

4647-19

AN ORDINANCE FOR THE CONSTRUCTION
OF CERTAIN SIDEWALKS WITHIN THE
CITY OF URBANA, ILLINOIS

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF URBANA, ILLINOIS:

SECTION 1. That the following lines of concrete sidewalk shall be constructed in the City of Urbana, Illinois, as follows:

Upon the east side of Race Street from the north curb line of the pavement on Florida Avenue, thence north to the south curb line of the pavement on Delaware Avenue, and also necessary sidewalk stubs to curb line on Race Street;

On the east side of Race Street beginning at the end of the present sidewalk extending north from Pennsylvania Avenue thence north to the south curb line of Michigan Avenue, and also necessary sidewalk stubs to curb line on Race Street;

On the east side of Race Street from the north curb line of Michigan Avenue thence north to the present sidewalk on said Race Street and for a distance of 578.5 feet;

On the west side of Race Street beginning at the end of the sidewalk extending north from Florida Avenue and thence north to the south curb line of the pavement on Delaware Avenue less the present sidewalk on the south side of Delaware Avenue;

On the west side of Race Street from the north end of the present pavement on Delaware Avenue to the sidewalk on the south side of Vermont Avenue;

On the west side of Race Street from the end of the sidewalk on the north side of Vermont Avenue to the sidewalk on the south side of Pennsylvania Avenue;

On the north side of Vermont Avenue from the east line of the proposed sidewalk on Race Street thence east to the west line of Lot 15 in DeYoung's first Subdivision.

SECTION 2. The construction of said sidewalks shall be under the supervision and shall be subject to the approval of M. H. Kinch, public engineer, who is hereby designated by the City Council as the officer of said Council as City Engineer for the construction of said sidewalks.

SECTION 3. The whole cost of the construction of said sidewalks shall be paid by special taxation upon the lots, blocks, tracts or parcels of land in proportion to their frontage upon said sidewalks, and the cost of the construction of said sidewalks is hereby levied in whole upon each of said lots, blocks,

tracts or parcels of said land touching upon the line of said sidewalk in proportion to their frontage as aforesaid.

SECTION 4. All owners of the lots, blocks, tracks or parcels of land touching the line of the proposed sidewalk are hereby required to construct a sidewalk in front of and touching upon their respective lots, blocks, tracks or parcels of land in accordance with the specifications of said ordinance entitled "An Ordinance For The Construction Of Certain Sidewalks Within The City of Urbana, Illinois", within thirty days after the mailing of a notice of the passage of this ordinance. Said public engineer, M. H. Kinch, is hereby authorized and directed to mail such notices to all the owners of such lots, blocks, tracts or parcels of land immediately upon the adoption and approval of this ordinance. Such notice shall be addressed to the party who last paid the general taxes on the respective lots, blocks, tracts or parcels of land.

SECTION 5. In case the owner or owners of any of the lots, blocks, tracts or parcels of land as aforesaid shall default in constructing such sidewalk, the City of Urbana may furnish the material and construct such sidewalk in accordance with this ordinance or may enter into a contract for the furnishing of materials and the construction of such sidewalk.

SECTION 6. The bill of the cost of said sidewalks showing the cost of the construction and supervision thereof shall be made by the said public engineer together with the list of the lots, blocks, tracts or parcels of land touching upon said sidewalk, and the names of the parties who last paid the general taxes on the same, and the frontage. Thereupon, if the owner of any lot, block, tract or parcel of land has failed or refused to construct his portion of the sidewalk in accordance with the provisions of this ordinance, the public engineer of said City shall prepare a special tax list of those lots, blocks, tracts or parcels of land fronting or touching upon which the sidewalk has not been constructed. Said Public Engineer shall ascertain by computation the amount of special taxes and the annual installment thereof to be charged against each of those lots, blocks, tracts or parcels of land on account of the

construction of said sidewalks, said amount to be pro rata share of each lot, block, tract or parcel of land according to its frontage upon said line of sidewalk.

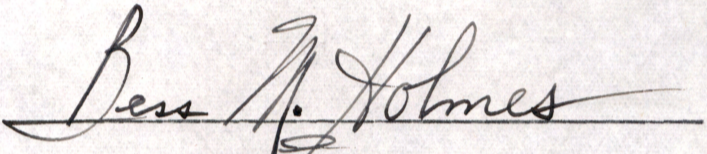
Said special tax list shall be filed in the office of the City Clerk of said City who shall thereupon issue warrants directed to the collector of special taxes for the collection of the amount of the special tax so ascertained and appearing from said special tax list to be due from the respective lots, blocks, tracts or parcels of land touching or fronting upon said line of sidewalk. The aggregate amount of each special tax shall be divided into five annual installments of equal amounts, except that of fractional amounts shall be added to the first installment so as to leave the remaining installments equal in amount and each a multiple of \$100.00.

The first installment of said special tax shall be due and payable on the 2nd day of January next after the date of the first voucher issued on account of work done, and the second installment one year after, and so on annually until all installments are paid. All installments shall bear interest at the rate of six per cent annually. Interest on assessments shall begin to run from the date of the first voucher issued on account of work done. Said interest installments shall be payable on the 2nd day of January next succeeding the date of the first voucher as certified. The interest accrued to date on all unpaid installments shall be due and payable and shall be collected with the installment. The City Clerk shall file within thirty days after the issuance of said tax list in the office of the special collector, a certificate signed by such City Clerk giving the date of the first voucher, and of the amount thereof.

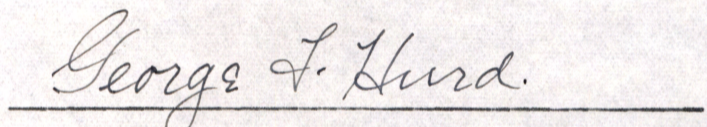
SECTION 7. It shall be the duty of the special collector to collect the warrants by mailing a written notice to the address of the party who last paid the tax on the lots, blocks, tracts or parcels of land in said tax list stating that said tax list is in the possession of said tax collector for collection.

SECTION 8. The aforementioned sidewalks shall be constructed of Portland Cement Concrete mixed in the proportions and constructed in the manner and in the proportions as approved by an ordinance entitled "An Ordinance Regulating The Construction Of Sidewalks"; adopted by the City Council on the 4th day of April 1930, and approved by the Mayor April 4, 1930. Said sidewalks shall be constructed contiguous to the lots, blocks, tracts or parcels of land abutting upon said sidewalks except that portion of said sidewalks which shall extend from the property line to the curb line and within the streets above mentioned.

Adopted by the City Council this 3rd day of February A.D. 1947.


CITY CLERK

Approved by the Mayor this 3rd day of February A.D. 1947.


MAYOR

SPECIFICATIONS
GREGORY AVENUE PAVEMENT, LOCAL IMPROVEMENT #206

I. GENERAL CONDITIONS OF CONTRACT.

1. DEFINITIONS: Whenever in these specifications or contract, the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

CITY shall mean the City of Urbana, Illinois.

BOARD shall mean the Board of Local Improvements of the City of Urbana, Illinois.

CONTRACTOR shall mean the person, firm or corporation to whom the work is awarded and the agent, employees and assignees thereof.

ENGINEER shall mean the appointed Engineer of the Board of Local improvements of the City of Urbana, Illinois or his properly authorized representative whose duties it shall be to enforce and interpret these specifications as directed by the Board of Local Improvements of the City of Urbana, Illinois.

PLANS shall mean all official drawings or reproductions of drawings made or to be made pertaining to the work provided in the contract or any structure in connection therewith.

WORK shall mean all labor, materials, supplies, use of machinery and tools and overhead costs necessary to complete the proposed improvement in full compliance with all of the provisions of ordinances, plans, specifications, general conditions and contract.

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT (cont'd)

2. **SPECIAL PROVISIONS:** Shall be inserted at the head of the Specifications as herein-after given and if any Special Provisions conflicts with the Specifications hereinafter included, the Special Provisions shall govern.
3. **COMMENCEMENT AND COMPLETION OF WORK:** The Contractor shall commence the work within ten days after the contract is signed and shall complete the work on or before the date as given in his proposal or bid for time of completion. The work shall be commenced at such points as the Board may designate. If the Contractor shall fail to complete the work within the time specified, he shall be liable for any shall pay the wages of the Inspector or Inspectors on the work, at the rate of Fifteen Dollars (\$15.00) per day per Inspector, and in addition thereto the sum of Twenty Dollars (\$20.00) per day as liquidated damages to the City and not as a penalty for such failure, from the time when said work should have been completed until the same is actually completed, and the amount of such wages and such liquidated damages may be deducted by the City from any moneys which may be due to the Contractor from the City. In case the City grants an extension of time to the Contractor, the wages of such Inspectors and such liquidated damages will be computed from the date to which the time for completion is extended until the actual completion of the work.
4. **CONTRACT:** A contract in writing shall be entered into between the City and the Contractor for the performance of said work, in accordance with and subject to the terms and conditions of the specifications, and as shown on the plans, of which contract these general conditions and specifications are a part.

