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Unilateral Palpable and Impalpable Mistake in Construction Contracts

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UNILATERAL PALPABLE AND IMPALPABLE MISTAKE IN CONSTRUCTION CONTRACTS[1]

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I. IN THE COURTS

MISTAKE in the formation of a bid on construction contracts has been urged as the basis for relief in a number of varied situations which have come before the courts. Faulty addition,[2] misreading of blueprints,[3] omission of items,[4] transposition of numbers,[5] improper multiplication,[6] misunderstanding as to location,[7] or extent of the work demanded,[8] constitute the

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[1]This article constitutes an elaboration of one of the mistake situations discussed in Patterson, Equitable Relief for Unilateral Mistake, (1928) 28 Col. L. Rev. 859. The present writer is greatly indebted to Professor Patterson for his kind assistance and his many valuable suggestions in the preparation of this study of mistake in the construction contract. On the problems of unilateral mistake see also, Note (1926) 26 Col. L. Rev. 989; Note (1927) 27 Col. L. Rev. 60; Foulke, Mistake In Formation and Performance of a Contract, (1911) 11 Col. L. Rev. 197.

[2]Geremia v. Boyarsky, (1928) 107 Conn. 387, 140 Atl. 749; Steinmeyer v. Schroeppel, (1907) 226 Ill. 9, 80 N. E. 564; Brown v. Levy, (1902) 29 Tex. Civ. App. 389, 69 S. W. 255; State v. Scholz Bros., (Tex. Civ. App. 1928) 4 S. W. (2d) 661.

[3]C. H. Young Co. v. Springer, (1911) 113 Minn. 382, 129 N. W. 773 (reading ⅛ inch per foot scale as ¼ inch per foot); Southbridge Roofing Co. v. Providence Cornice Co., (1916) 39 R. I. 35, 97 Atl. 210 (same); Leonard v. Howard, (1913) 67 Or. 203, 135 Pac. 549.

[4]Board of Commissioners v. Bender, (1905) 36 Ind. App. 164, 72 N. E. 154 (omission of a page in the estimate book); Board of Regents v. Cole, (1925) 209 Ky. 761, 273 S. W. 508; Tyra v. Cheney, (1915) 129 Minn. 428, 152 N. W. 835; St. Nicholas Church v. Kropp, (1916) 135 Minn. 115, 160 N. W. 500 (structural iron); Barlow v. Jones, (N.J. Ch. 1913) 87 Atl. 649 (carpentry).

[5]Moffett, Hodgkins & Clarke Co. v. Rochester, (1900) 178 U. S. 373, 20 Sup. Ct. 957, 44 L. Ed. 1108 ($1.50 per foot of excavation instead of $15.00 per foot); Bromagin v. City of Bloomington, (1908) 234 Ill. 114, 84 N. E. 700 (figure for weight per foot instead of price per foot); City of New York v. Seely-Taylor Co., (1912) 149 App. Div. 98, 133 N. Y. S. 808, aff'd on opinion below, (1913) 208 N. Y. 548 (numbers wrongly copied); Harper v. City of Newburgh, (1913) 159 App. Div. 695, 145 N. Y. S. 59.

[6]Boeckler Lumber Co. v. Cherokee Realty Co., (1909) 135 Mo. App. 708, 116 S. W 452; City of New York v. Dowd Lumber Co., (1910) 140 App. Div. 358, 125 N. Y. S. 394; Neill v. Midland Ry., (1869) 20 L. T. (N.S.) 864.

[7]McCormack v. Lynch, (1897) 69 Mo. App. 524 (excavation work thought to be for a different site).

[8]Hudson Structural Steel Co v. Smith & Rumery Co., (1912) 110 Me. 123, 85 Atl. 384 (bid on the basis of iron and steel for one building whereas specifications called for two buildings); Grant Marble Co. v.

remarkable array of errors sufficiently important to have led to litigation.

In a large number of cases, the mistake was put forward to obtain the return or cancellation of a deposit check which accompanied the bid as security for the execution of the contract on the acceptance of the bid.[9] In others it was set out as a defense to an action for damages on the part of the owner who had been forced to relet the contract at a higher price on the refusal of performance by the mistaken bidder.[10] Suits to obtain a decree of rescission,[11] or reformation,[12] and actions at law in quantum meruit for the services performed, ignoring the price named in the contract,[13] comprise the remainder.

The cases are divided rather evenly between granting[14] and denying[15] relief.

Abbot, (1910) 142 Wis. 279, 124 N. W. 264 (work demanded for six stories and bid on the basis of five).

[9]Mayor and City Council of Baltimore v. Robinson Construction Co., (1914) 123 Md. 660, 91 Atl. 682; Bowes v. Town of Milton, (1926) 255 Mass. 228, 151 N. E. 116; Brown v. Levy, (1902) 29 Tex. Civ. App. 389, 69 S. W. 255; Moffett, Hodgkins & Clarke Co. v. Rochester, (1900) 178 U. S. 373, 20 Sup. Ct. 957, 44 L. Ed. 1108; Bromagin v. City of Bloomington, (1908) 234 Ill. 114, 84 N. E. 700; Board of Commissioners v. Bender, (1905) 36 Ind. App. 164, 72 N. E. 154; Board of Regents v. Cole, (1925) 209 Ky 761, 273 S. W. 508; St. Nicholas Church v. Kropp, (1916) 135 Minn. 115, 160 N. W. 500; Barlow v. Jones, (N.J. Ch. 1913) 87 Atl. 649.

[10]Bertram v. Bergquist, (1910) 153 Ill. App. 43; Geremia v. Boyarsky, (1928) 107 Conn. 387, 140 Atl. 749; State v. Scholz Bros., (Tex. Civ. App. 1928) 4 S. W. (2d) 661; C. H. Young Co. v. Springer, (1911) 113 Minn. 382, 129 N. W. 773; Southbridge Roofing Co. v. Providence Cornice Co., (1916) 39 R. I. 35, 97 Atl. 210; Leonard v. Howard, (1913) 67 Or. 203, 135 Pac. 549; City of New York v. Seely-Taylor Co., (1912) 149 App. Div. 98, 133 N. Y. S. 808; City of New York v. Dowd Lumber Co., (1910) 140 App. Div. 358, 125 N. Y. S. 394; McCormack v. Lynch, (1897) 69 Mo. App. 524.

[11]Steinmeyer v. Schroeppel, (1907) 226 Ill. 9, 80 N. E. 564; Harper v. City of Newburgh, (1913) 159 App. Div. 695, 145 N. Y. S. 59.

[12]Youngstown Electric Light Co. v. Poor District, (1902) 21 Pa. Super. Ct. 96; Neill v. Midland Ry., (1869) 20 L. T. (N.S.) 864.

[13]Tyra v. Cheney, (1915) 129 Minn. 428, 152 N. W. 835; Boeckler Lumber Co. v. Cherokee Realty Co., (1909) 135 Mo. App. 708, 116 S. W. 452; Hudson Structural Steel Co. v. Smith & Rumery Co., (1912) 110 Me. 123, 85 Atl. 384; Grant Marble Co. v. Abbot, (1910) 142 Wis. 279, 124 N. W. 264.

