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SPECIFICATIONS

DEL MAR - ESCONDIDO HIGHWAY - ROAD IMPROVEMENT DISTRICT NO. 3

San Diego County, California

Thomas P. Ellis, Engineer.

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Fletcher Cars

~~June 6~~

Mr. Fletcher:

Last months report was submitted
The use of your car was as follows

June 6 - Cadillac { Brown spanned
Ellis spanned
June 9 - Colburns Ford { San Diego
Ellis spanned
San Diego
San Diego

July 1 - Colburns Ford - Hawgood
July 2 + Ellis to San Clemente
+ Warner's Lane

July 8 - Colburns Ford - Wickham
+ Ellis to Escondido
Co - Evans ^{Janudo} Byles
Filing

IN THE MATTER OF ROAD IMPROVEMENT DISTRICT No. 3.

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SPECIFICATIONS FOR WORK.

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TO THE BOARD OF SUPERVISORS
OF THE COUNTY OF SAN DIEGO,
STATE OF CALIFORNIA.

Pursuant to the authority conferred upon me in and by a Resolution of your Honorable Board, passed and adopted on the 20th day of December, 1916, directing me to furnish Specifications for the work hereinafter proposed to be done in the above entitled Road Improvement District, I respectfully submit the following:

(A) DESCRIPTION OF WORK

The work is to consist of the grading of the roadway and the construction thereon of a concrete pavement, including culverts, bridges, retaining walls, etc., to make a completed paved highway from the Village of Del Mar to the westerly City limits of the City of Escondido, with a branch from Crescent Valley to Bernardo, all along the route shown in detail on the said plans.

A particular description of the alignment of said highway is as follows:

Beginning at the intersection of 21st and Coast Boulevard in Del Mar, California, running thence easterly to Grand Avenue; Thence northeasterly along Grand Avenue in Arden Heights No. 6 and continuing northeasterly through Southwest quarter of

the Northeast quarter and the East half of the Northeast quarter of Section 11, Township 14 South, Range 4 West, S.B.M.;

Thence easterly along the present County Highway through the $S\frac{1}{2}$ of the $S\frac{1}{2}$ of Section 1, Township 14 South, Range 4 West, S.B.M., and the $S\frac{1}{2}$ of the $SW\frac{1}{2}$ and the $NE\frac{1}{2}$ of the $SW\frac{1}{2}$, and the $N\frac{1}{2}$ of the $SE\frac{1}{2}$, all in Section 6, Township 14 South, Range 3 West, S.B.M.; and continuing along the present County Highway as existing in the $SW\frac{1}{2}$ of the $SW\frac{1}{2}$, and Lot 3, both in Section 5, Township 14 South, Range 3 West, S.B.M.

Thence northerly along the present County road as existing in the Dinsmore tract, Rancho San Dieguito, and continuing in a northeasterly direction through the Santa Fe Land Improvement Company's tract in the Rancho San Dieguito to a point on the east line thereof whence Corner No. 8 of said Rancho bears North $4^{\circ} 50'$ west 2,893.5 feet more or less;

Thence continuing east through the $N\frac{1}{2}$ of the $N\frac{1}{2}$ of Section 22, Township 13 South, Range 3 West, S.B.M., also the $N\frac{1}{2}$ of $N\frac{1}{2}$ of Section 23, and continuing northeasterly through the $S\frac{1}{2}$ of the $SE\frac{1}{2}$ of the $SW\frac{1}{2}$, also the $SE\frac{1}{2}$, both in Section 14, Township 13 South, Range 3 West, S.B.M.;

Thence continuing easterly through the $N\frac{1}{2}$ of the $S\frac{1}{2}$ of Section 13, Township 13 South, Range 3 West, S.B.M.;

Thence Northeasterly through the unsurveyed lands of Section 18, Township 13 South, Range 2 West, S.B.M.;

Thence northeasterly through the $NE\frac{1}{2}$ of the $NE\frac{1}{2}$ of Section 18, Township 13 South, Range 2 West, S.B.M.;

Thence northerly through the $E\frac{1}{2}$ of the $E\frac{1}{2}$ of Section 7

and 6, Township 13 South, Range 2 West, S.B.M.;

Thence easterly through the NW $\frac{1}{4}$ of Section 5, Township 13 South, Range 2 West, S.B.M.;

Thence northerly through the SE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 32 and continuing northerly through the W $\frac{1}{8}$ of the SE $\frac{1}{4}$ and the SW $\frac{1}{4}$ of the NE $\frac{1}{4}$ and the E $\frac{1}{2}$ of the NW $\frac{1}{4}$, all in Section 32, Township 12 South, Range 2 West, S.B.M.;

Thence continuing northerly and following the present county road through Section 29, Township 12 South, Range 2 West, S.B.M. to an intersection with the County Road as existing south of and adjacent to Blocks 310 and 311, Rancho Rincon del Diablo;

Thence easterly along said County Road to the road lying west of and adjacent to Lot D, Block 311 of Rancho Rincon del Diablo;

Thence northerly along said road lying west of and adjacent to said Lot D, Block 311 and continuing along said road northerly as the same exists west of and adjacent to Block 312, Rancho Rincon del Diablo;

Thence through Lot 3, said Block 312 to and thence easterly along the road which lies north of and adjacent to said Block 312 and Block 313 said Rancho Rincon del Diablo to the intersection of Kansas Avenue with Vine Street, being the westerly City Limits of Escondido, California.

Together with a branch road traversing the following lands, to-wit: Beginning in the Northwest quarter of Section 5, Township 13 South, Range 2 West, S.B.M. as hereinbefore set forth;

Thence continuing easterly and southeasterly to the west line of the Rancho San Bernardo from whence the northwest corner

of the Nulton Tract therein bears North 11° 33' East 486.4 feet;

Thence southeasterly through said Nulton Tract and continuing in an easterly direction through the Barnett Tract in said Rancho to the west line of the San Diego - Escondido Highway being also the east line of said Barnett Tract whence the northeast corner thereof bears North 18° 49' East 1,003.6 feet.

