesign of Portland Bridges," *ibid.*, July 17 1924, vol. 93, 118.

"New Bridge Opened at Portland," *ibid.*, Jan. 7 1926, vol. 96, 36.

"Gustav Lindenthal," *Transactions of the American Society of Civil Engineers*, vol. 105, 1940, 1740-1794. Memoir prepared by F.H. Frankland and F.E. Schmitt.

"General and Primary Election [Sample Ballots]," vol. 1 (1892-1934), n.p., Multnomah County Department of Records and Elections, Elections Div., Files, Multnomah County Central Library, Government Documents.

"Investigation of Burnside Street Bridge, Portland, Oregon," Oregon State Highway Commission, signed Conde B. McCullough, Salem, Oregon, May 15 1920, Wilson Rare Book Room, Central Library, Portland.

"Resolution," in the matter of issuance and sale of \$500,000 Ross Island Bridge bonds, first installment of \$1,600,000 Ross Island Bridge Bonds authorized by the voters of the county, Sept. 22 1923, Files, Multnomah County Archives, S.E. 190th.

"Notice to Contractors," calling for bids for construction of Burnside Bridge," signed Sept. 19 1923, Files, *ibid.*

Memorandum of Agreement, regarding Sellwood Bridge, signed Dec. 12 1923, by and between Multnomah County, Board of County Commissioners and Ira Hedrick, Kansas City, Missouri, and Robert Kremers, Portland, Files, *ibid.*

"Specifications, Proposal and Contract for the Burnside Bridge across the Willamette River at Portland, Oregon Design No. 2," signed 2 April, 1924, by and between Multnomah County Board of County Commissioners, Gustav Lindenthal by M.E. Reed, and the Pacific Bridge Co., by C.f. Swigert, Files, *ibid.*

"Contract Specifications and Proposal for the Completion of Approaches to the Burnside Bridge at Portland, Oregon," signed 9 Nov. 1926, by and between Multnomah County, Board of County Commissioners and Lindstrom and Feigenson, Portland, Files, *ibid.*

Letters:

July 1 1924, U.S. Steel, Pacific Coast Dept., to Gustav Lindenthal, Benson Hotel, Portland, Files, Multnomah County, Yeon facilities, S.E. 190th; Aug. 4 1924, C.F. Swigert, Pacific Bridge Co., to Lindenthal, 250-1/2 Third Street, *ibid.*; Aug. 6 1924, Lindenthal to Joseph Strauss, Chicago; Aug. 20 1924, *ibid.*; Sept. 4 1924, C.E. Paine, Strauss Bascule Bridge Co., to Lindenthal, *ibid.*; Oct. 15 1924, Paine to Lindenthal, *ibid.*; Oct. 17 1924, Lindenthal to Pacific Coast Steel Co., *ibid.*; Oct. 29 1924, U.S. Steel, to American Bridge, cc to Lindenthal, *ibid.*; Dec. 31 1924, *ibid.*

May 21 1926, Lindenthal by Rode, to Amedee Smith, County Commission, *ibid.*; July 30 1927, Rode, to Parker & Banfield, *ibid.*;

Other: Files, City of Portland Stanley Parr Archives, 9360 No. Columbia Blvd., Portland; Files, City of Portland office of transportation, Portland Building, 1120 S.W. 5th.

List of Contributors

Diana Banning, Historian, Stanley Parr Records Center, City of Portland. Provided background documents.

Michael Beard, Errolgraphics, Portland. Provided historic engineering drawings, Queensboro Bridge, NYC.

Dr. Steven Dow Beckham, Historian, Portland. Provided background information on the east bank and the bridge's namesake.

Lane Brown, A.I.A., Portland. Provided background information on the new stairs at the west end of the bridge.

James Carmin, Wilson Room librarian, Multnomah County Central Library. Provided access to historic drawings and documents.

Ray Couture, lead mechanic, Multnomah County Bridge Section. Provided background information on bridge repair history.

Lewis Crutcher, A.I.A. Provided consultation on paint color selection during the 1960s; provided privately-held files.

Seeb DeBonney, Portland. Provided background information on 1894 Burnside Bridge.

Linda Dodds, Historic American Engineering Record Historian/Oregon Department of Transportation. Provided background information and documents.

Steve Dotterrer, chief planner, City of Portland, Office of Transportation. Provided privately-held historic photographs and background information.

Mary Edin, map maker and CAD technician, City of Portland, Office of Traffic Management. Provided background documents.

Bill Forbes, transit rider, Portland. Provided background information on Portland trolley/interurban service.

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Franziska Gebhardt, Germany. Provided Lindenthal family background information.

Ken Gervais, retired Environmental Services director, Multnomah County. Provided background information on bridge ownership.

Stan Ghezzi, Bridge Section operations supervisor. Provided help and access to Multnomah County engineering drawings and records and help with coordinating access to bridge for research.

Mary Hardy, Historian and records manager, Multnomah County. Provided access to Multnomah County records and consultation on bridge history.

Multnomah County Library Reference Line, Central Library, 801 S.W. Tenth, Portland, Oregon 97205. Provided corroborative detail and documents.

Walter Hart, retired Oregon State Bridge Engineer. Provided privately-held background publications.

George Hudson, planner, Portland Parks and Recreation, provided background information about Eastbank Riverfront Park.

James Howland, CH2M Hill, Corvallis. Provided friendly help and assistance obtaining background information from the Oregon State University library, Salem.

J. Kris Krider, architect and project manager, City of Portland, Office of Transportation. Provided access to background documents.

Tony Lester, Bridge Maintenance supervisor, Multnomah County. Provided consultation on bridge maintenance and rail history.

Cielo Lutino, planner, City of Portland. Provided information on landmark status background.

Eugene Mandel, friend of the Historic American Engineering Record (HAER), Los Angeles. Provided privately-held historic publications.

ADDENDUM

Judith McGaw, Historic American Engineering Record, (HAER) Historian. Provided assistance with research direction, provided background documents.

John Middleton, president, Z-Tec Engineering (Zaronsinski-Tatone), Portland. Provided historic engineering drawings.

Cydney E. Millstein, Historic American Engineering Record (HAER) Historian. Provided background information on engineer Ira Hedrick.

Richard O'Connor, Historic American Engineering Record (HAER) Historian, Washington, D.C. Provided assistance with archival requirements.

Oregon Historical Society, Maps and Photo Library staff. Provided assistance with period photographic images and documentation.

Pam Patrie, bridge operator, Multnomah County. Provided consultation on bridge interior and operations.

David Pickthorne, Bridge Operations supervisor, Multnomah County. Provided consultation on bridge operations and background information.

Austin Pratt, Bridge Management Specialist, USCG, Seattle. Provided historic records and documents.

John A. Schultz, Jr., S.E., Hazelet & Erdal, Chicago. Provided background publications on movable bridge types.

Larry Skinner, lead electrician, Multnomah County. Provided consultation on bridge electrical system.

Bill Smith, bridge operator, Multnomah County. Provided background information.

Justin Spivey, Historic American Engineering Record (HAER) Historian. Provided background information on Strauss and Strauss systems.

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Cheryl Strubb, drafter, Multnomah County Bridge Section. Provided background information regarding engineering drawings.

Craig Totten, structural engineer, KPFF Engineering, Portland. Provided background information about the Burnside Bridge connector bridge.

Dwight Wallis, records administrator, Ford Building, Multnomah County. Provided consultation on bridge history and records.

Ed Wortman, Engineering Services administrator, Multnomah County. Provided help and access to Multnomah County engineering drawings and records and help with coordinating access to bridge for research.