CITY OF CHARLOTTE
CITYWIDE RECORDS PROGRAM

PUBLIC RECORDS REQUEST #2709

The following materials have been gathered in response to public records request #2709. These materials include:

Agreement For The Elimination of Grade Crossings of Tracks - City of Charlotte and Southern Railway Company - 7/7/52

Plan & Report on Grade Crossing Elimination - 8/22/50

Report and Estimates for the West Side Grade Crossing Elimination Project - 2/6/61

Report of Separation of Street and Railway Grades - January 1931

Supplementary Report on the Separation of Street and Railway Grades

City Council Minute Book 33 - Pages 79-84 - 7/22/49

City Council Minute Book 34 - Page 168 - 12/19/51

City of Charlotte Resolution Book 1 - Page 452 - 12/19/51

For further information about this request or the Citywide Records Program, please contact:

Cheyenne Flotree
Citywide Records Program Manager
City of Charlotte/City Clerk's Office
600 East 4th Street, 7th Floor
Charlotte, NC 28202
cheyenne.flotree@charlottenc.gov

CHARLOTTE.

Val Mfg
V-35a
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Dated July 7, 1952.

City of Charlotte, N. C.

AND

Southern Railway Company

Agreement

For elimination of grade crossings of tracks, etc., at Charlotte.

This Agreement, made and entered into this 7th day of July, 1952, by and between

CITY OF CHARLOTTE, a municipal corporation organized and existing under and by virtue of the laws of the State of North Carolina, hereinafter for convenience styled the City, party of the first part; and

SOUTHERN RAILWAY COMPANY, a corporation organized and existing under and by virtue of the laws of the State of Virginia, hereinafter for convenience styled the Company, party of the second part;

Witnesseth: That

WHEREAS, the City, in the interest of public safety and convenience, desires to improve the grade crossing situation by the elimination of interference that now exists between rail and vehicular traffic, and to that end has had a survey and recommendation made by its Consulting Engineer, Frank T. Miller, of Greensboro, North Carolina, hereinafter referred to as the City's Engineer, as embodied in his report to the City dated August 22, 1950; and

WHEREAS, the City and the Company have agreed that certain of the grade crossings referred to in said report should be eliminated by grade separation structures, and the rail traffic over certain other crossings eliminated or reduced by the construction of a cross line for use by the Company, all as hereinafter described and referred to as the "project"; and

WHEREAS, the City desires to eliminate hazards to the movement of traffic and feels itself required to take such steps as may be necessary to promote the safe movement of traffic, and as a result of negotiations the City and the Company have reached an understanding with respect to this project for this purpose, a part of the work in performance of which shall be done by the Company on a force account basis, and the City and Company desire to enter into this agreement setting forth such understanding and agreement in lieu of other action by the City;

NOW, THEREFORE, the City and the Company, each in consideration of the premises, and of the covenants, promises and undertakings of the other hereinafter expressed and

contained, do hereby covenant and agree, each with the other, as follows:

1. That said project contemplates and shall include, but not be limited to, the following items of construction, all as shown on Drawing 33/417 dated August 30, 1951, entitled "Charlotte, N. C.—Map of City and Vicinity," attached to and made a part of this agreement:

(A) Cross line:—Construct new line of railway for the Company from a point at or near Griffith Station, on the Charlotte-Columbia line of the Company, northwardly to a point of connection at or about Milepost 381, approximately two (2) miles east of Juneau, on the Charlotte-Atlanta line of the Company, with grades, right of way, automatic signals, suitable connection near Juneau with remote control of its switches, grade separation structures and other facilities, all as required to produce satisfactory operating conditions for the Company. To the extent that may be practicable, automatic signals will be provided by the removal and relocation of similar facilities which at present exist between said Griffith Station and a point at or about East Morehead Street overhead bridge.

(B) West Trade Street:—The construction of a new underpass to eliminate the present crossing at grade near the Company's passenger station including a raise in grade of the Company's tracks approximately twelve feet.

(C) Passenger Station:—The necessary remodeling in front of the present west wall of the Company's passenger station and related facilities and tracks of the Company to conform with the change in grade of the main tracks and other tracks of the Company; it being understood that any rearrangement of the facilities in the interior of said passenger station the Company may elect to make in the interest of improved service shall be acceptable to the City.

(D) West Sixth Street Underpass:—Raise tracks and remodel and extend present structure to suit new grade and track arrangement.

(E) West Sixth Street Underpass (on industry track):—Raise and relocate industry track including trestle and street underpass, as may be necessary.

(F) West Fourth Street:—Construct new underpass where no grade crossing now exists.

(G) Piedmont and Northern Railway Company Underpass:—Remodel present underpass to conform with new line and grade of the Company's tracks contemplated by this project.

(H) West Hill—West Stonewall Streets:—Construct new underpass to eliminate the present grade crossing of West Hill Street.

(I) West Morehead Street Underpass:—Raise track and remodel and extend structure to suit new grade and track arrangement.

(J) South Tryon Street:—Remove the present track of the Company within the limits of street.

(K) East Fourth Street Underpass:—Widen existing structure for street and raise tracks.

(L) West Park Avenue:—Construct new underpass for street as proposed to be extended.

(M) East Eleventh Street Overhead Bridge:—Replace present timber overhead bridge with permanent structure.

(N) Switching lead south of depot.

That the construction of underpasses on the double track main line and the raising of the Company's main line tracks will make necessary the raising of the present Columbia Division track for some distance southward from the passenger station. This track raise will involve the remodeling of the present underpass at South Graham Street and the remodeling of the present underpass used by the Piedmont and Northern Railway Company in the vicinity of West First Street. A new crossing at grade is to be provided for West Stonewall Street as extended toward the new Hill Street Underpass. The cost of these changes shall be included in the cost of the project.

It is understood that the items of construction listed in this section as (A), (B), (C), (D), (E), (F), (G), (H), (I), (J), (K) and (N) will be constructed under the project; and that if by reason of constructing item (N) (Switching lead south of depot), the total cost of the project exclusive of items (L) and (M) exceeds Five Million Dollars,

then the Railway Company shall pay to the City a part of the additional cost occasioned by construction of the switching lead, as hereinafter in Article 6 provided. If, after constructing items (A) through (K) and item (N), the City still has sufficient funds to do either or both of items (L) and (M), preference shall first be given to construction of item (M), namely the overhead bridge at East 11th Street.

2. That in connection with the prosecution of the project and the items and changes enumerated above, modifications of the Company's facilities and additions to facilities of the Company and changes in the operations of the Company will be required as a result of and during the construction of the project, some of which are listed below for convenient reference:

(A) The construction of temporary double track detour for use during the various stages of construction.

(B) Suitable temporary facilities for the handling of passengers, mail, express, switching of passenger trains, and the heating and other servicing facilities for passenger trains.

(C) The relocation and rearrangement of signals, signal wires, communication wires, poles, pipes and other facilities, of or in the service of the Company, to fit the general plan of the project.

(D) The provision for a new or remodeled building and related facilities to take care of the Company's mail and express business, including carload shipments of same.

The cost of providing the above facilities and other facilities, including the cost of rights of way, which are required because of the construction shall be included in the cost of the project. Any and all rights of way, acquired for railroad purposes, tracks, buildings, structures and other railroad facilities acquired, furnished, constructed or erected hereunder as a part of the project, other than the overhead bridges, shall be and remain the property of the Company.

Southern Rwy to own rights of way for underpasses.

3. That in connection with the project the City will (except as hereinafter in this article mentioned) close the following streets upon and across the right of way of the Company by appropriate councilmanic action, whether such streets are now open and used or whether such crossings are dedicated

City to close former road rights of way for the Project.

or not, and will upon the closure of such portion of said streets erect adequate barricades for the purpose of preventing (a) vehicular traffic from using the crossing, at grade, of West 7th Street, and (b) vehicular and other traffic from using such of the other crossings, at grade, as are now in use, viz:

West 8th Street
West 7th Street (to be closed only to vehicular traffic)
West 6th Street Place
Oates Street (as to main line of Company)
West 5th Street (to be closed for the present)
West Trade Street (new underpass to be constructed)
West 3rd Street
West 2nd Street
West Hill Street (new underpass to be constructed)
Dunbar Street
West Palmer Street
East Third Street

West Trade closed; new City r/w subject r/w as described in this agreement.

4. That the Company to the extent that its right, title and interest may permit or may enable it so to do, and without warranty of title, hereby agrees that the City shall have permission to build and construct streets across rights of way now owned or hereafter acquired, as contemplated by this project, and to construct the underpasses and overhead bridges and approaches thereto across such rights of way, as contemplated by this project, all in accordance with plans and specifications to be approved by the City and the Company before the work is undertaken.

Southern permits construction of roads on its r/w for the project.

5. That the Company will undertake to acquire, in its name or the name of its nominee, at the cost of the City as a part of the cost of the project, the rights of way or property required for railroad purposes of the Company in connection with the project, either by purchase, or, if unable for any reason to purchase, by condemnation, provided the Company has the right to and may under the laws of the State of North Carolina condemn rights of way or property required by the Company for such purposes. The City will furnish such assistance as it may be practicable for it so to do in the procurement of such rights of way or property as may be so required by the Company. In the event the Company is unable for reasons beyond its control to purchase or acquire such rights of way or property or in the event the prices demanded or amounts awarded in any legal proceedings are

not acceptable to the City and the Company, then and in such event or events the City and the Company will take such action in the premises as may be mutually agreed upon by the City Manager and the City's Engineer, representing the City, and the Chief Engineer of the Company, representing the Company.

That the City will handle direct with owning companies the removal or relocation of any pole lines, wires and pipes now located upon the right of way of the Company or in City streets as may be required by the construction of the project.

6. That the entire project contemplated hereunder is estimated to cost Five Million Dollars ($5,000,000), and any cost in excess of the amount paid by the Company as hereinafter provided shall be financed and paid for by the City in consideration of the surrender of such of the Company's rights, easements, and facilities as may be neeessary for the completion of the project. The Company shall and hereby agrees that it will pay an amount equal to one-fourth (¼) of the total cost of the project, provided, however, that in no event shall the Company have any obligation, except as hereinafter in this Article 6 provided, to pay an amount in excess of One Million Two Hundred Fifty Thousand Dollars ($1,250,000). The said payment by the Company is to be paid in fifty (50) equal installments of Twenty-five Thousand Dollars ($25,000) per month, beginning on the first day of the month following the month in which the work is substantially started by the City, until its total agreed payment is paid, and provided, further, that in the event work on said project is discontinued at any time, or from time to time, for any reason, then and in such event the obligation of the Company to make such payments to the City shall, during the period or periods the work is discontinued, cease and determine until such time as the work is fully resumed, and provided, further, that in the event the cost of said project, exclusive of items of construction designated as (L) and (M) in Section 1 of this agreement, exceeds Five Million Dollars ($5,000,000), then and in that event the Company shall pay to the City, in addition to the amount payable to the City as aforesaid, an amount equal to fifty per cent (50%) of the additional cost occasioned by construction of Item (N) Switching Lead south of depot, and the City shall pay or assume the balance of the remaining fifty per cent (50%) of such additional cost; the intention being that if the cost of the entire project, exclu-

sive of Items (L) and (M), does not exceed $5,000,000 the Company shall have no obligation to make any additional payment due to the construction of said Item (N); it being understood that appropriate records and accounts of the cost of construction of said Item (N) shall be kept during the progress of said work in order that the actual cost of same may be determined upon the completion thereof.

7. That from and after the date of this agreement the City will diligently prosecute, or cause to be prosecuted, to as early a completion as may be practicable, the work involved in the several items of work comprising the project; it being understood that such work shall be prosecuted in such manner as will not unduly interfere with street traffic or the operations of the Company.

8. That any track work, bridge work or other work in connection with the project may, when mutually agreed upon by the parties hereto, be performed by the Company under the terms of agreements then in effect between the Company and its employees concerning wages and working conditions, provided, however, that the Company shall have no liability to the City for its failure to perform said work when such failure is due to strikes, riots, insurrection, acts of Providence or other causes beyond its control. The Company will prepare and submit to the City an estimate of the cost of the work to be done and performed by it in connection with each item of construction comprising the project, or each group of related items as may be required for the orderly prosecution of the work, such estimates to describe the work to be done by the Company and the location of same. The aforesaid estimates when approved by representatives of the City shall be and become a part of this agreement. The details concerning the preparation of estimates of cost, billing, accounting and other procedures incident to the performance of such work by the Company and reimbursement of the Company by the City shall be such as may be agreed upon, in writing, by and between the City Manager and the City's Engineer, representing the City, and the Chief Engineer of the Company, representing the Company. The Company shall be reimbursed for the entire cost of such work, including, without limitation, cost of labor, materials, supervision, engineering, rental of equipment, insurance, accounting and the estimated excess cost of maintaining new tracks or relocated tracks for a period of six (6) months following the date of completion and acceptance

of said work by the Company. Such reimbursement shall be based on bills rendered by the Company; it being understood that errors or omissions on any bill will not be cause for withholding payment of same, but such errors or omissions will be corrected on a subsequent or final bill; and, furthermore, that such reimbursement shall not be limited to the amount of any preliminary estimate.

9. That the City will make, or cause to be made, a field survey to determine the location for the cross line and appurtenances and the cost of the survey will be considered as a part of the total cost of said project. The location of said cross line shall be subject to approval by the Company.

10. That since the purpose of the construction of the cross line is to eliminate schedule train operations over the Charlotte-Columbia line of the Company from North Charlotte Yard, via the Company's present freight depot, to a point at or near Griffith Station and also to eliminate the present grade crossing of South Tryon Street by the Company's passenger line, the Company agrees, for itself and as lessee, that it will, as soon as it may be practicable so to do, eliminate scheduled train service over the aforementioned lines, except during emergencies.

That after the work of building the cross line shall have been completed the normal operation of both scheduled passenger and freight trains to and from Columbia will be via the double track line passing the present passenger station, and the cross line from the point of its connection with the Charlotte-Atlanta line near Juneau to a point at or near Griffith Station on the said Charlotte-Columbia line of the Company.

That in cases of emergency, it may be necessary for the Company and the Company shall have the right to operate some or all of its scheduled trains between Charlotte and Columbia via its present freight line, but in such event the Company will use its best efforts to restore normal operating conditions as soon as practicable.

11. That after the completion of the cross line the Company will remove its passenger main track across South Tryon Street at or near the building of the Charlotte Observer. That the remaining portions of the passenger line between the passenger depot and a point near East Morehead Street overhead bridge may be continued in service by the Company for industrial purposes.

12. That the Company may continue in service its line of railway and subsidiary tracks from North Charlotte Yard via the Company's freight depot passing under East Morehead Street overhead bridge and thence to Griffith Station; PROVIDED, however, that operations over this line will normally be restricted to switching movements. The Company will conduct such operations when in the judgment of the Company the same will least interfere with street traffic.

13. That the work involved in that portion of the project located as shown on Drawing No. 1 (b) (condensed), General Layout Plan for Grade Crossing Elimination at Charlotte, N. C.—West Side, dated August 20, 1951, prepared by the City's Engineer, a copy of said drawing being hereunto annexed and made a part of this agreement, shall be substantially in accordance with said drawing No. 1 (b) and that the work involved in the remainder of the project shall be substantially in accordance with such additional drawings as may be prepared and mutually agreed upon by the City's Engineer and the Company, subject, however, to such revisions, additions and changes in all said drawings, including drawing No. 1 (b), as may be mutually agreed upon by and between the City's Engineer and the Company, and the work shall be done and performed pursuant to drawing No. 1 (b), and said additional drawings (as the same or any of them may be so revised), under such plans, specifications and special provisions as may be adopted and mutually agreed upon by the City's Engineer and the Company.

14. That the City and the Company will severally require any Contractor or Contractors to whom or to which it or they may let the work (or any part or portion thereof) hereinbefore recited and herein undertaken to be done and performed by the City and the Company, respectively, to execute an agreement containing, in addition to such other covenants as the City and the Company, respectively, require, a specific covenant on the part of the Contractor or Contractors to indemnify the City and the Company, said covenant to be such as may be approved by the City Manager and the City's Engineer, representing the City, and the Chief Engineer of the Company, representing the Company.

15. After the completion of the underpasses to be built as part of the project, the Company will at its own cost maintain and make all necessary repairs to the substructures and superstructures of same and the City will at its own cost maintain the roadways and sidewalks of the streets passing

Sets out bridge and roadway maintenance for underpasses built for the project.

Section covering lighting.

beneath the structures and all facilities in connection with said streets, including highway drainage and lighting; and after the completion of overhead bridges to be built as part of the project, the City will maintain at its own cost the superstructures and substructures of said overhead bridges and the approaches thereto, within the City limits, including the street paving, sidewalks, highway drainage and lighting. It is further understood and agreed that the maintenance obligations assumed by the parties hereto are intended to cover ordinary maintenance only and are not intended to obligate either party in the event changed conditions or major deterioration should require a new structure.

16. That as a part of the cost of this project, the City will assume responsibility for, defend or dispose of all claims and demands and all costs and expenses incident thereto arising out of or in anywise connected with the carrying out of the objectives of this project which may be asserted by any person, firm or corporation on account of property loss, damage to property (real or personal), personal injury or loss of life suffered by anyone, including employees of the Company, or on account of any breach of contract concerning industrial or other tracks, or the inability or failure of the Company to discharge its common carrier duties, any fault or negligence of the Company to the contrary notwithstanding, provided, however, that the liability of the City, as defined in this paragraph, shall not apply to any operations of the Company which may be in no wise connected with the prosecution or completion of this project; that the City will indemnify and save the Company harmless against any loss suffered by the Company in, or in connection with, the carrying out of the objectives of this project; and that, for the protection of the City and the Company, in connection with the work involved in this project, against loss which either the City or the Company may suffer on account of personal injury, loss of life, property loss, damage to property (real or personal), breach of contract, or inability or failure of the Company to discharge its common carrier duties, or otherwise, appropriate forms of insurance shall be obtained at the proper time in amounts which the parties hereto may deem adequate, and the cost thereof shall be considered a part of the cost of this project. Any cost or expense incurred by the City and Company, or either of them, in settlement of claims or judgments for any loss, injury or damage not covered by such insurance shall be considered a part of the cost of the project.

17. That the project contemplated hereunder is intended by both the City and the Company, upon its completion, to meet the requirements for grade separation for many years in the future and it is agreed that the prosecution of the project will be directed to that end so that additional separation of grades will not be necessary or required.

18. That the obligations of the parties hereto to perform their respective covenants and agreements herein contained are contingent on approval of this contract by any governmental or public authority having jurisdiction in the premises.

19. This agreement supersedes and cancels as of the date hereof any and all existing agreements between the parties hereto having to do with this project, including memorandum of agreement, bearing date of November 21, 1950.

IN WITNESS WHEREOF, the City, acting by and through its Mayor, thereunto duly authorized by resolution of the City Council of the City adopted on the 19th day of December, 1951, and the Company have caused these presents to be executed and their respective corporate seals to be hereunto affixed and attested by their officers thereunto duly authorized, the day and year first above written.

CITY OF CHARLOTTE, North Carolina,
By
VICTOR SHAW,
Mayor.

[SEAL]
Attest:
LILLIAN R. HOFFMAN,
City Clerk.

SOUTHERN RAILWAY COMPANY,
By
D. W. BROSNAN,
Vice-President.

[SEAL]
Attest:
R. L. EDDINGTON,
Assistant Secretary.

Approved as to form and legal sufficiency:
JNO. D. SHAW,
City Attorney.
J. B. A.
F. H. T.

