

工事請負方法ニ就テ

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内容梗概

本文ハ主トシテ建造 (Construction) 方面ニ關スル各種工事請負方法ニ就テ聊カ論ジタモノデアアルガ實際問題トシテノ請負契約書入札等ノ細部ニ亙ツタモノデアハナク極一般的ナ原則ニ關スルモノデアアル

第一章 緒論

一般ニ建造工事ヲ請負デアル場合ニハ次ノ様ナ三方面ニ關係者

企業……………工事所有者 (Owner)

設計……………技術者 (Engineer)

施工……………請負者 (Contractor)

ガ考ヘラレルガ (勿論場合ニヨリ組織トシテハ此二者ガ一組織ノモトニ來ルコトモアルガ此三方面ニ關係者ハ必ず考ヘラレル) 茲デ論ズル請負方法ハ企業方面ノ工事所有者ガ設計方面ノ技術者ヲ通ジテ施工方面ノ請負者ニ結ブ施工請負ニ關スルモノデアアル斯カル工事請負ノ方法ニハ從來實際ニ實施サレタモノヤ又ハ推舉サレタモノヲ考ヘルト隨分色々ナル様ダガ要スルニ其ノ主ナ區別相違點ハ「工事所有者ガ請負者ニ仕拂フ工事費ヲ如何ニシテ定メルカ」ト云フ點ニアルト思フ勿論此點以外ニモ考ヘ方ニヨツテハ色々ノ區別モ出來ルト思フガ請負方法トシテハ以上ノ仕拂工事費如何ト云フ事ガ最モ大切ナ事項デアアル所カラ自然各種ノ請負方法ガ此點カラ案出サレタモノデアルト思フ本論デモ主ニ此點カラ各種ノ

請負方法ヲ區別シテ論ズルツモリデア

請負方法ニ就テハあめりかデモ可成種々ノ方法が案出試用セラレ各種ノ雜誌等ニモ之ニ關スル色々ノ參考記事ガアルガ最近同國ノ土木學會デモ之ニ關スル討論ヲヤツテル之ニ American Society of Civil Engineers ; Transaction Vol. LXXXIII, 1920 "Contracts—A Comparison of Cost-plus with Other Forms," by Ernest Wilder Clarke ヲ見ハシ解ルガ請負方法ニ關スル有益ナ參考記事デア

第二章 總 論

各種ノ請負方法ニ就テ論ズル前ニ先ヅ工事所有者ガ請負者ニ任拂フ工事費如何ト云フ點カラシテ理想的ナ請負方法ノ條件ヲ考ヘテ見タイト思フ併シ之レハナカナカ六敷カシイ問題デ一寸簡單ニ云ヘル事デハナイガ特種ナ事情ヤ複雜ナ政策ト云フ様ナ事ヲ拔ニシテ廣イ見地カラ公平ニ考ヘルト理想的ナ請負方法トシテハ大體次ノ三條件ヲ満足スル事ガ必要ダト思フ

第一 實行上面倒負擔ノ少イ事

第二 經濟的ニ完全ナ工事ガ出來ル事

第三 請負者ニ適當ナ報酬ガ任拂ヘル事

第一ニ就テハ別ニ説明スル迄モナク明ラカダト思フ次ニ第二デア

ルガ茲デ考ヘル經濟的ト云フノハ請負者ノ報酬又ハ利益ヲ拔ニシタ實費ダケニ就テデアツテ工事所有者ノ負擔スル工事費全體ニ就テデハナイ一ノ請負工事ノ工費ハ一般ニ實費(Cost)ト報酬(Fee)又ハ利益(Profit)トノ二ツニ大別出來ルガ實費ト云フノハ工事完成上請負者ノ要シタ純費用ヲ云フノデ之レハ材料費、勞力費、設備費、總係費ノ諸項目カラ成立ツテル茲デ云フ經濟的ト云フノハ此實費ニ對シテ云フノデアツテ第二條件ハ即チ工事所有者ノ要求ニ應ジ請負者ガ必要ニシテ充分ナ程度ノ完全ナル工事ヲ施工シシカモ以上ノ實費諸項目ノ總計ガ最少ナ場合ヲ云フノデア

ル理想的ナ請負方法トシテ斯カル條件ノ必要ナノハ之レ又明カデア

ハ第三デアルガ請負者が工事ヲ完成シタ以上其ノ勞力ニ對シ適當ナ報酬ヲ與ヘルノハ之レ又當然ナ事デ別ニ説明ノ必要ハナイガ只必ズ報酬ヲ與ヘル爲ニハ原則トシテ常ニ請負者ニ其ノ所要實費ノ全部ヲ仕拂フ事が必要デアル併シ報酬ヲ與ヘル爲ニ必ズ實費ヲ仕拂フ必要アリトシテモ左記ノ如キ原因ヨリノ實費ハ必ズシモ工事所有者ガ其ノ全部ヲ負擔スル理由ハナイ