[14]Geremia v. Boyarsky, (1928) 107 Conn. 387, 140 Atl. 749; Board of Commissioners v. Bender, (1905) 36 Ind. App. 164, 72 N. E. 154; Board of Regents v. Cole, (1925) 209 Ky. 761, 273 S. W. 508; Tyra v. Cheney, (1915) 129 Minn. 428, 152 N. W. 835; St. Nicholas Church v. Kropp, (1916) 135 Minn. 115, 160 N. W. 500; Barlow v. Jones, (N.J. Ch. 1913) 87 Atl. 649; thus in every case of omission of an item, relief was granted; Moffett, Hodgkins & Clarke Co. v. Rochester, (1900) 178 U. S. 373, 20 Sup. Ct. 957, 44 L. Ed. 1108; Bromagin v. City of Bloomington, (1908) 234 Ill. 114, 84 N. E. 700; Harper v. City of Newburgh, (1913)

A. *Impalpable Mistake.*—The solution to the problems implicit in this type of case is not easily found. Assuming the mistake to be impalpable, or unknown to the other party,[16] the builder or owner has entered into a valid contract, or has accepted a low bid and returned the other deposit checks, in reliance upon an estimate submitted by a person who is presumably competent, and more than likely, expert. If an expectation of performance is ever aroused upon the formation of a contract, this promisee's expectation has been aroused. To permit the contractor to withdraw from the contract without penalty simply because he has added a column of figures carelessly, seems hardly a desirable result.

On the other hand, are we to force a contractor who has made an honest, though careless blunder, either to pay damages, or to go through with a contract he never thought he was making? Are we to require him to perform when all profit is taken from the transaction and a loss perhaps to be incurred? Practically, as every business man knows, a forced performance without profit and with the possibility of a loss will result in shoddy material and poor work.

In many cases if the bidder refuses to perform, it will mean

159 App. Div. 695, 145 N. Y. S. 59; City of New York v. Dowd Lumber Co., (1910) 140 App. Div. 358, 125 N. Y. S. 394; Neill v. Midland Ry., (1869) 20 L. T. (N.S.) 864; Hudson Structural Steel Co. v. Smith & Rumery Co., (1912) 110 Me. 123, 85 Atl. 384.

[15]Steinmeyer v. Schroeppel, (1907) 226 Ill. 9, 80 N. E. 564; Brown v. Levy, (1902) 29 Tex. Civ. App. 389, 69 S. W. 255; State v. Scholz Bros., (Tex. Civ. App. 1928) 4 S. W. (2d) 661; C. H. Young Co. v. Springer, (1911) 113 Minn. 382, 129 N. W. 773; Southbridge Roofing Co. v. Providence Cornice Co., (1916) 39 R. I. 35, 97 Atl. 210; Leonard v. Howard, (1913) 67 Or. 203, 135 Pac. 549. All of the cases of misreading blueprints; City of New York v. Seely-Taylor Co., (1912) 149 App. Div. 98, 133 N. Y. S. 808; (while the city was denied additional damages because the deposit check represented liquidated damages for the costs of readvertising, nevertheless the contractor was denied rescission); McCormack v. Lynch, (1897) 69 Mo. App. 524; Grant Marble Co. v. Abbot, (1910) 142 Wis. 279, 124 N. W. 264; Baltimore v. Robinson, (1914) 123 Md. 660, 91 Atl. 682; Bowes v. Town of Milton, (1926) 255 Mass. 228, 151 N. E. 116; Bertram v. Bergquist, (1910) 153 Ill. App. 43; Youngstown Electric Light Co. v. Poor District, (1902) 21 Pa. Super. Ct. 95.

[16]To avoid the necessity of repeating the phrases "not known to the other party" and "known to the other party," Professor Patterson has employed the words "impalpable" and "palpable" to describe these situations. It should be noted that the term "palpable" has a broader significance than "known" in that it refers to an objective rather than a subjective approach. The United States Supreme Coprt has used the term "palpable" in this connection in Moffett, Hodgkins & Clarke v. Rochester, (1900) 178 U. S. 373, 386, 20 Sup. Ct. 957, 961, 44 L. Ed. 1108, 1115. See also Fidelity & Casualty Co. of N Y. v. Waugh, (1927) 222 Ky. 198, 201, 300 S. W. 592, 593.

the forfeiture of his deposit check which may result in a handsome but hardly deserved gift to the owner.[17] To refuse rescission means forfeiture of the deposit, or damages to be paid the owner for his loss of bargain. To grant rescission denies compensation to the promisee for his disappointed expectation in a situation in which he has been free from fault.

In the protection of this expectation of the owner, the courts have resorted in many instances to the device of calling the contractor negligent. And that seems to have decided the case. The great difficulty with this method is that it does not offer any solution to the problem. The desired result having been found, these courts have resorted to a label, a "vituperative epithet"[18] to explain their decision.

A mistake in addition was called negligent in *Steinmeyer v. Schroeppel,*[19] a case of impalable mistake in which relief was denied. In a later case in the same jurisdiction, *Bromagin v. City of Bloomington,*[20] the plaintiff, bidding on a city contract for the furnishing and laying of a water main, made a mistake in carrying over into the column containing the price per foot of sixteen inch pipe, the figure representing the weight per foot, so that the bid was considerably less than was intended. The mistake was noticed by the city engineer who pointed it out to the city board before they accepted the bid.[21] Here the court said that there was a reasonable excuse for the error. Having thus distinguished the case before it from the *Steinmeyer Case* where the mistake was "negligent," the court granted recission.

It is difficult to see how a mistake on the part of an expert contractor, or any business man for that matter, in placing a number in the wrong column is any less negligent than a mistake in adding that column. It may be that even a school-boy is supposed to be able to add properly, but in doing a careful job, he should be equally competent in setting down numbers in their proper place.

In the *Steinmeyer Case* the mistake was impalpable; in the

[17]St. Nicholas Church v. Kropp, (1916) 135 Minn. 115, 160 N. W. 500. The deposit check was for a thousand dollars, yet no expense was incurred by the owner since readvertising was not necessary. It was the court's distaste for this result that led to the granting of rescission.

[18]Patterson, Equitable Relief for Unilateral Mistake, (1928) 28 Col. L. Rev. 859, 885 note 1.

[19](1907) 226 Ill. 9, 80 N. E. 564.

[20](1908) 234 Ill. 114, 84 N. E. 700.

[21]The case is, therefore, one of palpable mistake, being known to the other party.

Bromagin Case it was not, and that may well be the basis for the difference in result.[22] But calling one negligent and the other reasonable is not deciding anything.

While the court's sympathies may be aroused to favor the contractor who was ill when he estimated his bid,[23] that this fact should make the mistake any less negligent is untenable. That there should be a difference in legal result depending on extrinsic emotional factors would be a definite and undesirable departure from established doctrine.[24] If relief is to be denied for impalpable mistake, the reason for doing so must be more substantial than a condonation of the negligent action of the mistaken party.