CITY OF CHARLOTTE

North Carolina

A regular meeting of the City Council of the City of Charlotte, North Carolina, was held in the Council Chamber, City Hall, on Wednesday, December 19, 1951, at 4 o'clock p.m., with Mayor Shaw presiding, and Councilmen Albea, Baxter, Boyd, Coddington, Delinger, Jordan and Van Every present.

RESOLUTION AUTHORIZING THE EXECUTION OF AN AGREEMENT WITH SOUTHERN RAILWAY COMPANY WITH RESPECT TO GRADE-CROSSING ELIMINATION PROGRAM IN THE CITY OF CHARLOTTE

WHEREAS, it is in the public interest and safety of the citizens and property of the City of Charlotte that traffic congestion in the uptown portion in the City of Charlotte be given immediate attention and alleviation.

AND, WHEREAS, the City Council of the City of Charlotte finds as a fact that the plans prepared by Frank T. Miller, Consulting Engineer are the best available and practical solution of unbottling the uptown portion of the City of Charlotte by eliminating through trains on the east side of Charlotte upon the Charlotte-Columbia division of the Southern Railway and providing for the elimination of grade-crossings on the west side of town.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CHARLOTTE:

THAT, the Mayor and the City Clerk be and they are hereby authorized and empowered and directed by and on behalf of the City of Charlotte to enter into a contract in form hereto attached with Southern Railway Company to accomplish said purpose and the various officials and employees of the City are requested with all due dispatch to prosecute said program as outlined in said contract to a speedy conclusion in the best interest of the citizens of the City of Charlotte; it being understood and agreed that the City of Charlotte will not be called upon to spend, and will not spend as its part of the cost of the project more than one-fourth thereof at any time.

I, Lillian R. Hoffman, City Clerk of the City of Charlotte, North Carolina, Do HEREBY CERTIFY that the foregoing is a true and exact copy of a Resolution adopted by the City Council of the City of Charlotte, North Carolina, in regular session convened on the 19th day of December, 1951, and is so recorded in Minute Book 34, at Page 168 and in Resolutions Book 1, at Page 452.

WITNESS my hand and the corporate seal of the City of Charlotte, North Carolina, this the 17th day of June, 1952.

(SEAL)

LILLIAN R. HOFFMAN,
City Clerk.

SOUTHERN RAILWAY SYSTEM
OFFICE OF VICE PRESIDENT
IN CHARGE OF OPERATION
WASHINGTON 13, D. C.

July 8, 1952.
117-8017

Subject: Grade Separation Project—Charlotte, North Carolina.

Mr. H. A. Yancey, City Manager,
City of Charlotte,
Charlotte, North Carolina.

Dear Mr. Yancey:

The City of Charlotte and Southern Railway Company have negotiated and agreed upon a contract providing for grade crossing eliminations in the City of Charlotte. The Supreme Court of North Carolina, in an opinion published on June 11, 1952, in the case of *Austin* v. *Shaw*, has approved the power of the City to execute the contract, and following the publication of this opinion the contracting parties, acting through their duly authorized officers, executed the contract on July 7, 1952. Immediately thereafter certain questions arose concerning the manner and timing of performance of the contract.

In the agreement between the City and the Railway Company certain items of construction are outlined to be accomplished, but the sequence of performing these several items is not specifically set forth except in one instance. In order to consummate the project with a minimum of interference with vehicular and pedestrian traffic in the City's streets and with the operations of the Railway Company, as provided in Article Seven of the contract, it seems desirable that the total project be divided into construction phases and that these several phases of construction be undertaken in sequence and only at such time as the proper representatives of the City and the Railway Company are satisfied that funds are, or in all probability will be, available to carry through the individual phase to prompt completion and thus avoid undue interference with street and railway traffic.

We think that the work to be performed under the contract is susceptible of division into three major phases or components, the first being the construction of the cross line (Paragraph 1, Item A of the contract) and removal of the South Tryon Street grade crossing (Paragraph 1, Item J of the contract), and the other two being, respectively, the work to be done on the west side of the City along the double track main line and the work to be done on the east side of the City along the freight line of the Railway Company.

Included in the work to be done along the west side are: The construction of a new underpass at West Trade Street, including a raise in the grade of the tracks of the Railway Company of approximately 12 feet; change in grade of tracks and work done in connection with facilities relating to the passenger station; remodeling of West Sixth Street underpass on main tracks; remodeling of underpass carrying West Sixth Street under industry track; construction of new underpass at West Fourth Street; remodeling of Piedmont and Northern Railway Company underpass; new underpass at West Hill—West Stonewall Street; remodeling of West Morehead Street underpass; and other work incidental to raising the grade of the double track main line, all as more particularly set forth in Article I of the contract.

Included in the work to be done on the east side is the remodeling of the East Fourth Street underpass as set forth in Article I of the contract.

You will note that we have not attempted to allocate to either of these three phases of work the construction of the new underpass at West Park Avenue, the replacement of the East Eleventh Street overhead bridge, or the construction of the switching lead south of the depot, inasmuch as special provision is made in the contract itself governing the sequence in which these last three items will be performed.

With this division of the contract into three major phases, we think that the ends to be accomplished with respect to facilitating street and railway traffic can best be achieved by pursuing each of these phases independently and in the sequence named, that is to say, the construction of the cross line should be first undertaken and completed and then construction on the West side should be undertaken and completed, and, finally, the construction on the East side should be undertaken and completed. As to securing or having a reasonable prospect of securing adequate funds for the completion of the contract, we think that the matter can most satisfactorily be handled by securing or having assurance of securing the funds necessary for the completion of phase one before the work on phase one is begun, and likewise with respect to phases two and three.

The question of what constitutes reasonable assurance of securing necessary funds for the completion of any one of the phases of the contract must, of necessity, be determined at the proper time by representatives of the contracting parties. Accordingly, it is our understanding that the City Manager and the City's Engineer, on the one hand, and the Chief Engineer of the Railway Company, on the other hand, will, for the purpose of this understanding, have authority in each instance to determine whether there is such reasonable assurance of securing necessary funds as will permit the commencement of work on any one of the three phases of the contract as outlined above.

If you, the Mayor of the City of Charlotte, and the City's Engineer agree with our suggestions and understanding as herein expressed, will you kindly sign and have the Mayor and the City's Engineer, Mr. Miller, also sign one copy of this letter and return it to me. One signed copy of the letter is enclosed for this purpose and there are also enclosed several additional unsigned copies for such use as you may wish to put them.

Yours very truly,

D. W. BROSNAN.

AGREED:

CITY OF CHARLOTTE, N. C.

By VICTOR SHAW, *Mayor.* Date July 24th, 1952.

By H. A. YANCEY, *City Manager.* Date July 24th, 1952.

By FRANK T. MILLER, *City's Engineer.* Date July 24th, 1952.

SOUTHERN RAILWAY SYSTEM
OFFICE OF CHIEF ENGINEER
WASHINGTON 13, D. C.

July 9, 1952
117-8017

Subject: Grade Separation Work—Charlotte, N. C.

Mr. H. A. Yancey, City Manager,
City of Charlotte,
Charlotte, North Carolina.

Dear Mr. Yancey:

The agreement between the City of Charlotte and Southern Railway Company, dated July 7, 1952, covering grade separation work at Charlotte, including the cross line, stipulates in Article 14 the following:

> "That the City and the Company will severally require any Contractor or Contractors to whom or to which it or they may let the work (or any part or portion thereof) hereinbefore recited and herein undertaken to be done and performed by the City and the Company, respectively, to execute an agreement containing, in addition to such other covenants as the City and the Company, respectively, require, a specific covenant on the part of the Contractor or Contractors to indemnify the City and the Company, said covenant to be such as may be approved by the City Manager and the City's Engineer, representing the City, and the Chief Engineer of the Company, representing the Company."

Pursuant to the above stipulation, I submit for your consideration our suggestion for such a covenant, viz.:

(A) The Contractor covonants that the Contractor will indemnify and save harmless the City against any and all loss of or damage to its property, and that it will indemnify and save harmless Southern Railway Company against any and all loss of or damage to its property or property in its care, custody or control, and, furthermore, against any and all claims, demands, suits, judgments, fines or sums of money accruing, or claimed to accrue to any person, corporation, municipality, firm or company, against the City and/or Southern Railway Company, for loss of life or injury or damage to person, or property, or violation of any municipal law or regulation, growing out of or claimed to grow out of, any act or omission of, or method pursued or hazard encountered by the Contractor, or from or as a consequence of the use in said work of defective or inferior materials, or by or on account of any improper material or workmanship used or employed in the prosecution of said work, or by or on account of any accident, or of any other act or omission of the said Contractor, its agents, employees, servants or workmen, in or about or in connection with the work herein undertaken to be done and performed by the Contractor. The Contractor, moreover, agrees to indemnify and save harmless the City and/or Southern Railway Company against any and all claims or liens which may be made or placed upon the said work by any laborer, materialman or furnisher of materials purchased and furnished by the

Contractor, or any other person, exclusive of the materials, if any, purchased and furnished by the City and Southern Railway Company, and will, furthermore, reimburse the City and Southern Railway Company for any attorney's fees, costs or other expenses incurred by it or them growing out of or arising by reason of any claim or lien, unless within the exception mentioned above in this article, upon said work; nor shall the City or Southern Railway Company be responsible to the Contractor for any delay to, or interruption of, said work which may be caused by any legal proceeding or the action of any governmental or public authority.

(B) That the Contractor will, at the cost and expense of the Contractor, for the further protection of the City and Southern Railway Company, take out and deliver to the City and Southern Railway Company, respectively, and at all times during the progress and until the final inspection and acceptance of said work by the City and Southern Railway Company maintain in full force and effect a policy or policies of contractual liability insurance in favor of and in form and amount satisfactory and acceptable to the City and Southern Railway Company. The obligation of such insurance policy or policies shall include, without exception or exclusion, the following obligation:

"The Contractor covenants that the Contractor will indemnify and save harmless the City against any and all loss of or damage to property of the City, and that the Contractor will indemnify and save harmless Southern Railway Company against any and all loss of or damage to its property or property in its care, custody or control, and, furthermore, against any and all claims, demands, suits, judgments, fines or sums of money accruing, or claimed to accrue to any person, corporation, municipality, firm or company, against the City and/or Southern Railway Company, for loss of life or injury or damage to person, or property, growing out of or claimed to grow out of any act or omission of, or method pursued or hazard encountered by the Contractor, or from or as a consequence of the use in said work of defective or inferior materials, or by or on account of any improper material or workmanship used or employed in the prosecution of said work or by or on account of any accident or of any other act or omission of the Contractor, its agents, servants, employees or workmen, in or about or in connection with the work herein undertaken to be done and performed by the Contractor."

It is distinctly understood by the Contractor that the furnishing by the Contractor of such policy or policies of insurance and the acceptance thereof by the City and Southern Railway Company is not intended to, and shall not, limit, affect or modify the obligations or liabilities of the Contractor under the foregoing paragraph (A).

(C) The Contractor further covenants to pay all taxes now or hereafter imposed upon any income of the Contractor, and any sales tax, use tax or other tax the obligation to pay which is created by the purchase of building materials, other tangible personal property or the performance of services in or in con-

nection with the work herein undertaken to be done and performed by the Contractor; to furnish the City and Southern Railway Company evidence satisfactory to them of the payment of such taxes, and to indemnify and save harmless the City and Southern Railway Company, and each of them, from and against the consequences of the failure on the part of the Contractor to pay such taxes.

If you and Mr. Frank T. Miller, the City's Engineer, approve the foregoing covenant, kindly sign and have Mr. Miller sign the stipulation to that effect appended to the enclosed copy of this letter and return to me.

Two (2) extra signed copies of this letter are enclosed, one of which should be retained by Mr. Miller as the above stipulations, with an appropriate preface will have to be included in any specifications that he may write for various parts of the project.

Yours very truly,

J. B. AKERS
Chief Engineer
Southern Railway Company

APPROVED:

CITY OF CHARLOTTE, N. C.

By H. A. YANCEY
City Manager
Date July 24th, 1952.

By FRANK T. MILLER
City's Engineer
Date July 24th, 1952.

SOUTHERN RAILWAY SYSTEM
OFFICE OF CHIEF ENGINEER
WASHINGTON 13, D. C.

July 10, 1952
117-8017

Subject: Grade Separation Work—Charlotte, N. C.

Mr. H. A. Yancey, City Manager,
City of Charlotte,
Charlotte, North Carolina.

Dear Mr. Yancey:

The agreement between the City of Charlotte and Southern Railway Company, dated July 7, 1952, covering the grade separation work at Charlotte, including the construction of the cross line, provides in Article 5 that Southern Railway Company will undertake to acquire the rights-of-way and property required for railroad purposes at the cost of the City. The agreement does not provide how the Railway Company is to be reimbursed for the cost of acquiring such rights-of-way and property.

Article 8 of the agreement provides for work to be done by the Railway Company on the basis of force account estimates to be submitted to and aproved by the City. The details concerning the preparation of estimates of cost, billing, accounting and other procedures incident to the performance of such work by the Railway Company and reimbursement of the Railway Company by the City shall be such as may be agreed upon, in writing, by and between the City Manager and the City's Engineer, representing the City, and the Chief Engineer of the Company, representing the Company.

I submit below, for your consideration, our suggestions for such details and procedures, viz.:

(1) Reimbursement of Railway Company by City for Expenditures in connection with Acquisition of Rights-of-Way and Property

Expenditures made by the Railway Company for acquisition of rights-of-way and property, including all costs incidental thereto, will be billed to the City monthly on the basis of expenditures made in connection with such acquisitions. The actual amounts of such expenditures shall be used in preparation of these bills. Payment of such bills shall be made by the City within 30 days of the date of rendering each bill.

(2) Reimbursement of Railway Company by the City of Charlotte for work done under provisions of the agreement

Any expenditures for labor and materials by Southern Railway Company (hereinafter referred to as Company) for account of the City of Charlotte, N. C. (hereinafter referred to as City), or any work done by the Company in connection with any portion of work included in the project, including cost of engineering services, field and shop inspection, the cost of accounting, work train employees, foremen, cooks on camp cars and other employees used on the work, will be considered or treated as part of the cost of the project. Such expenditures shall be detailed and all accounts of either party hereto shall

be subject to audit by the other party hereto. Reimbursement of the Company by the City shall be on the basis of monthly bills prepared by the Company and submitted to the City for payment within thirty (30) days. Such bills shall be prepared on the following basis:

(a) Labor costs shall consist of the payroll cost of all labor actually used on the work, plus the current rate for vacation allowance (now 3%), to which shall be added six and one-fourth per cent (6¼%), or such other rate as may be in effect when the work is performed, for railroad retirement and unemployment taxes. Ten per cent (10%) of payroll cost shall be added to cover supervision, and use of small tools.

(b) The actual cost of insurance taken out by the Company to protect the Company and/or the City as provided in the agreement dated July 7, 1952.

(c) Material cost shall be the actual invoice price, plus freight at regular tariff rates for material purchased specifically for the work; other material furnished from stock of the Company shall be billed at stock value, plus fifteen per cent (15%) to cover freight and handling. The cost of material shall also include any Federal, State and City taxes levied on the cost of the material and on the freight charges for such material. All salvaged material, except such material as may be turned over to the City as provided in the specifications, shall be credited at its appraised value, less fifteen per cent (15%) for freight and handling, when no longer required for the work. Such appraisal shall be made and agreed to jointly by the City's Engineer and an authorized representative of the Company's Chief Engineer.

(d) Equipment furnished by Company:

Rental rates for equipment used shall be the then current rates prescribed by the General Managers' Association of Chicago. For equipment used but not covered by the above rates, the then current rental rates established by the Associated Equipment Distributors shall be used. For equipment used but not covered by either of the above said rate schedules, rental rates shall be such as may be established by mutual agreement between the City's Engineer and the Chief Engineer of the Company, or his authorized representative.

The charges for fuel, oil, supplies and servicing of work train and other equipment to be included in the costs to be paid by the City hereunder shall be those customarily made by railroads for such materials, supplies and services.

For cost of moving work equipment of the Company in trains of the Company, but not on its own wheels, one (1) cent per ton mile each way to and from the site of said work.

For cost of moving work equipment of the Company on its own wheels in trains of the Company twenty (20) cents per mile for pile drivers and cranes, six (6) cents per mile

for camp cars and other cars, and equitable and comparative costs for moving other equipment, each way to and from the site of said work.

If you and Mr. Frank T. Miller, the City's Engineer, are agreeable to such details and procedure, kindly sign and have Mr. Miller sign the stipulation to that effect appended to the enclosed copy of this letter and return it to me. Two (2) extra signed copies of this letter are also enclosed for such use as you may have for same.

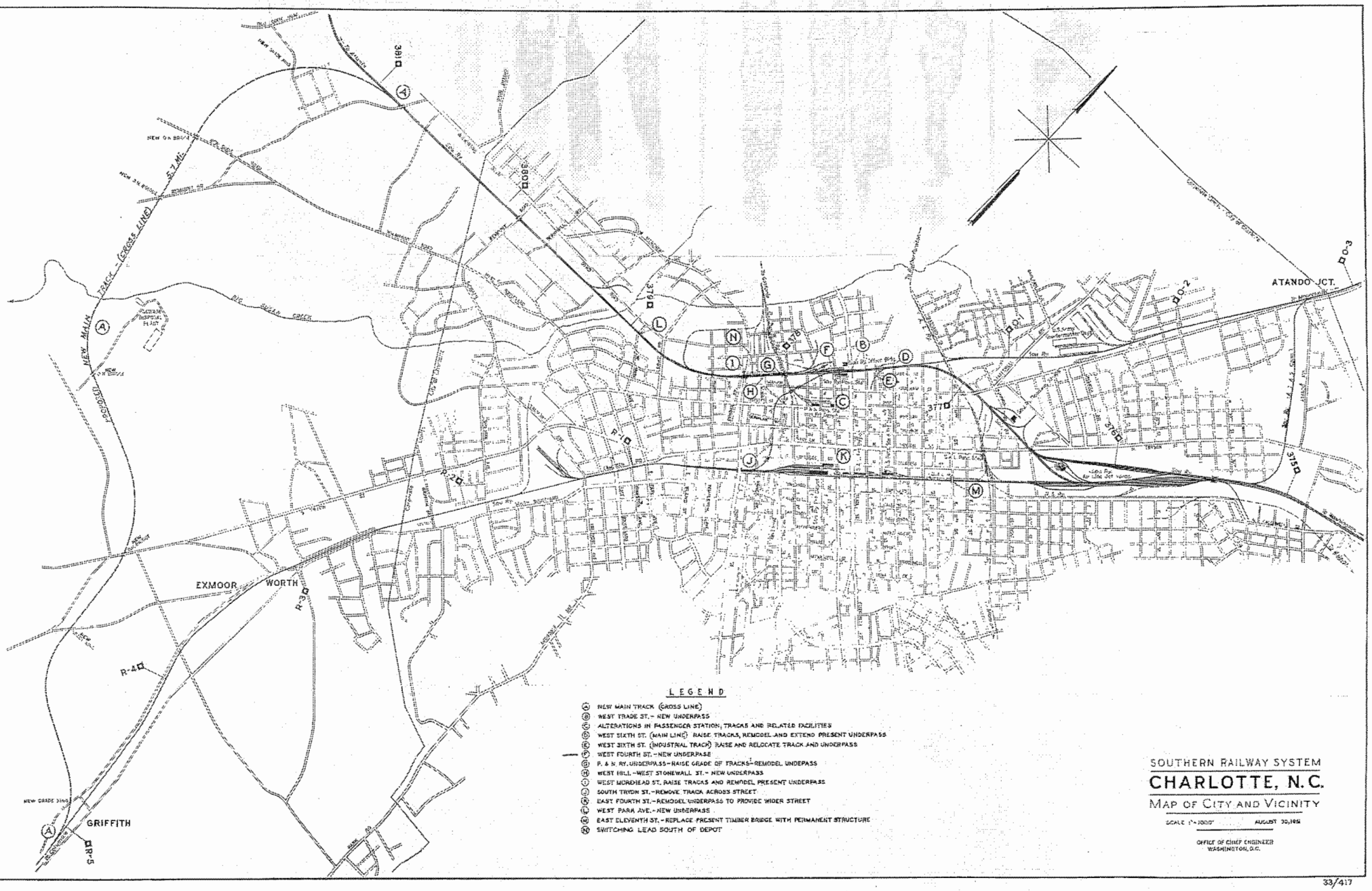
Yours very truly,

J. B. AKERS,
Chief Engineer.
Southern Railway Company

APPROVED:

CITY OF CHARLOTTE, N. C.
By H. A. YANCEY,
City Manager. Date July 24th, 1952.