一 請負者側ノ無能過失怠慢等ニ基因スル實費

二 工事所有者請負者何レニモ關係ナキ原因例ヘバ天災等ヨリノ實費

前者ノ場合ハ寧ロ其ノ全部ヲ請負者ノ負擔トスベキデソレダケ報酬ヲ差引クノガ當然デアル併シ後者ノ場合ハ多少考慮ヲ要スル若シ此等ノ實費全部ヲ工事所有者ノ負擔トスルト施工上ノ危険ガ全部企業側タル工事所有者ニ歸着シ請負者ノ方ハ至極安泰デアルガンレダケ請負者ガ此等ノ危険豫防ニ對スル注意ヲ怠ル患ガアル又逆ニ此等ノ實費ヲ全部請負者ノ負擔トスルト利害ハ全ク逆トナリ請負業其ノモノガ甚ダ冒險的投機的ナモノトナルダカラ不可抗力ナ天災又ハ經濟上ノ大變動ニ伴フ物價勞銀ノ異常變化等ヨリ必要トスル實費ハ工事所有者ト請負者ガ相互ニ何等カノ割合デ分擔スベキモノデアル又何レニモ關係ナキ第三者ニ基因スル實費モ全然第三者ニ負擔セシムルカ又ハ兩者相互ニ分擔スルガ至當デアルト思フ併シ實地ニ當ツテハナカナカ斯カル原因カラノ實費ヲ他ト判斷區別スル事ハ容易デナイガ理論トシテハ斯クアル可キデ請負方法トシテモ可成工事ニ應ジスカル條件ヲ満足スルモノヲ撰バネバナラヌ施工上要求ニ對シ完全ナル工事ヲ遂行シシカモ如上ノ請負者又ハ第三者ノ負擔ト認ム可キ實費ヲ除イタ工事所要實費ハ當然工事所有者ノ負擔トナル可キモノデ之レガ請負工事ニ於ケル仕拂工事費ノ標準デアル今假リニ之レヲ「仕拂標準實費」ト名附ケルト仕拂標準實費ぶらす報酬ガ理論的ナ仕拂工事費デアル

理想的請負方法ノ條件トシテ以上三ツヲ列舉シタガ斯カル諸條件ヲ完全ニ満足出來ル請負方法ヲ實際ニ案出實行スル事ハ到底不可能デアル併シ何レノ請負方法ヲ用フルニセヨ當事者相互ハ可成如上ノ理想ヲ満足スル様實施ニ當リ注意スル

事ハ必要ダト思フ次ニ各種ノ請負方法ニ就キ上述ノ理想論カラ其ノ利害ヲ研究シテ見タイト思フ

第二章 各種請負方法ニ就テ

工事所有者ガ請負者ニ仕拂フ工事費ヲ如何ニシテ定メルカト云フ點カラ考ヘテ請負方法ヲ大別スルト

第一 定額請負 (Lump Sum or Fixed Price Contract)

請負契約ト同時ニ仕拂工事費ヲ定メル方法

第二 實費報酬請負 (Cost-plus Fee Contract)

請負契約ト同時ニ仕拂工事費ヲ決定セズニ工事施行ノ結果實際ニ要シタ實費ニ或ル報酬ヲ加ヘタモノヲ仕拂フ方法

第三 以上第一及第二請負方法ヲ修正シタルモノ

第二ハ更ニ其ノ報酬ヲ仕拂フ實費ニ比例サセルカ又ハ請負契約ト同時ニ定額デ定メルカニヨツテ

a 實費比例報酬請負 (Cost-plus a Percentage Fee Contract)

b 實費定額報酬請負 (Cost-plus a Fixed Fee Contract)

トノ二ツニ區別出來ル又第三ハ

a 定額請負ヲ修正シタモノ

b 實費報酬請負ヲ修正シタモノ

トノ二ツノ方面カラ考ヘラレル

第二ノ方法ハ實際ノ實費ヲ計算仕拂フモノデアアルガ實費中材料勞力設備費ハ計算上割合ニ困難ガ少イガ總係費中ノ或ルモノハ一ノ請負工事ニ對シ幾何程ニナルヤ性質上配賦シ惡イモノガアル例ヘバ請負者ノ本部事務所ニ要スル費用ノ如キモノデ果シテ其ノ幾何が或ル工事ノ實費トシテ計上サレルカ一寸定メル事ガ困難デアアルツレデ實地ニハ便宜上此様ヲ費

用ハ實費トシテ考ヘズニ報酬中ニ含メテ仕拂ツテルガ元々此等ノ費用ハ工事ノ總實費ニ比ベレバ僅カナモノデアルカラ此等ヲ含メタモノヲ報酬ト考ヘテ論ジテモ別ニ大ナル矛盾ハナイ