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT (cont'd)

5. **SUBLETTING:** The Contractor shall not transfer or sublet the work of any part thereof to any person, except with the written consent of the City. In case such consent is given, it shall not relieve the Contractor from any of the obligations of the contract, and any transferee or sub-contractor shall be considered the agent of the Contractor and as between the parties hereto the Contractor shall be and remain liable as if no such transfer or subletting had been made.
6. **BOND:** The Contractor shall execute and deliver to the City a bond in the penal sum of one-third of the amount of the contract, with such sureties as shall be approved by the City conditioned, that said Contractor will duly keep and perform all of the terms and conditions of the contract on his part to be kept and performed.
7. **ENGINEER:** The work provided for in the contract shall be performed under the direction of, and to the entire satisfaction and acceptance of the Board, and its decisions, upon all questions which may arise, relative to the contract, plans and specifications shall be final and binding upon the parties hereto. The Engineer may make corrections of errors or omissions in the plans and specifications when necessary for the proper fulfillment of the intention thereof.
8. **PLANS AND SPECIFICATIONS:** The plans referred to in the specifications, or correct copies thereof, are on file in the office of the City Clerk and show the details, dimensions, plans, profiles and general character of the work. During the progress of the work such drawings will be furnished to the Contractor as may from time to time become necessary. Anything shown on the plans and not in the specifications or shown in the specifications and not on the plans, necessary to make the work complete, shall be furnished and constructed by the Contractor without extra charge, the intent and meaning of the specifications being that the Contractor shall finish the work complete in all respects ready for use, for the contract price.

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT (cont'd)

9. **NOTICES GIVEN BY CONTRACTOR:** The Contractor shall give notice in writing to all persons in charge of streets, gas, and water pipes, railroads, and all other property that may be affected by the Contractor's operations at least forty-eight hours before breaking ground. He shall also give the Chief of the Fire Department twenty-four hours notice in writing before it becomes necessary to blockage a cross street. The Contractor shall also notify the Engineer at least forty-eight hours before beginning the work and before continuing the work after a suspension of the same. Also when said contractor shall require the services of the Engineer for laying out and supervision of the work.
10. **APPLICATION OF POWER:** The Engineer shall have the power to direct the applications of the working force of the Contractor, to any particular portions or portions of the work, and to order the increase of said working force at his discretion.
11. **DISCIPLINE:** It is understood that only competent, skillful workmen shall be employed to do the work, and that the Engineer shall have authority to order the dismissal of any person on the work, who, in his opinion, is incompetent, or who refuses or neglects to obey any of his instructions relating to the carrying out of the provisions and intent of these specifications, or who is unfaithful, abusive, threatening or disorderly in conduct, and such person shall be dismissed by the Contractor and shall not be employed again on the work.
12. **SKILLED LABOR:** Such class or kind of work to be done which requires special skill shall be done under the direction of foremen and by workmen who are known to be skilled in that class of work.
13. **CO-OPERATION:** The Contractor and his Sub-Contractors, if any, shall cooperate with all other Contractors in, upon, or about the work, and shall carry on his work so that none of the co-operating Contractors shall be hindered, delayed or interfered with in the progress of their work, and so all of the work shall be a finished and complete job of its kind.

SPECIFICATIONS.

GENERAL CONDITIONS OF CONTRACT (cont'd)

14. **TESTS:** The Contractor shall furnish samples of all materials in sufficient quantities and in ample time so that the proper tests may be made by said Board or its representatives.
15. **IMPROPER MATERIALS AND WORK:** The Contractor, within twenty-four hours after receiving notice from the Engineer so to do, shall proceed to remove from any of the premises all materials condemned by the Engineer, whether used or not, and said Contractor shall remove all portions of the work which the Engineer shall condemn as unsound or improper, or in any way failing to conform to the plans and specifications, and the Contractor shall make good all work damaged or destroyed thereby, all at the sole cost and expense of the Contractor. If the Contractor shall refuse or neglect to remove such materials or to take down such work, to make good such work within the time specified, the City may purchase any acceptable materials on hand and perform such labor necessary and deduct the cost and expense thereof from any moneys due, or that may thereafter become due, said Contractor, under the contract. If, however, at the time of making a monthly or other estimate, the Engineer should fail to condemn defective material or work, such neglect shall not be construed as an acceptance of such material or work.
16. **CONTRACTOR'S SUPERINTENDENT:** During the performance of any work herein specified on any premises or public street of said City, the Contractor shall keep on the ground an experienced representative or superintendent duly authorized to represent and act for the Contractor in all matters pertaining to the work to be done under these specifications.
17. **INSPECTION:** Inspectors will be appointed whose duty it shall be to point out to the Contractor any neglect or disregard of the specifications, but the right of final acceptance or rejection of the work will not be waived at any time during its progress.

The Contractor shall execute the work only in the presence of the Engineer in charge of the work, or Inspectors, during the working hours of the day unless otherwise directed by the Board, but the presence and superintendence of said Engineer or Inspectors representing said City, shall in no way relieve the Contractor of the responsibility of his material or poor workmanship.

CONTRACTOR'S OBLIGATIONS

GENERAL CONDITIONS OF CONTRACT (cont'd).

Originally one inspector will be employed, but if on account of character of the specifications on the part of the Contractor, additional inspectors should be required, such additional inspectors shall be employed by the Engineer in charge as he may deem necessary to insure faithful compliance with the contract, and the pay of each additional inspector shall be charged to the Contractor, at the rate of Fifteen Dollars per day, per inspector and collected from the amount due the contractor.

Notice of any irregularities in this work or in any directions of work furnished by the Engineer, to any foreman or agent in charge of any portion of the work, in the charge of the Contractor, shall be considered as notice to the Contractor.

18. CHARACTER OF WORK: The said improvement shall be constructed and completed under the direction and supervision of the Board of Public Improvement of the City, and shall be in all respects and particulars laid and executed in a workmanlike manner and shall be subject to the approval of the said Board.
19. SANITARY CONVICTIONS: The Contractor shall provide, if necessary, proper accommodations for the use of his employees on the street, and shall maintain the same in a clean and sanitary condition. He shall not create nor permit any nuisance to the public or to residents in the vicinity of the work.
20. LINES AND GRADES: The location and position of all line and grade stakes will be given by the engineer and the Contractor shall be responsible for such stakes and shall see that the same are retained until the completion of the work, or until the Engineer shall give his permission for their removal.
21. STAKES FOR ENGINEERS: The Contractor shall furnish suitable stakes and help to place same for the Engineer to use in staking out the work and shall himself or his representative be present when stakes are located.

SPECIFICATIONS

GENERAL CONDITIONS OF CONTRACT (cont'd)

22. **DETOURS:** The Contractor shall mark and maintain detours as laid out by the Engineer. If street to be improved is kept open, it shall be properly maintained as directed by the Engineer, cost of such work shall be included in the Contractor's bid.
23. **LABOR, TOOLS, ETC:** The Contractor, at his own expense, will furnish all material, labor, tools, implements, machinery, appliances, supplies, forms, false work, bridges, staging, mortar boxes, water and everything necessary for the performance of the contract, including all temporary drainage and all pumping apparatus and water piping necessary to supply water for construction operations.
24. **MEASUREMENTS:** No extra or customary measurements of any kind in accordance with the actual length, area, solid, contents, or number shall be considered in measuring the work under this contract, except that no deductions will be made in payment for any obstructions containing less than one (1) square yard.
25. **OBSTRUCTION OF DRAINAGE:** If it is necessary during the progress of the work to interrupt or to obstruct the natural drainage of flow from artificial drains, the Contractor shall make provisions for taking care of all such drainage, so that no damage of any kind or character shall result, and if the Contractor shall neglect so to do, he shall be liable for and shall indemnify and save harmless the City from all liability for any damage which may result from such negligence.
26. **PILING MATERIALS:** Material or equipment when delivered at the site of the work shall be piled in such manner as not to interfere with the use of any hydrant, sidewalk or roadway.
27. **MANHOLES, CATCH BASINS, ETC:** All the covers and tops of the sewer manholes, catch basins, lamp posts, holes, or water or gas valve boxes on the line of the work shall be reset flush with the surface of the completed pavement by the Contractor, at his own cost and expense.
28. **CONNECTING ADJOINING WORK:** The completion of this work under this contract includes any and all work that may be necessary to connect the paved roadway and curbing with all adjoining streets and alleys in a good and workmanlike manner, without extra compensation whatsoever.

SPECIFICATIONS.