By FRANK T. MILLER,
City's Engineer. Date July 24th, 1952.



SOUTHERN RAILWAY SYSTEM

CHARLOTTE, N.C.

MAP OF CITY AND VICINITY

SCALE 1" = 1000' AUGUST 30, 1951

OFFICE OF CHIEF ENGINEER
WASHINGTON, D.C.

33/417

80-49

PLAN AND REPORT

on

GRADE CROSSING ELIMINATION

for

THE CITY OF

CHARLOTTE

NORTH CAROLINA

FRANK T. MILLER
Consulting
Engineer
Greensboro, North Carolina

PLAN AND REPORT

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FRANK T. MILLER
Consulting
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Greensboro, North Carolina

August 22, 1950

CITY OF CHARLOTTE, NORTH CAROLINA

A REPORT WITH RECOMMENDATIONS

covering

STREET AND RAILWAY GRADE CROSSING ELIMINATION

Charlotte, North Carolina, besides being the County Seat of Mecklenburg County, is also the metropolis of the State. It is situated in the heart of the Piedmont section of the Carolinas.

This city is fortunate, in the diversification of its business interests, and further, that it is the regional headquarters for so many out of state industries. The 1950 census gives it a population of 133,312.

The railway facilities of the city, through almost a century of service have developed into four railway systems, viz: Southern Railway System, Seaboard Air Line Railroad, Norfolk Southern Railway and Piedmont and Northern Railway.

Southern Railway

(a) In 1852 the Charlotte and South Carolina Railway started operating southwardly from Charlotte. Before long this line became a part of Charlotte, Columbia and Augusta Railway, which today is part of the Columbia Division of Southern Railway.

(b) In 1856, the North Carolina Railroad was put into operation between the cities of Goldsboro and Charlotte, both in North Carolina. The southern terminus of this line was just south of what is now the Charlotte Southern Railway freight depot. Here it made connection with the north end of Charlotte, Columbia and Augusta Railway.

(c) The Atlantic, Tennessee and Ohio Railroad was opened for business between Charlotte and Statesville, both in North Carolina, in 1860. During the civil war, however, the track materials were removed and reused in the construction of Piedmont Railroad, north of Greensboro. Eleven years later, in 1871, the tracks of A. T. and O. Railroad were relaid and train service was restored.

(d) The first sixty miles of the railroad between Charlotte and Atlanta, were constructed under the name of Atlanta and Richmond Air Line Railway. It started operation, out of Charlotte, in December 1872. It was completed to Atlanta in 1873 and through train service between Charlotte and Atlanta began in September of that year. Before this line started operating as part of Southern Railway, its title was changed to Atlanta and Charlotte Air Line Railway.

When the A. T. and O. Railroad was completed to Charlotte, a connecting track between it and C. C. and A. Railway was built from near West Ninth Street, by way of the present Southern Railway passenger station location, and on to East Morehead Street where the connection was made with C. C. and A. Railway. It is this line which crosses South Tryon Street, at grade, today. It is now the Columbia Division passenger train line of Southern Railway.

The Atlanta and Charlotte Air Line Railway had its connection with the A. T. and O. Railroad near West Fourth Street, and from an A. T. and O. Railroad connection again near West Ninth Street, the A. & C. A-L. Railway built a connection track with North Carolina Railroad, terminating somewhere in what is now Air Line Junction yard of Southern Railway.

Out of this combination of railroads, through purchase and lease, has come Southern Railway lines into and through Charlotte as follows:

(a) The double tracked main line enters the city from the north on the line which formerly was North Carolina Railroad; it leaves Air Line Junction over the connecting line built by the A. and C. A-L. Railway, connecting the North Carolina Railroad with the A. T. and O. Railroad near West Ninth Street; from West Ninth Street it uses the former A. T. and O. Railroad line to West Fourth Street where it joins the former A. and C. A-L. Railway line which it follows to the south city limits and on to Atlanta.

In our study, this line from north to south, passing through Air Line Junction and on by West Ninth Street and West Fourth Street to the south city limit will be known as "West Side."

The freight main line from Air Line Junction, south toward Columbia is made up of the North Carolina Railroad line to the south end of Southern Railway freight depot, and from there on south it operates over the former C. C. and A. Railway tracks to Columbia and Augusta.

In our study, this line will be in the section designated as "East Side."

Seaboard Air Line Railroad

In the early days of railroad construction, that is in the 1860's and 1870's, the Wilmington, Charlotte and Rutherford Railroad Company completed a line between Charlotte and Lincolnton, both in North Carolina, and the Carolina Central Railway Company completed one between Pee Dee and Charlotte, both in North Carolina. These lines now form part of the Wilmington-Charlotte-Rutherfordton branch of Seaboard Air Line Railroad, which still cross the two lines of Southern Railway at West Eleventh Street at grade.

Seaboard Air Line Railroad has a line in Charlotte which parallels the North Carolina Railroad on the west side of its tracks and to a point just south of East Fourth Street. The S. A. L. Railroad freight depot is located against East Fifth Street between it and East Trade Street. This latter line of S. A. L. Railroad is in "East Side" section.

Norfolk Southern Railway

About forty years ago a railroad under the title of R. C. and S. Railway Company, was built from Charlotte to Raleigh, both in North Carolina.

It was to be the south end of a Charlotte to Norfolk trunk line. It is now known as Norfolk Southern Railway, and its main line operates between Charlotte and Norfolk.

It passes through North Charlotte coming south, and crosses the Seaboard Air Line Railroad overhead and the North Carolina Railroad line of Southern Railway and Freight Depot line of S. A. L. Railroad, the latter two at grade, all within a few hundred feet.

It continues on south on the west side of S. A. L. Railroad tracks to its freight depot where it ends just east of North College Street between East Sixth and East Seventh Streets. It is a freight line only, between Charlotte and Raleigh.

Piedmont and Northern Railway

This is an electric line operating between Charlotte and Gastonia. Its double tracked main line lies between South Graham and South Cedar Streets, about at right angles thereto and crosses under the main line tracks of Southern Railway about 700 feet north of West Hill Street crossing.

This line terminates at its yard and depot on South Mint Street. It crosses under the Southern Railway (A. T. and O.) line between West Fourth Street and East Morehead Street, and is included in the "West Side" section.

With the above facts in hand, your engineer had complete topographic surveys made:

(a) Of the Southern Railway tracks from the Seaboard Air Line Railroad crossing on the north to a point about 3,800 feet south of West Morehead Street, on the Washington-Atlanta line.

(b) Of the Southern Railway, Seaboard Air Line Railroad, and Norfolk Southern Railway tracks from the Seaboard Air Line Railroad crossing on the north to a point just south of East Morehead Street overhead bridge on the Southern Railway Columbia line.

(c) Of the Southern Railway (A. T. and O.) line between East Morehead and West Fourth Streets, crossing South Tryon Street at grade.

(d) Of Seaboard Air Line Railroad Rutherfordton Branch, each side of the Southern Railway main line and its Statesville (A. T. and O.) Branch line.

(e) Of Piedmont and Northern Railway tracks between South Cedar and South Graham Streets.

Tryon Street is Charlotte's main thoroughfare. As its name implies, it goes back to the early history of the community. It follows fairly well the top of a ridge and doubtless was in its earliest days, a ridge road.

Trade Street cuts the ridges, crossing Tryon Street at the very top of the divide. It, too, is one of the early roads.

As the community grew into a city, parallel streets were developed to Tryon and to Trade Streets.

At the foot of the hill on the west is Irwin Creek, and at the foot of the hill on the east is Little Sugaw Creek, each approximately paralleling Tryon Street.

The main or west side line, the double tracked one, of Southern Railway runs approximately on a hillside contour far down toward Irwin Creek.

The freight main or east side line of Southern Railway and the adjacent tracks of Seaboard Air Line Railroad and Norfolk Southern Railway approximately parallel Tryon street along the side of the hill but at less distance from Tryon Street than does the west side.

North Tryon Street descends generally toward the north and South Tryon Street descends generally toward the south, with the summit at Trade Street intersection.

Seaboard Air Line Railroad cuts the ridges and crosses North Tryon Street about nine blocks north from its intersection with Trade Street.

The Southern Railway passenger line from East Morehead Street to the passenger station cuts through the ridge at Church Street. It crosses South Tryon Street at grade about five and one-half blocks south of its intersection with Trade Street.

These data present the problem for grade crossing elimination in Charlotte. Care must be taken to exercise economy, and still develop a solution of the problem that will fit into future expansion, both from a practical and also from an aesthetic standpoint.

West Side

The solution of the Southern Railway main line problem hinges around grade separation at West Trade Street.

(a) The lowering of the railway is not practical because the present grade is ascending almost constantly from Irwin Creek arch culvert, south of the city, to approximately a mile north of East 36th Street crossing. One could not depress the tracks and get back to existing grade for miles without increasing the railway grade excessively which is not practical. Again, there would be the elimination of service to so many Charlotte industries which would be resisted. A cut would produce almost

insurmountable drainage conditions in case of a flash flood. Any one of these situations makes track depression ill advised; together they make it economically unsound.

(b) It is always better to confine an underpass project to the limits of the next street on each side of the railway tracks. At West Trade Street this is logical and feasible because the tracks are about midway between Graham and Cedar streets.

(c) To leave the tracks on the present grade would create an intolerable situation in the vicinity of the Passenger Station and damage properties on each side of West Trade Street for a quarter of a mile, because it would necessitate a cut 19 feet deep at the railroad. The appearance of the street would be marred and the railroad would gain nothing.

(d) To achieve an underpass at West Trade Street would require elevating the tracks enough as to necessitate their removal and rebuilding on the new grade. Since this is true, very little difference in cost is involved as between elevating them the 10 feet necessary and the 12 feet desirable. With the latter the situation would result in a splendid street appearance and improvement to the passenger facilities of the railway. The new railway grade would ascend on a 1.0% grade toward West Trade Street from each direction. The locomotive on north bound passenger trains would stop, when standing at the station, 375 feet north of the middle of West Trade Street underpass, on a 1.0% descending grade. Almost all of a south bound passenger train, when standing at the station, would be on a 1.0% descending grade.

(e) Coach yard tracks, convenient to the passenger terminal have been planned, having a capacity for 44 coaches. Parking tracks for Pullman cars in service and for waiting dining cars are provided.

(f) A subway is provided in front of the passenger station, passing under the tracks for use of passengers to get to and from trains without walking across tracks.

(g) There are to be two north bound and two south bound passenger main tracks, with the regular main line double tracks between the sets of passenger tracks. This middle set of tracks will be used for freight trains, thus avoiding close contact between passengers and moving freight trains.

(h) Two passenger platforms with butterfly shed roofs are planned, each long enough to accommodate an 18 coach passenger train. One platform is to be between the two south bound passenger tracks and the other one is to be between the two north bound passenger tracks.

(i) The mail and express depot is planned to be located adjacent to the east track side and on the south side of West Fifth Street.

(j) The vast increase of the movement of mail and express has made it desirable to remove the operation of express, mail and baggage wagons from passenger platforms.

For north bound trains the mail and express depot is at the mail and express car end. For south bound trains, a trucking platform is provided along the east side of the tracks for use of baggage wagons moving to the south end. An elevator is planned for the baggage room for delivery of baggage wagons to the trucking platform.

(k) It is planned to enclose the concrete concourse immediately in front of the passenger station from the Baggage Room to West Trade Street and extending in width from the building west to the line of columns which support the roof.

(l) Some of the Southern Railway buildings now occupying the area where the coach yard is to be built are to be relocated as directed by Southern Railway officials. The existing turntable in this area is said to be inadequate, and it is here suggested that it be abandoned and in its stead use the Wye track near Charlotte Roadway Shops.

(m) At West Sixth Street, the industrial track and trestle will have to undergo revisions to get it down off of the higher grade and also to make way for the widened main line trackage.

The existing underpass structure will have to be widened and elevated to provide for the additional tracks and elevated grade. No changes to street grades or pavement are contemplated.

(n) At West Fifth Street, it is not recommended that an underpass be constructed now because there seems to be no need for it. It is recommended, however, that building lines be established and that a future street grade line be adopted and that all new structures be required, by ordinance, to build to the established building line and that foundations be carried to below the new street grade line as adopted. This expedient should cover the section of West Fifth Street westwardly from North Graham Street to where it intersects with West Sixth Street.

(o) An underpass is planned for West Trade Street. The grade of the street will be altered from Graham Street to Cedar Street. Overhead clearance of underpass will be 14 feet.

(p) It is planned to close West Third Street crossing entirely which will provide the necessary space for the coach yard. In lieu of the West Third Street crossing, it is planned to open West Fourth Street with an underpass. West Fourth Street is now a one-way street westwardly to the passenger station. In opening it through under the tracks, it is recommended that it be made "one way" eastwardly through the underpass to the passenger station. Exit from the passenger station should be by West Trade Street. No vehicles should enter the passenger station driveway from West Trade Street. West Fourth Street underpass will have a 14-foot overhead clearance.

(q) New West Stonewall Street will converge with West Hill Street at the intersection of the latter with South Graham Street. New Stonewall Street and West Hill Street will pass over a new right-of-way from South Graham Street to South Cedar Street, eliminating the West Hill Street off-set at South Cedar Street.

The new right-of-way from South Graham Street to South Cedar Street will be 60 feet wide and there will be an underpass with 14 foot overhead clearance where it crosses under the Southern Railway main line.

(r) No change in street grade will be made at West Morehead Street underpass. The girders in the underpass will simply be raised to care for the new grade.

(s) Near mile post 379 on Southern Railway Atlanta line, Park Avenue will be extended north-westwardly crossing under the railroad and then connecting with Dowd Road. When Independence Boulevard is completed Park Avenue may be extended further to connect with it. This arrangement provides passage of traffic between Routes 29, 74, 49 and 21 over city streets against the western edge of the city.

(t) The plant of A. L. Boyles Company is located partly on private and partly on Southern Railway property. A sincere effort has been made to disturb industry as little as possible. This plant, however, falls where the Railway property will be needed. A turnout and five hundred feet of track is carried in the estimate for a new track to serve this plant on a new location of its selection.

Piedmont and Northern Railway

The P. and N. Railway underpass situated just south of the new coach yard will have to undergo considerable alterations. The raising of Southern Railway tracks will increase the overhead clearance of the Piedmont and Northern tracks to the extent that its main line grade may be improved.

Retaining Walls

Retaining walls are provided where necessary and sometimes to avoid purchase of rights of way. Comparative costs will have to be developed when detailed plans are made to determine which is cheaper: retaining walls or additional right of way.

Drainage

Adequate drainage facilities are provided in the estimate for both railway and street facilities.

East Side—South

(a) East Stonewall Street Underpass.

This structure is planned to occupy the location recently adopted by the City Council for that purpose. It is an ideal situation for such a grade separation. The plan provides for revamping the Southern Railway team yard in such a way as to reduce the distance through the underpass structure by about 85 feet. It is included in the plans and estimates.

(b) East Fourth Street Underpass.

The present structure is narrower than the street. To widen it would lengthen the girders and increase their depth. The track grade profile from East Trade Street, south, is such as to make practical the raising of tracks over this underpass sufficiently to care for the additional depth of girders. The revamping of this structure is cared for in the plans and estimates.

From East Trade Street north, the situation presents a very difficult problem. Here are available service tracks of three of the railway systems entering the city. Important enterprises of the city have availed themselves of these facilities and have constructed expensive storage warehouses and other buildings along these tracks. They are important in the carrying on of trade in the city and they represent the expenditure of several millions of dollars.

Underpasses could be built at three crossings on the East Side-North, viz; at East Fifth Street, at East Sixth Street and at East Ninth Street. One could also be provided for South Tryon Street crossing.

By reference to the appendix, the tabulated estimates of cost reveal the following:
Underpasses at:

[1] (a) East Fifth Street	$ 321,905.00
(b) East Sixth Street	426,088.00
(c) East Ninth Street	256,520.00
(d) South Tryon Street	228,883.00
Total, not including property damage	$1,233,396.00

Traffic delays at the crossings on the East Side, are not caused by switch engines serving enterprises along these tracks. It is the mile long freight trains moving at a speed of from 6 to 8 miles per hour that cause the delays.

This situation has given your Engineer no little concern. Much consideration has been given to the idea of building a cross line somewhere south of the city, to connect the Columbia line of Southern Railway with its Atlanta line.

If this could be done the cross line would make possible the ingress and egress of all Columbia Division trains of Southern Railway over the Atlanta double tracked line, and the present use of the East Side for scheduled trains would be discontinued, leaving only switch engine operation on the East Side. Tryon Street crossing could be abandoned.

An agreement between the City Council and the railway companies could regulate the time and place, when and where switching is to be done so as to avoid serious conflict between track and street traffic.

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[1] See Pages 28, 29 and 30.

This arrangement would provide relief at all East Side crossings as well as at the one on South Tryon Street and the side track facilities of Charlotte enterprise would remain unimpaired.

A brief study has been made of the cross line possibilities, through the use of enlarged U. S. Geological survey contour maps. The line would be somewhere between five and six miles long and it would open up a long stretch of railway frontage in Mecklenburg County, an invitation for new industries.

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[2]It is believed that the cross line could be built for $832,500.00 exclusive of the cost of rights of way.

The estimated cost of the entire project follows:

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[2] See Page 14.