Another familiar device of the courts found repeatedly in these mistake cases is the use of the "meeting of the minds" doctrine. This too is a rationalization. In those cases in which relief is to be given, the courts find that there was no meeting of the minds.[25] But where relief is to be denied, curiously enough there is a meeting of the minds,[26] even though the contractor was just as mistaken, and despite the fact that had he known of the mistake the contract would not have been signed, nor the bid submitted.

Even assuming, contrary to the current of opinion of present day writers,[27] that the meeting of the minds theory does con-

[22]As a matter of fact the court in the Bromagin Case does stress the fact that the mistake was known to the board. Nevertheless the two grounds, the reasonableness of the mistake and the palpability, are the basis of the decision.

[23]In Barlow v. Jones, (N.J. Ch. 1913) 87 Atl. 649, 650, the court says, "Mr. Barlow was a sick man. His vitality had been sapped, his nervous system shattered by a diabetic disorder, which later led to partial paralysis."

[24]Boyden v. Hill, (1908) 198 Mass. 477, 484, 85 N. E. 413, 415, (evidence as to physical condition at the time of executing the contract held properly excluded); Horn v. Davis, (1914) 70 Or. 498, 503, 142 Pac. 544, 545.

[25]Geremia v. Boyarsky, (1928) 107 Conn. 387, 140 Atl. 749; Board of Commissioners v. Bender, (1905) 36 Ind. App. 164, 72 N. E. 154; Board of Regents v. Cole, (1925) 209 Ky. 761, 273 S. W. 508; Tyra v. Cheney, (1915) 129 Minn. 428, 152 N. W. 835; St. Nicholas Church v. Kropp, (1916) 135 Minn. 115, 160 N. W. 500; Moffett, Hodgkins & Clarke Co. v. Rochester, (1900) 178 U. S. 373, 20 Sup. Ct. 957, 44 L. Ed. 1108; Hudson Structural Steel Co. v. Smith & Rumery Co., (1912) 110 Me. 123, 85 Atl. 384.

[26]Steinmeyer v. Schroeppel, (1907) 226 Ill. 9, 80 N. E. 564; Brown v. Levy, (1902) 29 Tex. Civ. App. 389, 69 S. W. 255; Leonard v. Howard, (1913) 67 Or. 203, 135 Pac. 549; Boeckler Lumber Co. v. Cherokee Realty Co., (1909) 135 Mo. App. 708, 116 S. W. 452; McCormack v. Lynch, (1897) 69 Mo. App. 524; Grant Marble Co. v. Abbot, (1910) 142 Wis. 279, 124 N. W. 264.

[27]Patterson, The Delivery of a Life Insurance Policy, (1919) 33 Harv. L. Rev. 198, 209-212; Corbin, Offer and Acceptance and Some of

stitute a valid basis for decision, nevertheless it is unreasonable to say that in one case of a mistaken bid there is a meeting of the minds, and in another there is none. If the reason for the lack of consensus is that the contractor did not intend his mistaken bid to represent his estimate, that the bid as submitted was not a correct transcript of a sum already fixed, then the same reasoning holds for the cases where relief was denied for a similar type of mistake. If the reason the minds have met is because the contract was exactly what each party understood it to be and because it expressed what was intended by each,[28] that too could be said of the other cases.

It appears, therefore, that in addition to the fundamental objections to the doctrine of the meeting of the minds, there is the further objection here in its inconsistent and illogical application. Like the use of the term "negligent," it is a rationalization, a post-decision label, and not a basis for deciding future cases.

An examination of the cases of unilateral impalpable mistake in construction bids indicates a general tendency to deny relief to the mistaken contractor,[29] thus following the rule set down in other types of unilateral impalpable mistake.[30] As between the two hardships, the courts feel that the better result is attained in protecting the expectations of the owner with whose conduct no fault can be found. This protection of expectation by denial of equitable relief thus applies to these cases the considerations used for the most part in courts of law. Since the merger of law and equity there is no good reason for contrary methods of approach.

the Resulting Legal Relations, (1916) 26 Yale L. J. 169, 205; 1 Williston, Contracts, sec. 95.

[28]Steinmeyer v. Schroeppel, (1907) 226 Ill. 9, 80 N. E. 564.

[29]With the exception of Harper v. City of Newburgh, (1913) 159 App. Div. 695, 145 N. Y. S. 59, relief was denied for unilateral impalpable mistake in the cases cited supra notes 14 and 15.

[30]Griffin v. O'Neil, (1892) 48 Kan. 117, 29 Pac. 143 (sale of cattle—mistake in addition); Tatum v. Coast Lumber Co., (1909) 16 Idaho 471, 101 Pac. 957 (sale of machinery—same); Scott v. Hall, (1900) 60 N. J. Eq. 451, 46 Atl. 611 (confusion as to sums due on contracts); Farquhar v. Farquhar, (1907) 194 Mass. 400, 80 N. E. 654 (action for money had and received for payments under improper calculations); Page v. Higgins, (1889) 150 Mass. 27, 22 N. E. 63 (sale of land—extent of purchase); Turner v. Washington Realty Co., (1924) 128 S. C. 271, 122 S. E. 768 (purchase at judicial sale—mistake as to senior creditors); Olson v. Shephard, (1926) 165 Minn. 433, 206 N. W. 711 (exchange of lands—mistaken boundaries); Libby, McNeil & Libby v. Bush Terminal Co., (1923) 121 Misc. Rep. 228, 201 N. Y. S. 149 (plaintiff forgot a prior contract with the same lessor giving him an option at a lower price); Diman v. Providence, etc., Ry., (1858) 5 R. I. 130 (subscription for stock—wrong amount).

The result of so holding is salutary, the weight of authority is with it, and law and equity become unified.

St. Nicholas Church v. Kropp[31] presents a case in which the court was faced with the occasional hardship incident to the strict application of any rule of law. The case was clearly one of impalpable mistake,[32] yet to deny relief would be presenting to the owner a gift of a thousand dollars where he had sustained no damage. The deposit check for that amount probably stood as liquidated damages for the cost of readvertising and reletting.[33] Since a belated bid, considerably lower than that which followed the defendant's low bid, was accepted, no such expense was incurred. The facts are particularly compelling, and the sympathies of the court were obviously with the contractor. As authority, however, it is doubtful whether the case will be followed; at most, its ruling will be limited to the particular facts.

B. *Palpable Mistake.*—In the case of a palpable mistake, other considerations face the courts. It may well be argued that there is no reasonable expectation aroused in the owner when he knows of the contractor's mistake. Actually there may be grave doubts in his mind whether the contract will be performed upon the discovery of the mistake. If it is discovered, as a business man he knows that the wisest course will be to permit the contractor to withdraw. And if the expectation consists in the wish that the mistake will not be discovered until performance is completed, that is a gamble at long odds and not an expectation.[34]

Regardless of whether or not there is an expectation in fact, the courts feel that on ethical grounds the promisee should not be permitted to take advantage of the mistake.[35] Business acumen is respected and the employment of skill in driving shrewd bar-

[31](1916) 135 Minn. 115, 160 N. W. 500 (rescission).