第四章 定額請負

此方法ハ工事着手前ニ豫メ前記標準實費ヲ調査決定シ之レニ或ル適當ナ報酬ヲ加ヘテ請負契約ト同時ニ仕拂工事費ヲ決定スルノデアアルガ簡單ナ工事ナラ兔ニ角少シ複雑ナ工事ニナツタラ餘程調査其ノ他ニ費用ヲ投ジナイ限リハ正確ニ此標準實費ヲ豫定スル事ハ困難デアアル若シ此仕拂實費ニシテ實際ノ仕拂標準實費ト遠ク掛離レ假リニ實際ノモノヨリ非常ニ大デアツタトスルト請負者ハ不當ナ利益ヲ獲得スルガ其ノ代リ工事所有者ハ不當ナ損害ヲ蒙ルコトニナル又逆ニ實際ノ仕拂標準實費ヨリ非常ニ小デアツタトスルト工事所有者ハ資金ノ點ノミカラハ利益ニナルカモ知レナイガ請負者ハ不當ナ損失ヲ受ケ爲ニ工事ヲ粗略ニスル患ガアルカラ結局工事所有者ニモ損害ヲ來スコトニナル何レニシテモ斯カル場合ニハ理想的請負方法ノ條件タル第二第三ヲ満足スル事ハ不可能デ從テ此方法ニヨル請負工事ハ甚ダ冒險的投機的ナモノトナリ易イ此點ガ此方法ノ根本的缺點デアアルガ豫メ仕拂工事費ヲ定メテシマウト云フ事ニハ尙次ノ様ナ利害ガ考ヘラレ

- 一 企業計畫上重要ナ關係アル固定資本ガ早ク確定出來ル
 - 二 工費仕拂上ノ面倒ガナイ
 - 三 工事ニ對スル仕拂金額ガ一定シテ居ルカラ利益増進上請負者ノ努力ヲ促ス
- 以上ハ利點デアアルガ逆ニ缺點トシテハ
- 一 仕拂實費ヲ可成仕拂標準實費ニ適合セシムル爲ニ契約前ニ充分ノ調査ヲ必要トスル
 - 二 工事ニ對スル仕拂金額ガ一定シテ居ル事ハ利益増進上請負者ガ施工ヲ粗略ニスル因ヲナス
 - 三 又工事所有者側ノ技術者ガ監督ニ偏シ請負者ニ對シ公正ナル體度ヲ缺ク

四 工事途中ノ設計變更困難ナリ

要スルニ此方法ハ工事ノ性質上豫メ正確ニ仕拂標準實費ガ調査出來ル場合ニ於テノミ有利ナモノデ少シク複雑ナ工事又ハ特種ナモノニシテ從來經驗ノ少キ工事等ニハ決シテ應用スベキ方法デハナイ

第五章 實費報酬請負

此方法ハ契約前ニ仕拂工事費ヲ定メナイデ實際工事ヲ施工シタ上デ其ノ所要實費ヲ計算シ之レニ或ル報酬ヲ必ズ加ヘテ仕拂フノデアアル從ツテ定額請負ノ如ク豫メ正確ナ標準實費ヲ想定スルノトハ違ヒ仕拂實費ガ實際ト一致シテル點カラハ定額請負ヨリハ理想的請負方法ノ第三條件ヲ満足シ易イ併シ請負者ガ實際ニ要シタ實費全部ガ必ズシモ仕拂標準實費トハ云ヘナイ殊ニ此方法デハ請負者ガ決シテ損失ヲ招ク心配ガナク又ヨク奮發シテ實費ヲ節約シテモソレダク請負者自身ノ所得ヲ増ス事ニナラヌカラ稍モスルト實費節約上請負者ノ怠慢ヲ招キ(殊ニ同シ請負者ガ他ニ定額請負ノ工事ヲヤツテル時ニハ兎ニ角實費報酬請負工事ノ方ニ劣等ナル労働者機械等ヲ送ル傾ガアル)從ツテ此方法ニヨル實際ノ實費ハ一層仕拂標準實費ト相違スル患ガ多イダカラ實際ノ實費ヲ何デモ全部支拂フ此方法ハ以上ノ點カラ必ズシモ第三條件ヲ満足シナイ許リカ實費ガ嵩ム上カラハ理想的請負方法ノ第二條件ヲ満足シナイ嫌ガアル之レガ此方法ノ根本的ナ大缺點デアル尙仕拂工事費ヲ工事施工後ニ定メルト云フ點カラハ定額請負ト全ク反對ナ利害得失ガ考ヘラレル要スルニ此方法ハ豫メ仕拂標準實費ヲ査定スル事ガ非常ニ困難ナ特種ナ工事或ハ天災戰時ノ如キ火急ヲ要スル場合デ經濟的關係ヲ離レ完成ガ主デ着手前調査等ニ時日ヲ許サナイ様ナ工事ニ用ヒテ大ニ有利ナノデアアル此度ノ歐洲戰爭デ此方法ガあめりかニ著シク發達シタノハ全ク以上ノ理由カラデアアル尙次ニ報酬ノ點カラ異ナルニツノ實費報酬請負ヲ考ヘルト