Estimated cost of grade crossing elimination, West Side, Charlotte, North Carolina

1. Railway track changes			
(a) Grading—			
(a-1) Earth excavation, 1,000 cu. yds. @ $0.40	$ 400.00		
(a-2) Borrowed embankment, 273,100 cu. yds. @ $0.75	204,825.00		
(a-3) Sub-ballast, 12,500 cu. yds. @ $1.00	12,500.00	$	217,725.00
(b) Drainage—			
(b-1) 12″ C.I.P. 1,400 lin. ft. @ $3.75	5,250.00		
(b-2) 18″ R.C.P., 1,700 lin. ft. @ 3.00	5,100.00		
(b-3) 24″ R.C.P., 560 lin. ft. @ 4.00	2,240.00		
(b-4) 30″ R.C.P., 100 lin. ft. @ 5.00	500.00		
(b-5) 36″ R.C.P., 440 lin. ft. @ 8.00	3,520.00		
(b-6) Conc. box culv't., 40 lin. ft. @ $90.00	3,600.00		
(b-7) Manholes, 6 @ $400.00	2,400.00		
(b-8) Catch basins, 4 @ $125.00	500.00		
(b-9) Drop inlets, 42 @ $75.00	3,150.00		26,260.00
(c) [3]Retaining walls, surcharge			
(c-1) 7 feet high, 219 lin. ft. @ $33.00	7,227.00		
(c-2) 9 feet high, 415 lin. ft. @ 44.00	18,260.00		
(c-3) 10 feet high, 364 lin. ft. @ 52.00	18,928.00		
(c-4) 11 feet high, 100 lin. ft. @ 61.00	6,100.00		
(c-5) 12 feet high, 200 lin. ft. @ 70.00	14,000.00		
(c-6) 14 feet high, 450 lin. ft. @ 97.00	43,650.00		
(c-7) 15 feet high, 205 lin. ft. @ 110.00	22,550.00		
(c-8) 16 feet high, 130 lin. ft. @ 123.00	15,990.00		
(c-9) 19 feet high, 100 lin. ft. @ 165.00	16,500.00		
(c-10) 22 feet high, 50 lin. ft. @ 215.00	10,750.00		
(c-11) 25 feet high, 50 lin. ft. @ 272.00	13,600.00		
(c-12) 26 feet high, 50 lin. ft. @ 293.00	14,650.00		
(c-13) 27 feet high, 50 lin. ft. @ 314.00	15,700.00		217,905.00
(d) [4]Retaining walls—no surcharge			
16 feet high, 737 lin. ft. @ $75.00			55,275.00
(e) Track work:			
(e-1) [5]100# rail bonded track, 13,370 lin. ft. @ $6.66	$ 89,044.20		
(e-2) Jacking 100# rail track, 1 to 4 feet lining over, ballasting and surfacing, 2,300 lin. ft. @ $8.00	18,400.00		
(e-3) Surfacing and ballasting 100# rail track, 8″ raise, 1,550 lin. ft. @ $2.70	4,185.00		
(e-4) [6]No. 10 insulated 100# rail turnouts, 11 @ $2,170.00	23,870.00		
(e-5) [7]No. 12 insulated, 100# rail turnouts, 1 @ $2,560.00	2,560.00		
(e-6) [8]No. 14 insulated, 100# rail turnouts, 16 @ $2,842.00	45,472.00		
(e-7) [9]85# rail track, 12,970 lin. ft. @ $4.62	59,921.40		
(e-8) Lining over, ballasting and surfacing 85# rail track, 8″ raise, 910 lin. ft. @ $3.45	3,139.50		

[3] See Page 24; [4] See Page 24; [5] See Page 21; [6] See Page 21; [7] See Page 22; [8] See Page 22; [9] See Page 23.

(e-9) 85# rail laid on trestle, 375 lin. ft. @ $1.00..	375.00		
(e-10) 85# rail crossing	748.90		
(e-11) Clearance posts, 20 @ $15.00	300.00		
(e-12) [10]No. 8, 85# rail turnouts, 13 @ $1,420.00..	18,460.00		
(e-13) [11]No. 10, 85# rail turnouts, 3 @ 1,598.00..	4,794.00		271,270.00
(f) Right of way acquisition			200,000.00
(g) Signal system:			
(g-1) Restoration of transmission line 25 poles @ $25.00	625.00		
(g-2) Restoration of block signals 8 @ $1,500.00	12,500.00		13,125.00
2 Improvements about Passenger Station			
(a) Subway, ramps and stairs		$	58,700.00
(b) Concrete platforms			
(b-1) Passenger platforms, 6,800 sq. yds. @ $5.00.$	34,000.00		
(b-2) Mail, baggage and express platforms, 4,234 sq. yds. @ $5.00	21,170.00		
(b-3) Pullman parking platforms, 7 feet wide, 284 sq. yds. @ $5.00	1,420.00		
(b-4) Automobile parking driveways at station, 4,174 sq. yds. @ $5.00	20,870.00		
(b-5) Placing brick cap on top of retaining wall in front of station, and removing roof overhang	5,000.00		82,460.00
(c) Butterfly sheds			
(c-1) Creosoted piling, 4,200 lin. ft. @ $1.50.....	6,300.00		
(c-2) Concrete piers, 188 cu. yds., reinforced, @ $50.00	9,400.00		
(c-3) Structural steel, 3,060 lin. ft. @ $18.90.....	57,834.00		
(c-4) Concrete plank, 70,500 sq. ft. @ $0.45.....	31,725.00		
(c-5) 3-Ply gravel roof, 735 sq. yds. @ $10.00	7,350.00		
(c-6) Down spout drainage	3,400.00		116,009.00
(d) Baggage elevator			7,000.00
(e) Purchase of rights of way and remodeling of buildings for mail and express depot			125,000.00
3. Moving Southern Railway buildings to new locations..			75,000.00
4. Restoration of telegraph lines, 25 poles @ $200.00....			5,000.00
5. Raising track on Graham Street underpass			5,000.00
6. Shoring P. and N. Railway underpass trestle deck ..			5,000.00
7. [12]Revamping trestles at West Sixth Street			35,715.00
8. Razing buildings			3,000.00
9. [13]Changes and additions to West Sixth Street underpass			181,350.00
10. [14]West Trade Street underpass			486,822.00
11. [15]West Fourth Street underpass			300,600.00
12. [16]P. and N. Railway underpass			121,671.00
13. [17]West Hill-West Stonewall Street underpass.....			279,129.00
14. Changes and additions to West Morehead Street underpass			15,000.00
15. [18]Park Avenue underpass			131,570.00

[10] See Page 23. [11] See Page 24. [12] See Page 25. [13] See Page 25. [14] See Page 25. [15] See Page 26. [16] See Page 27. [17] See Page 26. [18] See Page 27.

16.	Facilities removed		
	(a) Removing track, 25,204 lin. ft. @ $0.58	$ 14,618.32	
	(b) Removing turnouts, 48 @ $50.00	2,400.00	
	(c) Removing turnout signal protection, 21 @ $25.00	525.00	
	(d) Removing block signals 8 @ $100.00	800.00	
	(e) Removing block signal transmission line, 25 poles @ $10.00	250.00	
	(f) Removing telegraph line, 25 poles @ $25.00	625.00	
	(g) Removing C.I.P. drains, 442 lin. ft. @ $0.50	221.00	
	(h) Removing canopy from over West Trade Street sidewalk	498.18	$ 19,937.50
18.	Contingencies		305,552.50
	Engineering		201,664.00
	Total estimated cost of West Side Project		$3,562,740.00

Estimated Cost of Grade Crossing Elimination
East Side-South, Charlotte, North Carolina

1. Railway track changes		
(a) Track work		
(a-1) [19]85# rail track, 2,112 lin. ft. @ $4.62	$ 9,757.44	
(a-2) [20]No. 10, 85# rail turnouts, 3 @ $1,598.00	4,794.00	
(a-3) [21]No. 8, 85# rail turnouts, 7 @ $1,420.00	9,940.00	
(a-4) [22]No. 7, 85# rail turnouts, 7 @ $1,329.00	9,303.00	$ 33,794.44
2. Facilities removed		
(a) Removing track, 2,050 lin. ft. @ $0.58	$ 1,189.00	
(b) Switches, 11 @ $50.00	550.00	
(c) Teamway, 710 sq. yds. @ $0.55	390.50	2,129.50
3. [23]East Stonewall Street underpass		$332,595.00
4. [24]East Fourth Street underpass revision		93,650.00
5. Contingency		46,217.06
6. Engineering		30,503.00
Total estimated cost East Side-South Project		$538,889.00

[19] See Page 23; [20] See Page 24; [21] See Page 23; [22] See Page 23; [23] See Page 27; [24] See Page 28.

Cross Line South of the City

This cross line to be covered with a definite estimate, would necessitate a cross country detail survey.

Midway between the two lines of railway are streams flowing toward Catawba River. There is one deep ravine, fairly steep on both sides with rolling land extending each way from the top of the ravine slope to the respective railway line.

It is your Engineer's opinion that waterways would cost about $160,000.00.

Between Charlotte and Catawba River, there is a network of roads running in all directions. It would be wise to approach all road crossings so as to pass underneath them. Overhead bridges would cost about $37,500.00 each including the highway approaches. There would probably be 3 or 4 such bridges, suppose we say 4 @ $37,500.00, total cost $150,000.00.

Such a line would be some 5 or 6 miles long. Suppose we say 5½ miles @ $95,000.00 would cost $522,500.00 for grading, track work, aerial surveys, property investigations and engineering.

On this basis the cross line would cost

Waterways	$160,000.00
Overhead bridges	150,000.00
Tracks, etc.	522,500.00
Total	$832,500.00

which does not include right of way of which about 133 acres would be required.

Salvage Value of Materials Released, West Side

1.	Steel rail		
	(a) 85#, 297 L.T. @ $20.00		$ 5,940.00
	(b) 100#, 597 L.T.		
	(c) 131#, 71 L.T.		
	668 L.T. @ $35.00		23,380.00
2.	Switches		
	(a) 85#, 6 @ $227.70	$ 1,366.20	
	(b) 100#, 40 @ 345.40	13,816.00	
	(c) 131#, 2 @ 403.70	807.40	
			15,989.60
3.	Frogs		
	(a) 85# No. 8, 6 @ $172.70	1,036.20	
	(b) 100# No. 8, 21 @ 224.40	4,712.40	
	(c) 100# No. 10, 19 @ 239.80	4,556.20	
	(d) 131# No. 10, 2 @ 415.80	831.60	
			11,136.40
4.	Guard rails		
	(a) 85#, 12 @ $14.00	168.00	
	(b) 100#, 80 @ 67.10	5,368.00	
	(c) 131#, 4 @ 89.80	359.20	
			5,895.20
5.	Switch stands, 48 @ $33.00		1,584.00
6.	Cross ties, 4,325 @ $1.00		4,325.00
7.	Tieplates, 345,000# @ $4.13		14,248.50
8.	Rail joints		
	(a) 85#, 712 @ $2.68	1,908.16	
	(b) 100#, 1,006 @ 3.20	3,219.20	
	(c) 131#, 93 @ 5.80	539.40	
			5,666.76
9.	Scrap steel, 600,027# @ $0.02		12,000.54
10.	Signal equipment for turnouts, 21 @ $20.00		420.00
11.	Block signals, 8 @ $200.00		1,600.00
12.	Cast iron drain pipe, 442 lin. ft. @ $0.50		221.00
	Total salvage value of materials released, West Side		$102,407.00

Salvage Value of Materials Released, East Side-South

1.	85# Steel rail, 7,587 lin. ft., 95.97 L. T. @ $20.00	$ 1,919.40
2.	85# Switches, 11 @ $227.70	2,504.70
3.	85# Frogs, 11 @ $172.70	1,899.70
4.	85# Guard rails, 22 @ $64.90	1,427.80
5.	Switch stands, 11 @ $33.00	363.00
6.	Tie plates, 46,702# @ $4.13	1,928.80
7.	Rail joints, 220 @ $2.68	589.60
8.	Scrap steel, 9,000# @ $0.02	180.00
	Total salvage value of materials released, East Side-South	$ 10,813.00

Summary

Total estimated cost of West Side Project		$3,562,740.00
Total estimated cost of East Side-South Project		538,889.00
Total estimated cost of cross line, not including rights of way		832,500.00
Total estimated cost of entire grade crossing elimination undertaking		$4,934,129.00
Less:		
Salvage value of materials released:		
West Side	$102,407.00	
East Side-South	10,813.00	
		113,220.00
Net estimated cost of undertaking		$4,820,909.00

Without raising the tracks, clearing the right of way and starting new, which would result in the razing of many valuable structures, no underpasses north of East Trade Street can be applied except of the non-draining sump type, fed by excessive street grades from North Tryon Street, and this is indeed true as to sump type structure, for South Tryon Street.

The real true solution of this East Side-North problem is the cross line. It should be the first undertaking along with East Stonewall Street and East Fourth Street underpasses.

This procedure would eliminate a complicated situation at the passenger station in handling Columbia Division passenger trains of Southern Railway. These trains would use the Atlanta line after the building of the cross line.

In the construction on the West Side, the work would be done by first arranging three tracks on the new grade along the west side of the project, and then constructing the remaining tracks and structures.

Your Engineer has endeavored to prepare a plan economically sound, and one which takes care of both the interest of the City as well as those of the Railway Companies.

There is little to be said here. The plans and estimates disclose the facts. If the plans are carried out, Charlotte will have a modern and efficient railway facility. The street underpass structures will be self-draining, convenient of approach and architecturally pleasing to look upon.

The railway structures will make possible efficient means for train operation, and the facilities for their passengers' convenience will be in keeping with comforts deserving of a City like Charlotte.

It has been said, "You cannot have a city without a railroad, and you cannot have railroads without cities." Here you have both. With the improvements described herein realized, both the city and the railway companies may move forward to bigger and better things.

Respectfully submitted,

FRANK T. MILLER,
Consulting Engineer.

To the Mayor and City Council,
City of Charlotte, North Carolina.
Made at Greensboro, North Carolina,
August 22, 1950.

Drawing No. 1a, Char. G. C. E.—West Side—Plan
Drawing No. 2a, Char. G. C. E.—West Side—Profiles
Drawing No. 3, Char. G. C. E.—East Side-South—Plan and Profiles
are made a part of this report.

APPENDIX

APPENDIX

Estimated cost of one lin. ft. of 100# rail bonded main track, based on a 1,000 foot section.

Cross ties, creosoted, 600 @ $3.17	$ 1,902.00
100# rail, 2,000 lin. ft., 29.76 L.T. @ $35.00	1,041.60
100# rail joints, 52 @ $3.20	166.40
Track bolts, 1"x5¼", 312, 586.56# @ $8.14	47.75
Nut locks for 1" bolts, 312 @ $50.60 per M	15.79
Tie plates for 100# rail, 1,200, 13,080# @ $4.13	540.20
Rail anchors for 100# rail, 624 @ $0.275	171.60
Spikes, 2,400, 1,650# @ $5.50	90.75
Stone ballast, 400 cu. yds. @ $3.00	1,200.00
Labor, 1,000 lin. ft. @ $1.25	1,250.00
Work train, 1 day @ $100.00	100.00
Payroll tax, 8¾% of $1,250.00	109.38
Bonding track	25.00
Total estimated cost	$ 6,660.47
Unit cost of one lin. ft. 100# rail bonded track	$6.66

Estimated Cost of a No. 10, 100# Rail Signal Protected Turnout.

No. 10 creosoted switch ties, 1 set, 4,221 ft. B. M. @ $107.80	$ 455.02
100# rail, 382 lin. ft. 5.68 L.T. @ $35.00	198.80
100# rail joints, 9 @ $3.20	28.80
Track bolts, 1"x5¼", 54, 101.5# @ $8.14	8.26
Nut locks for 1" bolts, 54 @ $50.60 per M	2.73
Track spikes, 634, 436# @ $5.50	23.98
100# rail switch, 15'-0" long, 1 @ $345.40	345.40
Tie plates for 100# rail, 212, 2311# @ $4.13	95.44
Guard rails, manganese, 100# rail, 2 @ $67.10	134.20
New Century low switch stand, 1 @ $33.00	33.00
100# rail, No. 10, manganese insert frog, 1 @ $239.80	239.80
Stone ballast, 66 cu. yds. @ $3.00	198.00
Signal control installation	175.00
Labor: 110 lin. ft. @ $1.25 + $75.00	212.50
Payroll tax, 8¾% of $212.50	18.59
Total estimated cost	$ 2,169.52

Unit cost of one No. 10, 100# rail signal protected turnout, $2,170.00.

Note—The prices for concrete and reinforcing steel, used in these estimates are; for concrete, $50.00 per cubic yard; for reinforcing steel, 10 cents per pound.

Estimated Cost of a No. 12, 100# Rail Signal Protected Turnout.

No. 12 creosoted switch ties, 1 set, 5,000 ft. B. M. @ $107.80	$ 539.00
100# rail, 463 lin. ft., 6.89 L.T. @ $35.00	241.15
100# rail joints, 9 @ $3.20	28.80
Track bolts, 1"x5¼", 54, 101.5# @ $8.14	8.26
Nut locks, 54 @ $50.60 per M.	2.73
Track spikes, 800, 550# @ $5.50	30.25
100# rail switch, 16'-6" long, 1 @ $446.60	446.60
Tie plates for 100# rail, 292, 3,183# @ $4.13	131.46
Guard rails, manganese, 100# rail, 2 @ $67.10	134.20
New Century low switch stand, 1 @ $33.00	33.00
100# rail, No. 12 manganese insert frog, 1 @ $287.10	287.10
Stone ballast, 80 cu. yds. @ $3.00	240.00
Signal control installation	175.00
Labor: 133 lin. ft. @ $1.25 + $75.00	241.25
Payroll tax, 8¾% of $241.25	21.11
Total estimated cost	$ 2,559.91

Unit cost of one No. 12, 100# rail, signal protected turnout, $2,560.00.

Estimated Cost of a No. 14, 100# Rail Signal Protected Turnout.

No. 14 creosoted switch ties, 1 set 5,814 ft. B. M. @ $107.80	$ 626.75
100# rail, 516 lin. ft., 7.68 L.T. @ $35.00	268.80
100# rail joints, 9 @ $3.20	28.80
Track bolts, 1"x5¼", 54, 101.5# @ $8.14	8.26
Nut locks, 54 @ $60.60 per M	2.73
Track spikes, 1,000, 688# @ $5.50	37.84
100# rail switch, 24'-0" long, 1 @ $464.20	464.20
Tie plates for 100# rail, 372, 4055# @ $4.13	167.48
Guard rails, manganese, 100# rail, 2 @ $67.10	134.20
New Century low switch stand, 1 @ $33.00	33.00
100# rail, No. 14, manganese insert frog, 1 @ $331.10	331.10
Stone ballast, 92 cu. yds. @ $3.00	276.00
Signal control installation	175.00
Labor: 152 lin. ft. @ $1.25 + $75.00	265.00
Payroll tax, 8¾% of $265.00	23.19
Total estimated cost	$ 2,842.35

Unit cost of one No. 14, 100# rail protected turnout, $2,842.00.

Estimated Cost of One Lin. Ft. 85# Rail Track, Based on a 1,000 Foot Section

Cross ties, cypress, 600 @ $2.32	$ 1,392.00
85# rail, 2,000 lin. ft., 25.30 L.T. @ $20.00	506.00
85# rail joints, 61 @ $2.68	163.48
Track bolts, ⅞"x4¾", 244, 361# @ $8.14	29.39
Nut locks, 244 @ $40.70 per M	9.93
Tie plates for 85# rail, 1,200, 13,080# @ $4.13	540.20
Track spikes, 2,400, 1,650# @ $5.50	90.75
Chert ballast, 425 cu. yds. @ $1.00	425.00
Labor: 1,000 lin. ft. @ $1.25	1,250.00
Work train, 1 day @ $100.00	100.00
Payroll tax, 8¾% of $1,250.00	109.38
Total estimated cost	$ 4,616.13

Unit cost of one lin. ft., 85# rail track $4.62.

Estimated Cost of a No. 7, 85# Rail Turnout

No. 7 creosoted switch ties, 1 set, 3,232 ft. B. M. @ $107.80	$ 348.41
85# rail, 285 lin. ft., 3.61 L.T. @ $20.00	72.20
85# rail joints, 9 @ $2.68	24.12
Track bolts, ⅞"x4¾", 36, 54# @ $8.14	4.40
Nut locks, 36 @ $40.70 per M	1.47
Track spikes, 500, 344# @ $5.50	18.92
85# rail switch, 15'-0" long, 1 @ $227.70	227.70
85# tie plates, 160, 1,744# @ $4.13	72.03
85# guard rails, manganese, 2 @ $64.90	129.80
New Century low switch stand, 1 @ $33.00	33.00
85# No. 7 rigid frog, 1 @ $149.60	149.60
Chert ballast, 51 cu. yds. @ $1.00	51.00
Labor: 84 lin. ft. @ $1.25 + $75.00	180.00
Payroll tax, 8¾% of $180.00	15.75
Total estimated cost	$ 1,328.40

Unit cost of one No. 7, 85# turnout, $1,329.00.