GENERAL CONDITIONS OF CONTRACT (cont'd)

29. **BARRICADES:** All necessary guardsmen shall be employed and barricades and light shall be furnished day and night by the Contractor.
30. **RESPONSIBILITY FOR THE WORK:** Prior to the completion of the work by the Contractor and the acceptance thereof, by the City, the work shall remain at the risk of the Contractor and said Contractor shall be required to repair, replace, renew, and make good at his own expense all damages caused by force or violence of the elements, or any other cause whatsoever, provided, however, that in such cases the Contractor shall be entitled to a reasonable extension of time within which to complete said work. The Contractor shall accept any extension or extensions of time given by the City within which to complete the work, on account of any delays suffered by the Contractor as full compensation from the City for any and all damages which the Contractor may have suffered by reason or on account of such delays.
31. **METHODS EMPLOYED:** The Contractor is to use such methods and appliances for the performance of all the operations connected with the work embraced under this contract, as will secure a satisfactory quality of work, and a rate of progress which in the opinion of said Board will secure the completion of the work within the time herein specified. If at any time before the commencement or during the progress of the work, such methods or appliances appear to said Board to be insufficient or inadequate for securing the quality of work required, or the said rate of progress, they may order the Contractor to increase his efficiency, or to improve the character of his work, and the Contractor must conform to said order; but the failure of said Board to demand such increase of efficiency or improvement shall not relieve the Contractor from his obligations to secure the quality of work and the rate of progress established in these specifications.
32. **PROTECTION OF EXISTING IMPROVEMENTS:** The Contractor will be held responsible for any damage done to the water main or drain pipes, or to any other pipes, or to any living tree, which tree must be protected by two (2) inch planking by the Contractor, in addition to the penalty described by the City Ordinances. All loss or damage arising out of the nature of the work to be done, or from any detention, or unforeseen or unusual obstruction or difficulty, which may be encountered in the prosecution of the work, or from the action of the elements, shall be sustained by the Contractor, who will be required without cost to the City to replace all pavements, sidewalks, or cross-walks, displaced or injured, and to remove from the street, all surplus material, earth, rubbish, etc., immediately after the completion of the work.

SPECIFICATIONS.

GENERAL CONDITIONS OF CONTRACT (cont'd).

33. **USE OF WATER:** Contractors desiring to use water from public hydrants will be required to make application to the proper authorities and conform to the rules and regulations provided in such cases by the City ordinances, and pay for the water at the required water rates.
34. **PERMITS, LAWS AND ORDINANCES:** The Contractor shall procure and pay for all permits that may be required and shall comply with all laws, ordinances and other regulations of the proper authorities which may by any way effect the work, and shall be responsible for any and all damages arising from the neglect to procure said permits or from disregarding said laws, ordinances or other regulations.
35. **DAMAGE AND INJURIES:** The Contractor shall and will indemnify, save harmless and defend said City from any and all suits, actions, legal proceedings, claims, demands, damages, costs, expenses and Attorney's fees, in any manner caused by, arising from, incident to, connected with, or growing out of the performance of the contract.
36. **WORKMEN'S COMPENSATION:** The Contractor shall provide and pay (in accordance with the provisions of the Workmen's Compensation Law, of the State of Illinois) compensation for injuries sustained by, or death resulting to, any of the employees, arising out of or in the course of his employment in the performance of any of the work under this contract, and further shall carry insurance in a company satisfactory to the City fully protecting the Contractor against claims which may be made against him under said laws. The Contractor shall also carry Public Liability and Property Damage Insurance sufficient amounts as determined by the Board. The Contractor also agrees to deposit said policies, or a true copy thereof, with the City.
- The Contractor shall hold the City harmless from and against claims, demands, or suits which may be made or brought against the City on account of any claim made under any of the terms and provisions of said law, for injury or death to any of the employees of the Contractor, his agents or sub-contractors, if any, or damages to any person or property in connection with this work.
37. **PATENTS:** The Contractor shall and will indemnify, save harmless, and defend said City from any and all suits, actions, legal proceedings, claims, demands, damages, costs, expenses, and attorney's fees incident to any infringement or to any claimed infringement of any patent or patents in anywise relating to any or all of the machines, appurtenances, or appliances installed or incorporated in the work, or in any way connected herewith or with the use thereof by the City.

SPECIFICATIONS.

GENERAL CONDITIONS OF CONTRACT (cont'd)

38. **OPENING AND CLOSING STREETS:** No Street or Streets or Alley or Alleys shall be closed by erecting barricades or otherwise, nor shall the same be opened by the removal of said barricades or otherwise except by permission of the Board.
39. **DAMAGE TO OTHER CITY PROPERTY:** Damage to any City property by the Contractor's trucks, workmen or equipment shall be repaired at the Contractor's own expense.
40. **FINAL ACCEPTANCE:** Before final payment is authorized by the Board, the Street or streets, alley or alleys, or other property on which the work is located between property lines, shall be swept off, cleaned, graded, and properly raked, all foreign material of any kind removed from the site of the work so that the completed work presents a finished and pleasing appearance.

SPECIFICATIONS

STORM WATER SEWERS, DRAINS, CROSSOVERS AND CONNECTIONS.

1. **DESCRIPTION.** The Storm Water Drains, Crossovers and Connections and dimensions as shown on the accompanying plans and profiles.
2. **MATERIALS.** In general the Contractor should receive the approval of the Board on all materials which he proposes to use in the above mentioned work, before presenting his bid for the proposed work. The Board may require samples for testing purposes of all materials, which the Contractor proposes to use. If such samples proves satisfactory, similar material will be considered acceptable for the proposed work. The Board may reject and cause the removal of any material in place or in storage until such a time as the work is finally accepted by the Board.
3. **PIPE.** The pipe for all Storm Water Sewers, Drains, Crossovers and Connections, shall be of best quality Portland Cement Concrete Sewer Pipe, or its equivalent in vitrified clay sewer pipe. The pipe shall be free from flaws, cracks, blisters. Any pipe with pieces chipped out shall not be placed in the trench by the Contractor. Any pipe too soft, green or cracked so as not to give a clear metallic ring when struck with a steel hammer shall be culled and removed from the site of the work by the Contractor at his own expense. Plain Portland Cement-Concrete Sewer Pipe shall be used when the size required is from four inches in diameter to but not including twenty-four inches in diameter. The Physical Test Requirements of Sewer Pipe shall be as follows:

Internal Diameter, inches	Av. Crushing Strength lb. per lin.ft. Knife - Sand Edge & Bear-Three ings. Edge Bearings.	Maximum Absorption per cent
4.....	1000 1430	8
6.....	1000 1430	8
8.....	1000 1430	8
10.....	1100 1570	8
12.....	1200 1710	8
15.....	1370 1960	8
18.....	1540 2200	8
21.....	1810 2590	8

SPECIFICATIONS

PIPE (Cont'd) The dimensions of Sewer Pipe, shall be as follows:

Internal Diameter in.	Daying Length Ft.	Thickness of Barrel in.
4.....	2,2 ¹ / ₂	9/16
6.....	2,2 ¹ / ₂	5/8
8.....	2,2 ¹ / ₂ 3	7/8
10.....	2,2 ¹ / ₂ 3	7/8
12.....	2,2 ¹ / ₂ 3	1
16.....	2,2 ¹ / ₂ 3	1 ¹ / ₈
18.....	2,2 ¹ / ₂ 3	1 ¹ / ₂
21.....	2,2 ¹ / ₂ 3	1 3/4

The Portland Cement-Concrete Sewer Pipe shall be manufactured to conform to "Standard Specifications for Cement-Concrete Sewer Pipe", adopted by the American Society for Testing Materials. Serial C-14 or its equivalent in vitrified clay Sewer Pipe.

4. MORTAR. The mortar shall be mixed in the proportions of one (1) part best Portland Cement and two (2) parts clean, sharp fine sand by volume. The amount of water to be used shall make the mortar workable without permitting the separation of any of the ingredients.

5. CONSTRUCTION. In general the Storm Water Sewers, Drains, Crossovers and Connections shall be excavated from their outlet and laid to the upper end.

6. OBSTACLES. Any old sewers, drains, water pipe, gas or other lines found in place by the Contractor during excavation of trench shall be disturbed as little as possible. In case it becomes necessary to change the grade or otherwise disturb the location of said underground lines the Contractor shall first receive the approval of the Engineer in writing on the method he proposes to use to complete the extra work involved and shall complete the proposed extra work to the entire approval of the Board. The sides of the trenches shall be of sheet piling if so directed by the Board. No sheet piling shall be left in place. Tunneling will be permitted if in the opinion of the Board no other method would be as satisfactory. No extra compensation shall be allowed the Contractor for tunnelling.

7. PAVEMENT. Whenever it is necessary to remove pavement or paved drives or sidewalks of concrete, said pavement drives etc., shall be removed in accordance with standard Specifications attached hereto and the new pavement, drives, etc., replacing the old shall be of the same type of pavement, drives etc., as was removed or is adjacent thereto. Said pavement replacing drives, etc., shall be in accordance with the Standard Specifications for new Pavements, Drives, etc., and attached hereto. When the excess excavated material is removed the trench opening shall be maintained by cinders or rock until all settlement has taken place and then replaced with the new pavement aforesaid. The new pavement replaced, if any, shall have a bearing on solid undisturbed earth on each side of the trench of at least nine (9) inches.