第一節 實費比例報酬請負

實費報酬請負デ報酬ヲ適當ニ定メルト云フ事ハナカナカ困難ナ問題デアアル工事所有者ノ資金關係工事ノ種類性質工事ニ對スル需給關係等ハ報酬決定上重要ナ事項デアアルガ此等ハ工事毎ニ一々變動スベキモノデ一定ノ報酬標準ヲ定メル事ハ

蓋シ不可能ナ事デアアル工事所有者ノ立場カラハ出來ル限リ少イガイ、シ請負者ノ立場カラハ少シデモ多キヲ慾スル譯デアアルニ場合ニ應ジ關係者相互ノ考一ツデ定マルベキモノデアアル

實費比例報酬請負デハ報酬ヲ實際ノ實費ニ比例シテ仕拂フノデアアルガ所要實費ノ何割ヲ報酬トシテ仕拂フト契約スルノデアアル之レハ報酬其ノモノ、性質カラ考ヘテ必ズシモ正當ナ定メ方デハナイノミナラズ此方法ニヨルト請負者ニハ何等ノ負擔トナラナイ實費が増ストソレダケ報酬が増スコトニナルカラ實費報酬請負ヲシテ益其ノ弊ヲ大ナラシムル嫌ガアル之レガ此方法ノ大缺點デアアル併シ工事着手前報酬決定上カラモ餘リ特別ニ調査ヲ要シナイカラ此點カラハ工事着手ニ手數時日ヲ要シナイ方法トシテ最モ徹底的ナモノデアアル

第二節 實費定額報酬請負

之レハ報酬ヲ契約ト同時ニ定額デ定メル方法デアアルガ所要實費ノ増加が必ズシモ報酬ノ増加トナラナイカラ實費節約上前ノ方法ヨリハ餘程弊害ハ少イ併シ此方法モ請負者ノ努力ニヨル實費ノ節約が何等請負者ニ報ユル處ガナイカラ依然トシテ實費増進ノ弊害ハ免レナイ

第六章 定額請負及實費報酬請負ノ修正

定額請負實費報酬請負ニハ上述ノ通り全ク正反對ナ兩極端ノ利害ガアルガ之レヲ互ニ緩和スル爲ニ種々ノ修正方法ガ案出實行サレテル今其ノ重ナモノニ付次ニ説明シテ見ヨウト思フ

第一節 定額請負ノ修正

定額請負ノ主ナ缺點ハ仕拂工事費ヲ契約ト共ニ決定スル爲施工後何カノ原因デ所要實費ガ豫定ノ仕拂標準實費ト非常ニ相違シタ時仕拂工事費ガ變更出來ナイカラ起ルノデアアルダカラ之レヲ輕減スルノニハ工事着手後實費ヲ左右スル實際ノ原因條件ナリガ豫想ト反シタ時ニ之レニ應ジテ仕拂工事費ヲ實際ト一致スル様修正出來ル事ニスレバヨイノデアアル實費ヲ變化スル原因ナリ條件ナリハ色々アルカラ此修正方法モ考ヘレバ種々ノモノガ出來ル今最モ普通ニ實行サレテル方法

ニ付次ニ述ベル

第一 工事數量ノ變化ニヨリ工事費ヲ修正スル方法

之レハ實地施工ニ當リ工事數量ガ變動シタ時夫レニ應ジテ仕拂工事費ヲ増減スル方法デアアル即チ一ノ請負工事ヲ更ニ便宜ナ各種ノ工事ニ細別シ此各ニツキ契約ト共ニ或ル請負單價ヲ設定シ置キ工事着手後ノ移動工事數量ニ對スル費用ヲ此單價デ修正スルノデアアル契約前仕拂工事費ヲ決定スル爲各種ノ工事所要數量ヲ正確ニ豫定スル事ハ確カニ困難ナ事ノ一デアアルカラ此數量ヲ實際施工シタ結果ニヨツテ確定スル此方法ハ確カニ定額請負ノ缺點ヲ補フモノデアアル