(B) ASSESSMENT DISTRICT

I hereby propose the following territory to be included in the Assessment District to be hereafter assessed to pay for the costs and expenses of said work, to-wit:

All that territory shown within the boundary lines of the District set forth on Map A and marked "In the matter of Road Improvement District No. 3, Map of Assessment District", hereto attached and made a part thereof, which said territory is more particularly described as follows:

Beginning at the intersection of the mean high tide line of the Pacific Ocean with the center line of Fifth Street, Del Mar, California, as per map No. 368, of Record in the office of the County Recorder of San Diego County, California; thence easterly along said center line and the center line produced to the south line of Section 14, Township 14 South, Range 4 West, S.B.M.;

Thence easterly along the said south line of said Section 14 to the southeast corner thereof;

Thence north along the east line of said Section 14 to the corner of Sections 11, 12, 13 and 14, said Township 14 South,

Range 4 West, S.B.M.;

Thence easterly along the south line of Section 12, Township 14 South, Range 4 West, S.B.M., and continuing easterly along the south line of Section 7, Township 14 South, Range 3 West, S.B.M., to the southeast corner of said Section 7;

Thence north along the east line of said Section 7 to the east quarter corner thereof;

Thence easterly along the east and west center lines of Sections 8 and 9, Township 14 South, Range 3 West, S.B.M. to the east quarter corner of said Section 9;

Thence north to the northeast corner of said Section 9, being also the southwest corner of Section 3, Township 14 South, Range 3 West, S.B.M.;

Thence east along said south line of said Section 3 to the southeast corner thereof;

Thence north along the east line of said Section 3 to the northeast corner thereof;

Thence continuing from the northeast corner of said Section 3, Township 14 South, Range 3 West, S.B.M., easterly along the south line of Section 35, Township 13 South, Range 3 West, S.B.M., to the southeast corner thereof;

Thence northerly along the easterly line of said Section 35 to the northeast corner thereof, being also the southwest corner of Section 25, Township 13 South, Range 3 West, S.B.M.;

Thence easterly along the south line of said Section 25, Township 13 South, Range 3 West, S.B.M., and continuing easterly along the south line of Section 30, Township 13 South, Range 2

West, S.B.M., to an intersection of the westerly line of the Rancho San Bernardo;

Thence northerly along said westerly line of Rancho San Bernardo to the closing corner between Sections 17 and 20, Township 13 South, Range 2 West, S.B.M.;

Thence easterly in a straight line through Rancho San Bernardo to the closing corner between Sections 24 and 13, Township 13 South, Range 2 West, S.B.M., which point is also on the easterly line of the Rancho San Bernardo;

Thence northerly along said easterly line of Rancho San Bernardo to the northeast corner thereof;

Thence westerly along the north line of said Rancho San Bernardo to its intersection with the center line of the County Highway, Route 3, Division 1, being also a point on the center line of the street which lies easterly from and adjacent to Lot 8, Block 254 of the Rincon del Diablo;

Thence northerly along the center line of said street to its intersection with the center line of a street that lies easterly from and adjacent to Lots 4 and 7, Block 254 of said Rancho Rincon del Diablo;

Thence northerly along the center line of said street which lies easterly from and adjacent to said Lots 4 and 7 and continuing northerly along the center line of the street which lies adjacent to and easterly from Blocks 253 and 256 of said Rancho Rincon del Diablo, to an intersection with the center line of Idaho Avenue, said center line of Idaho Avenue being also the southerly limits of the City of Escondido;

Thence southwesterly, westerly and northerly following the traverse of the boundary of the City Limits of Escondido to its intersection with the southerly right of way line of the Atchison, Topeka and Santa Fe Railroad;

Thence in a westerly direction along the said southerly line of said Atchison, Topeka and Santa Fe Railroad right of way to an intersection with the west line of Rancho Rincon del Diable, being also the east line of Rancho Los Vallecitos de San Marcos;

Thence southerly along said east line of said Rancho Los Vallecitos de San Marcos to the southeast corner thereof;

Thence northwesterly along the south line of said Rancho Los Vallecitos de San Marcos to its intersection with the easterly line of the "Subdivision of Lot 9, Section 18, Township 12 South, Range 2 West, S.B.M. Also the Southeast Quarter of the Southeast Quarter of Section 18, Township 12 South, Range 2 West, S.B.M. Also a part of Lot 1, Section 17, Township 12 South, Range 2 West, S.B.M." as per map No. 555 of record in the Recorder's office of San Diego County, California;

Thence southwesterly along the easterly line of said subdivision to the Section corner of Sections 17, 18, 19, 20, Township 12 South, Range 2 West, S.B.M.;

Thence west along the north line of said Section 19 to the quarter corner between Sections 18 and 19, Township 12 South, Range 2 West, S.B.M.;

Thence southerly along north and south center line of said Section 19 to its intersection with the east and west center line thereof;

Thence west along the east and west center line of

said Section 19 to the west quarter corner of said Section;

Thence south along the west line of said Section 19 and Sections 30, 31, all of Township 12 South, Range 2 West, S.B.M. to the south line of said Section 31, which is also the north line of Section 1, Township 13 South, Range 3 West, S.B.M.;

Thence west along the north line of said Section 1 to the north quarter corner thereof;

Thence south along the north and south center line of said Section 1 and Section 12 to its intersection with the east and west center line of said Section 12;

Thence westerly along the east and west center line of said Section 12 and Section 11 to the west quarter corner of said Section 11;

Thence south along the west line of said Section 11 to the southwest corner thereof which is also the northeast corner of Section 15, Township 13 South, Range 3 West, S.B.M.;

Thence west along the north line of said Section 15 to the north quarter corner thereof;

Thence south along the north and south center line of said Section 15, Township 13 South, Range 3 West, S.B.M., to its intersection with the north line of the Rancho San Dieguito produced easterly;

Thence westerly along said north line of the Rancho San Dieguito produced easterly and also the north line of the Rancho San Dieguito to Corner No. 7 of said Rancho San Dieguito;

Thence Northerly, Westerly and Southerly and following the boundary lines of the Rancho San Dieguito through its

respective corners 6, 5 and 4 to the closing corner between Section 25, Township 13 South, Range 4 West, and Section 30, Township 13 South, Range 3 West, S.B.M.;

Thence south along the westerly line of said Section 30 and Section 31, both of Township 13 South, Range 3 West, S.B.M. to the southwest corner of Section 31;

Thence continuing from the Southwest corner of said Section 31, Township 13 South, Range 3 West, S.B.M., westerly along the north line of Section 1, Township 14 South, Range 4 West, S. B. M., to the northwest corner thereof;

Thence south along the west line of said Section 1 to the west quarter corner of said Section 1;

Thence westerly along the east and west center line of Section 2 to its intersection with the north and south center line of said Section 2;

Thence South along the north and south center line of said Section 2 to the south quarter corner thereof;

Thence west along the south line of said Section 2 to its intersection with the mean high tide line of the Pacific Ocean;

Thence southerly and following the meanderings of the Pacific Ocean to the point of beginning.