SPECIFICATIONS

8. LAYING. The invert of the pipe shall be laid to the grades, elevations and alignment as shown by the accompanying plans and profiles and as indicated by the Engineer by stakes or other means to show the necessary and required grades, elevations and alignment. Before the lowering of the pipe into the trench the earth at the bottom of the trench shall be of the proper cross-section, i.e., circular to fit the outer surface of the pipe after placing. If the trench bottom is too wet to form such sub-grade or base for the pipe, such trench shall be dried up and by the placement of gravel or sand so fixed that such cross-section may be maintained. Walking or working on the completed sewer line will not be permitted until the trench has been backfilled to a height at least two (2) feet above the top of the pipe. Any rocks or other material found close to grade shall be taken out and the cavity filled and carefully compacted. All necessary connections to catch basins in place or to be built or inlets in place or to be built shall be carefully cemented in place as a part of the work required herein.

9. BACKFILLING. No backfilling shall be made for at least twenty-four (24) hours after the laying of the tile and the placing of the joint material and not until inspected by the Engineer. The pipe shall then be carefully blinded with selected material from the material excavated or as other material. No sand backfilling will be placed within the trench within two (2) feet of the top of the pipe. No rocks or large bats shall be back-filled into the trench in such a manner as to damage the pipe in place. The first two feet shall be carefully tamped around the pipe in place and from thereon up to the top of the trench the backfill shall be tamped in two (2) foot layers. No puddling of backfills, will be allowed. The backfill shall be jettted as follows: As soon as the backfill has reached the normal ground surface holes shall be arranged in transverse and longitudinal rows no more than five (5) feet apart. Additional holes shall be jettted if necessary to secure adequate settlement. Rock, gravel, or other material encountered in sinking the holes shall be picked loose with crow bars or iron rods. The water pressure used shall not be greater than that required to sink the holes at a moderate rate of speed. The introduction of water shall continue as long as the backfill will take any appreciable amount of water. After the settlement of such backfill the said settled trench shall be brought back up to the required grade and jettted until final settlement has taken place and required grade of top of backfill is reached. All suitable excavated material shall be piled over the backfilled trench. Trenches cut through permanent surface improvements shall be maintained by the Contractor with cinders or crushed rock until final acceptance by the Board. All surface or underground improvements cut through, moved changed or altered in any way shall be replaced by the Contractors at his own expense in the same condition before any change or alteration was made.

10. ACCEPTANCE. Before Final Acceptance by the Board the entire site of the work or plant shall be cleaned up, all refuse or rubbish removed, the parkings carefully raked down and the entire work left in a clean and presentable condition.

SPECIFICATIONS.

(Acceptance Cont'd) The pipe in place, Catchbasins, Inlets, etc., shall be in satisfactory operation.

11. **PAYMENT.** Payment for Storm Water Sewers, Drains, Crossovers and Connections, shall be for each lineal foot in place and in satisfactory operation and constructed in accordance with the Plans, Specifications, shall include all necessary labor, materials and supplies, use of machinery and tools and overhead costs incidental to the construction of the proposed improvement.

SPECIFICATIONS.

STORM WATER INLETS:

1. DESCRIPTION. The Storm Water Inlets shall be of the size and dimensions as shown on the Standard Details of Storm Water Inlets Plan attached hereto.
2. CONCRETE. The concrete shall be mixed in the proportions of one (1) part best Portland Cement, two (2) parts sand, and three (3) parts washed gravel or broken stone. The Mortar used shall be mixed in the proportions of one (1) part best Portland Cement, one (1) part clean sharp sand.
3. TILE CONNECTIONS. The tile connection shall be of best quality Number One sewer pipe.
4. TOPS. The cast iron grating and tops shall be of such shape, dimensions, and weight as shown on the accompanying Plans. The material shall be of best quality soft gray iron, without admixture of any inferior metals.
5. CONSTRUCTION. The bottom and walls of the Inlets shall be built of concrete rings and placed in proper position. The joints shall be neatly filled with cement mortar.
6. Acceptance. Before final acceptance the Inlet must be in satisfactory operation. The inside carefully cleaned out and all refuse material removed.
7. PAYMENTS. Payments for Inlets shall be for completed inlet in place and shall include all necessary labor, material and supplies, use of machinery and tools, and overhead costs complete in place.

SPECIFICATIONS

STORM WATER CATCH-BASINS.

1. DESCRIPTION: The storm water catchbasins shall be of the size, grade, location, weight and grade as shown on the plans.
2. MATERIALS: All material must receive the approval of the Board before being used in or on the work, and any material may be rejected if found unsatisfactory by the Board up until the time of final acceptance by the Board. All rejected material must be removed immediately from the site of the work.
3. CONCRETE: The concrete shall be mixed in the proportions of one part Portland Cement, two parts sand (fine aggregate) and three parts washed gravel and broken stone (coarse aggregate). All mixtures to be by volume. The amount of water to be used shall in general not exceed seven gallons of water to one sack batch.
4. MORTAR: The mortar shall be mixed in the proportions of one part Portland Cement, one part clean sharp sand, (fine aggregate). All mixtures to be by volume. The amount of water to be used shall in general not exceed eight gallons of water to the one sack batch.
5. SEWER PIPE: All sewer pipe used and connections shall be of the best quality No. 1 vitrified, hard-burned, sewer pipe.
6. TOPS: The metal used in the castings for the tops shall be of best quality pure, soft gray iron, without the admixture of any foreign material.
7. CONSTRUCTION: The bottom and walls shall be built of concrete rings of best quality, laid in mortar. The bottom shall be carefully trowelled to present as smooth and pleasing appearance. Backfill around the catchbasin shall not be made until the mortar has set properly and shall be made of only suitable material selected from the excavated material. No rubbish or refuse of any kind shall be placed in the backfill.
8. STEPS. The steps shall be of three quarter inch round properly bent bars and shall be long enough to extend through the entire thickness of the catch basin.

SPECIFICATIONS.

SEWER WATER CATCH-BASINS (cont'd)

9. **ACCEPTANCE:** Before final acceptance, the catchbasins shall be in satisfactory operation, the inside carefully cleaned out and all refuse material removed and the site of the work cleaned up so as to present a pleasing and satisfactory appearance.
10. **PAYMENTS:** Payments for all catchbasins shall be for the completed catchbasin in place and shall include all labor, materials and supplies use of machinery and tools, and overhead costs necessary to build, construct, protect and maintain the catchbasins in accordance with the plans, specifications and contract.

SPECIFICATIONS.

ADJUSTING MANHOLES, TOPS, CATCH BASINS ETC.

1. DESCRIPTION. The item of adjusting of man-holes, tops, catch-basins, etc., shall mean the removal of the present cast iron top and the replacement of same to proper line grade. It does not contemplate the furnishing of new tops.
2. RESETTING. As soon after the excavating is completed as practicable and before placing of any of the materials of new pavement the present castings used for the present man-hole, catch basins, flush tank tops and etc., the present tops shall be removed, the brick and concrete or mortar used in the old man-holes catch basins etc., shall be trued up and properly reconstructed, so that the castings can be properly set to the proper line and grade as given by the Engineer.
3. PAYMENT. Payment for the re-setting of man-holes, catch basins, tops etc., shall be for each one as reset by the Contractor to proper line and grade including all necessary labor, materials, use of machinery and tools, equipment, and overhead cost.

SPECIFICATIONS

II. EXCAVATION AND EMBANKMENT.

1. DESCRIPTION: Excavation shall include the removal and disposal of all earth materials taken from within the limits of the street of streets or alley or alleys necessary for the construction and preparation of the proposed improvement, embankment, pavement subgrade, slopes, grading parkways, intersections, approaches to the lines and grades shown on the plans and profile as indicated and directed. All soft and unsuitable material shall be removed and replaced with suitable material. Unless otherwise provided intersecting unpaved streets shall be sloped back on a grade to conform with the new grade of the street.
2. EMBANKMENTS: Embankments shall be formed of suitable material placed in successive level layers of not more than twelve (12) inches in depth for the full required width of the Cross Section. Stumps, trees, rubbish, sod, or any other unsuitable materials shall not be placed in the embankment. Embankments shall be made of sufficient height and width that after full shrinkage and sloughing of the slopes and the elevation and width shall conform to the Cross Section.
3. SUBGRADE: The subgrade shall be considered as that portion of the street upon which the pavement is placed. The subgrade shall consist of the natural earth, or material contained in the old street, which has been brought to the proper elevation and crosssection and rolled until firm and smooth. The subgrade shall be constructed so that it shall be as nearly as possible of uniform density throughout its entire width. For the purpose of rolling the subgrade there shall be provided a roller, weighing not less than ten (10) tons. The subgrade shall be brought to a true shape, and, after rolling, shall be tested; if not the proper elevation at all points, materials shall be removed or added as may be needed, to bring all portions of the subgrade to the correct elevation.