此方法ハ又定額請負ノ修正トシテデハナク請負契約ニ當ツテ工事ニ對スル單價ノミヲ契約シテ全仕拂工事費ハ施行後ノ實際數量ヲ調査シ決定スル一種ノ請負方法トシテモ用ヒラレル所謂單價請負 (Unit Price Contract) ハ之レデアアル斯ク單價ヲ契約シテ實際ノ工事數量ヨリ仕拂工事費ヲ出スカラニハ契約前充分ノ調査ヲシテ此單價ヲ實際ト適合サセル事ガ極メテ重要デアアル勿論此單價ヲ定メルニハ工事其ノモノノ性質ヲ充分調査研究シナクレバナラヌガ同時ニ單價ヲ定メル工事ノ區分方法ヲ考ヘル必要ガアル此區分如何ニヨツテ此方法モ結果ガ非常ニ違ツテ來ルノデアアル例ヘバ切取ト云フ工事モ地質ニ應ジ位置ニ應ジ區別スルト色々ニナルガ單ニ凡テヲ引キクルメテ平均切取單價何程トスルノト堅岩軟岩土砂切取等地質ニヨリ細別シテ各別ノ單價ヲ定メルノトハ同ツ切取請負工事デ施工後ノ工事數量ガ同シデアツタトシテモ結果ハ大分違フコトニナル細分スル程矛盾ハ少イカモ知レナイガソレダケ凡テニ面倒ガ伴フ譯デ此區分如何ト云フ事ハ定額請負ノ修正トシテモ單價請負トシテモ重要ナ問題デアアル此事ニ就テ以前米國土木學會デ討議ヲヤツテルガ之レハ左ノ記事ヲ參照スルト解ル

"Uniformity of Requirement and Clearness of Specification in Agreements for the Graduations of Railroads." by W. F. Dennis; Transaction of Am. Soc. C. E. Vol. LVIII, 1907.

此方法ニヨルト工事着手後ノ工事數量ノ移動ニヨル仕拂工事費ノ修正ハ容易ニ出來ルカラ契約前工事數量ノ豫定ハ定額

請負程正確ヲ要シナイが併シ之レモ程度問題デ實際ノ數量が豫想ト非常ニ遠フ事ニナルト此方法ニモ大ナル矛盾が出テ來ル實費中材料費、勞力費等ハ大體工事數量ニ比例スルモノデアルが之レトテ工事數量ノ移動が大トナレバ其ノ單價ハ當然變化ス可キモノデアル併シ設備費總係費報酬等ニ至ツテハ殆ンド工事數量ニ比例スルモノデナク一ノ工事全體ニ對シ大體決定サル可キモノデアルカラ豫想シタ工事數量カラ此等ヲ平均ニ割リ當テタ契約單價デ豫想ト非常ニ遠ツタ移動工事數量ニ對スル仕拂工事費ノ修正ヲヤルノハ甚ダ不合理ナ事ニナル斯カル場合ニハ當然單價ヲモ變更スベキデ既定ノ單價ヲ其ノ儘使用スル事ハ大ナル矛盾デアル(此等ハ次ニ述ブル餘分工事トシテ取扱フ可キモノデアル)尙之レニ就テ

Contracts Specifications and Engineering Relations by Daniel W. Mead (1920) p. 240 ニモ説明ガアル

前述ノ如ク此方法ニ於テ工事ノ適當ナル區分工事數量ノ正確ナル調査ト云フ事ハ單價決定上非常ニ大切ナル事デアルが之レ以外工事施工方法其ノ他工事費決定上必要ナ一切ノ調査ヲ出來ル限り充分ニヤラナクテハナラヌ若シ此等ノ調査が不完全デ單價其ノ他が適當デナイト種々ノ弊害が起リ結局定額請負ト選ブ所ガナクナル所謂不均衡入札 (Unbalanced Bid)ノ如キ弊害ノ起ルノハ全ク契約前ノ調査が不完全ナ結果カラデアル之レニ就テハ左ノ如キ參考記事ガアル

Handbook of Cost Data by H. P. Gillette (1920) p. 50.

"A Plan to Limit Unbalanced Bidding on City Contract Work" Engineering News, Vol. 69, April 17, 1913.

要スルニ此方法ヲ採用スルニシテモ之レヲ完全ニ利用スル爲ニハ定額請負ト同様契約前工事調査上充分ナ注意ヲ拂フ覺悟が必要デアル

第二 餘分工事 (Extra Work) ニ對シ別ニ仕拂フ方法

第一ノ方法ニヨツテ契約工事數量ノ變化ニ對スル工事費修正ハ出來ルが尙工事ニ依ツテハ着手後全然契約ニ豫期シナイ特別ナ餘分工事ヲ必要トスル場合が出來ル天災其ノ他ノ不可抗力ナ原因カラハ屢々斯カル餘分工事ノ必要が起ル此等ハ定額請負單價請負何レノ場合デモ別途ニ仕拂フノガ正當デ斯カル餘分工事ニ對スル特別ナ仕拂規定ヲ定額請負又ハ單價

請負方法ニ併用スルト一層其ノ缺點ヲ補フ事トナル此餘分工事ヲ仕拂フニハ種々ノ方法ガ考ヘラレル定額ニヨル事モ出ルシ別ニ新單價ヲ設定シテヤル事モ出ルシ又實費拂ニヨル事モ出ルルカデハ屢々實費拂ニヨル方法ヲモ用ヒテルガ參考迄ニハゆゝホク地下鐵道工事及びつゞば一々市土木部契約書ノ餘分工事ニ對スル部分ヲ左ニ書抜イタ

PUBLIC SERVICE COMMISSION FOR THE FIRST DISTRICT CONTRACT FOR THE CONSTRUCTION
OF A PART OF A RAPID TRANSIT RAILROAD

ROUTE No. 8.