(G) SPECIFICATION OF GRADES

I hereby specify the following grades for all roads, streets, avenues, boulevards, lanes and alleys within the above

described DISTRICT so far as the same are within such District, to-wit:

The grades shall be as delineated and set forth on the said profile. The elevations are in feet, refer to the top of the finished grade of the roadway at its center line, and are above a datum line of levels established by the United States Geological Survey and set forth in Bulletin 342 for the years 1896-1907.

The grade of the road shall conform to a uniform line of ascent and descent drawn between the grade points specified on the said profile except for a slight curvature immediately at the break formed at said grade line intersections where a small amount of curvature will be given so as to make the break less pronounced.

(D) ESTIMATE OF QUANTITIES

I hereby estimate that the following will be the respective quantities of the various kinds of work to be done:

<u>Item</u>	
1	140,900 Cu. Yds of Excavation.
2	110,400 " " Embankment.
3	140,724 Sq. Yds Concrete Pavement.
4	562 Lin. Ft. 8" Corrugated Metal Pipe.
5	1,927 " " 12" " " "
6	1,135 " " 15" " " "
7	609 " " 18" " " "
8	480 " " 24" " " "
9	664 " " 30" " " "
10	250 " " 36" " " "
11	108 Cu. Yds. Class "A" Concrete - (Headwalls & Slabs)
12	163 " " Rubble Masonry (Headwalls, Abutments, etc)
13	281 " " Dry Rubble Wall.
14	2,000 Pounds of Reinf. Steel complete in place.
15	1,700 Sq. Yds 4" Mesh #6 Gage Reinf. Wire in Concrete Ford.
16	6,300 Feet of Barbed Fencing.
17	1 Special Reinforced Concrete Culvert Sta. 4+59.
18	1 Special 5' x 7' Reinforced Box Culvert.
19	2 - 30 ft. Trussed Beam Bridges complete in place
20	2 - 20' Beam Bridges, complete in place.
21	3 - 5' x 7' Cattle Passes.

(E) ESTIMATE OF COST

I estimate that the aggregate amount of the cost of the work inclusive of incidental expenses and of the procedure will be Two Hundred Thirty-two Thousand and no/100 Dollars (\$232,000).

Respectfully submitted,

Superintendent of Work.

S P E C I F I C A T I O N S

DEL MAR - ESCONDIDO HIGHWAY - ROAD IMPROVEMENT DISTRICT NO. 3.

San Diego County, California

Thomas P. Ellis, Engineer.

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To these specifications are attached the plans and profile for the work and by reference thereto the said plans and profile are made a part of these Specifications with the same force and effect as though the same were contained in full herein.

(A) DEFINITIONS

(a) The word "County", when used in these Specifications, shall mean the County of San Diego, California,

(b) The words "Board of Supervisors" shall mean, the Board of Supervisors of said County.

(c) The word "Engineer" shall mean the Engineer of Work appointed by the Board of Supervisors of said County for this Road District.

(d) The word "Superintendent" shall mean the Superintendent of Work to be appointed by the Board of Supervisors of said County for this Road District.

(e) The word "Contractor" shall mean the party or parties contracting to perform the work covered by these Specifications, or his or their legal representatives.

(B) GENERAL DESCRIPTION OF WORK

(a) The work is to consist of the grading of the roadway and the construction thereon of a concrete pavement, including culverts, bridges, retaining walls, etc., to make a completed paved highway from the Village of Del Mar to the westerly City limits of the City of Escondido, with a branch from Crescent Valley to Bernardo, all along the route shown in detail on the said plans.

(C) ESTIMATE OF QUANTITIES

The following is the Engineer's estimate of date, May fifteenth, A. D. Nineteen Hundred Seventeen, of the amount of each kind of construction required in the work, per item complete in place, upon which prices are asked, and upon this statement all bids will be canvassed.

Item

1	140,900	Cu. Yds. of Excavation.
2	110,400	" " Embankment.
3	140,724	Sq. Yds. Concrete Pavement.
4	562	Lin. Ft. 8" Corrugated Metal Pipe.
5	1,927	" " 12" " "
6	1,135	" " 15" " "
7	609	" " 18" " "
8	480	" " 24" " "
9	664	" " 30" " "
10	250	" " 36" " "
11	108	Cu. Yds Class "A" Concrete - (Headwalls & Slabs)
12	163	Cu. Yds Rubble Masonry (Headwalls, Abutments, etc.)
13	281	" " Dry Rubble Wall.
14	2,000	Pounds of Reinf. Steel complete in place.
15	1,700	Sq. Yds 4" Mesh #6 Gage Reinf. Wire in Concrete Ford.
16	6,300	Feet of Barbed Fencing.
17	1	Special Reinforced Concrete Culvert Sta. 4+59.
18	1	Special 5' x 7' Reinforced Box Culvert.
19	2	- 30 ft. Trussed Beam Bridges Complete in place.
20	2	- 20' Beam Bridges - Complete in place.
21	3	- 5' x 7' Cattle Passes.

These quantities are an estimate only and may be increased or decreased in the actual construction of the work.

(D) GENERAL REQUIREMENTS

The work to be done consists of the following, viz:

(a) To furnish all labor, implements, tools, machinery and materials, required to construct and put in complete order for use the said road, including bridges, culverts, fences, and other appertaining structures, and to leave the grounds in a neat condition. Said structures shall be constructed by the Contractor where shown by the plans and profile. All work shall be done in a proper, thorough and workmanlike manner, in accordance with the said plans and profile and these specifications and to the satisfaction of the Engineer and also the Superintendent of Work.