[32]Infra note 63.

[33]City of New York v. Seely-Taylor Co., (1912) 149 App. Div. 98, 133 N. Y. S. 808.

[34]Nor, of course, is such a hope the expectation of performance which is protected by the courts.

[35]In Neill v. Midland Ry., (1869) 20 L. T. (N.S.) 864, 865, the court said: "The mistake is so palpable that it seems strange that the defendant should seek to take advantage of it." Similarly in Geremia v. Boyarsky, (1928) 107 Conn. 387, 391, 140 Atl. 749, 750, it is said, "It would be inequitable under the circumstances to permit the plaintiff, who had good reason to know [see comment infra p. 145], before the contract was signed, that there must have been a substantial omission or error in the amount of the bid, to take advantage of such error while the contract was still executory, and he had been in no way prejudiced, and to require the defendants to do the work for an amount much less than the actual cost."

gains is upheld, but the ability to take advantage of a mistake requires little more than a hard conscience and is not encouraged by the courts. This aversion to "snapping up" a bargain, coupled with the fact that there may be no expectation worthy of protection, have led to the holding in a large majority of the cases of mistaken construction bids[36] that relief will be granted where the mistake is palpable.[37]

In most cases, therefore, the question of relief turns upon the

[36]All of the cases in which relief was granted, supra note 14, are cases of unilateral palpable mistake, with the exception of Harper v. City of Newburgh, (1913) 159 App. Div. 695, 145 N. Y. S. 59, and St. Nicholas Church v. Kropp, (1916) 135 Minn. 115, 160 N. W. 500. Among the cases in which relief was denied, supra note 15, Baltimore v. Robinson Construction Co., (1914) 123 Md. 660, 91 Atl. 682, is the only case of palpable mistake. In that case there was a state statute for the city of Baltimore declaring all bids to be irrevocable when filed. But the presence of a similar statute did not bother the court in Moffett, etc. v. Rochester, (1900) 178 U. S. 373, 386, 20 Sup. Ct. 957, 961, 44 L. Ed. 1108, 1115. There the Supreme Court, in holding that because of the mistake there was no bid capable of being revoked, quotes with approval the opinion of the circuit court where it was said, "if the defendants are correct in their contention, there is absolutely no redress for a bidder for public work, no matter how aggravated or palpable his blunder. The moment his proposal is opened by the executive board he is held as in a grip of steel. There is no remedy, no escape. If, through an error of his clerk, he has agreed to do work worth a million dollars for ten dollars, he must be held to the strict letter of his contract, while equity stands by with folded hands and sees him driven to bankruptcy."

The Maryland court distinguishes the Moffett Case on the ground that it was in equity while the case before it was an action at law. But quaere, whether this is a valid distinction. Cf. Tyra v. Cheney, (1915) 129 Minn. 428, 152 N. W. 835, an action at law.

[37]It seems to be the general rule that relief will be given for unilateral palable mistake. Galloway v. Russ, (1927) 175 Ark. 659, 300 S. W. 390 (mistake as to type of refrigerator purchased); Skelton & Co. v. Ellis, (1883) 70 Ga. 297 (mistake on ticket rate sheet according to which sales were made); Morgan v. Owens, (1907) 228 Ill. 598, 81 N. E. 1135 (misunderstanding of the extent of a release); Jones v. Chicago, B. & Q. R. R., (1918) 102 Neb. 853, 170 N. W. 170 (shipment of merchandise to the wrong party); Chute v. Quincy, (1892) 156 Mass. 189, 30 N. E. 550 (specific performance denied; error on the plans in sale of land); Nelson v. Pederson, (1922) 305 Ill. 606, 137 N. E. 486 (purchase of wrong lot); Moore v. Copp, (1897) 119 Cal. 429, 51 Pac. 630 (plaintiff thought the deed she gave was only an option to lease); Crosby v. Andrews, (1911) 61 Fla. 554, 55 So. 57 (excessive conveyance); Retan v. Clark, (1922) 220 Mich. 493, 190 N. W. 244 (reformation; omission of part of the consideration); Town of Essex v. Day, (1885) 52 Conn. 483 (option clause omitted on bonds); Bell v. Carroll, (1925) 212 Ky. 231, 278 S. W. 541 (stock to be sold at "par" ($100.), meaning "market price" ($300); Everson & Co. v. International Granite Co., (1893) 65 Vt. 658, 27 Atl. 320 (mistake in the price of monuments; error in computation); Freeman v. Croom, (1916) 172 N. C. 524, 90 S. E. 523 (mortgage claim on which automobile released invalid because of late registration); Frazer v. State Bank of Decatur, (1911) 101 Ark. 135, 141 S. W. 941 (acceptance of one note signed by a company, the bank thinking it another instrument making the directors individually liable.

palpability of the mistake. Consequently, it becomes highly important to consider under what circumstances a mistake does become palpable. Of course, actual knowledge of the mistake brings the case within the field. But as a matter of proof, this is likely to be very difficult.

With the public bid, where the executive board is assembled when the bid is opened, notice of the mistake by the city engineer or by some member of the board may often be proved. But in the case of the private bid, proof of actual knowledge is unusual. It may be that in an unguarded moment, or in a burst of confidence, the owner will confess his knowledge and good fortune to one who will later testify, but such a situation is most unlikely.

Palpability must, therefore, be a matter of inference. The court must assume from the facts, from the discrepancies of the bids, from the experience of the owner or contractor, that he knew of the mistake. In the light of the decided cases, this seems to be the position which has been adopted.

In *Geremia v. Boyarsky*[38] it nowhere appears that the owner, the plaintiff, actually knew of the mistake. Both the plaintiff and the defendant were sitting together at a table when the defendant added his numbers and made the error. If the plaintiff had admitted observing the mistake, there is little doubt that the court would have mentioned it. What the court does say is:

"The plaintiff, when the erroneous bid was given and when he procured the signing of the contract, had good reason to believe and know that there must have been a substantial omission or error in the amount of the bid."

It should be noted that the court does not say simply that the plaintiff must have known that there was an error in the amount of the bid, but that he had good reason to believe that there was an omission or error. From the facts of the case it is apparent that he was not an expert relying on his own knowledge. That he was aware of the error can only follow from the presence of other bids or estimates, or else be an inference by the court that since it would have known there was a mistake, the owner must have known of it. But unless a sufficient background is before the court, this inference must be a matter of guesswork. It is for the purpose of suggesting the content of such a background that this article has been written.

[38](1928) 107 Conn. 387, 389, 140 Atl. 749, 750.

Hudson Structural Steel Co. v. Smith & Rumery Co.[39] presents another case of imputed knowledge. There the plaintiff's mistake was in construing the specifications to call for iron and steel for one roofing, whereas the demand was for two. A similar mistake had been called to the defendant's attention by another contractor. In setting aside the contract and granting the plaintiff's recovery in quantum meruit, the court quotes from the referee's report,

"'I find, in view of the fact that the defendant had knowledge before executing the contract that at least one other contractor had misinterpreted the plans and specifications as to the number of buildings, and in view of the smallness of the amount for which plaintiff proposed to furnish the steel roof framing (it being many hundred dollars less than the actual cost to furnish roof framing for two buildings) that the defendant, an experienced contractor and bidder on contracts embracing iron and steel structural work, ought to have been put upon inquiry as to whether the plaintiff was not acting under a mistake as to the number of the buildings.' It is the opinion of the court that this finding should be sustained."