SECTION No. 1.

GENERAL PROVISIONS AND DEFINITIONS

Article XII. In case any work or materials shall be required to be done or furnished in or about the Works which it is elsewhere in this contract expressly provided shall be paid for under this Article, or in case any work or materials shall be required to be done or furnished in or about or for the more perfect performance of the Works herein contemplated which are not mentioned, specified or indicated otherwise provided for in this contract or in the specifications forming a part of this contract or in or upon contract drawings and which in the opinion of the Engineer are not susceptible of classification under the Items of the Schedule of Unit Prices, the Contractor shall if ordered by the Engineer do and perform such work and furnish such materials at and for the actual and necessary net cost in money to the Contractor for labor, for insurance upon such labor under the Workmen's Compensation Law and for materials incorporated in the work and in addition thereto ten per centum (10 per cent) of such net cost, and the Contractor shall have no claim in excess of the above, such payment being in full compensation for the performance of such work and the furnishing of such materials and for all expense in connection therewith or incidental thereto, as aforesaid, including the expense of plant, power, tools, supplies and other means of construction, administration, superintendence and insurance, and for all the loss, damage, risks and expenses hereinbefore in Article XI mentioned. The amount of the insurance upon such labor under the Workmen's Compensation Law shall be determined by the amount

of the wages actually and necessarily paid for such labor and the rate of insurance for such labor either in the State Insurance Fund or in any stock corporation or mutual association authorized to transact the business of workmen's compensation insurance in this State, as the case may be. If the Contractor shall not have insured either in such State Insurance Fund or in any stock corporation or mutual association, the rate allowed will be the rate which he would have been required to pay for such insurance in the State Insurance Fund had he insured therein. Payment shall not be made under this Article for any such work or materials which are so required to be done or furnished in or about or for the more perfect performance of the Works herein contemplated and which are not mentioned, specified or indicated or otherwise provided for in this contract or in the specifications forming a part of this contract or in or upon the contract drawings so far as such work or materials may be, in the opinion of the Engineer, susceptible of classification under the Items of the Schedule of Unit Prices, which work or materials shall be paid for in part or in whole, as the case may be, at the unit prices given in the Items of the Schedule.

In case any work or materials shall be required to be done or furnished under the provisions of this Article, for cost plus ten per centum (10 per cent), the Contractor shall at the end of each day furnish to the Engineer daily time slips showing the name and number of each workman employed on such work, the number of hours employed thereon, the character of work he is doing and the wages paid or to be paid to him and also a daily memorandum of such material furnished, showing the amount and character of such materials, from whom purchased and the amount paid or to be paid therefor. If required by the engineer or the Commission, the Contractor shall produce any books, vouchers, records and memoranda showing the labor and materials actually paid for and the actual prices therefor. Such daily time slips and memoranda shall not, however, be binding upon the City and if any question or dispute shall arise as to the correct cost of such labor or materials, the determination of the Engineer upon such question or dispute shall be final and conclusive.

Instead of the method above described in this Article for paying for any work or materials to be paid for under this Article, the Engineer may, but only with the approval of the Commission, agree with the Contractor upon reasonable unit prices or a reasonable lump sum price for such work and materials. Such additional unit prices or such lump sum price shall be embodied in a supplemental schedule. The total amount to be paid for any work and materials

under such unit prices or lump sum prices as provided in this paragraph shall not exceed two per centum (2 per cent) of the total estimated cost on which the contract award was made, but the total amount to be expended under this contract for all purposes, including those contemplated by this Article, shall not exceed the amount set aside, authorized and appropriated by the Board of Estimate and Apportionment for the execution thereof. In the case of any single order of work or materials, or both, for a particular job or purpose where the lump sum price for such order to be agreed upon under the provision of this paragraph or the estimated cost of such order according to the unit prices therefor to be agreed upon under the provisions of this paragraph shall exceed ten thousand dollars (\$10,000), such agreement shall not be binding upon the City until the Board of Estimate and Apportionment shall approve or consent to such agreement or such lump sum price or such unit prices.

CITY OF PITTSBURGH, DEPARTMENT OF PUBLIC WORKS, BUREAU OF ENGINEERING
 STANDARD CONTRACT FOR STREET IMPROVEMENTS.