(b) On existing roads the surface of the traveled way shall not be disturbed, except for the construction of culverts, for more than one-half mile in advance of the completed roadway, unless otherwise permitted by written consent from the Engineer.

(c) The contractor is to furnish free of charge all stakes and such temporary structures as may be necessary for marking and maintaining points and lines given by the Engineer, and is to give the Engineer such facilities and materials and furnish common labor for giving said lines and points as he may require; and the Engineer's marks must be carefully preserved.

(d) If any person employed by the Contractor shall appear to the Engineer or Superintendent of Work to be incompetent or to act in a disorderly or improper manner, he shall be dis-

charged immediately on the requisition of the Engineer or Superintendent of Work, and such personal shall not again be employed on the work. Whenever the Contractor is not present on any part of the work where it may be desired to give direction, orders will be given by the Engineer or Superintendent, and shall be received and obeyed by the Superintendent or foreman who may have charge of the particular work in reference to which the orders are given.

(e) The Contractor shall, at his own expense, preserve and protect from injury such roadside trees as the Engineer shall specify, and, if so directed by the Engineer, he shall cover the trunks with burlap or drive stakes around them in a manner satisfactory to the Engineer. All trees which the Engineer shall consider to be useful for shade or other purposes shall be cared for by the Contractor as the Engineer shall direct, and no trees outside that portion of the roadway which is to be graded, shall be cut or otherwise removed without the consent in writing of the Engineer.

(f) All fences along the said highway shall be protected by the Contractor, and if they are injured or destroyed, they, and any other property injured by the Contractor, his employees or agents, shall be restored to a condition as good as it was when he entered upon the work.

(g) The Contractor shall examine all bridges and culverts on or near the work or over which he shall move his implements or equipment, and shall properly strengthen such structures where necessary before he uses them. He will be held responsible for any and all damage to such bridges and culverts caused by steam

road rollers or other implements and equipment.

(h) The Contractor shall provide and maintain such fences, barriers, "Road Closed" signs, red lights and watchmen and other means as may be necessary to prevent accidents to the public. He shall place, at the points designated by the Engineer, such warning signs as may be furnished by the Engineer, and he shall provide white lights as may be necessary for illuminating the said signs.

(i) After the completion of the work, the Contractor shall remove all temporary structures built by him and all surplus materials of all kinds from the site of the work and leave the whole clean and presentable.

(E) CLEARING AND GRUBBING

(a) All trees, stumps, roots and vegetation within the roadbed and slopes shall be grubbed out and removed, and all trees or shrubbery on the highway reserved by the Engineer shall be suitably protected by the Contractor, as the Engineer may direct, and as hereinbefore set forth.

(b) No additional payment will be made for above mentioned work, it being understood that the contract price for grading covers the same.

(F) GRADING

(a) The grades for the said Highway are delineated and set forth on the said profile. The elevations are in feet, refer to the top of the finished grade of the roadway at its center line,

and are above a datum line of levels established by the United States Geological Survey and set forth in Bulletin 342 for the years 1896-1907.

(b) The grade of the road shall conform to a uniform line of ascent and descent drawn between the grade points specified on the said profile except for a slight curvature immediately at the break formed at said grade line intersections where a small amount of curvature will be given so as to make the break less pronounced.

(c) Grading will include all embankments and excavations of whatever nature the materials may be, required for the construction of the roadway, waterways and ditches, road and driveway intersections, foundation pits for culverts and other structures, changing of streams and highways, and all other grading incidental to the construction of the finished highway. All grading shall be true to the lines and grades given and in conformity with the plans, profiles and sections therefor.

(d) There shall be but one excavation price and one embankment price for all classes of materials encountered in grading, that is, a flat price bid per cubic yard for each.

(e) All soft or unsuitable material shall be removed and the space refilled with good earth or gravel, as directed by the Engineer. The contract price for excavation or embankment will be allowed in this case both for the excavation below subgrade and for the refilling.

(f) The Contractor shall grade, according to the Engineer's directions, a safe, proper and workmanlike connection with each intersecting public or private road or driveway.

(g) Embankments shall be formed of suitable material and carried up full width, in layers not to exceed one foot in thickness, and the teams shall be made to travel as evenly as possible over the whole surface of each layer, both going and coming.

(h) All clods or hard lumps of earth shall be broken up before being placed in the fill, if, in the opinion of the Engineer, it is necessary, in order to obtain a dense embankment or a smooth, even surface.

(i) The entire roadway shall be plowed and broken up where directed by the Engineer, to allow new and old material to bond together. Slopes too steep to be plowed shall be benched, as directed by the Engineer.

(j) Embankments shall be carried to such height above grade and in such increased width as the Engineer may deem necessary for shrinkage and compression, and they must be maintained by the Contractor to their proper height, dimensions and slope until the work is finally accepted.

(k) After fills and cuts are graded, the entire width of the roadway shall be thoroughly watered and rolled with a roller weighing not less than 200 pounds per inch width of tire, until the surface is smooth and unyielding. Depressions below the required grade and cross-section shall be filled with fresh material and rolled as before.

(l) Excavations and embankments shall be finished with all slopes cut true and straight, in conformity with the lines and grades of slope directed by the Engineer, and all slopes, whether

old or new, shall be left with neat and even surfaces.

(m) The contract price per cubic yard for excavation and embankment shall include the excavation, loading, transportation, and deposit of the material in accordance with these specifications, and also all grubbing and clearing, culvert excavation, ditching, and all other work incidental to the grading.

(n) Excavation for culverts, bridges or other structures shall be estimated to include one foot beyond the outside limits of the footings or walls and with vertical slopes.

(o) Excessive blasting or "over-shooting" will not be permitted, and the Contractor will be required to remove at his own expense any material outside the authorized cross-section that may be shattered or loosened by blasting.

(p) The Contractor shall protect from injury and provide for continuous service all gas or water pipes, buildings, bridges, tracks and other construction that may be encountered, and promptly repair any damage done them during the progress of the work, and shall remove all rubbish or debris immediately after the completion of the work in each road division.