If trucks are used for hauling aggregates, all ruts and rough places caused by the same shall be properly smoothed over and compacted before placing of concrete. The subgrade shall be cleared of all materials and be wetted or sprinkled if dusty, it being understood that in sprinkling the same no pools of water will be formed.

4. PARKINGS: Shall be considered that part of the street or streets between the back of the curb on each side and the edge of the sidewalk. The parkings shall be graded between the limits heretofore specified with a uniform grade and shall be properly raked so as to present on completion a finished and pleasing appearance. All foreign material

II. EXCAVATION AND EMBANKMENT (cont'd)

(Parkings Cont'd)

regardless of whether the same has been left there by the Contractor or not shall be removed from the site of the work. It is the intent of this Specification that the Contractor shall prepare the parkings for seeding.

5. PAYMENT: Excavation and embankment in earth shall be paid for at the unit price per cubic yard for all material excavated, for preparation of subgrade, and grading and raking of parkings, in accordance with the plans and specifications including the placing of embankments, all necessary labor, supplies, use of machinery and tools and overhead cost.

SPECIFICATIONS

STUMPS:

1. Destructive removal of the present stumps will not be permitted. The present stumps must be hauled to the City Dump or other suitable location. The stumps and roots must be removed to a depth of at least one foot below the subgrade of the Proposed P.C. Concrete Curb and Gutter.
2. PAYMENT: Payment for stumps removed shall be for each stump as removed by the Contractor and shall include all labor, materials, use of equipment and tools, and overhead cost.

SPECIFICATIONS.

PORTLAND CEMENT COMBINED CURB AND GUTTER.

1. **DESCRIPTION.** The size, dimensions, location, grade, etc., of the proposed Portland Cement Concrete Curb and Gutter shall be as shown on the plans, profiles, and details accompanying and a part of these specifications.
2. **MATERIALS.** Before delivery on the job, the Contractor shall submit to the Board a sample as specified by the Board for each of the proposed materials to be used in or on the proposed work. These samples shall be tested and if found to pass the requirements of these specifications similar material shall be considered as acceptable for the work. All materials must receive the approval of the Board before using in or on the work and any material may be rejected if found unsatisfactory up until the time of final acceptance by the Board. Rejected material must be removed immediately from the site of the work.
3. **CEMENT.** The cement shall meet the requirements of the current "Standard Specifications and Tests for Portland Cement" adopted by the American Society for Testing materials. Ninety four pounds of Portland Cement shall be considered as one sack, one cubic foot and one fourth of a barrel. Cement shall be placed in the mixer directly from the original packages in which it was shipped. Bulk cement shall not be used. A bag of cement (ninety four pounds net) shall be considered as one (1) cubic foot. No batches requiring a fractional part of a sack of cement will be permitted.
4. **WATER.** The water shall be free from all oil, acid, alkali, organic matter or other deleterious substances. It shall be of equal in all physical and chemical properties to drinkable water.
5. **FINE AGGREGATE.** Fine aggregate shall consist of clean, sharp sand having hard strong durable grains, and shall be free from all dust, dirt and injurious amounts soft or flaky particles and shale. It shall be free from alkali and surface coatings and shall not contain injurious amount of vegetable or other organic material as determined by the Colorimetric Test described in the "Standard Method of Test for Organic Impurities" of the American Society for Testing Materials Serial No. C 40-22. It shall not contain injurious amounts of clay or silt as determined by the "Standard Method of Test for Quantity of Clay or Silt in Sand for Highway Construction", Serial No. D 74-21 of the American Society for Testing Materials. It shall be of such quality that mortar composed of one part of Portland Cement and three parts of the fine aggregate, by weight, when made in briquets shall show a tensile strength at 7 and 28 days at least equal to the strength of briquets composed of one part of Portland Cement and three parts of Standard Ottawa Sand, by weight. Briquets shall be made in accordance with the methods as recommended by the American Society of Testing Materials Serial No. C 9-26.

SPECIFICATIONS.

PORTLAND CEMENT CONCRETE CURB AND GUTTER (cont'd)

6. GRADING. Fine aggregate shall range in size from fine to coarse, within the following limits:

Passing through No. 4 sieve .. Not less than 85%

Passing through No. 50 sieve... Not more than 30%
and not less than 7%

Passing through No. 100 sieve.. Not more than 5%

- Grading. Coarse aggregate shall range in size from coarse to fine, within the following limits:

Passing 1-1/2 in. sieve .. not less than 95%

Passing 3/4 in. sieve .. not less than 40% to 75%

Passing No. 4 sieve .. not more than 15%

Passing No. 8 sieve .. not more than 5%

Coarse Aggregate. Coarse Aggregate shall consist of washed gravel or broken stone, having hard strong durable particles free from injurious amounts of soft, friable, thin, elongated or laminated pieces, alkali, organic or other harmful matter.

7. CONCRETE. Portland cement concrete shall be mixed in such proportions by weight of water, Portland cement, fine and coarse aggregates as will produce a workable plastic mixture, which when molded into test specimens and tested according to Standard Methods, i.e. "American Society for Testing Materials", Serial Designations C 31-21 and C 39-25 shall give a compressive strength of 3500 lbs. per sq. in. in fourteen days, and also a modulus of rupture when tested according to Standard Methods, i.e. American Society of Testing Materials, of 650 lbs. in 14 days. The mixing water shall not exceed five and one half (5-1/2) U.S. gallons of water to bag of cement. This quantity of water shall include the moisture on the surface of the aggregates. The moisture which the aggregates will absorb in thirty (30) minutes shall not be included as mixing water. The water shall be measured as described in the Standard Test of the American Society of Testing Materials, "Tentative Test for the consistency of Portland Cement Concrete", Serial Designation D138-26T. The slump shall not be less than 2 inches nor more than 4 inches. All proportioning for aggregates used in the mix shall be by weight. The equipment for weighing aggregates and the equipment for measuring the amount of water shall be such as meets the approval of the Board. These proportions shall be based upon tests of the materials selected by the Contractor for use in the work and delivered to the Board. The quantities of aggregates for each batch of concrete shall be measured by weight. The Board will furnish to prospective bidders, upon request the approximate proportion by weight necessary to produce concrete having the required workability and strength using aggregates from any established and available commercial source designated by the bidder, it being expressly understood that this information is only for the convenience of the bidder. The Board reserves the right to determine, as the work progresses, and as aggregates are delivered at the site of the work, proportions of cement

SPECIFICATIONS.

PORTLAND CEMENT CONCRETE CURB AND GUTTER (cont'd)

water and aggregates actually furnished which will produce workable plastic concrete having the strength specified herein. In case the proportion determined by the Board and used on the work shall vary from the approximate proportion previously furnished, on account of changes or variations in the materials from the sources originally designated, or on account of the use by the Contractor of aggregates from other sources or for other reasons considered sufficient by the Board, no additional compensation will be paid to the Contractor by the City.

8. **MORTAR.** The Portland Cement Mortar shall be mixed in the proportions by volume of one part Portland Cement and two part sand (fine aggregate). There shall be used between five and six U.S. Gallons of water per one sack batch of mortar. The amount of water shall be such as to give a slump of not less than two and not more than three inches as determined by the slump test. The above proportions may be varied by the Board without any extra compensation to the Contractor. The method of Measurement of the Materials going into each batch shall be as specified by the Board and shall be such as to secure the exact specified proportions of each material including water in each batch.
9. **FORMS.** Forms shall be of sufficient strength and rigidity so that, when properly supported, they will not deflect under the weight or pressure of the wet concrete and other loads incident to construction. Steel forms are preferred, but in case the Contractor desires to use wooden forms, they shall be at least two inch stock on straightway and one inch stock on curves. New lumber must be used for curves and old, worn, cracked, warped or otherwise undesirable lumber shall not be used for straightaway.
10. **REINFORCEMENT.** Reinforcing steel shall be of the size, weight and cross-sectional area as shown on the plans and Standard Detail accompanying these specifications. It shall be clean, free from rust, paint, oil, or other materials that might reduce its bond strength with the concrete. It shall be of a quality and character meeting the requirements of the "Standard Specifications for Steel-Concrete Reinforcement" of The American Society for Testing Materials. Serial No. A 15-14 or No. A 16-14.
11. **EXPANSION JOINT.** Joint material shall be of a suitable material that will not become soft and run in hot weather or become brittle in cold weather. It shall be cut to the true cross section of the Curb and Gutter before being placed. It shall consist of prepared strips of Fibre matrix and bitumen, containing less than 25% inert material. It shall be a thickness of three-quarters ($3/4$) of an inch and shall be continuous with the joint in the pavement. Expansion Joint shall be placed around all permanent objects left in place.

SPECIFICATIONS.