Part 2.

ARTICLES OF AGREEMENT

Extra Work 17. It is further agreed, in case work is added which cannot reasonably be classed with any material or work for which a contract unit price is established, that the Director shall be and is here by given power and authority to order the Contractor to furnish the additional work or materials which he may deem necessary or advisable; in case the Director and the Contractor are able to agree upon the proper compensation to be made for such additional work and materials, then the Director shall order, in writing, the said work to be done at the price or prices agreed upon; in case the parties hereto are not able to agree upon the proper compensation to be paid therefor, then the Director shall, in writing, order the work to be done or

the materials furnished and the Contractor agrees to accept as full compensation for such work, the actual cost of the labor, materials and work, as determined by the Director, plus fifteen (15%) per cent. of such cost. In reckoning said actual cost, no interest, rent or depreciation of plant or services of a general superintendent or administrative force, shall be included, and the allowance of fifteen (15%) per cent. is to include all such expense for superintendence, administration, interest, rent and general expense of plant and for profits and contingencies. In case the Director finds that the actual cost of the work and materials is in excess of the fair and reasonable cost thereof, by reason of overcharges for labor or materials, or by reason of an undue percentage of highly paid workmen or from any other reason, then the Contractor agrees to accept in lieu of the actual cost as herein before provided, the reasonable cost of the work and materials determined by the Director, plus fifteen (15%) per cent.

Claims for Extra Compensation 18. It is further agreed that all claims for extra compensation over and above the amount agreed upon in this contract, on account of any alterations or changes, or for any extra work, shall be filed with the Director by the party of the second part with the original order for alterations or changes or extra work attached thereto, within thirty (30) days after the completion of said alterations or changes or extra work, and all claims for extra compensation on account of such changes or alterations or for extra work which are not presented within thirty (30) days after the completion of the same, shall be taken and deemed as waived and forfeited by the party of the second part, and it is further agreed that, in the absence of the above mentioned written order from the Director, it will be deemed, taken and treated as conclusive by all parties hereto, that no changes or alterations have been ordered or made, and that no extra work has been ordered or done.

此方法デ困難ナ問題ハ餘分工事ノ範圍ヲ定メル事デ之レガ適當デナイト却テ弊害ヲ起ス事ニナル

第二節 實費報酬請負ノ修正

實費報酬請負ノ重ナ弊害ハ前述ノ通り實際ノ所要實費ヲ必ず仕拂フ結果實費ガ稍モスルト不當ニ嵩ム爲ニ起ルノザアル

ガカラ此缺點ヲ修正スルニハ契約ト同時ニ別ニ標準的ノ保證實費ヲ制定シ之レト實際ノ所要實費トヲ比較シテ其ノ割合ニ準ジテ報酬ヲ増減シ猥リニ實費ノ増大スルノヲ防グベヨ此豫メ契約スル保證標準實費ノ制定方法ノ如何又ハ之レヲ標準トシテ報酬ヲ増減スル方法ノ如何ニヨツテ此修正方法ニモ色々ノモノガ考ヘラレン Cost-plus Variable Fee Cost-plus Fee with Bonus or Penalty トカ Cost-plus Sliding Scale Fee トカ云フノハ何レモ此方法ノ一種デ要スルニ工事施工後ノ實費ガ保證標準實費ヨリ大デアレバ罰トシテ報酬ヲ減シ逆ニ少クレバ賞トシテ報酬ヲ増シ工事所有者請負者相互ヲシテ實費節約ニ努力セシメントスルモノデアアル此方法ヲ用ユル上ニ最モ大切ナ事ハ豫定スル保證標準實費ノ決定デ之レハ出來ル限リ仕拂標準實費ニ近クナクレバナラヌ勿論之レハ定額請負ノ契約工事費ヲ決定スル程ニ正確ナ必要ハナイガ餘リ仕拂標準實費ト掛離レテハ折角ノ標準タル價值ガナクナル事ニナル併シ此仕拂標準實費ヲ豫定スル事ハ定額請負ノ時ニ述ベタ様ニ工事ニヨツテハナカナカ困難ナ場合ガ多イ殊ニ實費報酬請負ヲヤロウト云フ様ナ工事ハ元々仕拂標準實費ノ査定ガ困難ナモノガ多イノデアアルカラ一層之ハ厄介ダト見ナクレバナラヌレデ此困難ヲ減ズル爲ニ第六章第一節デ説明シタ定額請負ノ修正デアアル單價請負ノ原理ヲ適用スル事ガ試ミラレテル即チ請負工事ヲ豫メ諸種ノ工事ニ區分シ此等ニ對シ夫々保證標準單價ヲ契約シ置キ實地施工ニ當リ實際ノ工事數量ヲ調査シ之レト保證標準單價トデ保證標準實費ヲ決定スルノデアアル Cost-plus Fee Contract with Guaranteed Max. Unit Cost 等ト稱シテルノハ之レデアアルあり加デハ所々ノ工事ニ此方法ヲ用ヒテルガ桑港市ノへちへち水道工事 (San Francisco's Hech Hetchy Water Supply Work) 及びわみ河洪水調整工事 (Miami River Flood-Control Work) 等デハ何レモ此方法ヲ採用シテル要スルニ此等ノ修正方法ハ實費報酬請負ト定額請負又ハ單價請負ヲ併用シタモノト考フベキモノデ第一章ニ擧ゲタ米國土木學會ノ請負方法ニ關スル討議記事中ニモ此等ニ關スル所論ガアル