(q) Bridge footings and the like shall be carried to the substantial depths and shall be placed upon undisturbed material. If excavations are carried below grade, no backfilling under footings will be permitted, and the footings must be extended to undisturbed material at the expense of the Contractor. After the abutments and piers are in place, all excavations around them shall be backfilled to substantially the original ground line, with such allowance for shrinkage as the Engineer may direct. At such places

on the work as rock is plentiful, the headwalls and abutments will be constructed of rubble masonry as shown upon the plans.

(r) The roadway near footing mentioned in (q) shall be backfilled to conform to the grade and cross-section of the adjacent road, the cost being included in the contract price for the bridge.

(G) CONCRETE PAVEMENT

(a) Before the pavement or shoulder material is placed, the roadbed shall be graded to a true cross-section conforming to the grades given by the Engineer and the section called for on the plan.

(b) It shall be thoroughly watered and rolled until the surface is smooth and unyielding.

(c) Depressions shall be filled with fresh material and the watering and rolling continued as before.

(d) Where a uniform and unyielding surface can not be otherwise obtained, the surface shall be cultivated and again puddled with water and rolled until a true and firm foundation is secured.

(e) No surfacing material shall be applied until the sub-grade is in condition acceptable to the Engineer.

(f) The cost of shaping and preparing the sub-grade shall be considered as included in the price quoted for the concrete pavement. All traffic shall be barred from that portion of the width of roadway which is being paved. The Contractor, however, must arrange to take care of the existing traffic so as

to inconvenience the general public as little as possible. Residents along the road must be provided for as far as practicable. Convenient access to driveways, houses and buildings along the line of the work must be maintained and temporary approaches to crossings or intersecting highways shall be provided and kept in good condition where required by the Engineer.

(g) Upon the sub-grade as hereinbefore specified, and while it is thoroughly damp and firm, there shall be laid a concrete pavement of the thickness, width and form shown on the typical cross-section composed of Class "B" cement concrete, mixed and placed as specified. Unless otherwise provided by special letter from the Engineer, no embankment over three feet in depth shall have pavement placed thereon until the drying out of the embankment after one winter's rain has taken place.

(h) The upper surface of the pavement shall be finished parallel to the profile grade by thorough tamping until the mortar flushes freely to the surface. Special care must be given to the tamping of the concrete adjacent to expansion joints. In striking off the top of the concrete the template must be moved away from the expansion joint, not toward it, and the surplus concrete removed. "Split floats" spanning the expansion joints shall be used for finishing the surface of the concrete adjacent thereto to insure that the concrete on both sides of each joint shall be at the same elevation. When a straight edge ten (10) feet long is laid on the finished surface of the concrete, and parallel with the line of the road, the surface shall in no place vary more than one-quarter of an inch from the lower edge of the straight edge.

All grade breaks as shown on the profile are construed to require a small vertical curve in the concrete to eliminate any sharp line of demarkation showing on the surface of the pavement.

(i) Expansion joints one-quarter (1/4) to three-eighths (3/8) of one (1) inch thick, shall be constructed at intervals of forty-five (45) feet. They shall be vertical, straight, and at right angles to the center line of the pavement. Steel templates of the dimensions shown for the road crown on the plan, shall be placed in position for the expansion joints prior to the concrete being poured adjacent thereto. The steel templates shall remain in place not less than twelve (12) hours following the pouring of the concrete, and shall then be removed and the spaces filled with 40° to 50° penetration asphalt up to the level of the top of the pavement. The spacing of the expansion joints may be changed at the discretion of the Engineer, provided the total number of said joints is not increased.

(j) The Contractor shall supply crown grade templates for use as directed by the Engineer, and he shall supply enough expansion joint steel templates for a full days run. Templates which become defective must be replaced immediately.

(k) The concrete shall be protected from direct rays of the sun after being placed and shall be so protected and kept wet for a period of at least ten (10) days. The concrete shall also be protected against traffic until thoroughly set.

(l) After the sub-grade has been prepared, or after the concrete foundation has been laid, it shall be protected from traffic and the contractor shall be required to repair any damage

which may occur.

(m) No traffic shall be allowed upon the unfinished roadway except by permission of the Engineer.

(H) CONCRETE

(a) CONCRETE MATERIALS: All cement used shall be Portland cement and must conform to the following requirements and be subject to the following tests which will be open to the contractors. Samples for tests may be taken from every package delivered or proposed to be used upon the work, and unless they meet the requirements herein specified, such package or packages of cement will be rejected. No cement will be accepted, tested or permitted to be used, unless delivered in the original, unopened packages with the manufacturer's name and the brand of cement thereon. All samples of Portland cement required by the Engineer or his authorized agent, shall be given him free of charge and he shall have authority at any time to take such samples as he or his agent may desire. All tests made will be made in the cement testing room provided by the Engineer for that purpose. A period of at least twelve (12) days shall be allowed for inspection and necessary tests. Cement failing to meet the seven day requirements may be held awaiting the twenty-eight day test before rejection. Briquettes for testing tensile strength of cement will be made both of neat cement and of cement and sand in the proportions hereinafter specified.

(b) SPECIFIC GRAVITY: The specific gravity of cement shall be not less than 3.10. Should the test of cement as received fall below this requirement, a second test may be made upon a sample

ignited at a low red heat. The loss in weight of the ignited cement shall not exceed four per cent.

(c) FINENESS: The cement must be evenly ground and when tested with the following standard sieves, must pass at least the following percentages by weight.

No. 100 sieve having 100 meshes per lineal inch, 92%.
No. 200 sieve having 200 meshes per lineal inch, 75%.

(a) TENSILE STRENGTH: Neat briquettes one inch square in section shall attain a minimum tensile strength as follows:

At 24 hours in moist air, 175 pounds.
At 7 days (1 day in moist air, 6 days in water), 500 pounds.
At 28 days (1 day in moist air, 27 days in water), 600 pounds.

Briquettes one inch square in section, made of one part of Portland cement to three parts of standard testing sand shall attain a minimum tensile strength as follows:

At 7 days (1 day in moist air, six days in water), 175 pounds.
At 28 days (1 day in moist air, 27 days in water), 250 pounds.

Cement testing neat below 700 pounds at 28 days and showing a retrogression below the seven day tests, will be rejected.