PORTLAND CEMENT CONCRETE CURB AND GUTTER (cont'd)

12. CONSTRUCTION. The building of forms and construction shall be started at such points as the Board may indicate and shall be carried on or constructed in the direction that the Board may indicate.
13. FORMS. The forms shall be oiled before placing. At intervals of Thirty feet more or less or in line with the joint in the pavement the expansion joint shall be placed and firmly held in place.
14. REINFORCING STEEL. The reinforcing dowel bars shall be placed on supports after the building of forms and before the placing of concrete.
15. MIXING. All forms shall receive the approval of the Board before the placing of any concrete within them. All concrete shall be mixed in batch type of mixer with a capacity for at least a one sack batch of the proportions as hereinbefore mentioned. No hand mixing will be permitted. The mixing plant and machinery shall be of sufficient capacity and power to carry out each pre-arranged operation without danger of delay during the process. The mixer shall be rotated at a peripheral speed of about 200 feet per minute. Mixing equipment shall be cleaned at the end of each mixing operation. Only enough concrete or mortar shall be mixed that will be placed within 30 minutes. The time of mixing shall not be less than one minute from the time that all materials are in the drum including water until the operator starts to take concrete from the drum. No materials, including water, shall be permitted to enter the drum until all of the concrete has been discharged. The time of mixing mortar shall not be less than two minutes. Re-tempering of concrete will not be permitted. Tests specimens of the concrete shall be made as often as required by the Board. Concrete shall be in place in the forms within thirty minutes after mixing or it shall be rejected. Segregation of the aggregates during transportation of the concretes shall be sufficient cause for rejection of the batch.
16. PLACING. Before placing any concrete between the forms, the forms shall be wet down with water. Said water shall be sprinkled on and no pools of water allowed to form or remain. The forms for the face of the curb shall then be plastered with one-half ($\frac{1}{2}$) inch of mortar. In no case shall more than twenty minutes elapse between the placing of the concrete and the plastering with mortar. While the concrete is being placed it shall be thoroughly tamped and the sides adjacent to the forms vibrated. The face form of the curb shall be left in place until the cement has set sufficiently to hold the concrete and mortar in place.

SPECIFICATIONS.

PORTLAND CEMENT CONCRETE CURB AND GUTTER (cont'd)

17. FINISHING. The curb shall be edged along the back form with a one (1) inch edger and along the front form with a one and one-half (1½) inch edger. The surface of the curb shall be steel trowel finished.
18. PROTECTION. The Contractor shall protect the newly laid concrete by covering with wet burlap or canvas. The burlap or canvas shall span the curb and gutter and care shall be taken that the surface of the curb and gutter is not marred. When the air temperature is thirty-five degrees F. or less or if the temperature will fall below thirty-five degrees F. in the next twenty-four hours after placing the concrete, the mixing water and aggregates shall be heated and precautions taken to maintain the concrete at a temperature of not less than fifty degrees F. for a period of seventy-two hours after placing. The methods of heating the materials and protecting the concrete which the Contractor proposes to use shall be approved by the Board. Salt chemicals and other foreign materials shall not be used to prevent freezing. The temperature of the concrete at the time of placing shall not exceed one hundred and twenty degrees F.
19. CURING. The freshly poured concrete shall be kept covered and wet down for a period of seven days after placing. In cooler weather as determined by the Board this operation may be replaced by a covering of 12" of straw.
20. APPEARANCE. Any curb and gutter found unsatisfactory shall be plainly marked and removed and rebuilt by the Contractor at his own expense. Any spalling or splitting off of the curb and gutter shall be sufficient cause for rejection. No patching of any kind will be permitted. Before Final Acceptance by the Board the Site of the work and plant shall be carefully cleaned up and all rubbish and debris of any kind removed, parkings carefully graded, raked, and the whole left presenting a finished and pleasing appearance.
21. PAYMENT. Payment for Portland Cement Curb and Gutter shall be per lineal foot of curb and gutter in place as measured by the Engineer along the line of the inside face of the completed curb. Driveway and alley curb shall be built up and constructed monolithic with the alley or driveway pavement and the cost of such curb shall be included in the bid price per square yard of pavement driveways. Curved portions shall be measured and paid

PORTLAND CEMENT CONCRETE CURB AND GUTTER (cont'd)

for the same as for straight curb and gutter. Payment covers the necessary labor, materials and supplies, use of machinery and tools and overhead costs required to construct, build and maintain the completed curb and gutter in accordance with the plans, profiles, specifications and contract.

SPECIFICATIONS.

PORTLAND CEMENT CONCRETE PAVEMENT.

1. **DESCRIPTION.** The size, dimensions, weight, location and grade shall be as shown on the plans and profiles, standard details and plan accompanying and a part of these specifications.
2. **MATERIALS.** Before delivery on the job, the Contractor shall submit to the Board a sample as specified by the Board for each of the materials he proposes to use in or on the work. The samples shall be tested and if found to pass the requirements of these specifications similar material will be considered as acceptable for the work. All materials must receive the approval of the Board before being used in or on the work and any material may be rejected if found unsatisfactory by the Board up until the time of final acceptance by the Board. Rejected material must be removed immediately from the site of the Work.
3. **CEMENT.** The cement shall meet the requirements of the current "Standard Specifications and Tests for Portland Cement" adopted by the American Society for Testing Materials, Serial C 9-26. Ninety-four pounds of Portland Cement shall be considered as one sack, one cubic foot and one-fourth of a barrel.
4. **WATER.** The water shall be free from all oil, acid, alkali, organic matter or other deleterious substances. It shall be equal in all chemical and physical properties to drinkable water.
5. **FINE AGGREGATE.** Fine aggregate shall consist of clean sharp sand, having strong durable grains, and shall be free from dust, dirt and injurious amounts of soft or flaky particles and shale. It shall be free from alkali and surface coatings and shall not contain injurious amounts of vegetable or other organic material as determined by the Colorimetric Test described in the "Method of Test for Organic Impurities" of the American Society for Testing Materials, Serial No. 040. It shall not contain injurious amounts of clay or silt as determined by the "Standard Method of Test for Quantity of Clay or Silt in Sand for Highway Construction", Serial No. D-74 of The American Society for Testing Materials. Fine aggregate shall be of such quality that mortar composed of one (1) part Portland Cement and three (3) parts fine aggregate by weight, when made into briquettes, shall show a tensile strength (at seven (7) and twenty-eight days) equal to or greater than the strength of briquettes composed of one (1) part of the same cement and three (3) parts standard Ottawa sand by weight. The percentage of water used in making the briquettes of cement and fine aggregate shall be such as to produce a mortar of the same consistency as that of the Ottawas and briquettes of Standard consistency. In other respects all briquettes shall be made in accordance with the methods of Testing Cement recommended by the American Society for Testing Materials (Serial No. C 9-26).

SPECIFICATIONS.

PORTLAND CEMENT CONCRETE PAVEMENT SLAB (cont'd)

Grading. Fine aggregate shall range in size from fine to coarse; within the following limits:

Passing through No. 4 Sieve ..	not less than 85%
Passing through No. 50 Sieve ..	not more than 30% and
	not less than 7%
Passing through No. 100 Sieve..	not more than 5%

6. CORASER AGGREGATE. Coarse aggregate shall consist of washed gravel or broken stone, having hard strong durable particles free from injurious amounts of soft, pliable, thin, elongated or laminated pieces, alkali, organic or other harmful matter.

Grading. Coarse aggregate shall range in size from coarse to fine, within the following limits:

Passing through 1-1/2 in. sieve ..	not less than 95%
Passing 3/4 in. sieve ..	40 to 75%
Passing No. 4 sieve ..	not more than 15%
Passing No. 8 sieve ..	not more than 5%

7. CONCRETE. Portland Cement Concrete shall be mixed in such proportions by weight of water, Portland Cement, fine and coarse aggregates as will produce a workable and plastic mixture, which when molded into test specimens and tested according to Standard Methods, i.e. "American Society for Testing Materials" Serial Designations C 31-21 and C 39-25 shall give a compressive strength of 3500 lbs. per sq. inch in fourteen days, and also a modulus of rupture when tested according to Standard Methods, i.e. American Society of Testing Materials, of 650 lbs. in 14 days. The mixing water shall not exceed five and one-half (5-1/2) U.S. gallons of water to bag of cement. This quantity of water shall include the moisture on the surface of the aggregates. The moisture which the aggregates will absorb in thirty (30) minutes shall not be included as mixing water. The consistency shall be measured as described in the Standard Test of the American Society of Testing Materials. "Tentative Test for the consistency of Portland Cement Concrete", Serial Designation D 139-260. The slump shall not be less than 2 inches nor more than 4 inches. All proportioning for aggregates used in the mix shall be by weight. The equipment for weighing aggregates and the equipment for measuring the amount of water shall be such as meets the approval of the Board. These proportions shall be based upon tests by the materials selected by the Contractor for use in the work and delivered to the Board. The quantities of aggregates for each batch of concrete shall be measured by weight. The Board will furnish to prospective bidders, upon request, the approximate proportion by weight necessary to produce concrete having the required workability and strength using aggregates from any established and available commercial source designated by the bidder, it being expressly understood that this information is only for the convenience of the bidder. The Board reserves the right to determine, as the work progresses, and as aggregates are

PORTLAND CEMENT CONCRETE PAVEMENT SLAB (cont'd)

delivered at the site of the work, proportions of cement, water and aggregates actually furnished which will produce workable plastic concrete having the strength specified herein. In case the proportion determined by the Board and used on the work shall vary from the approximate proportion previously furnished, on account of changes or variations in the materials from the sources originally designated, or on account of the use by the Contractor of aggregates from other sources or for other reasons considered sufficient by the Board, no additional compensation will be paid to the Contractor by the City.