Estimated Cost of a No. 8, 85# Rail Turnout

No. 8 creosoted switch ties, 1 set, 3,552 ft. B. M. @ $107.80	$ 382.91
85# rail, 317 lin. ft., 4.01 L.T. @ $20.00	80.20
85# rail joints, 9 @ $2.68	24.12
Track bolts, ⅞"x4¾", 36, 54# @ $8.14	4.40
Nut locks, 36 @ $40.70 per M	1.47
Track spikes, 570, 392# @ $5.50	21.56
85# rail switch, 15'-0" long, 1 @ $227.70	227.70
85# tie plates, 172, 1,875# @ $4.13	77.44
85# guard rails, manganese, 2 @ $64.90	129.80
New Century low switch stand, 1 @ $33.00	33.00
85# No. 8 rigid frog, 1 @ $172.70	172.70
Chert ballast, 56 cu. yds. @ $1.00	56.00
Labor: 93 lin. ft. @ $1.25 + $75.00	191.25
Payroll tax, 8¾% of $191.25	16.73
Total estimated cost	$ 1,419.28

Unit cost of one No. 8, 85# rail turnout, $1,420.00.

Estimated Cost of a No. 10, 85# Rail Turnout

No. 10 creosoted switch ties, 1 set, 4,221 ft. B. M. @ $107.80	$ 455.02
85# rail, 382 lin. ft., 4.83 L.T. @ $20.00	96.60
85# rail joints, 9 @ $2.68	24.12
Track bolts, ⅞"x4¾", 36, 54# @ $8.14	4.40
Nut locks, 36 @ $40.70 per M	1.47
Track spikes, 634, 436# @ $5.50	23.98
85# rail switch, 15'-0" long, 1 @ $227.70	227.70
85# tie plates, 212, 2311# @ $4.13	95.44
85# guard rails, manganese, 2 @ $64.90	129.80
New Century low switch stand, 1 @ $33.00	33.00
85# No. 10 rigid frog, 1 @ $209.00	209.00
Chert ballast, 66 cu. yds. @ $1.00	66.00
Labor: 110 lin. ft. @ $1.25 + $75.00	212.50
Payroll tax, 8¾% of $212.50	18.59
Total estimated cost	$ 1,597.62

Unit cost of one No. 10, 85# rail turnout, $1,598.00.

Reinforced Concrete Retaining Wall — No Surcharge

Height of wall	Cu. yds. Concrete per lin. ft. of wall	Lbs. Rein. Steel per lin. ft. of wall	Lin. ft. Piles per lin. ft. of wall	Cu. yds. excav. per lin. ft. of wall	Est. cost per lin. ft. of wall
6'-0"	0.35	13	—	1.0	$21.00
8'-0"	0.46	16	—	1.0	27.00
10'-0"	0.60	26	—	1.2	34.00
12'-0"	0.75	42	—	1.3	44.00
14'-0"	0.92	76	—	1.5	55.00
16'-0"	1.10	106	4.0'	1.6	75.00

Reinforced Concrete Retaining Wall — Surcharge Cooper E-72

Height of wall	Cu. yds. Concrete per lin. ft. of wall	Lbs. Rein. Steel per lin. ft. of wall	Lin. ft. Piles per lin. ft. of wall	Cu. yds. excav. per lin. ft. of wall	Est. cost per lin. ft. of wall
6'-0"	0.44	20	2.0	1.2	$30.00
8'-0"	0.55	25	2.0	1.2	36.00
10'-0"	0.80	43	3.0	1.4	52.00
12'-0"	1.07	62	4.0	1.6	70.00
14'-0"	1.40	100	7.5	1.8	97.00
16'-0"	1.77	140	9.0	2.0	123.00
20'-0"	2.64	186	12.0	3.3	179.00
24'-0"	3.60	410	14.0	4.0	251.00
28'-0"	4.75	615	17.0	5.0	335.00

Estimated Cost of West Sixth Street Underpass and Allied Construction Work

(a)	Underpass		$177,812.50
(b)	Removal of existing facilities		
	(b-1) Concrete pavement,	450 sq. yds. @ $0.75	337.50
	(b-2) Concrete sidewalk,	120 sq. yds. @ 0.75	90.00
(c)	New street work		
	(c-1) Reinforced concrete pavement,	450 sq. yds. @ 5.00	2,250.00
	(c-2) Concrete curb and gutter,	200 lin. ft. @ 2.50	500.00
	(c-3) Concrete sidewalk,	120 sq. yds. @ 3.00	360.00
	Total estimated cost		$181,350.00

Estimated Cost of Trestle at West Sixth Street Underpass

(a)	Concrete piers	
	(a-1) Reinforced concrete, 205.8 cu. yds. @ $50.00	$ 10,290.00
	(a-2) Reinforcing steel, 15,700 lbs. @ $0.10	1,570.00
	(a-3) Excavation, 300 cu. yds. @ $1.00	300.00
	(a-4) Rock excavation, 40 cu. yds. @ $2.50	100.00
(b)	Re-erect steel superstructure	5,000.00
(c)	Removal of existing piers	300.00
(d)	Timber trestle, 299 lin. ft. @ $59.00	17,641.00
(e)	Removal of existing pile bents	514.00
	Total estimated cost	$35,715.00

Estimated Cost of West Trade Street Underpass and Allied Construction Work

(a)	Underpass		$332,150.50
(b)	Removal of existing facilities		
	(b-1) Concrete pavement,	8,800 sq. yds. @ $0.18	1,584.00
	(b-2) Concrete sidewalk,	4,526 sq. yds. @ 0.15	678.90
(c)	New street work		
	(c-1) Grading,	11,649 cu. yds. @ 0.40	4,659.60
	(c-2) Reinforced concrete pavement,	8,050 sq. yds. @ 5.00	40,250.00
	(c-3) Concrete curb and gutter,	4,800 lin. ft. @ 2.50	12,000.00
	(c-4) Concrete sidewalk,	5,733 sq. yds. @ 3.00	17,199.00
(d)	Reinforced concrete retaining walls		47,160.00
(e)	Drainage		
	(e-1) Manholes, 4 each @ $200.00		800.00
	(e-2) Catch basins, 6 each @ $200.00		1,200.00
	(e-3) Reinforced concrete pipe		
	(1) Size 24", 560 lin. ft. @ $4.00		2,240.00
	(2) Size 36", 700 lin. ft. @ 8.00		5,600.00
(f)	Temporary trestles, 3 each @ $6,600.00		19,800.00
(g)	Removal of temporary trestles, 3 each @ $500.00		1,500.00
	Total estimated cost		$486,822.00

Estimated Cost of West Fourth Street Underpass and Allied Construction Work

(a)	Underpass		$210,577.00
(b)	Removal of existing facilities		
	(b-1) Concrete pavement,	1,600 sq. yds. @ $0.18	288.00
	(b-2) Concrete sidewalk,	700 sq. yds. @ 0.15	105.00
(c)	New street work		
	(c-1) Grading	9,600 cu. yds. @ 0.40	3,840.00
	(c-2) Reinforced concrete pavement,	4,533 sq. yds. @ 5.00	22,665.00
	(c-3) Concrete curb and gutter,	2,400 lin. ft. @ 2.50	6,000.00
	(c-4) Concrete sidewalk,	2,800 sq. yds. @ 3.00	8,400.00
(d)	Reinforced concrete retaining walls		19,585.00
(e)	Drainage		
	(e-1) Manholes,	4 ea. @ $200.00	800.00
	(e-2) Catch basins,	6 ea. @ 200.00	1,200.00
	(e-3) Reinforced concrete pipe		
	(1) Size 24", 500 lin. ft. & $4.00		2,000.00
	(2) Size 30", 690 lin. ft. @ 6.00		4,140.00
(f)	Temporary trestles, 3 ea. @ $6,600.00		19,800.00
(g)	Removal of temporary trestles, 3 ea. @ $400.00		1,200.00
	Total estimated cost		$300,600.00

Estimated Cost of West Hill-West Stonewall Street Underpass and Allied Construction Work

(a)	Underpass		$ 91,650.00
(b)	Removal of existing facilities		
	(b-1) Concrete pavement,	7,000 sq. yds. @ $0.18	1,260.00
	(b-2) Concrete sidewalk,	1,460 sq. yds. @ 0.15	219.00
(c)	New street work		
	(c-1) Grading 30,000 cu. yds. @ 0.40		12,000.00
	(c-2) Reinforced concrete pavement,	9,500 sq. yds. @ $5.00	47,500.00
	(c-3) Concrete curb and gutter	3,000 lin. ft. @ 2.50	7,500.00
	(c-4) Concrete sidewalk	2,300 sq. yds. @ 3.00	6,900.00
(d)	Drainage		
	(d-1) Manholes,	4 ea. @ $200.00	800.00
	(d-2) Catch basins,	6 ea. @ 200.00	1,200.00
	(d-3) Reinforced concrete pipe		
	(1) Size 24", 600 lin. ft. @ $4.00		2,400.00
	(2) Size 30", 800 lin. ft. @ 6.00		4,800.00
(e)	Temporary trestles, 2 @ 6,600.00		13,200.00
(f)	Removing temporary trestles, 2 @ 600.00		1,200.00
(g)	Right of way and buildings		
	(g-1) 2.5 acres @ 3,000.00		7,500.00
	(g-2) Buildings, 27 @ 3,000.00		81,000.00
	Total estimated cost		$279,129.00

Estimated Cost of Piedmont and Northern Railway Underpass and Allied Construction Work

(a) Underpass	$ 89,496.00
(b) Grading, 4,500 cu. yds. @ $0.75	3,375.00
(c) Elevating P. and N. Railway tracks, 1,800 lin. ft. @ $8.00	14,400.00
(d) Temporary trestles, 2 ea. @ $6,600	13,200.00
(e) Removal of temporary trestles, 2 ea. @ $600.00	1,200.00
Total estimated cost	$121,671.00

Estimated Cost of Park Avenue Underpass

(a) Underpass	$ 90,000.00
(b) Removal of existing facilities	
(b-1) One 100# No. 10 turnout	50.00
(c) New street work	
(c-1) Grading, 7,800 cu. yds. @ $0.40	3,120.00
(c-2) Reinforced concrete pavement, 2,400 sq. yds. @ $5.00	12,000.00
(c-3) Concrete curb and gutter, 850 lin. ft. @ 2.50	2,125.00
(c-4) Concrete sidewalk, 550 sq. yds. @ 3.00	1,650.00
(d) Drainage	
(d-1) Catch basins, 4 @ $200.00	800.00
(d-2) 30" reinforced concrete pipe, 144 lin. ft. @ $6.00	864.00
(e) Temporary trestles, 2 @ $6,600.00	13,200.00
(f) Removal of temporary trestles, 2 @ $600.00	1,200.00
(g) Right of Way	
(g-1) 1 acre @ $3000.00	3,000.00
(g-2) Buildings, 1 @ $3,000.00	3,000.00
(h) Restoring one 100#, No. 10 turnout	561.00
Total estimated cost	$131,570.00

Estimated Cost of East Stonewall Street Underpass and Allied Construction Work*

(a) Underpass	$246,720.00
(b) New street work	
(b-1 Grading, 15,000 cu. yds. @ $0.40	6,000.00
(b-2) Reinforced concrete pavement, 4,155 sq. yds. @ 5.00	20,775.00
(b-3) Concrete curb and gutter, 2,200 lin. ft. @ 2.50	5,500.00
(b-4) Concrete sidewalk 1,470 sq. yds. @ 3.00	4,410.00
(c) Drainage	
(c-1) Manholes, 2 ea. @ $200.00	400.00
(c-2) Catch basins, 4 ea. @ 200.00	800.00
(c-3) Reinforced concrete pipe	
(1) Size 18" 70 lin. ft. @ $ 3.00	210.00
(2) Size 24" 70 lin. ft. @ 4.00	280.00
(c-4) 5 ft. x 5 ft. R. C. box culvert, 300 lin. ft. @ 25.00	7,500.00
(d) Temporary trestles, 5 ea. @ $5,000.00	25,000.00
(e) Removal of temporary trestles, 5 ea. @ $600.00	3,000.00
(f) Piedmont Products Company Building	12,000.00
Total estimated cost	$332,595.00

*Does not include installation of water and sanitary sewer lines.

Estimated Cost of East Fourth Street Underpass and Allied Construction Work

(a) Underpass		$ 90,112.50
(b) Removal of existing facilities		
(b-1) Concrete pavement,	450 sq. yds. @ $0.75	337.50
(b-2) Concrete sidewalk,	120 sq. yds. @ 0.75	90.00
(c) New street work		
(c-1) Reinforced concrete pavement,	450 sq. yds. @ 5.00	2,250.00
(c-2) Concrete curb and gutter,	200 lin. ft. @ 2.50	500.00
(c-3) Concrete sidewalk,	120 sq. yds. @ 3.00	360.00
Total estimated cost		$ 93,650.00

Estimated Cost of East Fifth Street Underpass and Allied Construction Work

(a) Underpass		$114,702.60
(b) Removal of existing facilities		
(b-1 Concrete pavement,	2,455 sq. yds. @ $0.18	441.90
(b-2) Concrete sidewalk,	500 sq. yds. @ 0.15	75.00
(c) New street work		
(c-1) Grading	16,000 cu. yds. @ 0.40	6,400.00
(c-2) Reinforced concrete pavement,	3,211 sq. qds. @ 5.00	16,055.00
(c-3) Concrete curb and gutter,	1,700 lin. ft. @ 2.50	4,250.00
(c-4) Concrete sidewalk,	1,133 sq. yds. @ 3.00	3,399.00
(d) Reinforced concrete retaining walls		110,250.00
(e) Drainage		
(e-1) Manholes,	4 ea. @ $200.00	800.00
(e-2) Catch basins,	4 ea. @ 200.00	800.00
(e-3) Reinforced concrete pipe		
(1) Size 18",	68 lin. ft. @ $3.00	204.00
(2) Size 24",	400 lin. ft. @ 4.00	1,600.00
(3) Size 30",	400 lin. ft. @ 6.00	2,400.00
(f) Temporary trestles, 2 ea. @ $6,600.00		13,200.00
(g) Removal of temporary trestles, 2 ea. @ $750.00		1,500.00
(h) Contingencies		27,607.50
(i) Engineering		18,220.00
Total estimated cost		$321,905.00

Estimated Cost of East Fourth Street Underpass and Allied Construction Work

(a) Underpass		$ 90,112.50
(b) Removal of existing facilities		
(b-1) Concrete pavement,	450 sq. yds. @ $0.75	337.50
(b-2) Concrete sidewalk,	120 sq. yds. @ 0.75	90.00
(c) New street work		
(c-1) Reinforced concrete pavement,	450 sq. yds. @ 5.00	2,250.00
(c-2) Concrete curb and gutter,	200 lin. ft. @ 2.50	500.00
(c-3) Concrete sidewalk,	120 sq. yds. @ 3.00	360.00
Total estimated cost		$ 93,650.00

Estimated Cost of East Fifth Street Underpass and Allied Construction Work

(a) Underpass		$114,702.60
(b) Removal of existing facilities		
(b-1 Concrete pavement,	2,455 sq. yds. @ $0.18	441.90
(b-2) Concrete sidewalk,	500 sq. yds. @ 0.15	75.00
(c) New street work		
(c-1) Grading	16,000 cu. yds. @ 0.40	6,400.00
(c-2) Reinforced concrete pavement,	3,211 sq. qds. @ 5.00	16,055.00
(c-3) Concrete curb and gutter,	1,700 lin. ft. @ 2.50	4,250.00
(c-4) Concrete sidewalk,	1,133 sq. yds. @ 3.00	3,399.00
(d) Reinforced concrete retaining walls		110,250.00
(e) Drainage		
(e-1) Manholes,	4 ea. @ $200.00	800.00
(e-2) Catch basins,	4 ea. @ 200.00	800.00
(e-3) Reinforced concrete pipe		
(1) Size 18",	68 lin. ft. @ $3.00	204.00
(2) Size 24",	400 lin. ft. @ 4.00	1,600.00
(3) Size 30",	400 lin. ft. @ 6.00	2,400.00
(f) Temporary trestles, 2 ea. @ $6,600.00		13,200.00
(g) Removal of temporary trestles, 2 ea. @ $750.00		1,500.00
(h) Contingencies		27,607.50
(i) Engineering		18,220.00
Total estimated cost		$321,905.00

Estimated Cost of East Sixth Street Underpass and Allied Construction Work

(a) Underpass		$200,000.00
(b) Removal of existing facilities		
(b-1) Concrete pavement,	2,455 sq. yds. @ $0.18	441.90
(b-2) Concrete sidewalk,	752 sq. yds. @ 0.15	112.80
(c) New street work		
(c-1) Grading,	20,412 cu. yds. @ 0.40	8,164.80
(c-2) Reinforced concrete pavement,	3,211 sq. yds. @ 5.00	16,055.00
(c-3) Concrete curb and gutter,	1,700 lin. ft. @ 2.50	4,250.00
(c-4) Concrete sidewalk,	1,133 sq. yds. @ 3.00	3,399.00
(d) Reinforced concrete retaining walls		112,500.00
(e) Drainage		
(e-1) Manholes,	4 ea. @ $200.00	800.00
(e-2) Catch basins,	4 ea. @ 200.00	800.00
(e-3) Reinforced concrete pipe		
(1) Size 18",	68 lin. ft. @ $3.00	204.00
(2) Size 24",	400 lin. ft. @ 4.00	1,600.00
(3) Size 30",	400 lin. ft. @ 6.00	2,400.00
(f) Temporary trestles, 2 ea. @ $6,600.00		13,200.00
(g) Removal of temporary trestles, 2 ea. @ $750.00		1,500.00
(h) Contingencies		36,542.50
(i) Engineering		24,118.00
Total estimated cost		$426,088.00

Eestimated Cost of East Ninth Street Underpass and Allied Construction Work

(a) Underpass		$106,098.40
(b) Removal of existing facilities		
(b-1) Concrete pavement,	3,070 sq. yds. @ $0.18	552.60
(b-2) Concrete sidewalk,	1,000 sq. yds. @ 0.15	150.00
(c) New street work		
(c-1) Grading,	15,300 cu.yds. @ 0.40	6,120.00
(c-2) Reinforced concrete pavement,	3,250 sq. yds. @ 5.00	16,250.00
(c-3) Concrete curb and gutter,	1,750 lin. ft. @ 2.50	4,375.00
(c-4) Concrete sidewalk,	1,150 sq. yds. @ 3.00	3,450.00
(d) Reinforced concrete retaining walls		62,500.00
(e) Drainage		
(e-1) Manholes,	4 ea. @ $200.00	800.00
(e-2) Catch basins,	4 ea. @ 200.00	800.00
(e-3) Reinforced concrete pipe		
(1) Size 18",	68 lin. ft. @ $3.00	204.00
(2) Size 24",	400 lin. ft. @ 4.00	1,600.00
(3) Size 30",	400 lin. ft. @ 6.00	2,400.00
(f) Temporary trestles, 2 ea. @ $6,600.00		13,200.00
(g) Removal of temporary trestles, 2 ea. @ $750.00		1,500.00
(h) Contingencies		22,000.00
(i) Engineering		14,520.00
Total estimated cost		$256,520.00

Estimated Cost of South Tryon Street Underpass and Allied Construction Work

(a) Underpass		$ 33,080.00
(b) Removal of existing facilities		
(b-1) Concrete pavement,	6,000 sq. yds. @ $0.18	1,080.00
(b-2) Concrete sidewalk,	2,500 sq. yds. @ 0.15	375.00
(c) New street work		
(c-1) Grading,	31,675 cu. yds. @ 0.40	12,670.00
(c-2) Reinforced concrete pavement,	6,000 sq. yds. @ 5.00	30,000.00
(c-3) Concrete curb and gutter,	1,700 lin. ft. @ 2.50	4,250.00
(c-4) Concrete sidewalk,	2,500 sq. yds. @ 3.00	7,500.00
(d) Reinforced concrete retaining walls		87,500.00
(e) Drainage		
(e-1) Manholes,	2 ea. @ $200.00	400.00
(e-2) Catch basins,	4 ea. @ 200.00	800.00
(e-3) Reinforced concrete pipe		
(1) Size 18",	180 lin. ft. @ $3.00	540.00
(2) Size 24",	90 lin. ft. @ 4.00	360.00
(3) Size 30",	1,500 lin. ft. @ 7.00	10,500.00
(f) Temporary trestle		6,000.00
(g) Removal of temporary trestle		1,200.00
(h) Contingencies		19,625.00
(i) Engineering		12,953.00
Total estimated cost		$228,833.00

ATLANTA, GEORGIA

CHARLOTTE, NORTH CAROLINA

124 46

WHITEHEAD & ZICKEL

CONSULTING ENGINEERS

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July 1, 1961

Mr. William J. Veeder
City Manager
City of Charlotte
Charlotte, North Carolina

Dear Mr. Veeder:

We are pleased to submit to you, the Mayor, and City Council a "Report and Estimates for the West Side Grade Crossing Elimination Project, dated July 1, 1961." The report and estimate were made in accordance with our contract for engineering services as authorized by the City Council on February 6, 1961.