The sand test must in all cases show an increase in strength at twenty-eight days.

(e) SOUNDNESS: Pats of neat cement about three inches in diameter, one-half inch in thickness at the center and tapering to a thin edge, shall be kept in moist air for a period of twenty-four hours. A pat will then be kept in air of normal temperature and examined at intervals for at least twenty-eight days. Another pat will be exposed in an atmosphere of steam above boiling water in a loosely closed vessel for five (5) hours; these pats to

satisfactorily pass the requirements, must remain firm and hard and show no signs of distortion, checking, cracking, blotching or disintegration. Neat briquettes shall develop initial set in not less than thirty (30) minutes and shall not develop final set in less than one (1) hour, but must develop final set in less than ten (10) hours. If so required by the Engineer, no cement will be permitted to be used in the work until after the seventh day test as above prescribed. The cement shall not contain more than one and 75/100 per cent of anhydrous sulphuric acid nor more than four per cent of magnesia.

(f) All tests shall be made in accordance with the methods specified in the Final Report of the Special Committee on Uniform Tests of Cement of the American Society of Civil Engineers, presented January 17, 1912, with subsequent amendments. (Alternative)

(g) The cement shall be suitably protected from exposure to moisture until used, and shall be so piled as to permit of access for tally, inspection and identification of each shipment. It shall be delivered in the original package, with the brand and the name of the manufacturer plainly marked thereon.

(h) All cement, the samples of which do not pass the above specifications, and all cement which may have become damaged by exposure to moisture shall be immediately and permanently removed from the work.

(i) SAND: All sand must be fresh water sand, clean, hard and sharp with grains graded from coarse to fine but with coarse grains predominating and shall contain not more than two per cent of foreign matter. The sand shall pass a screen having four (4) meshes to the lineal inch. Not more than 25% shall pass

a screen having 50 meshes per lineal inch and not more than five per cent shall pass a screen having 100 meshes per lineal inch. The sand shall be of such quality that mortar composed of one part of Portland cement and three parts of sand, by weight, when made into briquettes, shall show a tensile strength (at 7 and 28 days) at least 70% of the strength of briquettes composed of one part of the same cement and three parts standard testing sand by weight. The percentages of water used in making the briquettes of cement and sand shall be such as to produce a mortar of the same consistency as that of the standard testing sand briquettes of normal consistency.

(j) BROKEN STONE OR GRAVEL: Broken stone or gravel shall be of clean, hard, durable rock, free from all deleterious matter. It shall be of such size that it will pass a 1-1/2" round opening and be retained on a screen having 1/4" openings and not less than 30 per cent of its volume shall be material which will pass a 3/4 inch mesh screen and shall range in size from the minimum noted above to one and one-half inches in greatest dimension maximum. It being understood that the Engineer has the right to reject any and all material which does not conform to these specifications.

(k) The water used in mixing the concrete shall be clean, free from oil, acid, alkalies or vegetable matter.

(l) CLASS A CONCRETE shall consist of one cubic foot (94 lbs.) of Portland cement, two cubic feet of fine aggregate and four cubic feet of coarse aggregate, the several ingredients being measured separately before mixing.

(m) CLASS B CONCRETE shall consist of one cubic foot

(94 lbs.) of Portland cement, two and one-half cubic feet of fine aggregate, and five cubic feet of coarse aggregate, the several ingredients being measured separately before mixing.

(n) CLASS C CONCRETE shall consist of one cubic foot (94 lbs.) of Portland cement, three cubic feet of fine aggregate, six cubic feet of coarse aggregate.

(o) The ingredients of the concrete shall be thoroughly mixed, sufficient water being added to obtain the desired consistency, and the mixing continued until the materials are uniformly distributed, and each particle of fine aggregate is thoroughly coated with cement, and each particle of coarse aggregate is thoroughly coated with mortar.

(p) Where a mechanical mixer is used, the materials must be proportioned dry. The mixer must produce a concrete of uniform consistency and color, thoroughly mixing the materials in the proportions covered by the Specifications, with the stones thoroughly mixed with the water, sand and cement.

(q) Sufficient water shall be added during the process of mixing to produce a wet, plastic mixture which will flush readily under light tamping, but which can be handled without causing a separation of the coarse aggregate from the mortar. The quantity of water used shall be modified, as directed by the Engineer, to meet the conditions of the work being placed.

(r) All concrete shall be used while fresh and before it has taken an initial set. Retempering with additional water, any concrete that has partially hardened, shall not be permitted.

(s) The forms shall be smooth, tight, true to the required lines and grade, and of sufficient strength to resist spring-

ing out of shape during the placing of the concrete. All mortar and dirt shall be removed from forms previously used; they shall be thoroughly moistened immediately before concrete is placed against them; they shall remain in place until the Engineer authorizes their removal, and they shall be removed in such order as he may direct.

(t) Concrete, when mixed, shall be immediately deposited without any separation of its ingredients, and thoroughly rammed and tamped or spaded in layers not more than six inches in depth, until it is thoroughly compact and until free mortar appears on the surface and all voids are filled. It shall not be permitted to fall from any considerable height.

(u) It shall not be placed under water except with the consent of the Engineer, and in such event, shall be deposited in a compact mass in such manner that the cement and fine aggregate will not be separated from the stones. Concrete shall not be laid in running water.

(v) Any voids discovered in the surface of the concrete shall be repaired by removing the defective work and refilling the space with one to one cement mortar. Exposed surfaces shall be finished smooth and uniform by removing all form marks and imperfections. A neat cement grout shall be applied over the entire surface, as directed by the Engineer.

(w) When joining new concrete with concrete already set, the surface shall be cleaned, roughened, thoroughly watered and coated with a thin mortar, composed of neat cement.

(x) The concrete in each floor slab or girder shall be placed continuously. Concrete in arches shall be placed in a manner

acceptable to the Engineer.

(y) Reinforcing rods shall be placed as shown on the plan, wired at intersecting rods and held firmly in place until embedded in concrete. The price of the concrete alone for all reinforced structures is the same as if the structures were without reinforcement. In addition, however, will be added the price bid for reinforcement in place. The sum of the two prices going to make up the total price of the reinforced concrete.