8. CONSTRUCTION JOINTS. Construction joints shall be constructed as directed by the Board, and as shown on the accompanying plans and details. Intermediate construction joints or transverse construction joints caused by delays or other reasons shall be constructed in accordance with these specifications.
 - a. One half (1/2) inch round deformed bars shall be placed through all construction joints. These bars shall be two (2) feet in length and spaced not to exceed two and one-half (2 1/2) foot centers. The bars shall be one-half the total thickness below the surface of the pavement. The bars shall be placed and supported by pins before placing the concrete. All longitudinal and transverse construction joints shall be carefully edged so as to prevent spalling.

9. TRANSVERSE EXPANSION JOINTS. Transverse joints shall be placed in the pavement slab at right angles to the center line of the pavement at intervals of thirty (30) feet, more or less, except at intersections where the joint shall be placed transversely in line with the back of curbs of the intersecting pavement or turn-out and also shall be placed longitudinally in line with the back of curbs of the pavement or turn-outs being constructed and at each corner of the square or rectangle thus formed in the slab of the intersection, a line of joint shall be placed to the center of the curve of the adjacent gutter. Expansion joints shall be placed around all permanent objects left in place. The transverse joints shall be made by inserting during construction and leaving in place prepared strips of fibre matrix and bitumen or similar material of approved quality which shall extend through the entire thickness of the pavement. The prepared strips shall be one-half (1/2) inch in thickness and of a width equal to the thickness of the pavement plus one (1) inch, one-half (1/2) inch to be placed below the bottom of the slab and one-half (1/2) inch to project above the top of the slab, 3/4 inch oiled, slip dowel bars, 12 inch etc. must be placed through all expansion joints.

SPECIFICATIONS.

PORTLAND CEMENT CONCRETE PAVEMENT SLAB (cont'd)

10. **STORING MATERIALS.** Stock piles of fine and coarse aggregate shall be kept separated. Different kinds of cement, sand, gravel or stone shall be stored separately. Coarse aggregate and fine aggregate shall be stockpiled so as to eliminate segregation of the different sizes.
11. **MIXING.** The concrete shall be mixed in a batch mixer of a type approved by the Board. All of the materials, including the water for each batch of concrete, shall be mixed at least one (1) minute before any part of the batch is discharged from the drum. The drum shall revolve at a rate of speed specified by the manufacturer for the particular mixer used by the Contractor, but not less than fourteen (14) revolutions per minute. The drum shall be completely emptied before receiving material for the succeeding batch. Water shall be added at the time the other materials are being run into the drum. The volume of the mixed material used per batch shall not exceed the manufacturer's rated capacity of the drum in the cubic feet of mixed material. No mixer shall be used which requires less than one sack of cement per batch.
12. **PLACING.** Immediately prior to placing the concrete, subgrade shall be checked and brought to an even surface. The surface of the subgrade shall be wet, but shall show no pools of water when the concrete is placed. All soft wet dirt shall be removed.

The interval of time between mixing of the concrete as described above, the placing in the pavement slab as described below shall not exceed thirty (30) minutes.

After mixing, the concrete shall be deposited rapidly upon the subgrade in successive batches for the entire width and depth of the pavement. The work of spreading the concrete shall be done in a continuous operation, completing sections between expansion joints without the use of intermediate cross joints.

In case of a breakdown, however, an intermediate cross joint shall be used. The intermediate cross joint shall be constructed as follows: A bulkhead shall be set across the pavement at right angles to the center line at such a position that the concrete already mixed will be sufficient to complete the pavement to the bulkhead. Care shall be taken that no dirt is mixed with the concrete. No expansion joint material shall be used. No concrete mixed by hand shall be used, reinforcement shall be as heretofore specified.

SPECIFICATIONS

PORTLAND CEMENT CONCRETE PAVEMENT SLAB (cont'd)

13. FINISHING. The surface of the concrete shall be struck off for the entire width of the pavement by means of strike-off board. After striking off it shall be thoroughly tamped with a heavy tamper as approved by the Board, and during said tamping the concrete shall be vibrated with a power vibrator as approved by the Board. It shall be again struck off with a finishing strike-off board and floated with a wooden float twelve (12) inches in width and reaching across the entire width of slab being placed. It shall then be finished by two applications of a belt made of canvas, not less than six (6) inches wide and not less than two (2) feet longer than the width of the slab. The belt shall be applied with a combined crosswise and longitudinal motion. For the first application vigorous strokes at least twelve (12) inches long shall be used, and the longitudinal movement of the belt along the pavement shall be very slight.

The second application of the belt shall be immediately after the water glaze or sheen disappears, and the stroke of the belt shall not be more than four (4) inches, and the longitudinal movement shall be much greater than for the first belting.

Two suitable bridges to span the width of the slab shall be used to do the floating, no part of said bridges shall come in contact with the finished work.

A notched ten foot straightedge shall be used over each joint to strike off the surface of the concrete to insure a perfect continuity of the surface.

The concrete adjoining transverse joints shall be dense in character and shall be finished with a wood float, which is divided through the center and which will permit finishing on both sides of the filler at the same time.

The surface shall then be broomed with a broom as approved by the Board. When the concrete will have become sufficiently hard to work the edges shall then be run with an edging tool having a radius not greater than one (1) inch.

The concrete under the curb and around fixed objects shall be finished with a steel trowel and edged with an edging tool having a radius of one (1) inch.

SPECIFICATIONS.

PORTLAND CEMENT CONCRETE PAVEMENT SLAB (cont'd)

The finished surface of the pavement shall not vary from the specified contour as shown on the Standard Details more than one quarter ($1/4$) of an inch as checked by a ten (10) foot straight edge by the Board. The checking shall be done before ten (10) o'clock of the day following the placing of the concrete, and the area which must be corrected shall be plainly marked by the Board or its representatives so that they can be properly removed by the Contractor by rubbing with Carborundum Stones. This work must be completed to the satisfaction of the Board.

- 16.a. For each variation from the true surface greater than $1/4$ and less than $1/2$ inch which cannot be removed by the method prescribed above, as determined by the Board there shall be deducted from amounts due the Contractor the cost of 1 sq. yd. of pavement at the contract unit price per sq. yd. If the variation from the true surface exceeds $1/2$ inch, the entire area as determined by the Board shall be removed and replaced by pavement of the required quality and smoothness at the entire expense of the Contractor.

17. PROTECTION. The Contractor shall protect the newly laid concrete by covering it with pieces of wet burlap or canvas. The pieces shall be long enough to span the entire width of the slab. Pieces of wood or metal shall be fastened to each end in order to facilitate handling. Care shall be taken that the surface of the concrete is not marred.

When the ^{air} temperature is thirty-five (35) degrees F. or less, or if the temperature will fall below thirty-five (35) degrees in the next twenty-four hours after placing the concrete, the mixing water and aggregates shall be heated and precautions taken to maintain the concrete at a temperature of not less than fifty (50) degrees F. for a period of seventy-two (72) hours after placing. The methods of heating materials and protecting the concrete which the Contractor proposes to use shall be approved by the Board. Salt chemicals and other foreign materials shall not be used to prevent freezing. The temperature of the concrete at the time of placing shall not exceed one hundred and twenty (120) degrees F.

SPECIFICATIONS.

PORTLAND CEMENT CONCRETE PAVEMENT SLAB (cont'd)

18. CURING. The freshly poured concrete shall be kept covered and wet down for a period of seven days after placing. In cooler weather as determined by the Board this operation may be replaced by a covering of 12" of straw.
19. OPENING TO TRAFFIC. The pavement in any one section may be opened to traffic on the twenty-first day following the completion of the last section in that block, or sooner or later at the discretion of the Board. Before opening to traffic, the Contractor shall remove all protective, curing and waste materials.
20. PAYMENT. Payment for pavement slab will be by the square yard at the price named in the contract for pavement in place as measured by the Board. Payment shall be for the completed pavement in place including all labor and materials and supplies, protection and curing, removal of waste, curing, and protective materials, use of machinery and tools and overhead costs.

SPECIFICATIONS.

PORTLAND CEMENT CONCRETE SIDEWALKS.