Numerous conferences were held with various City and Southern Railway Company officials to co-ordinate, discuss, and incorporate ideas and requirements mutually beneficial to the parties participating in the cost of construction and use of the project. We wish to acknowledge the assistance and co-operation rendered by the City and Railway Company.

We have made numerous studies, drawings, and comparative estimates on which this report and the total estimate of cost are based. The proposed structures and methods for constructing the railway are conventional and most economical.

You are requested to authorize our firm to continue developing the preliminary plans into final contract drawings and specifications as per paragraph 2(b) PLAN PHASE of our contract for engineering services. A contract for sub-surface investigations at proposed bridge and retaining wall foundations should be considered by the City at the same time.

The importance of constantly working in order to get this project under construction at an early date in the summer of 1962 cannot be emphasized enough.

Respectfully submitted,

Ralph L. Whitehead

Ralph L. Whitehead
Consulting Engineer

Registered Professional Engineer
State of North Carolina
Registration No. 1978

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OBJECTIVES OF THIS REPORT

1. ASSEMBLING DATA AND EVALUATING PREVIOUS PLANS:
In order to make a comprehensive report and reliable estimate of construction costs, a thorough evaluation of the plans previously prepared had to be made. Considerable time was required to assemble and to study correspondence files, drawings, engineering data, and survey notes which had been prepared for the project during the past twelve years. A brief history of the Grade Crossing Elimination Program is included.

2. RECOMMENDATIONS FOR ADDITIONS, DELETIONS, OR ALTERATIONS:
Each item of construction was carefully considered as to merits versus costs. By the process of trial and elimination, several schemes were studied and discarded in favor of the most economical and conventional.

3. PREPARATION OF PRELIMINARY PLANS AND PROFILES:
Preliminary structural plans were prepared on which comparative estimates of cost were made to determine which would be the most economical. Plans and profiles of street changes were made to consider the effects of street and utility changes on property adjacent to the street right of way. Preliminary track staging plans were prepared to show how the project might be constructed during railway operations. All of the above preliminary drawings have been submitted to the City and to the Southern Railway Company for discussion and tentative approval. This is a major step toward the preparation of contract drawings and specifications.

4. PREPARATION OF A REALISTIC ESTIMATE OF CONSTRUCTION COSTS:
Based on the above-mentioned preliminary drawings and the assurance that the basic ideas will be acceptable to the City and to the Southern Railway Company, a realistic estimate of construction costs was prepared. To make this estimate, current unit prices of all items were obtained. From the above preliminary drawings, quantities were estimated with the most reasonable degree of accuracy possible at this time. For construction contingencies, 10 per cent is included in the total estimate of construction costs.

5. SUGGESTIONS FOR EXPEDITING THE CONSTRUCTION OF THE PROJECT:
Suggestions for overcoming some of the major obstacles that may delay the project are submitted. The right-of-way clearance, negotiations with property owners, and abandonment of the present passenger station tracks and operations are essential steps to be accomplished before construction.

6. EXPLANATION OF THE SCOPE AND MERITS OF THE PROJECT:
An explanation of the scope and merits of the project outlines the specific items of construction recommended. The scope of the project must encompass a substantial amount of allied construction in addition to the proposed underpass structures.

HISTORY OF CHARLOTTE GRADE CROSSING ELIMINATION PROGRAM

Complete topographic surveys, preliminary drawings, estimates of cost, and a report for the Grade Crossing Elimination Program in Charlotte were made in 1949 and 1950. Maps of the East Side and West Side were prepared from the topographic surveys and the first West Side General Layout Plan was prepared.

An agreement was signed in 1951 between the City of Charlotte and Southern Railway Company whereby the Railway Company agreed to pay 25 per cent of the total cost of the major program, which included the Crossline Railway and West Side Projects.

East Stonewall Street Underpass was constructed in 1951 and 1952, opening a new street under the Southern Railway freight yard. The freight station later burned and freight operations were moved to West Fourth Street on the opposite side of the tracks from the passenger station.

The Crossline Railway was surveyed and the design began in 1952 and 1953. Construction and final design were delayed for about one year, pending State participation in the financing of the project.

East Eleventh Street Overhead Bridge was designed and constructed in 1953 and 1954, replacing the old timber structure.

The design was resumed and right of way was acquired for the Crossline Railway in 1954 and 1955. The City obtained $500,000 State participation in the financing. Construction began in the summer of 1955 and was completed in the fall of 1956.

The construction of the Crossline Railway allowed all Columbia Division trains to pass through Charlotte on the West Side, leaving only switch engine operations to industry on the East Side. The long delays to vehicular traffic on the East Side street-railway grade crossings were eliminated by the Crossline Railway. The long freight trains, which delayed traffic on the East Side before the Crossline Railway, were added to the West Side rail traffic. The increase in volume of rail traffic plus the increase in volume of vehicular traffic made the construction of the West Side Project more important.

In addition to the relief provided at all East Side street-railway grade crossings by the construction of the Crossline Railway, the Columbia Division connecting line was disconnected on each side of South Tryon Street, eliminating that grade crossing. These tracks are now used as switching lead tracks to serve industry up to each side of South Tryon Street.

The construction of the Crossline Railway is the major accomplishment of the Grade Crossing Program to date. The physical improvements were made outside the City (now it marks the City limits), but the results are obvious at all the East Side street-railway crossings. It was the most economical solution for the East Side and was planned as a phase of the Program allied to the West Side Project.

Remount Road Overhead Bridge was designed and constructed in 1956 and 1957, replacing the old structure across Southern Railway Company main tracks. This bridge was part of a street bond project..

In 1957 it was agreed to move the passenger terminal from its present location on West Trade Street to a new location east of North Tryon Street near Keswick Avenue. This necessitated a complete revision of the railway layout plan previously prepared for the West Side Project.

In the summer of 1958, a revised West Side General Layout Plan was submitted and approved generally for operations by the Southern Railway Company. Immediately thereafter, it was decided unwise to proceed with detail contract drawings and specifications for construction until the traffic study and Thoroughfare Plan had been completed by Wilbur Smith and Associates, Traffic and Highway Consultants. As a result, the project was delayed until the Master Highway Transportation Plan for the Charlotte Metropolitan Area was submitted in the spring of 1960 by the above-named firm.

All of the above accomplishments on the Charlotte Grade Crossing Elimination Program were attained under the direction of the late Frank T. Miller, Consulting Engineer, of Greensboro, North Carolina, who passed away in March, 1960.

MERITS OF WEST SIDE GRADE CROSSING ELIMINATION PROJECT

The elimination of grade crossings on the West Side of Charlotte offers merits to both the City and to Southern Railway Company. Grade Crossings may be eliminated by either one of the following three ways:

(a) Close the street on each side of the tracks. This reduces the crossing hazards, but it creates a vehicular traffic problem, namely, a dead-end street. It is not justified unless the traffic volume is small and can be absorbed by an alternate route.

(b) Remove the track across the street by relocation or abandonment. The cost for relocation is usually excessive, and abandonment must be justified by lack of service.

(c) Separate the crossing by constructing a street underpass or street overhead bridge.

By one of the above three ways, the studies on this project have pursued the main objective, elimination of grade crossings. In the proposals of this report, a great effort has been made to increase the merits of the project without increasing the total cost, as compared with previous plans.

The elimination of the grade crossing at West Trade Street by constructing an underpass is the primary focal point of the project.

The construction of this separation structure cannot be accomplished unless a great amount of allied work is performed. The allied construction makes the scope of the project broader and the benefits derived from the entire project must be considered integrally.

Approximately 1.4 miles of main line railway facilities, including local industrial lead tracks and connecting tracks, must be raised to accommodate the Trade Street structure. The raising of these tracks automatically makes it possible and logical to provide separation structures for other streets. These proposed additional underpasses combine with West Trade Street Underpass to form a broader base for the derivation of specific benefits and provide adequate justification for the $3.5 million project.

The underpass at West Trade Street can allow six lanes of traffic to travel uninterrupted beneath the railway on this major east-west arterial street. A new underpass is proposed for West Fourth Street, presently dead-end on each side of the railway, with a new street wide enough for four lanes of traffic. West Fifth Street grade crossing can be eliminated by adding a new underpass with three lanes at this location. West Morehead Street Underpass, currently three lanes wide, will be reconstructed to accommodate four lanes of traffic. The existing West Sixth Street Underpass superstructure will be modified to fit the new location of the railway tracks, but the street with four 10'-0" lanes will remain unchanged.

The above four new underpasses combined with the existing West Sixth Street structure and Independence Boulevard Overhead Bridge can provide 25 grade-separated traffic lanes. At present, the existing underpasses at West Morehead and West Sixth Streets and Independence Boulevard Overhead Bridge provide for only 13 grade-separated traffic lanes. The addition of 12 grade-separated traffic lanes on the West Side is the most significant objective for the City.

The closing of three minor streets is proposed to eliminate the grade crossings. These streets are West Third Street, West Hill Street, and Dunbar Street. The traffic now accommodated by these three grade crossings can be routed through and easily absorbed by the existing and new separation structures. The proximity of these proposed and existing dead-end streets to the proposed new underpasses, the infeasibility of separating street-railway crossings at these locations, and the distance between separation structures emphasize the importance of each underpass proposed.

Included in the project is new street and utility construction, accounting for a substantial portion of the project cost. The street approaches between Graham and Cedar Streets for the underpasses must be depressed and/or widened. Pavement, sidewalk, drainage facilities, water mains, and sewer mains must be reconstructed. Buildings on property adjacent to the depressed streets may require modifications to driveways, foundations, and front elevations.

West Trade Street, West Sixth Street and West Morehead Street will

become important feeder connector streets between the central business district and the access points on the North-South Expressway. This will obviously cause an increase in the volume of traffic on these major streets, especially during the usual rush hours of commuter traffic. When the major arterial streets are loaded with traffic at peak hours, motorists seek alternate routes. West Fourth Street Underpass and a suggested westward extension of Fourth Street to Summit Avenue near Tuckaseegee Road can become an alternate route plus a service street to the industrial area west of the railway.

The separation of the street-railway crossings on the West Side and the proximity of the proposed North-South Expressway, generally paralleling Irwin Creek, can attract downtown development westward along Trade Street to the railway and beyond. Such a trend of new building will undoubtedly increase property values and consequently increase City revenues.

In the process of acquiring right of way for railway purposes or in clearing the present railway right of way of encroachments, approximately 50 slum dwellings must be removed on the west side of the tracks.

In raising the railway tracks and reducing the number of tracks at most potential crossings, it will be more feasible to build underpasses at some additional locations if future developments warrant such construction.

The time lost by individuals, trucks, cars, and buses waiting at train-blocked crossings can be a thing of the past.

The West Side Grade Crossing Elimination Project will offer many benefits to Southern Railway Company. Some of these are listed as follows:

(a) The elimination of 13 traffic lanes crossing at grade a total of approximately 25 tracks reduces Railway Company liabilities due to possible train-vehicle accidents.

(b) Maintenance cost for approximately 700 track feet of grade crossings can be eliminated.

(c) Probability of having to add signal lights or gates at these grade crossings can be eliminated.

(d) The crossing watchman and signal gates at West Trade Street will not be required after the project is complete.

(e) The project can assist the Railway Company in relocating passenger operations to a new passenger terminal. Released track and other materials can be used at other locations.

(f) Obsolete trackage removed can reduce the tax valuation and maintenance.

(g) The old passenger station, greatly in need of maintenance and renovation, can be released or razed for other purposes.

The land can be used for downtown development in the future, and its value can increase substantially as adjacent downtown property develops westward.

(h) West Fourth Street Underpass and approaches will provide direct access by a wide new street to the Southern Railway Freight Station and other properties presently served by this dead-end street on both sides of the tracks.

(i) With improved track alignment and relocation of passenger station operations, the freight trains can probably move through the City more rapidly.

(j) Reconstruction of West Morehead Street Underpass and improvements to West Sixth Street Underpass relieves the Railway Company of some maintenance and the probability of replacement of these structures at an earlier date.

(k) Right of way acquired for railway purposes by the project will become the property of Southern Railway Company.

(l) Encroachments by slum dwellings and buildings on the present railway right of way must be removed for the construction of this project.

ITEMS CONSIDERED IN REPORT

1. SCOPE OF THE PROJECT:

(a) After the decision was made to build a new Southern Railway Passenger Station, a thorough study was made resulting into the final general layout plan and profiles submitted by the late Frank T. Miller, Consulting Engineer, in 1958.

(b) The proposed final track plan was reduced in scope considerably by the decision to move the passenger station. For example, the Southern Railway Company agreed that three tracks would be sufficient throughout most of the project, whereas in previous plans with the passenger station in its present location, there were to be six or more tracks on the newly elevated embankment at some locations and the project included a considerable expenditure on the existing depot and facilities.

(c) The proposed railway grades were modified in 1958 so that the new railway grade would ascend on a 0.75% maximum grade toward West Trade Street from the north and descend on a 1.00% maximum grade from West Trade Street toward the south. The grade change begins at West Eleventh Street and ends near Independence Boulevard.

(d) The proposed alignment of the new northbound main track is to be located westerly approximately 43 feet from the existing location. The new southbound main track is to be moved westerly and located 14 feet from the new northbound main track. The proposed main track alignment is straight throughout, except at each end of the project where the existing curves are to be compounded. This is an improvement over the existing track alignment.

In addition to the two main tracks, a main lead track paralleling the main tracks is proposed along the east side from near West Tenth Street to near Independence Boulevard. This main lead track will descend from the upper level to the lower level between West Fourth Street Underpass and Piedmont and Northern Railway Underpass. Another lead track will tie into this main lead track near West Eighth Street and descend to the existing track elevation near West Fifth Street to serve industry within this area. The changes in grade from the upper level tracks to the lower level tracks occur between proposed underpass locations.

Industrial track service may be continued between underpasses without crossing streets, except in one location. This location is at West Fifth Street where an industrial track will continue to cross the street at grade. This track is infrequently used and may be eventually abandoned. Otherwise, the work contemplated in the following paragraph will eliminate all grade crossings between Summit Avenue (previously Dowd Road) and West Ninth Street.

(e) The work contemplated by the plans:

(e-1) Build an addition to the existing West Sixth Street Underpass to fit the new location of tracks.

(e-2) Build a new underpass at West Fourth Street with 44'-0" between the street curbs.

(e-3) Build a new underpass at West Trade Street with a total of 70'-0" between the street curbs.

(e-4) Build a new underpass at West Fifth Street with 36'-0" between street curbs.

(e-5) Remove the existing underpass and build a new underpass at West Morehead Street to fit the new location of tracks and increase the street width from 36'-0" to 44'-0".

(e-6) Build an addition to the existing underpass for Piedmont and Northern Railway to fit the new location of the two main Southern Railway tracks.

(e-7) Build a railway trestle between West Fifth Street Underpass and a point near West Seventh Street in lieu of earth retaining walls.

(e-8) Close West Third Street grade crossing, creating a dead-end street.

(e-9) Close West Hill Street grade crossing, creating a dead-end street.

(e-10) Close Dunbar Street grade crossing, creating a dead-end street.

(e-11) Raise West Ninth Street grade crossing approximately three feet.

(e-12) Raise West Tenth Street grade crossing slightly.

2. PRELIMINARY STRUCTURAL STUDIES:

During the study of the previous plans, it was discovered that a very thorough study had been made of the proposed track plan and profiles which have been generally approved by the Southern Railway Company for railway operations. Researching into the history of this project further indicated that the structural studies had not been emphasized as much as track studies. Therefore, it was decided that preliminary plans should be made for each structure in order to more accurately estimate the construction costs.

Preliminary structural plans serve several other purposes, such as exhibits for obtaining tentative approval from the City and Southern Railway Company. These preliminary drawings represent a portion of the working drawings and will serve as a guide for commencing with the detailed contract drawings and specifications with the assurance that the basic design will be acceptable to the City and to Southern Railway Company. Thus, the estimate of construction cost for the structures will be more reliable.

The plan prepared by the late Frank T. Miller, Consulting Engineer, required a total expenditure of approximately $500,000 for earth fill, concrete retaining walls and additions to West Sixth Street Underpass between West Fifth Street and West Seventh Street.

A comprehensive study, including a detailed design of a prestressed concrete railway trestle for the three elevated tracks, was made to be compared with the cost of the concrete retaining walls including the cost of revamping West Sixth Street Underpass and the cost of earth embankment. The trestle proposed is approximately 730 feet long, including 106 feet for the addition to the existing

West Sixth Street Underpass and an extension southward of 97 feet for West Fifth Street Underpass.

The West Fifth Street Underpass will be relatively inexpensive if constructed for a temporary vertical clearance of 12'-6". This restriction is brought about by the fact that the street will have to cross at grade an industrial track serving a warehouse on the east side of the tracks. The damage caused to the buildings adjacent to the street will be extensive if the street is lowered further for the desired 14'-6" vertical clearance. In the future, service on the above-mentioned industrial track may be discontinued and some of the old buildings will probably be removed. The street could then be lowered an additional 2'-0" without damaging the property extensively or spending a great deal for underpinning these old buildings. An underpass with a temporary vertical clearance of 12'-6" conspicuously marked with a sign will serve to move many automobiles and trucks beneath the railway tracks, as has been accomplished by the present underpass at West Morehead Street.