(z) During the first ten days after placing, the concrete shall be kept flooded with water to a depth of at least one inch by building earth dams as required until it has thoroughly set. In case of rain, extreme heat or drying winds, freshly laid concrete shall be protected by canvas until the flooding can be taken care of.

Shoulders of the dimensions shown on the plan, or of such dimensions as the Engineer shall specify, shall be built on both sides of the paved way.

If the Engineer shall so direct, any material which he shall select from the excavation of the present road bed shall be stacked in piles, saved for use on the shoulders and used therefor when directed by the Engineer.

The shoulders shall be dressed to conform to the proposed cross-section and shall be rolled with a roller of weight and pattern approved by the Engineer and to his satisfaction. When the roadway is completed, the shoulders shall be smooth and hard and shall conform to the proposed cross-section.

Timber Headers of 2" by 4" planks placed on edge and

securely nailed inside of supporting stakes shall be placed along each edge of the pavement and at the beginning and end of each section thereof and they shall conform to the lines and grades for the edge of the finished pavement.

They shall have square top edges, square butt joints against stakes and shall not contain enough knots or imperfections to impair their strength.

The stakes shall be sufficient in size and number to support the concrete base until the work is finished. The headers shall remain in place until the concrete has hardened to the satisfaction of the Engineer.

All stakes shall be set with a sawed top conforming to the surface of the finished pavement.

The expense of the headers and placing them shall be considered as included in the price for the concrete.

(I) CORRUGATED METAL PIPE

(a) All pipe shall be of first quality, straight and true to form, and thoroughly galvanized with not less than two ounces of zinc spelter per square foot before being corrugated. It shall be free from imperfections of any kind and shall show no signs of cracking or blistering. The corrugations shall not be less than two and one-half ($2\frac{1}{2}$) inches, nor more than two and three-quarters ($2\frac{3}{4}$) inches in width, and not less than one-half ($\frac{1}{2}$) inch in depth.

(b) The metal composing the pipe and rivets shall contain at least ninety-nine and eighty-four hundredths (99.84) per cent pure iron.

(c) All rivets shall be thoroughly galvanized and shall have ample structural round, or cone heads.

(d) All rivets shall be at least five-sixteenths ($\frac{5}{16}$) inches in diameter and be of sufficient length to allow of an upset of the same size as the head of the rivet.

(e) Galvanizing on rivets shall be left as nearly intact as possible during manufacture, and shall be free from scars or indentations of tools or machines used in riveting.

(f) All pipe shall be riveted at longitudinal joints as follows:

(g) On all pipe of a diameter under thirty (30) inches there shall be one rivet in each corrugation.

(h) On all pipe thirty (30) inches in diameter and over there shall be two (2) rivets in each corrugation.

(i) In circumferential joints of pipe of all diameters, rivets shall be placed not more than eight (8) inches apart from center to center.

(j) For pipe twenty-four (24) inches in diameter and less, the metal shall be sixteen (16) gauge U.S. Standard; for pipe over twenty-four (24) inches in diameter, and not over forty-two (42) inches in diameter, the metal shall be fourteen (14) gauge U. S. Standard; for pipe forty-eight (48) inches in diameter and over, the metal shall be twelve (12) gauge U. S. Standard.

(k) The bottom of the excavation for the culvert shall be true to grade and thoroughly compacted, the pipe carefully placed in position with the intake end headed up stream, and with seams on sides.

(l) If pipe sections are built of two sheets, the seams shall be placed quartering. Five gravel, sand or good earth shall then be filled around the pipe up to the center and thoroughly tamped with a thin tamping bar. The excavation shall then be filled in layers six (6) inches thick, each layer being thoroughly tamped.

(m) All pipe shall be delivered at proper location fourteen (14) days prior to installation, in order to give sufficient time for chemical analysis of the metal.

(n) Corrugated iron culverts shall be laid where shown in the plans.

(o) All corrugated iron pipe shall be laid true to the lines and grades furnished by the Engineer.

(p) Nothing but fine material, free from large stones, shall be placed around and under the pipe, and all material placed under and about the pipe shall be thoroughly tamped in place by a thin iron tamping bar.

(q) The ends of pipe culverts must be protected by concrete walls as shown on the plan.

(r) The price per foot paid for pipe laid as above shall include the cost of trenching and back-filling, and all incidental work except the masonry ends; provided, however, that when the depth of the trench exceeds five (5) feet, all excavation necessary below five feet shall be paid for by the cubic yard at the regular contract price for excavation.

(J) DRY RUBBLE RETAINING WALLS.

(a) Retaining walls of dry rubble shall be constructed where shown on the plans.

(b) The stones shall be hard and durable, and free from seams or other imperfections. Selected stones with flat faces as nearly parallel as practicable shall be used. At least seventy-five (75) per cent of the stones shall be one-man stones or larger.

(c) The different sizes of stones shall be evenly distributed over the whole face of the wall, generally keeping the largest stones in the lower part of the wall. The work shall be well bonded, using as many large long stones as can be obtained, and shall present a reasonably true and smooth surface, free from large holes or projections. The wall shall be built ahead of the embankment, and shall be self-sustaining.

(d) The price per cubic yard for dry rubble shall include furnishing and placing the stones and all incidental work.

(K) RUBBLE MASONRY

(a) The specifications for Dry Rubble Retaining Walls shall apply.

(b) The stones to be selected so as to give a uniform face to the wall when in place.

(c) Mortar to be one part cement to four parts clean sand. (See plans)

(L) REINFORCING STEEL

(a) All steel shall be of best quality, tough and ductile and of the open hearth process. Rerolled materials will not be accepted.

(b) The reinforcing bars must be free from injurious seams, flaws, cracks or other defects. Loose scales, excessive rust, grease, paint or other coatings of any character which may destroy the bond will not be permitted.

(c) All reinforcing bars shall be deformed bars having their corrugations at right angles to their length.

(d) All reinforcing steel specimens shall develop a tensile strength of from 55,000 to 65,000 pounds per square inch, an elastic limit of 50% of this and an elongation of 22%.

Reinforcing steel shall be used in such sizes only as shown on the plans and shall be paid for at the unit price per pound named in the contract, which price is for the steel complete in place and other incidental work.