The two words "actual cost" as used in the report are interesting. If they have any significance in relation to the promisee's thoughts when the contract was made, it must be on the basis of other bids or estimates than known to the promisee. No finding of actual knowledge of the mistake is shown, but the court grants recission on the ground that from the extremely low bid, the defendant as an expert contractor should have detected the mistake.

In *Barlow v. Jones*[40] the plaintiff submitted five alternative bids covering various shaped buildings. There should have been seven subcontractors' estimates included to produce the plaintiff's totals. Through an oversight, one of the subcontractor's bids was omitted in three of the five alternative proposals. The court, in cancelling the contract and ordering the return of the deposit check, said: "The amount named in the bid was a manifest mistake." The contemporaneous circumstances from which the court inferred that the defendant was actually aware of the mistake do not appear in the report.

Dicta by the courts in other cases point to the same conclusion.

[39](1912) 110 Me. 123, 125, 85 Atl. 384, 385.
[40](N.J. Ch. 1913) 87 Atl. 649, 650.

"It seems impossible for the error to have escaped the notice of the board."[41] "If by reason of ambiguity in the terms of the contract, or some peculiar circumstances surrounding the transaction, it appears that one of the parties has, without gross fault or laches on his part, made a mistake, that this mistake was known, or ought to have been known, to the opposite party, the court will afford relief."[42] "There is no such discrepancy between the bid submitted and the next higher bid as would justify us in saying, as a matter of law, the plaintiff was thereby put upon notice that Howard had made a mistake."[43]

From these cases it is quite clear that the palpability of a mistake which will be the ground for relief to the mistaken party may be inferred by the court from the fact that the promisee should have known or must have known of the mistake where it does not appear as a matter of fact that he actually did. This inference is drawn largely because the contractor's bid was so low in comparison with the other bids submitted or even with the owner's implicit estimate that a reasonably experienced business man would suspect that a mistake had been made. This owner, being that reasonably experienced business man, consequently must have known (*i.e.*, probably did know) of the mistake.

The result of this approach is clearly conducive to a higher ethical standard in business operations. If the skilled contractor will be held to have known of a subcontractors' mistake, fewer contracts based upon an erroneous bid will be signed. The courts will have discouraged successfully the "snapping up" of another's mistake.

II. In Business Practice

If palpability is to be a matter of inference, it becomes highly desirable to study the situations from which that supposition will be raised. When does the experienced contractor suspect that a mistake has been made in the estimate submitted to him? How low must the low bid be to put him on notice? What is the usual variation in bids offered in the usual course of business? The answers to these questions may be found in a comparison and

[41]Moffett, Hodgkins & Clarke Co. v. Rochester, (1900) 178 U. S. 373, 387, 20 Sup. Ct. 957, 962, 44 L. Ed. 1108, 1115.

[42]City of New York v. Dowd Lumber Co., (1910) 140 App. Div. 358, 362, 125 N. Y. S. 394, 397, quoting Singer v. Grand Rapids Match Co., (1903) 117 Ga. 86, 94, 43 S. E. 755, 757.

[43]Leonard v. Howard, (1913) 67 Or. 203, 212, 135 Pac. 549, 552.

study of bids which have been submitted to builders and municipalities in the regular conduct of their affairs. From these figures may be evolved a more or less scientific method of analyzing the cases which have already come before the courts, and of approaching new cases with a view to conformity with business practice and uniformity of legal result.

A. *The Causes of Variation.*—Under the modern industrial system, it would be expected that the bids on a particular piece of work would vary but little. The job calls for very definite construction; there is scarcely any opportunity for individuality of expression. At any particular time lumber will cost so much, and brick so much, and steel so much. Labor, too, is a cost with small variation. Accordingly, if specifications are sent to subcontractors for bids on steel construction, since the price of steel should be fairly equal for all bidders, and labor charges precisely the same in view of the unionization of the workers, the bids submitted should fall within a close range. There are, however, numerous other considerations which complicate the problem.

Over a representative group of companies to whom the specifications for a particular job will be given, organization of the business enterprise will differ. Some will be large firms, doing a great volume of business, able to buy in large quantities, and with great available resources. Others will be small units, handling a few operations yearly, eager to establish a reputation. Still others may be financially weak, opearting desperately to stage a comeback, speculating, perhaps, on a lower price of materials at the time of the performance of the contract. All of these factors may be reflected in the bid.

In the case of a large firm, ability to make heavy purchases brings with it an opportunity to take discounts. As a result, this company's bid may be considerably lower than those of other organizations. On the other hand, being an established enterprise with a recognized reputation, handling as much business as it can take conveniently, its bid may be considerably higher. The consumer is accustomed to pay for quality. This company feels that it will have to be paid well to undertake another transaction. It may even be that it positively cannot handle the work, yet being obliged to bid as a matter of policy, an estimate is submitted knowingly placed too high.

Another firm may be doing very little work. Its offices, its

men, its machinery represent a constantly mounting item of overhead. Unless it secures the contract, the costs will continue to rise. This company will be satisfied to make a very small profit on the contract just so long as it can move into operation.

A small company, newly established, may be angling for the contract as a matter of advertising. If it can complete a few well known jobs, even if they be done at a small profit, its reputation is established. Consequently, this organization's bid will be low. So too, with the company which is financially unstable; it may be a matter of vital importance to it that it obtain the work.

But despite the influences of these economic factors on the bids submitted, there is a range of variation into which all bids will fall. Of course the variation will be greater than it would be if these factors were not present. The variation, for example, may be as high as 30% for a bid of a certain size, whereas under other circumstances it might not be more than 5%. But once it is established that bids for that size contract vary to the extent of 30%, any bid in that class which varies 50% or more demands investigation, for clearly a mistake of some kind has been made. It was with a view to establishing the normal range of variation in several classes of bids that the tabulations contained in the appendix were organized.

B. *Analysis of Bids.*—Two types of bids have been collected: subcontractor's bids to a private contractor for materials and labor for the erection of a twelve story bank and office building, a fifteen story apartment house, and a seven story garage; and bids submitted by contractors to the board of transportation of New York City for public work. Both sets of bids cover a period ranging from August to November, 1930.

In the computation[44] of the percentage variation of the low bid, two methods have been employed. By one, the differences between the lowest bids and the average of all bids are stated as percentages of the average of the bids submitted for a certain piece of work. In the other the difference between the low bid and the next higher is stated as a percentage of the low bid itself. The use of both methods is desirable so that one may stand as a check against the other in certain unusual cases.

[44]The writer wishes to express his appreciation to Messrs. H. A. Inghram and R. P. Eastwood of the Columbia School of Business for their helpful suggestions as to the handling of the statistical material.