An alternate solution to the problem of vertical clearance at the proposed West Fifth Street Underpass can be the addition of a center concrete pile bent for two short ballastless concrete 27'-0" spans across the street. These spans can be designed approximately 1'-10" thinner than the longer clear span of 40'-0". Such an alternate can provide four lanes of traffic instead of three. The street would not need to be lowered more now or in the future because the vertical clearance would be at least 14'-0".

In addition to replacing the retaining walls and earth embankment, the proposed railway trestle will serve as approaches for the raised and horizontally relocated superstructure of the existing West Sixth Street Underpass. The estimated total cost of this railway trestle, including West Fifth Street Underpass and the addition to West Sixth Street Underpass, is approximately $473,000.

The railway trestle is further warranted because it can be constructed more rapidly with less space requirements during the various stages of track construction. It allows the two temporary main tracks to operate clear of the structures through a restricted area. The construction time required for the project will be less.

The trestle will not alter the drainage system of the tracks nor damage the property occupied by the United States Navy Armory and the cemetery through this section of the project. Retaining walls at the locations shown on the previous plans would have required drainage alterations. Construction of the walls would have damaged the adjacent property substantially. Excavation for footings and pile driving would have required more space with temporary shoring and bracing on each side.

COMPARATIVE COST ESTIMATES

EARTH FILL AND RETAINING WALLS VERSUS RAILWAY TRESTLE BETWEEN STATION 72 + 54 AND 79 + 84

Earth Fill and Retaining Walls:

Earth fill, 624 L. F.	$ 29,000
Retaining walls	314,000
Temporary sheeting and bracing during construction	30,000
West Sixth Street Underpass Addition, 106 L. F.	127,000
TOTAL	$ 500,000

Note: Fifth Street would be a dead-end street under this plan.

Railway Trestle:

Prestressed concrete trestle, 527 L. F.	$ 297,000
West Sixth Street Underpass Addition, 106 L. F.	66,000
New West Fifth Street Underpass, 97 L. F.	76,000
New street work at West Fifth Street	34,000
TOTAL	$ 473,000

Note: Above figures include 15% for construction contingencies and engineering.

Conclusion: The difference in costs by using the trestle reflects a net savings of $27,000 plus a new underpass including street changes at West Fifth Street costing $110,000, or a gross difference of $137,000 for this project. A street parallel to and on the west side of the tracks between West Trade Street and West Fifth Street (proposed in conjunction with the previous plans for dead-ending West Fifth Street) was estimated to cost $100,000, including right of way. This street will not be needed if West Fifth Street remains open. A new diagonal street to connect West Sixth Street at Graham Street to West Fifth Street at Pine Street was recommended by Wilbur Smith and Associates because the previous grade crossing elimination plans contemplated making West Fifth Street a dead-end street. The estimated cost, including right of way, for this proposed connector would have been approximately $60,000, but it will not be required if the underpass is constructed. It is obvious that the railway trestle and West Fifth Street Underpass are both well justified economically.

Where space requirements allow, concrete cribbing may be substituted for some of the railway trestle spans and/or concrete retaining walls. Further investigation will be made, during the preparation of contract drawings and specifications, to determine where such substitutions can be made economically

Provision for an underpass at West Fifth Street is compatible with the traffic studies and Thoroughfare Plan prepared by Wilbur Smith and Associates. The Thoroughfare Plan recommends improvements for West Fifth Street, making it a major arterial street.

With proposed new underpasses at West Fifth Street, West Trade Street, and West Fourth Street, much of the high cost of elevating the approaching tracks may be distributed over these three structures located in the central business district. These structures replace grade crossings at Trade and Fifth Streets and the presently dead-end West Fourth Street is to be opened to traffic by a new underpass.

3. PROPOSED TRACK STAGING DURING CONSTRUCTION:

In order to raise the tracks through Charlotte and maintain grades and vertical curves acceptable to Southern Railway Company, it is necessary to extend the track-raising project approximately 4,000 feet south of West Trade Street and 3,000 feet north of West Trade Street. The studies for this report indicated that this change in track elevation could not be avoided, and the grades and profiles prepared by the late Frank T. Miller must be adhered to in order to build underpasses at West Fourth Street, West Trade Street, and West Fifth Street at minimum costs.

In the process of raising the tracks to the new elevations, it is more economical and practical to change the alignment of the tracks in order to build the new tracks and structures clear of train operations. The track plan prepared by Mr. Miller provided for the main tracks to be relocated approximately 43 feet to the west from the existing tracks, between the limits of West Morehead Street and West Fifth Street. This will allow the new embankments to be constructed without interfering appreciably with the operations of Southern Railway trains.

Approximately one half of the existing tracks may be used at their present location and elevation as temporary main tracks during construction. The proposed horizontal relocation of the newly elevated tracks will allow partial construction of the underpass structures without interfering appreciably with the temporary main track operations. More specifically, the structures can be completed for a width sufficient to allow the two new main tracks to be placed into final position and operation thereon.

In studying the track stages during construction, studies were made

on the structures in order to co-ordinate track and structural work. It was determined that all structures could be constructed for their full width and length to fit the new location of the tracks thereon without interfering with train operations on the temporary main tracks and without temporary falsework trestles, with the following exceptions:

(a) The West Morehead Street single-track underpass will require a temporary falsework trestle for industrial lead track operations during the construction of the structure. The temporary falsework trestle will consist of three double timber pile bents, using the two open-deck steel plate girder spans released from the existing underpass and typical timber trestle approaches.

(b) The entire railway trestle, including revisions to the existing Sixth Street Underpass and the West Fifth Street Underpass, will have to be constructed in two stages. The first stage of construction shall be wide enough for the two main tracks, and the second stage of construction shall complete the full width of the bridge for the addition of the main lead track.

Railway track construction stage plans were prepared to show how the new track layout could be progressed from the existing layout. This included intermediate stages of trackwork for continuous railway traffic operations. Provisions for the Contractors' operations, vehicular traffic, structures, street and utility construction were considered integrally with the trackwork stage plans.

These preliminary track staging plans provided a basis for estimating the cost of trackwork. It was possible to estimate which existing materials could be used or released in reconstruction and what materials would be required from other sources. Specific dimensions, clearances, and requirements for train operations were established through discussion of these exhibits with Southern Railway engineers. The basic scheme for track staging provides for temporary double track main lines to operate throughout the project during construction. With these items generally agreed on, the trackwork estimate is more reliable.

TEMPORARY DETOURS FOR VEHICULAR TRAFFIC:

During the studies for this report, it was determined that considerable detours of vehicular traffic would have to be made during construction. These traffic detours must be co-ordinated with railway, street, and structure stages of construction.

The first step during construction will be the construction of a

temporary double track main line, crossing the streets at approximately the existing elevations.

The second step is to construct West Fourth Street Underpass complete and West Fifth Street Underpass wide enough for the two elevated main tracks. During this step, only Fifth Street will be closed to vehicular traffic and substructures will be in various stages of construction on Trade Street with traffic slightly restricted. Also, during this phase, the end spans on Trade Street Underpass may be completed.

The third step will close Trade Street at Wilkes Place and Cedar Streets and simultaneously detour traffic under the new Fourth Street Underpass, the new Fifth Street Underpass, and the existing Sixth Street Underpass. Vehicular traffic will be crossing over the temporary double track main line through the first two structures at existing grade crossing elevations or slightly lower. A temporary vertical clearance of 10'-0" beneath the new structures will have to be maintained during this stage. The duration of this restriction depends on the time required for the completion of the Trade Street Underpass center spans, the relocation of the main tracks, and the completion of the street pavement. The time required for this step must be kept to an absolute minimum and is estimated to be approximately 60 days.

The fourth major step, after Trade Street Underpass is completed and the street opened to traffic, will require a temporary closure of Fourth and Fifth Streets so these streets can be lowered and completed.

The above four steps may increase to eight phases of construction by being subdivided during the preparation of detail contract drawings and specifications.

Only through co-operative efforts of the Railway Company, City, adjacent property owners, utility companies, and the traveling motorists can this project be constructed expediently and economically. Detour signs should be erected as follows: "Please pardon the inconvenience of our progress."

5. STREET AND UTILITY RECONSTRUCTION:

The streets approaching the new underpasses must be depressed and/or widened between Graham and Cedar Streets. The utilities therein must be depressed or relocated according to the new street plans and profiles. Water, sewer, and gas mains must be lowered. Storm drainage systems must be altered. Street lights, sidewalks, driveways, curbs, and pavement must be reconstructed.

The City will direct utility companies to remove or relocate any

poles, lines, wires, conduits, and pipes now located upon the railway or street right of way as may be required by the construction of the project. The cost of this work shall be absorbed by the utility companies according to the respective ownership of such items.

Where the sidewalk is removed and reconstructed at a lower elevation to match the new street grade, building foundations may have to be underpinned and extended downward below the new sidewalk. Front elevations of buildings exposed by the lowering of the sidewalk will require renovations. Entrances may require steps and new doorways. Driveways outside the street right of way must be reconstructed to match the new street cross-section.

6. RECOMMENDED EXTENSIONS OF WEST FOURTH STREET:

On the "Vicinity Plan" included herein are two suggestions for extending West Fourth Street to provide more westward continuity to the street. The proposed underpass structure is to be constructed under only three railway tracks and, if constructed concurrently with the track-raising project, the construction cost will be a minimum. The right-of-way cost and property damage to buildings by depressing the streets will be substantial, but the total estimated cost is justified by the necessity.

West Third Street, which now crosses 13 tracks at grade, will become a dead-end street when the crossing is closed to vehicular traffic. It is not practical to separate this crossing.

The suggested westward extension of West Fourth Street from Cedar Street to Summit Avenue can assist West Trade and West Sixth Streets with the volume of traffic between the westward area beyond Irwin Creek and the central business district. West Fourth Street now extends across the City to the east, but it becomes a dead-end at the present railway depot.

The recommended westward extension beyond Cedar Street of West Fourth Street can be bridged over the proposed North-South Expressway and Irwin Creek. It can be given access to the frontage streets paralleling the expressway, or direct access to the expressway. More significantly, it will provide an alternate westward route between the central business district and West Charlotte when West Trade and West Sixth Streets are filled to their capacities with traffic moving to or from the proposed access points of the expressway.

The suggested West Third and West Fourth Street Connector between Graham Street and the proposed West Fourth Street Underpass would allow traffic to merge or diverge at a point just east of the railway underpass. Two significant buildings will have to be

removed in clearing the right of way for this connector, but the one fronting on Fourth Street will be damaged and will require considerable alterations by the depressed street approaching the underpass anyway. This suggestion is a logical improvement to alleviate the closing of West Third Street now and may be accomplished during the underpass construction or in the future. Obviously, if the area redevelops in the future, the increased cost of such a downtown connector may make it unjustifiable.

7. INFEASIBILITY OF LOWERING RAILWAY:

The lowering of the railway through the West Side of Charlotte so that the streets may cross over the tracks on bridges is not economically feasible. Such a possibility has been further investigated in the preparation of this report and the following reasons are listed to help answer the often-asked question, "Why not lower the tracks?"

(a) The required separation of street crown and top of rail would be approximately 26 feet for an overhead bridge to clear the top of rail 22'-6". The tracks would have to be depressed approximately 18 feet at West Trade Street and the street raised approximately 8 feet. Similar requirements would have to be met at West Fourth and West Fifth Streets if grade separations are to be provided.

(b) Existing West Sixth Street Underpass would have to become a grade crossing, which is adverse to the objectives of the project.

(c) Property damage would be greater if the approaching streets were elevated in front of existing buildings.

(d) Grades for the street approaches would be at a maximum and sight-distances at a minimum.

(e) Grades for the railway would be at a maximum and it is doubtful if the necessary changes would be acceptable.

(f) Providing surface drainage for the long excavation containing the tracks would be a serious and expensive problem.

(g) The ground water table is indicated to exist at an elevation 11 feet below the surface at the present West Trade Street grade crossing. This would make excavation below this depth and underdrainage of the tracks major items of cost.

(h) Since the tracks would be depressed approximately 14 to 18 feet between West Third and West Seventh Streets, it would be impractical to provide railway freight service to the present industries at their existing floor levels.

(i) In making an excavation this deep, especially 8 to 10 feet below the existing ground water table, the provisions for retaining the side slopes would probably be retaining walls or cribbing at many locations. The construction of retaining walls parallel to the tracks to support vertical earth banks surcharged with the weight of loaded industrial railway tracks and buildings at the upper (existing) level would be very expensive.

(j) Sanitary sewer lines presently located beneath the existing streets would have to be designed to pass under the depressed tracks or on the overhead bridges clearing the top of rail at least 22'-6". This will make it very difficult to obtain gravity flow.

(k) Rock excavation may be encountered in some locations during the construction of the railway tracks, drainage systems and utilities.

3. RIGHT-OF-WAY REQUIREMENTS:

(a) Right-of-way for railway construction: Between West Eleventh Street and West Dunbar Street, there are approximately seven parcels of land to be acquired for railway construction. The change in track grade and alignment makes these acquisitions necessary to accommodate the embankment slopes, drainage, and utility poles. These parcels of land are partly occupied by warehouses, slum dwellings, or sheds which must be moved, razed, or altered to clear the proposed right of way.

In addition to the parcels of land to be acquired by deed for right of way, there are many areas on the existing railway right of way which must be cleared for construction. Clearance of these areas includes removing portions of old warehouses, dwellings, one store and several sheds.

During the negotiations for acquiring and/or clearing the right of way, comparative costs should be developed to determine which is cheaper; retaining walls or additional right of way for embankment slopes. Retaining walls are provided where necessary, but more retaining walls or concrete cribbing may be added to avoid expensive purchases for right of way.

The right-of-way parcels of land, moving dwellings, razing or altering buildings and property damages for railway construction on this project is estimated to be $250,000.

The termination of operations on the tracks and facilities serving the existing Southern Railway Passenger Station on West Trade Street is necessary in order for these tracks and facilities to be removed. Removal of these tracks, butterfly passenger sheds, canopies, and concrete paving in front of the station should be accomplished during the initial stages of construction to provide space for lining the temporary main tracks eastward, bypassing the Contractor's operations.

Since the 1958 plan is based on moving all passenger operations to North Charlotte, it is imperative that the proposed new passenger station be constructed and in operation before construction of the West Side track-raising project is begun. Assuming that it will require one year to construct and put into operation the new passenger station and the tracks serving it, the construction contract should be awarded for the new station as soon as possible.

(b) Right of way for street construction: Additional street right of way will be required at West Morehead Street, West Fourth Street and West Fifth Street to accommodate the widened streets. Extensive negotiations are expected to be required in order to obtain agreements with property owners along the depressed streets.

Renovation of the entrances, front elevations, driveways, doors, steps, etc. must be detailed to the owners' specifications and such work should be performed concurrently with the street reconstruction. Portions of several small buildings will have to be underpinned during the street excavation so that the foundations may be extended below the new sidewalk grade.

A maximum effort must be made to quickly reconstruct these streets with minimum inconvenience to business and property owners.

The right-of-way parcels of land, renovation of buildings, and property damages for street construction on this project is estimated to be $200,000.

The total estimated cost for all right of way for railway and street purposes is $450,000. It is recommended that negotiations for acquisition of this right of way begin immediately.

LIST OF DRAWINGS PREPARED FOR REPORT AND ESTIMATES

Drawing No.	Title and Date
T-1001	Vicinity Plan & Railway Profiles, dated June 1, 1961.
B-1001	Proposed Roadbed Sections, dated April 10, 1961.
D-1001	Proposed Track Staging Plans for Temporary Double Track Main Line, dated April 20, 1961 (6 sheets).
D-1002	West Trade Street-Preliminary Plan and Profile, dated May 24, 1961.
D-1003	West Trade Street Underpass-Preliminary Plan and Elevation, dated May 24, 1961.
D-1004	West Fourth Street-Preliminary Plan and Profile, dated May 24, 1961.
D-1005	West Fourth Street Underpass-Preliminary Plan and Elevation, dated May 24, 1961.
D-1006	Preliminary Trestle Plan and Profile, dated June 8, 1961.
D-1007	Preliminary Trestle Plan and Elevation-Prestressed concrete, dated June 8, 1961.
D-1008	West Fifth Street-Preliminary Plan and Profile, dated June 8, 1961.
D-1009	West Fifth Street Underpass-Preliminary Plan and Elevation, dated June 8, 1961.
D-1010	West Sixth Street Underpass Alterations-Preliminary Plan and Elevation, dated June 8, 1961.
D-1011	Piedmont and Northern Railway Underpass-Preliminary Plan and Elevation, dated June 8, 1961.
D-1012	West Morehead Street-Preliminary Plan and Profile, dated May 24, 1961.
D-1013	West Morehead Street Underpass-Preliminary Plan and Elevation, dated May 24, 1961.
D-1014	West Morehead Street Underpass-Plan of Detour Trestle for Lead Track, dated June 8, 1961.
16 Sheets	Railway Earthwork Cross-sections, dated June 8, 1961.
2 Sheets	Remodeling Southern Railway Office Building-Preliminary, dated May 30, 1961.

SUMMARY - TOTAL COST OF PROJECT*

ITEM 1.	TRACKWORK (including salvage)	$ 774,380
ITEM 2.	RAILWAY SIGNAL, ELECTRICAL & COMMUNICATION FACILITIES	127,020
ITEM 3.	GRADING FOR RAILWAY ROADBED	156,165
ITEM 4.	TRACK DRAINAGE	16,410
ITEM 5.	RETAINING WALLS	53,100
ITEM 6.	CONCRETE CRIB WALLS	21,900
ITEM 7.	CHANGES TO WEST TENTH STREET GRADE CROSSING	2,325
ITEM 8.	CHANGES TO WEST NINTH STREET GRADE CROSSING	4,200
ITEM 9.	REVISING EXISTING TIMBER TRESTLE AT WEST SIXTH STREET	7,500
ITEM 10.	WEST SIXTH STREET UNDERPASS ALTERATIONS	60,000
ITEM 11.	PRESTRESSED CONCRETE RAILWAY TRESTLE	270,000
ITEM 12.	WEST FIFTH STREET UNDERPASS & ALLIED CONSTRUCTION	150,000
ITEM 13.	WEST TRADE STREET UNDERPASS & ALLIED CONSTRUCTION	390,000
ITEM 14.	WEST FOURTH STREET UNDERPASS & ALLIED CONSTRUCTION	274,000
ITEM 15.	PIEDMONT AND NORTHERN RAILWAY UNDERPASS	118,000
ITEM 16.	WEST MOREHEAD STREET UNDERPASS & ALLIED CONSTRUCTION	193,000
ITEM 17.	TEMPORARY GRADE CROSSINGS AND BARRICADES	12,000
	SUB-TOTAL OF ITEMS 1 THROUGH 17	$2,630,000
	CONTINGENCIES	263,000
TOTAL ESTIMATED CONSTRUCTION COST (including salvage)		2,893,000
	LESS: SALVAGE VALUE OF MATERIALS RELEASED	113,000
	ESTIMATED CONSTRUCTION COST	2,780,000
	ENGINEERING (including supervision of construction)	220,000
	ESTIMATED RIGHT OF WAY COST	450,000
	MISCELLANEOUS EXPENSES (to be paid directly by City)	20,000
TOTAL COST OF PROJECT		$3,470,000

*For detailed estimates, refer to following pages.