1. **DESCRIPTION.** The size, dimension, location, grade, etc., shall be as shown on the Details, plans and profiles accompanying and a part of these specifications.
2. **MATERIALS.** Before delivery on the job, the Contractor shall submit to the Board a sample as specified by the Board for each of the proposed materials to be used in or on the work. These samples shall be tested and if found to pass the requirements of these specifications, similar material shall be considered as acceptable for the work. All material must receive the approval of the Board before being used in or on the work and any material may be rejected if found unsatisfactory by the Board up until the time of Final Acceptance by the Board. Rejected material must be removed immediately from the site of the work.
3. **CEMENT.** The cement shall meet the requirements of the current "Standard Specifications and Tests for Portland Cement" adopted by The American Society for Testing Materials, Serial C 9-26. Ninety four pounds of Portland Cement shall be considered as one sack, one cubic foot and one fourth of a barrel. Cement shall be placed in the mixer directly from the original packages in which it is shipped. Bulk cement shall not be used. A bag of cement (ninety four pounds net) shall be considered as one (1) cubic foot. No batches requiring a fractional part of a sack of cement will be permitted.
4. **WATER.** The water shall be free from all oil, acid, alkali, organic matter or other deleterious substances. It shall be equal in all physical and chemical properties to drinkable water.
5. **FINE AGGREGATE.** Fine aggregate shall consist of clean sharp sand, having strong durable grains, and shall be free from dust, dirt and injurious amounts of soft or flaky particles and shale. It shall be free from alkali and surface coatings and shall not contain injurious amounts of vegetable or other organic material as determined by the Colorimetric Test, described in the "Standard Method of Test for Organic Impurities of the American Society for Testing Materials, Serial No. C 40-22. It shall not contain injurious amounts of Clay or Silt as determined by the "Standard Method of Test for Quantity of Clay and Silt in Sand for Highway Construction", Serial No. D 74-21, of the American Society for Testing Materials. It shall be of such quality that mortar composed of one part of Portland Cement by weight and three parts of the proposed fine aggregate by weight, when made in briquets shall show a tensile strength at 7 and 28 days of at least equal to the strength of briquets composed of one part Portland Cement and three parts of Standard Ottawa Sand by weight. Briquets shall be made in accordance with the methods as recommended by the American Society of Testing Material, Serial No. C 9-26. Fine aggregate shall range in size from fine to coarse, within the following limits:

SPECIFICATIONS.

PORTLAND CEMENT CONCRETE SIDEWALKS. (cont'd)

8. FORMS. Forms shall be sufficient strength and rigidity so that, when properly supported and braced they will not deflect under the weight of the concrete and other loads incident to construction. Steel forms are preferred, but in case the Contractor desires to use wooden forms, they shall be at least two inch stock on straightaway, and one inch stock on curves. New lumber must be used for curves and old, worn, cracked, warped or otherwise objectionable lumber shall not be used for the straightaway.
9. EXPANSION JOINT. Joint material shall be of suitable material that will not become soft and run in the hot weather or become brittle in cold weather. It shall be $3/4$ " thick and of such width that one-quarter inch of the joint will project below the sidewalk slab and one-quarter inch will be left projecting above the sidewalk slab after completion. It shall consist of prepared strips of fibre matrix and bitumen, containing less than 25% of inert material.
10. CONSTRUCTION. The building of forms and construction shall be started at such points as the Board may indicate and shall be carried on or constructed in the direction that the Board may indicate.
11. SUBGRADE. Excavation for sidewalks shall be included in the bid price per square foot for sidewalks in place, including the removal and disposal of any sidewalk either brick, concrete or other material now in place and necessary to be removed. Fills shall be made in not to exceed eighteen inch layers and shall be puddled or hand-tamped and no concrete shall be placed thereon until in the opinion of the Board the fill has properly settled. The sub-grade shall be brought to the proper elevation or grade in accordance with the stakes or the plans and profiles and carefully compacted before the building or laying of any forms. Any vegetable matter or spongy material of any kind shall be removed at this time and replaced with hand-tamped dirt brought to the true and proper elevation.
12. FORMS. The forms shall be firmly staked by stakes not more than three feet apart and otherwise held to the proper lines and grades. After the forms are set all mud or other soft material shall be removed and replaced with gravel or other material. False joints shall then be edged cutting the sidewalk slab into approximate squares.

SPECIFICATIONS

PORTLAND CEMENT CONCRETE SIDEWALKS (cont'd)

13. **DRIVES AND ALLEY CROSSINGS.** The sidewalk slab shall be six (6) inches in thickness across all Drives or alley crossings. As soon as the concrete will properly support itself the outside form shall be removed and a wing built on each side in a triangular shape six inches out from the bottom of the sidewalk and meeting the top surface of the sidewalk slab. The concrete and mortar for the wings shall be carefully troweled into place. The cost of such extra thickness and labor, etc., incidental to the construction and maintenance of such Drives and Alley Crossings shall be included in the bid price per square foot for Portland Cement Sidewalk in place.
14. **MIXING.** All forms shall receive the approval of the Board before any mixing operations are started or before any concrete is placed between the forms. No hand mixing will be permitted. All concrete shall be mixed in a batch type mixer approved by the Board with a rated capacity for at least one sack batch of the proportions of concrete as hereinbefore specified. The mixer shall be rotated at a peripheral speed of about 200 feet per minute. Mixing equipment shall be cleaned at the end of each mixing operation. Only enough concrete shall be mixed as can be placed within the following thirty minutes. Re-tempering of concrete will not be permitted. The time of mixing shall not be less than one (1) minute from the time all of the materials have entered the drum including the water until such time until the operator starts discharging the concrete from the drum. No materials, including water shall be allowed to enter the drum until all of the concrete of the previous batch has been discharged. Test specimens of the concrete shall be made as often as specified by the Board. Concrete shall be in place in the forms within thirty minutes after the mixing of the same or it shall be rejected. Segregation of the coarse aggregate from the concrete during transportation of the concrete shall be sufficient cause for rejection of the batch.
15. **PLACING.** While the concrete is being placed it shall be thoroughly tamped and the sides adjacent to the forms spaded.
16. **FINISHING.** The surface of the sidewalk shall be carefully finished with a wooden float so as to present a smooth but gritty appearance. No ridges or waves shall be left in the finished surface. The surface of the mortar shall be belted after being properly struck off with a straightedge. The surface edges shall be edged with a one inch radius edger. All expansion joints shall be edged to a radius of one (1) inch. Markings at the false joints shall be edged exactly perpendicular to the center line of the sidewalk slab.

SPECIFICATIONS.

PORTLAND CEMENT CONCRETE SIDEWALKS (cont'd)

17. **EXPANSION JOINTS.** Expansion joints shall be placed in the forms as indicated by the Board at intervals of thirty feet more or less or in line with joint in the pavement. At all intersections of sidewalks expansion joints shall be placed entirely around the slab of sidewalk at the intersection. Expansion joint shall be $3/4$ inch thick, two thicknesses shall be placed between the sidewalk where the same is adjacent to any curb and gutter. Expansion joints shall be placed around all permanent objects left in place.
18. **ADJOINING WORK.** Walks should be matched up neatly with adjoining walks, steps, curbs or other surface structures and in case of brick walks, enough of the latter shall be relaid to form a gradual transition in line and grade. All brick removed shall become the property of the City and be hauled to the nearest City lot available for storage.
19. **PROTECTION.** The Contractor shall protect the newly laid concrete and mortar by covering with wet burlap or canvas. The burlap or canvas shall span the sidewalk and care shall be taken that the surface of the sidewalk is not marred. When the air temperature is thirty-five degrees F. or less or if it will fall below thirty-five degrees F. within the following twenty-four hours, the mixing water and aggregates shall be heated and precautions taken to maintain the concrete at a temperature of not less than fifty degrees F. for a period seventy-two hours after placing. The methods of heating the material and protecting the concrete which the Contractor proposes to use shall be approved by the Board. Salt chemicals and other foreign materials shall not be used to prevent freezing except as directed by the Engineer. The temperature at the time of placing shall not exceed one hundred and twenty degrees F.
20. **CURING.** The freshly poured concrete shall be kept covered and wet down for a period of seven days after placing. In cooler weather as determined by the Board this operation may be replaced by a covering of 12" of straw.
21. **ACCEPTANCE.** Any sections between false joints showing any spalling or splitting off at the edges or the surface being too rough or uneven said section or sections shall be removed and rebuilt by the Contractor at his own expense. No patching of any kind will be permitted. Before Final Acceptance by the Board the site of the work and plant shall be carefully cleaned up and all rubbish and debris of any kind removed, parking cars carefully raked up and the whole left presenting a finished and pleasing appearance.

SPECIFICATIONS

PORTLAND CEMENT CONCRETE SIDEWALKS (CONT'D)

22. PAYMENT. Payment for Portland Cement Concrete Sidewalks shall be per square foot of sidewalks in place as measured by the Board. Payment covers the necessary labor, materials and supplies, use of machinery and tools and overhead costs required to construct, build and maintain the completed walk in accordance with the plans and profiles, Standard Details, Specifications and Contract.