In the first method the dollar amount of the bids for a particular job are averaged. The low bid and the next higher bid are then each subtracted from the average. Dividing the remainder in each case by the average, a percentage is obtained. The result thus far constitutes a percentage representing the variation of the low bid from the average, and the next to the low from the average. The second percentage may then be subtracted from the first to produce a third percentage for purposes of analysis.

To illustrate, if we take the first set of bids[45] in the board of transportation group, that for enclosures at a station, it may be seen that they vary from $3,202.00 to $8,065.00, the last being considerably higher than the others. The average of the eleven bids is $4,315.45. The difference between the low bid and the average is $1,113.45, and that of the next higher and average is $515.45. Taken as percentages, the variation of the low bid from the average of bids is 23%, and the variation of the next lowest is 11%. The difference between the two variations is, of course, 12%.

The second method was made necessary in order to compare the results of these bids with the cases which have been adjudicated. In the cases, unfortunately, the complete set of bids is not in any instance set out. In a number of the cases, no figures at all are shown;[46] in others only the mistaken bid and what it should have been are given.[47] A comparison with these cases is impossible.

But in some cases the court does give the low bid and the next higher bid. By reducing these figures to percentages they may then be compared with like percentages in the collected bids. Accordingly, a percentage has been derived by taking the difference between the low and the next higher bid on the low bid. In the set of bids used for illustration above, the difference is $598.00 which yields 12% if taken on the low bid, $3,202.00.[48]

[45]Infra, p. 157, no. 1.

[46]Tyra v. Cheney, (1915) 129 Minn. 428, 152 N. W. 835; Scholz Bros., (Tex. Civ. App. 1928) 4 S. W. (2d) 661.

[47]Geremia v. Boyarsky, (1928) 107 Conn. 387, 140 Atl. 749; Barlow v. Jones, (N.J. Ch. 1913) 87 Atl. 649.

[48]The use of the first method described will prove valuable where both the low bid and the next higher are considerably lower than the remainder of the bids. It is conceivable that both are mistakes. Accordingly a percentage taken on the average bid will show the discrepancy, whereas a percentage of the difference between the two lows taken on the low would

An examination of the tabulations of percentages[49] indicates a definite trend. As the dollar size of a contract increases, the percentage of variation decreases. When the bid is in the low thousands, the percentage variation taken on the average is as high as 32% in the public work bids and 21% in the private bids. Using the percentage variation on the low bid, for public work it is as high as 20%, and in private bids, 48%. As the sums mount into the hundred thousands, the variations decrease generally. In the millions, the highest variation under both methods is 6%. Reference to the tabulations will fix the variations for specific sums; an extended discussion and elaboration of them here is unnecessary.

It may be said, therefore, that where the bid is in the thousands, a fairly high percentage of variation is expected; one between 30% and 50% is usual. Consequently a low bid which varies to that extent is anticipated by the expert contractor or builder. But a bid with a greater percentage of variation is highly unusual. If a mistake is shown in such a bid, the court will be well justified in calling it a palpable mistake.

With the dollar increase, as has been shown, the percentage variations decrease, so that a much smaller degree of variation may constitute warning of a mistake. It will be noticed that in the case of the public work bids ranging in averages from $111,640.00 to $367,074.00, the largest variation, using the second method, is, with one exception, 5%. That one exception, a

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not. An exact example is not at hand, but in the set of bids for telephone and emergency alarm, infra, p. 157, no. 3, it will be seen that the variation is more clearly discernible with the use of the first method than with the second. If the two lows were closer, only the first method would show the discrepancy.

On the other hand, where the high bid or bids are extremely high, as for river borings, infra p. 157, no. 2, the average is thrown off, and the low bid, while not varying greatly from most of the bids, will vary considerably from the average. In that case the second method would be more desirable. It seems, therefore, that both methods should be used to arrive at an accurate conclusion.

[49]Infra pp. 156-159. Because of the comparative incompleteness of the private bids, the results are not so reliable as those from the public estimates. Unfortunately, the private bids presented were the only ones available. In many instances only two bids on a job were submitted and many subcontractor's items are not represented. This, of course, does not lend itself to so complete an analysis as in the case of a list of bids. Then too, the private bids at their highest in dollar amounts are equivalent to the lower public bids. Consequently they may only show how high the variations for the lower amounts will run. Despite these handicaps, however, all the bids are presented, since it is felt that with them certain general tendencies may be demonstrated.

14% variation on the bids for telephone and emergency alarms, provides an excellent and most gratifying practical application of the theory which the writer has attempted to develop. According to the rule set out, that bid because of its high relative variation should give notice of a mistake. As a matter of fact, the low bid in that group was not accepted. The whole set of bids was thrown out by the board of transportation and the work readvertised.

C. *Application to the Adjudicated Cases.*—When it comes to the application of these principles to the reported cases of unilateral mistake in construction contracts, uniformity of result cannot be expected. The courts have followed no definite rule. Palpability, where knowledge in fact was not shown, has been a matter of judicial guesswork, and often a matter of sympathy. Nevertheless, the cases do support the view that an extraordinary variation will make the mistake palpable.

In *Moffett, Hodgkins & Clarke Co. v. Rochester*[50] rescission was granted. Using the second method outlined above since the complete set of bids is not available, the percentage variation on the low is 31%. In view of the fact that the low bid was for $857,552.00, this was an extremely high variation[51] and would be proper cause for calling the mistake palpable.

The court in *Board of Commissioners v. Bender*[52] granted relief to the plaintiff who sought to have the contract rescinded and his deposit check returned, on the ground that the plaintiff was not negligent and that the minds of the parties had not met. To the plaintiff's contention that the defendant should have known of the mistake, the court ineptly answered, "Although the plaintiff alleges the difference was so great the defendant should have known, this does not show the mistake to be mutual." Nevertheless the court did reach the proper result in granting rescission since the percentage variation was 27% on a low bid of $11,337.00, considerably higher than the normal variation.[53]

On the reverse side of the picture, relief was denied in *Bowes v. Town of Milton*[54] where the variation was 9% on a

[50](1900) 178 U. S. 373, 20 Sup. Ct. 957, 44 L. Ed. 1108. Low bid, $857,552.00; next higher, $1,130,195.00.

[51]Infra Table I, p. 156, this being the table on public work.

[52](1905) 36 Ind. App. 164, 72 N. E. 154. Low bid, $11,337.00; next higher, $14,500.00.

[53]Infra Table I, p. 156.

[54](1926) 255 Mass. 228, 151 N. E. 116. Low bid, $201,784.00; next higher, $221,784.00.

bid of $201,784.00. This is somewhat higher than is indicated in the tabulation, but not so much higher as to warrant calling it a palpable mistake. Being impalpable, relief was properly denied.