(M) BRIDGES

(a) All bridges shall be constructed as detailed on the plans and set forth in any clauses which apply and form a part of these Specifications.

(b) All lumber shall be clear, either Oregon Pine or its equivalent and California Redwood as indicated on plans.

(c) All wooden decks shall be given three applications of road oil each to consist of one-half gallon per square yard over which coarse sand or rock screenings shall be spread same to have a maximum diameter of one-half inch.

(d) The oil shall be at least 90% asphaltic and applied at a temperature of not less than two hundred fifty (250) degrees Fahrenheit, nor more than five hundred (500) degrees Fahrenheit.

(e) In no case shall live steam or water be injected into or allowed to enter the oil after it has been received by the Contractor.

In the process of oiling, oil must not be allowed to fall on any concrete head walls, curbs, walks or guard rails.

(f) Before any tank of oil is applied, it must be inspected by said Engineer to determine its quantity and temperature.

(g) All wagon tanks used for the distribution of oil shall first be submitted to the Engineer, who will gauge and mark the capacity in gallons of said tanks.

(h) Guard rails shall be built in accordance with the plans, located at the points shown.

(i) Posts shall be six (6) feet total length, embedded in the earth to a depth of two and one-half (2½) feet. They shall be square redwood posts 6" by 6", finished dimensions, surfaced four (4) sides, and spaced eight (8) feet on centers.

(j) The rails shall consist of 2"x6"x16' Oregon pine, surfaced four (4) sides. The ends shall be properly squared so as to make a neat joint. Rails shall break at joints on alternate posts. Each rail shall be securely fastened to the posts with not less than two (2) fifty-penny steel wire nails at each end and at the center.

(k) The completed guard rail shall be painted with two (2) coats of pure white lead mixed in oil in proper proportions.

The first coat shall be thoroughly dry before the second coat is applied.

(1) All timber must be of first quality redwood and Oregon Pine, free from sap, shakes, loose or rotten knots, or other defects that would impair its strength or durability, and thoroughly seasoned. Such changes shall in no wise invalidate the contract for the performance of the work nor the security therefor.

(N) CONCRETE CULVERTS, END WALLS, ETC.

(a) Concrete culverts, end walls, and retaining walls shall be constructed where shown on the plans to the lines and grades given by him and in accordance with the standard or special designs shown on the plan.

(b) All culvert masonry shall be measured in accordance with the dimensions shown on the plan, and no allowance shall be made for coffer dams, pumps, labor, etc., which may be necessary on account of water. The price paid for general concrete work shall not include the hauling and placing of the steel reinforcement, but it will include all other incidental work. The hauling and placing of the steel reinforcement will be included in the cost in place for steel alone.

(O) FENCES

The new fences will consist of Number Fourteen (14) gage, two point Glidden Special barbed wire with three strands of barbed wire on 4"x4"x6' Redwood posts spaced thirty (30) feet apart. All fences shall be built in a substantial and

workmanlike manner, with all wire fences well and tightly stretched.

The price to be paid for all work done hereunder shall include the cost of taking down the fences, moving them to their new locations, resetting them, and replacing all portions of the fences which are injured or damaged, by reason of their removal, with new materials of kind and quality equal to that in the fences before their removal, to the intent that, when replaced, such fences shall be equal in all respects to the present fences. The price shall also include all handling and hauling of material, building the fences, and all incidental work.

(P) DAMAGES

The Contractor shall take all responsibility of the work and shall take suitable measures to protect the work and prevent accidents during construction. He shall provide and maintain all necessary barriers, lights, danger signs and watchmen as hereinbefore set forth.

All loss or damage arising from any unforeseen obstruction or difficulties which may be encountered in the prosecution of the work, or from any action of the elements or from any act or omission not authorized by these specifications, on the part of the Contractor or any agent or person employed by him, shall be sustained by the Contractor.

(Q) SPECIFICATIONS AND DRAWINGS

Anything mentioned in the Specifications and not shown in the drawings, or vice versa, shall be done as though shown

and mentioned in both. Should the drawings and specifications conflict as regards the same detail, the Engineer's written decision as to which is correct shall be final and binding.

(R) STAKING OUT WORK

The Contractor shall give at least forty-eight (48) hours notice when he shall require the services of the Engineer for laying out any portion of the work. He shall dig all stake holes necessary to give lines and levels, and shall preserve in their proper places all surveyor's stakes or monuments. The expense of replacing said stakes or monuments which the Contractor or his employees may have failed to preserve, shall be borne by the Contractor.

(S) DEFECTIVE WORK

Defective work shall be made good, and unsuitable materials furnished by the Contractor may be rejected, notwithstanding the fact that such work and materials have been previously overlooked by the Engineer. If the work, or any part thereof, shall be found defective before the final acceptance of the whole work, the Contractor shall forthwith make good such defects in a manner satisfactory to the Engineer.

(T) SUPERVISION OF WORK

The work shall be under the supervision of the Superintendent of Work and the Engineer. The Contractor shall furnish

the Superintendent and Engineer reasonable facilities for obtaining such information as may be necessary to give them full information at all times respecting the progress and manner of the work and the character of the materials.

It shall be the duty of the Engineer to examine and inspect the work done or to be done under this contract and to see that the same is properly performed and when completed to file his written approval thereof with the Superintendent of Work.

The Superintendent of Work, the Engineer or his assistant in charge of the work shall have authority to stop the work whenever the provisions of these Specifications are not being complied with, and the Contractor shall instruct his employees accordingly.

The Contractor shall give his personal attention constantly to the faithful prosecution of the work, shall keep the same under his personal control and shall not assign or sub-let the work or any part thereof without the previous written consent of the Board of Supervisors.

Whenever the Contractor is not present on any part of the work where it may be desired to give directions, orders may be given by the Engineer, and shall be received and obeyed by the Superintendent or foreman who may have charge of the particular work in reference to which the orders are given.

Any material condemned as not being in compliance with these Specifications, shall be immediately removed from the work and shall not be again brought thereon.

Ed Fletcher Papers

1870-1955

MSS.81

Box: 36 Folder: 9

**Business Records - Reports - Ellis, Thomas
P - "Specifications - Del Mar-Escondido
Highway - Road Improvement No. 3"**



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