尙實費報酬請負ヲ實施スルニ當ツテハ云フ迄モナク施工ニ當リ請負者ノ所要實費ヲ正確ニ調査決定スル事ガ最モ必要デアアル之レハ現在日本ノ請負工事狀態カラ考ヘルト隨分厄介至極ナ事ニ考ヘラレルガ之レハ全ク日本ノ請負業者ノ組織經

營等が不完全な結果カラデ若シわめりかノ如ク事業經營上原價計算制度ノ如キ方法ガ發達シ請負者ノ經營ガ組織立ツテ居レバ實施上決シテ想像スル程ノ面倒ハナイ又實費報酬請負デ競走入札ヲヤルニハ其報酬保證標準單價又ハ實費等ヲ入札セシメ其ノ條件ノ如何ニヨツテ請負者ヲ撰擇スレバヨイ

實費報酬請負契約書ノ好資料トシテハ左記ノ如キモノガアル

一 米國建築學會 (American Institute of Architect) 制定模範請負契約書案

二 米國總請負協會 (Associated General Contract of America) 制定實費報酬請負契約書案

二ノ契約書案ハ既ニ工學士野澤房敬氏が本年ノ鐵道請負協會報第十一號ニ翻譯掲載サレテル

第七章 結 論

便概ニモ述ベタ通り本論ハ極一般的ナ總論トモ云フ可キモノデ尙應用ニ當ツテハ更ニ各論トモ云フ可キ諸種ノ研究細目ガアルノハ勿論デアル上述ノ如ク各種請負方法ニハ夫々利害得失ガアルカラ利用ニ當ツテハ工事ノ性質ヲ充分顧慮シ場合ニ應ジ最モ適切ナル請負方法ヲ撰擇スル事ガ必要デアル如何ナル場合ニモ只一ノ請負方法ヲ墨守スルノハ大ナル誤デアル定額請負單價請負ハ從來日本デモ一般ニ行ハレテル方法デ別ニ珍シクハナイガ實費報酬請負ハ土木方面デハ未ダ餘リ利用サレテナイ様デアルいんばしそなるト定額請負單價請負ノミニ頼ルト云フ事ハ工事ノ進歩請負等ノ發展等カラ考ヘテ決シテ策ノ得タルモノデハナイ又一ノ工事ヲ施工スルニ當ツテハ如何ナル請負方法ヲ用フルニセヨ事情ヲ許ス限リ豫メ仕拂標準實費ヲ出來ル限リ正確ニ調査スル事ハ唯ニ企業上ノ經濟調査ヨリ必要ナ許リデナク如何ナル請負方法モ之レヲ完全ニ實施スル爲ニハ之レガ絶對必要條件デアルカラ仕拂標準實費ノ調査ト云フ事ニハ充分ナ努力ヲ拂ハネバナラヌ尙入札ニ當ツテハ入札前工事所有者側ニ於テ仕拂標準實費決定上必要ナ諸材料ヲ充分調査シ差支ナキ限リ之レヲ入札者ニ明示シ各入札者ガ一々同一調査ヲ繰返ス手數ヲ省ク事モ亦大切ナ事デアラル

斯ク仕拂標準實費ヲ正確ニ調査決定スルニハ契約前請負工事其ノモノヲ充分研究調査スル事ノ必要ナノハ勿論ダ尙一

般ニ工事施工中ノ原價計算制度ヲ完全ニシ凡テノ工事ニツキ現在ノミナラズ將來ニ對シ充分信頼ス可キ多クノ記録ヲ作ル事ニ努ムル必要ガアル一體ニ製造工業方面ノ工場デハ此原價計算制度ガ發達シテルガ建造工業 (Construction Industry) 方面ノ現物デハ尙甚ダ幼稚ナ感ガアル殊ニ日本ニ於テ其ノ感ガ深イ原價計算ト云フ事ハ獨リ有效ナル記録ヲ作ルト云フ事バカリデナク所謂科學的經營法ノ應用其ノ他カラモ大ニ意味アル事デアルカラ此迄ハ土木技術者トシテ建造工業ニ關係アルモノハ大ニ考フ可キ點デハナイカト思フ (完)