Another case of impalpable mistake is *Boeckler Lumber Co. v. Cherokee Realty Co.*,[55] where the variation was 13% on a low bid of $1,960.00, clearly within the variation for a bid of that amount. On the same sort of work the variation was 30% in *Steinmeyer v. Schroeppel*[56] and relief was denied. According to Table III[57] a variation as high as 47% may be expected. Some doubt, however, may be cast on the *Steinmeyer Case* in that the bid was for lumber only, and not for materials and labor as in the estimates which are used in the collected bids. It may well be that in such a situation the variation should be considerably lower, more like the *Boeckler Case*. But to establish this, extensive research beyond the scope of this article would be necessary.[58]

Relief was likewise denied in *Brown v. Levy*[59] where the variation was 18% on a low bid of $64,000.00 for private work. The decision agrees rather closely with the private bid variations of Table IV.[60] *Leonard v. Howard*[61] presents a variation of 37% on $4,975.00, rather high, but within Table III.[62] Relief was denied.[63]

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[55](1909) 135 Mo. App. 708, 116 S. W. 452. Low bid, $1,960.00; next higher, $2,230.00.

[56](1907) 226 Ill. 9, 80 N. E. 564. Low bid, $1,446.00, other bids in the neighborhood of $1,890.00.

[57]Infra, p. 159. This is the only table containing a percentage on approximately this amount.

[58]In this connection it might be well to observe that non-standardized work will be subject to greater variations than the ordinary routine job. But even in such a situation, an extreme bid should call for an investigation to corroborate the estimate. If no inquiry is made a court would be justified in holding as palpable any mistake made in that bid.

[59](1902) 29 Tex. Civ. App. 389, 69 S. W. 255. Low bid, $64,000.00; next lowest, $76,000.00.

[60]Infra, p. 159.

[61](1913) 67 Or. 203, 135 Pac. 549. Low bid, $4,975.00; next higher, $6,827.00.

[62]Infra, p. 159.

[63]In the remaining cases which present sufficient material, the results are as follows: Bromagin v. City of Bloomington, (1908) 234 Ill. 114, 84 N. E. 700, low bid $25,567.02, next lowest bid, over $29,000.00, a variation of 13%, normal according to Table I; Board of Regents v. Cole, (1925) 209 Ky. 761, 273 S. W. 508, low bid $207,787.00, next bid $238,787.00, variation of 14%, an abnormal variance. But in both cases there was other proof of notice of the mistake by the board, so that reference to tables to infer notice becomes unnecessary. Relief was granted in both cases. St. Nicholas Church v. Kropp, (1916) 135 Minn. 115, 160 N. W. 500, low bid $30,973.00, next higher $34,873.00, a variation

These cases demonstrate that where the variation is greater than is to be expected in bids of that size, relief will be granted, but where the variation is normal, relief will be refused. By the use of tables similar to those set out in the appendix, the usual variation for any particular size of construction contract may be determined.

There is little doubt that evidence of a normal variation and departure would be admissible in a particular case. In practically all of the cases of mistake which have been considered, evidence to prove the mistake and knowledge on the part of the owner has been admitted. If palpability is to be a matter of inference from what the reasonable man would expect, it must follow that evidence showing what the reasonable man normally expects is proper.

III. Conclusion

Some comment should be made concerning the attitude of the contractor in respect to erroneous bids. Generally, in the case of a private contract, if the mistake is large, the company or individual to whom the bid is submitted will release the mistaken party from his obligation. It is felt that this is a wise and cautious policy. A subcontractor forced to perform at a loss or with slight profit will undoubtedly skimp on the job in order to salvage something from the ruins. Either workmanship or material, and perhaps both, will prove unsatisfactory.

Large firms, on the other hand, upon discovering a mistake in their bids to other concerns, often prefer to say nothing of the matter, completing the work according to contract. This is found to be necessary to uphold their reputations and maintain the good will of owners and contractors.

In the case of the public bid, it is the policy of the board of transportation of New York City to permit a withdrawal by the contractor despite the fact that readvertising will be necessary. This, of course, is countenanced only when the contractor has convinced the board that he has made a mistake and that it was honest. Over the past few years, this procedure has been resorted to but twice. Law suits are extremely rare.

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of 12%, normal under Tables II, III, IV, which are the summaries for private bids. The mistake was therefore impalpable. The result may be explained, however, on the facts of the case.

Mistakes in the bids submitted to the board of transportation are minimized by the use of a form book into which all bids must be entered. Having made his own calculations, the contractor sets down in the booklet the price per unit at which he is willing to perform the work together with the number of units required. The extension and addition is done by the board itself. Under this system most of the mistakes which have been brought before the courts are eliminated.[64]

In the light of these practices, it is highly probable that litigation involving mistaken bids is on the decline. Where it does arise, however, relief should be denied in case of unilateral impalpable mistake, and granted where the mistake is palpable. Under this rule protection will be afforded the expectation of

[64]In studying an estimate book of this type, the lawyer must be careful not to be misled by the great discrepancies among the individual items; the books are reliable only for the totals they present. It is the practice among contractors to 'unbalance' their bids. (See City of New York v. Dowd Lumber Co., (1910) 140 App. Div. 358, 125 N. Y. S. 394). An accurate total, based on exact computations, is estimated for the contractor's own information and guidance. The individual items are then unbalanced.

It may be that a contractor foresees difficulty in financing the proposition. If that is the case, he will increase the cost of the earlier work and decrease that of the work at the end of the job. Since payments, as the job progresses, are made on the basis of the previously stated value of the work, by this device he will have collected his 80% (or whatever the contract provides) on a greater amount than his cost, thus freeing him from the worry of final payments.

Another reason for unbalancing is the possibility of extras. The specifications as set by the city are often extremely rough. Accordingly, a contractor will find that on some items, such as cement work, there will be a number of unforeseen extras for which no additional compensation can be asked. To provide for these the bid will be unbalanced, i.e., made proportionately higher with respect to those items.

With the aid of a blueprint elaboration of each bid, as prepared by the board of transportation, the large discrepancies among individual items as compared with the totals can easily be seen. Taking the group of bids for Station Finish "A" infra p. 158, no. 4, it will be seen that the variation of the totals, using the second method, is only .2%. But the detailed items making up those bids, such as earth excavation, rock excavation, removal and disposal of old masonry, and waterproofing show, by the same method, variations of 33%, 25%, 35%, 25%, and the like for the hundred and thirty-six items of the bid.

These figures demonstrate that the estimate book is to be used with care, and that for purposes of comparison, only the totals can be used accurately. They are, further, a demonstration that estimates generally are not to be separated into their component parts as a basis for fixing damages for partial performance of building contracts. See Patterson, Builder's Measure of Recovery for Breach of Contract, (1931) 31 Col. L. Rev. 1286, 1303. Of course, if the specifications stipulate that any item in the bid may be accepted, the contractor will see to it that none of his bid is unbalanced.

the promisee in accordance with the established doctrine of the courts of law and equity.

Much of the harshness which may be involved in the strict protection of this expectation will be minimized by the granting of relief in the case of a palpable mistake. The more serious the blunder, so that denial of relief would bring about a hardship, the more likely it is that the mistake will cause the bid to vary outside of the normal variation of bids in that class. Palpability being a matter of inference, the abnormal variation will prove the mistake palpable, and judicial relief will be granted the mistaken promisor.

APPENDIX

TABLE I

SUMMARY OF PERCENTAGE VARIATION OF BIDS SUBMITTED TO THE BOARD OF TRANSPORTATION OF NEW YORK CITY, AUGUST 29TH TO NOVEMBER 14TH, 1930, ON PUBLIC WORK

Contract Work	Average Dollar Bid	% Var. Low on Average	% Var. Next to Low on Average	% Difference	Second Method
Enclosures at Station .....$	4,315.45	23.	11.	12.	12.
Removal of Columns	8,028.40	32.	19.	13.	19.
Boring Vehicular Tunnel..	12,869.37	20.	11.9—	8.1	10.
Untreated Ties	20,217.01	9.	5.5	3.5	3.
Malleable Iron	23,896.73	2.7	1.8	.9	.8
River Borings	29,816.87	40.	31.	9.	15.
Belts, Nuts, Washers	33,213.63	3.5	2.8	.7	.7
Steel Work	46,794.37	3.8	1.9	1.9	1.
Spikes	57,691.40	1.8	.7	1.1	2.
Joint Bars	70,680.05	1.9	1.9	3.8	4.
Widening Roadway	92,318.29	22.	3.	19.	24.
Treated Ties	111,640.29	8.4	6.	2.4	2.
Tie Plates	117,231.92	1.8	1.8	3.6	3.
Station Lighting	140,416.00	9.6	5.2	4.4	4.
Track Installation	253,261.60	10.	6.	4.	4.
Passageway	296,758.82	15.	10.	5.	5.
Duct Line	298,735.87	2.9	.05	2.85	3.
Station Finish "A"	348,358.27	2.	1.8	.2	.2
Station Finish	351,827.45	4.1	3.	1.1	1.
Telephone Alarm	364,345.80	34.	25.	9.	14.
Station Finish "B"	367,074.97	4.	.7	3.3	3.2
Power Equipment	2,183,205.40	2.3	2.3	4.6	4.
Block Signaling	2,237,750.00	2.1	2.1	4.2	5.
Queens Boulevard "A"	5,555,485.12	6.	.6	5.4	5.
Queens Boulevard "B"	5,669,813.87	6.	.3	5.7	6.

SAMPLE GROUPS FROM BOARD OF TRANSPORTATION BIDS[65]

Bids	Average	Dollar Variation on Average	Percentage Var. on Aver.	Difference
1. *Enclosures at Station*				
$ 3,202.00		$ 1,113.45	23%	
3,800.00		515.45	11%	12%
3,981.50				
4,196.00				
	$ 4,315.45			
4,396.00				
4,456.00				
4,560.00				
4,680.00				
5,083.50				
5,550.00				
8,065.00				
	Second Method[66]—12%			
2. *River Borings*				
$ 17,770.00		$ 12,046.87	40%	
20,460.00		9,356.87	31%	9%
23,290.00				
26,465.00				
27,475.00				
28,750.00				
	$ 29,816.87			
42,200.00				
52,125.00				
	Second Method—15%			
3. *Telephone and Emergency Alarm*				
$237,980.00		$126,365.80	34%	
273,000.00		91,345.00	25%	9%
	$364,345.80			
415,249.00				
423,500.00				
472,000.00				
	Second Method—14%			

[65]Space limitations prohibit the setting out in full of the various bids submitted on each contract. In all, there are fifty-three groups, each represented in the Tables by the average bid of that group and percentages. Four sets of bids are here presented in order to show typically how the estimates on a contract vary, and to indicate the methods employed in reducing the bids for purpose of analysis.

[66]For explanation, see supra, p. 150.

SAMPLE GROUPS FROM BOARD OF TRANSPORTATION BIDS[65]

Bids	Average	Dollar Variation on Average	Percentage Var. on Aver.	Difference
4. *Station Finish "A"*				
$341,127.00		$ 7,231.27	2%	
341,963.75		6,394.52	.2%	1.8%
348,001.25				
	$348,358.27			
351,104.80				
352,471.96				
355,488.85				
	Second Method—.2%			
Station Finish "B"				
$352,234.80		$ 14,840.00	4%	
364,254.16		2,820.81	3.3%	.7%
365,481.25				
	$367,074.97			
369,842.85				
373,219.75				
377,417.00				
	Second Method—3.2%			

TABLE II

SUMMARY OF PERCENTAGE VARIATION OF BIDS SUBMITTED BY SUBCONTRACTORS ON A PRIVATE TWELVE STORY BANK AND OFFICE BUILDING, SEPTEMBER, 1930

Contract Work	Average Dollar Bid	% Var. Low on Average	% Var. Next to Low on Average	% Difference	Second Method
Concrete Steel ..... $	669.66	7.	1.7	5.3	5.
Toilet Partitions	3,208.50	17.	1.2	15.8	19.
Roofing and Sheet Metal	3,703.00	8.1	3.3	4.8	5.
Ornamental Iron	7,009.66	1.35	1.34	.01	.01
Terra Cotta	8,090.00	12.	.1	11.9	14.
Tiling	8,610.25	17.	16.	1.	1.
Cement Flooring	9,366.00	5.8	2.4	3.4	3.
Glazing	10,750.00	5.1	5.1	10.2	10.
Casements	17,598.00	2.2	2.2	4.4	4.
Marble	18,274.00	15.	9.	6.	6.
Bronze	21,244.00	25.	15.	10.	13.
Hollow Metal	47,334.50	15.	15.	30.	36.

[65]See ante, p. 157.

TABLE III

SUMMARY OF PERCENTAGE VARIATION OF BIDS SUBMITTED BY SUBCONTRACTORS ON A PRIVATE SEVEN STORY GARAGE, AUGUST, 1930.

Contract Work	Average Dollar Bid	% Var. Low on Average	% Var. Next to Low on Average	% Difference	Second Method
Finishing Hardware	$ 372.50	19.	19.	38.	46.
Granite	1,132.50	19.	19.	38.	47.
Electrical Work	3,303.00	14.	1.9	12.1	13.
Sheet Metal	3,733.00	10.	10.	20.	22.
Windows	4,856.00	1.2	1.2	00	00
Ornamental Iron	4,993.33	1.8	.2	1.6	1.
Plumbing	5,338.50	21.	11.	10.	12.
Sprinklers	7,675.00	2.3	2.3	4.6	4.
Elevator	14,960.00	16.	16.	32.	40.
Arches	25,750.00	10.	10.	20.	23.
Structural Steel	36,648.00	8.7	3.4	5.3	5.

TABLE IV

SUMMARY OF PERCENTAGE VARIATION OF BIDS SUBMITTED BY SUBCONTRACTORS ON A PRIVATE FIFTEEN STORY APARTMENT HOUSE, SEPTEMBER, 1930

Contract Work	Average Dollar Bid	% Var. Low on Average	% Var. Next to Low on Average	% Difference	Second Method
Fireproof Doors	$16,456.00	2.7	2.7	5.4	5.
Carpentry	20,850.00	6.2	6.2	12.4	13.
Elevators	31,342.50	4.9	4.9	9.8	10.
Concrete Arches	57,873.00	8.8	8.8	17.6	19.
Structural Steel	78,745.00	.3	.3	.6	.6