DETAIL ESTIMATES OF COST

1. TRACK WORK

(a)	Permanent track construction:		
	132# rail bonded M.L. track-8,497 L.F.@ $12.45...$	105,788	
	100# rail bonded M.L. track-5,673 L.F.@ $11.20...	63,538	
	132# rail track-587 L.F. @ $12.45.....	7,308	
	100# rail track-14,285 L.F. @ $11.13.....	158,992	
	No.10 Insul.132# rail M.L. turnout-1 @ $3,461....	3,461	
	No.14 Insul.132# rail M.L. turnout-1 @ $4,191....	4,191	
	No.10 Insul.100# rail M.L. turnout-3 @ $3,157....	9,471	
	No.10 Insul.132# rail M.L. crossovers-3@ $8,554..	25,662	
	No.6 100# rail turnout-1 @ $1,749.....	1,749	
	No.7 100# rail turnouts-8 @ $1,857.....	14,856	
	No.8 100# rail turnouts-9 @ $1,896.....	17,064	
	No.10 100# rail turnout-1 @ $2,272.....	2,272	$ 414,352
(b)	Lining and surfacing tracks into permanent position:		
	Main line tracks-1,070 L.F.@ $2.40.....	2,568	
	Side tracks-2,018 L.F.@ $2.25.....	4,541	7,109
(c)	Stone ballast F.O.B. for permanent tracks:		
	3-Track M.L. section-3,719 C.Y.@ $1.40.....	5,207	
	2-Track M.L. section-2,592 C.Y.@ $1.40.....	3,629	
	1-Track M.L. section-1,073 C.Y.@ $1.40.....	1,502	
	Side track section-3,525 C.Y.@ $1.40.....	4,935	
	M.L. track lined and surfaced-384 C.Y. @ $1.40...	538	
	Side track lined and surfaced-478 C.Y. @ $1.40...	669	16,480
(d)	Sub-ballast in place for permanent tracks:		
	3-Track M.L. section-4,861 C.Y. @ $4.30.....	20,902	
	2-Track M.L. section-3,684 C.Y. @ $4.30.....	15,841	
	1-Track main lead section-1,934 C.Y. @ $4.30.....	8,316	
	Side track section-4,402 C.Y. @ $4.30.....	18,929	63,988
(e)	Excess maintenance cost on permanent tracks for 6 months after construction is completed.....		32,960
(f)	Deduction for crossties displaced by switch ties in permanent tracks-4,800 Ea. @ $5.35.....		(25,680)
(g)	Temporary track construction:		
	132# rail bonded M.L. track-5,315 L.F.@ $12.45...	66,172	
	100# rail bonded M.L. track-100 L.F.@ $11.20.....	1,120	
	100# rail track-1,598 L.F.@ $11.13.....	17,786	
	No.10 Insul.100# rail M.L. turnout-1 @ $3,157....	3,157	
	No.8 Insul.100# rail M.L. turnouts-7 @ $2,781....	19,467	
	No.8 100# rail turnouts-1 @ $1,896.....	1,896	
	No.6 100# rail turnouts-1 @ $1,749.....	1,749	111,347
(h)	Lining and surfacing main track into temporary position-3,380 L.F.@ $2.40.....		8,112

(i)	Ballast (crusher run) for temporary tracks:		
	5,315 L.F. M.L. track-2,121 C.Y.@ $4.30	$ 9,120	
	1,598 L.F. Side track-460 C.Y.@ $4.30	1,978	
	3,380 L.F. M.L. track lined & Surf.-973 C.Y.@ $4.30	4,184	15,282
(j)	Maintenance on temporary tracks during construction:		36,000
(k)	Cross drainage for temporary tracks		2,000
(l)	Removal & reconstruction of side track crossing West Fifth Street at grade		5,000
(m)	Removing existing facilities:		
	Track-41,705 L.F.@ $1.58	65,894	
	Turnouts-69 @ $164	11,316	
	Surface cross drain pipes	173	
	Turntable	400	
	Butterfly sheds-670 L.F.@ $7.50	5,025	
	Concourse paving-5,778 S.Y.@ $0.80	4,622	87,430
	TOTAL COST OF TRACK WORK (including salvage)		$774,380

SALVAGE VALUE OF TRACK MATERIALS

(a)	Relay rail released:		
	3,130 trk.ft.132# rail = 123.0 G.T.@ $66.52	8,182	
	8,386 trk.ft.85# rail = 212.1 G.T.@ $66.52	14,109	22,291
(b)	Scrap turnouts released:		
	No.8 60# rail, 1 @ 1.35 G.T. = 1.35 G.T.@ $21.25	29	
	No.8 80# rail, 2 @ 2.07 G.T. = 4.14 G.T.@ $21.25	88	
	No.8 85# rail, 6 @ 2.26 G.T. = 13.56 G.T.@ $21.25	288	
	No.10 85# rail, 1 @ 2.29 G.T. = 2.29 G.T.@ $21.25	49	454
(c)	Relay turnouts released:		
	No.6 100# rail, 1 @ $625	625	
	No.8 100# rail, 9 @ $697	6,273	
	No.9 100# rail, 7 @ $765	5,355	
	No.10 100# rail, 13 @ $872	11,336	
	No.14 100# rail, 1 @ $1,255	1,255	
	No.8 132# rail, 2 @ $765	1,530	
	No.10 132# rail, 2 @ $892	1,784	
	No.14 132# rail, 1 @ $1,446	1,446	29,604
(d)	Rail joints released:		
	132#, 33.57 G.T.@ $66.52	2,233	
	100#, 40.23 G.T.@ $66.52	2,676	4,909
(e)	Tie plates released:		
	132#, 144.58 G.T.@ $66.52	9,617	
	100#, 140.39 G.T.@ $66.52	9,339	18,956
(f)	Fastenings released-79.72 G.T.@ $21.25		1,694

(g) Switch ties released:			
No.6, 1 @ $97	$	97	
No.8, 20 @ $107		2,140	
No.9, 7 @ $117		819	
No.10, 16 @ $128		2,048	
No.14, 2 @ $174		348	$ 5,452
(h) Cross ties released:			
New ties in temporary tracks-4,208 Ea.@ $2.73		11,488	
Ties in existing tracks-5,014 Ea.@ $0.50		2,507	13,995
TOTAL SALVAGE VALUE OF TRACK MATERIALS			$ 97,355
Summary for Item 1. TRACK WORK:			
TOTAL COST OF TRACK WORK (including salvage)			774,380
LESS SALVAGE VALUE OF TRACK MATERIALS			97,355
NET COST OF TRACK WORK			$677,025
2. REMOVAL AND RESTORATION OF RAILWAY SIGNAL, ELECTRICAL & COMMUNICATION FACILITIES			
(a) Automatic signal facilities		65,540	
(b) Electrical transmission facilities		16,000	
(c) Communication facilities		45,480	127,020
GRADING FOR RAILWAY ROADBED			
(a) Earth excavation-3,260 C.Y.@ $0.30		978	
(b) Borrowed earth-172,430 C.Y.@ $0.90		155,187	156,165
TRACK DRAINAGE			
(a) Cross drains, 8" Perf. Corr. 14 gage metal pipe-1,364 L.F.@ $2.50		3,410	
(b) Culvert extension-30 L.F.@ $160		4,800	
(c) Manholes-1 Ea.@ $500		500	
(d) Catch basins-13 Ea.@ $200		2,600	
(e) Drop inlets-8 Ea.@ $450		3,600	
(f) 4' x 4' junction box-1 Ea.@ $200		200	
(g) Excavation of outfall ditch from 30" concrete pipe-260 L.F.@ $5		1,300	16,410
RETAINING WALLS-STA. 71+25 TO STA. 74+25			
(a) 6 ft. high, 150 L.F.@ $88		13,200	
(b) 8 ft. high, 150 L.F.@ $96		14,400	
(c) 10 ft. high, 135 L.F.@ $120		16,200	
(d) 10 ft. high (including sheeting and bracing) 60 L.F.@ $155		9,300	53,100
CONCRETE CRIB WALLS			
(a) 5 ft. high, 460 L.F.@ $25		11,500	
(b) 7 ft. high, 260 L.F.@ $40		10,400	21,900

7. CHANGES TO WEST TENTH STREET GRADE CROSSING.....			$ 2,325
8. CHANGES TO WEST NINTH STREET GRADE CROSSING.....			4,200
9. REVISING EXISTING TIMBER TRESTLE AT WEST SIXTH STREET.			7,500
10. WEST SIXTH STREET UNDERPASS ALTERATIONS.....			
(a) Underpass substructure:			
Prestressed concrete piling-980 L.F.@ $7.00.....	$ 6,860		
Concrete-196 C.Y.@ $50.00.....	9,800		
Reinforcing steel-19,600 Lbs.@ $0.12.....	2,352		
Cutting and jacking existing concrete span.....	5,000		24,012
(b) Underpass superstructure:			
Prestressed concrete I-beams,			
AASHO Type II (29')-22 Ea.@ $319.....	7,018		
AASHO Type III (49')-7 Ea.@ $1,000.....	7,000		
Concrete-142 C.Y.@ $65.00.....	9,230		
Reinforcing steel-28,400 Lbs.@ $0.12.....	3,408		
Waterproofing (3 ply)-573 S.Y.@ $4.50.....	2,579		
Asphalt protective covering-573 S.Y.@ $2.00.....	1,146		
Structure drainage.....	2,019		
Expansion joints.....	1,000		
Fabreeka pad bearings-105 S.F.@ $6.00.....	630		
Aluminum handrailing-261 L.F.@ $7.50.....	1,958		35,988
TOTAL ESTIMATED COST OF ITEM 10.....			$ 60,000
11. PRESTRESSED CONCRETE RAILWAY TRESTLE (527 L.F.)			
(a) Trestle substructure:			
Prestressed concrete piling-9,240 L.F.@ $7.00.....	64,680		
Concrete-354 C.Y.@ $50.00.....	17,700		
Reinforcing steel-35,000 Lbs.@ $0.12.....	4,200		86,580
(b) Trestle superstructure:			
Prestressed concrete I-beams			
AASHO Type II (29')-198 @ $319.....	63,162		
Concrete-853 C.Y.@ $65.00.....	55,445		
Reinforcing steel-170,500 Lbs.@ $0.12.....	20,460		
Waterproofing (3 ply)-2,850 S.Y.@ $4.50.....	12,825		
Asphalt protective covering-2,850 S.Y.@ $2.00.....	5,700		
Structure drainage.....	11,035		
Expansion joints-900 L.F.@ $5.00.....	4,500		
Fabreeka pad bearings-398 S.F.@ $6.00.....	2,388		
Aluminum handrailing-1,054 L.F.@ $7.50.....	7,905		183,420
TOTAL ESTIMATED COST OF ITEM 11.....			$270,000

2. WEST FIFTH STREET UNDERPASS & ALLIED CONSTRUCTION

(a)	Removal of existing facilities:		
	Pavement-3,161 S.Y.@ $0.60	$ 1,897	
	Sidewalk-1,050 S.Y.@ $0.40	420	
	Manholes-3 Ea.@ $50	150	
	Curb Inlets-3 Ea.@ $25	75	$ 2,542
(b)	New street work:		
	Unclassified excavation-1,900 C.Y.@ $1.00	1,900	
	Curb and gutter-1,500 L.F.@ $2.30	3,450	
	Subgrade treatment, 4" thick-2,662 S.Y.@ $0.50	1,331	
	Concrete pavement-2,662 S.Y.@ $4.50	11,979	
	Concrete sidewalk-1,041 S.Y.@ $3.50	3,644	
	Concrete driveways-158 S.Y.@ $4.00	632	22,936
(c)	New storm sewer:		
	Manholes-3 Ea.@ $400	1,200	
	Curb inlets-4 Ea. @ $250	1,000	
	18" Dia. R.C. pipe-200 L.F.@ $3.50	700	
	24" Dia. R.C. pipe-350 L.F.@ $5.50	1,925	4,825
(d)	New sanitary sewer:		
	Lower and adjust manhole covers-2 @ $50.00		100
(e)	Relocating water mains & services:		
	New 20" Dia. C.I. pipe-440 L.F.@ $25.00	11,000	
	Valves and fitting for 20" Dia. pipe	8,000	
	60" Dia. sheath pipe-40 L.F.@ $90.00	3,600	
	Relocating 8" fire line to Chesapeake Paper Co.	1,590	
	Relocating 6" fire lines, hydrant and services	1,907	26,097
(f)	Building foundations & retaining walls		24,000
(g)	Underpass substructure:		
	Prestressed concrete piling-490 L.F.@ $7.00	3,430	
	Prestressed concrete piling-980 L.F.@ $10.00	9,800	
	Concrete-50 C.Y.@ $60.00	3,000	
	Reinforcing steel-5,000 Lbs.@ $0.12	600	
	Concrete slope paving-110 S.Y.@ $5.00	550	
	Damp-proofing-50 S.Y.@ $1.00	50	17,430
(h)	Underpass superstructure:		
	Prestressed concrete I-beams AASHO Type II (29')-22 Ea.@ $319	7,018	
	Structural steel-149,500 Lbs.@ $0.15	22,425	
	Concrete-158 C.Y.@ $65.00	10,270	
	Reinforcing steel-31,600 Lbs.@ $0.12	3,792	
	Waterproofing-527 S.Y.@ $4.50	2,372	
	Asphalt protective covering-527 S.Y.@ $2.00	1,054	
	Structure drainage	2,662	
	Expansion joints	750	
	Fabreeka pad bearings-44 S.F.@ $6.00	264	
	Aluminum handrailing-195 L.F.@ $7.50	1,463	$ 52,070

Summary for Item 12. WEST FIFTH STREET

STREET, UTILITIES AND ALLIED WORK-ITEMS (a), (b), (c), (d), (e) & (f)	$ 80,500
UNDERPASS-ITEMS (g) & (h)	69,500
TOTAL ESTIMATED COST OF ITEM 12	$150,000

3. WEST TRADE STREET UNDERPASS & ALLIED CONSTRUCTION

(a) Removal of existing facilities:		
Pavement-10,300 S.Y.@ $0.60	$ 6,180	
Sidewalks-3,500 S.Y.@ $0.40	1,400	
Manholes-5 Ea.@ $50	250	
Curb inlets-6 Ea.@ $25	150	
Canopy on depot over sidewalk	2,500	
Trees and stumps-3 Ea.@ $200	600	11,080
(b) Alterations to Sou. Rwy. Office Building		16,300
(c) New street work:		
Unclassified excavation-14,700 C.Y.@ $1.00	14,700	
Curb and gutter-3,100 L.F.@ $2.30	7,130	
Subgrade treatment, 4" thick-9,200 S.Y.@ $0.50	4,600	
Concrete pavement-9,200 S.Y.@ $4.50	41,400	
Sidewalk and median filler-3,400 S.Y.@ $3.50	11,900	
Concrete driveways-500 S.Y.@ $4.00	2,000	81,730
(d) New storm sewer:		
Manholes-2 Ea.@ $400	800	
Curb inlets-8 Ea.@ $250	2,000	
18" Dia. R.C. pipe-180 L.F.@ $3.50	630	
24" Dia. R.C. pipe-570 L.F.@ $5.50	3,135	
30" Dia. R.C. pipe-630 L.F.@ $8.00	5,040	11,605
(e) New sanitary sewer:		
Manholes-3 Ea.@ $400	1,200	
12" Dia. V.C. pipe-1,300 L.F.@ $4.00	5,200	
6" Dia. V.C. pipe-600 L.F.@ $2.00	1,200	7,600
(f) Relocating water mains & services:		
New 20" Dia. C.I. pipe-900 L.F.@ $25	22,500	
Valves and fittings for 20" Dia. pipe	12,650	
60" Dia. sheath pipe-40 L.F.@ $90	3,600	
New 8" Dia. C.I. pipe-72 L.F.(incl.valves & fit.)	1,020	
New 6" Dia. C.I. pipe-600 L.F.(incl.valves & fit.)	3,800	
Relocating 6" fire lines, hydrants and services	4,080	47,650
(g) Building foundations & retaining walls		28,500

(h) Underpass substructure:		
Temporary sheet piling for foundations	$ 19,300	
Bridge excavation-880 C.Y.@ $5.00	4,400	
Steel piling-5,160 L.F.@ $6.50	33,540	
Prestressed concrete piling-840 L.F.@ $7.00	5,880	
Concrete-396 C.Y.@ $50.00	19,800	
Reinforcing steel-39,600 Lbs.@ $0.12	4,752	
Concrete slope paving-300 S.Y.@ $5.00	1,500	
Damp-proofing-300 S.Y.@ $1.00	300	$ 89,472
(i) Underpass superstructure:		
Prestressed concrete I-beams		
AASHO Type II (50')-62 Ea.@ $650	40,300	
AASHO Type II (33')-30 Ea.@ $396	11,880	
Concrete-256 C.Y.@ $65	16,640	
Reinforcing steel-51,200 Lbs.@ $0.12	6,144	
Waterproofing (3 ply)-910 S.Y.@ $4.50	4,095	
Asphalt protective covering-910 S.Y.@ $2.00	1,820	
Structure drainage	5,576	
Expansion joints	1,200	
Bearings-184 Ea.@ $32	5,888	
Aluminum handrail-336 L.F.@ $7.50	2,520	96,063

Summary for Item 13. WEST TRADE STREET:

STREET, UTILITIES AND ALLIED WORK-ITEMS (a), (b), (c), (d), (e), (f) & (g)	$204,465
UNDERPASS-ITEMS (h) & (i)	185,535
TOTAL ESTIMATED CONSTRUCTION COST OF ITEM 13	$390,000

F. WEST FOURTH STREET UNDERPASS AND ALLIED CONSTRUCTION

(a) Removing existing facilities:		
Pavement-4,870 S.Y.@ $0.60	2,922	
Sidewalk-661 S.Y.@ $0.40	264	
Manholes-5 Ea.@ $50	250	
Curb inlets-11 Ea.@ $25	275	
Retaining walls-120 L.F.@ $4.00	480	
Trees and stumps-13 Ea.@ $150	1,950	
Two small buildings on Sou. Rwy. property	1,000	7,141
(b) New street work:		
Unclassified excavation-7,900 C.Y.@ $1.00	7,900	
Curb and gutter-2,400 L.F.@ $2.30	5,520	
Subgrade treatment, 4" thick-5,902 S.Y.@ $0.50	2,951	
Concrete pavement-5,902 S.Y.@ $4.50	26,559	
Concrete sidewalk-2,096 S.Y.@ $3.50	7,336	
Concrete driveways-1,333 S.Y.@ $4.00	5,332	55,598
(c) New storm sewer:		
Manholes-2 Ea.@ $400	800	
Curb inlets-6 Ea.@ $250	1,500	
24" Dia. R.C. pipe-660 L.F.@ $5.50	3,630	
30" Dia. R.C. pipe-690 L.F.@ $8.00	5,520	11,450

(d) New sanitary sewer:			
Manholes-3 Ea.@ $400	$ 1,200		
8" Dia. V.C. pipe-1,180 L.F.@ $3.00	3,540		
6" Dia. V.C. pipe-600 L.F.@ $2.00	1,200	$	5,940
(e) Relocating water mains and services:			
New 8" C.I. pipe (320 L.F.) and 2" Galv. W.I. pipe (585 L.F.)	5,450		
Relocating 6" fire lines, 2 hydrants and services.	1,921		7,371
(f) Building foundations and retaining walls			72,000
(g) Underpass substructure:			
Bridge excavation-450 C.Y.@ $5.00	2,250		
Steel piling-3,440 L.F.@ $6.50	22,360		
Prestressed concrete piling-840 L.F.@ $7.00	5,880		
Concrete-300 C.Y.@ $50.00	15,000		
Reinforcing steel-30,000 Lbs.@ $0.12	3,600		
Concrete slope paving-250 S.Y.@ $5.00	1,250		
Damp-proofing-230 S.Y.@ $1.00	230		50,570
(h) Underpass superstructure:			
Prestressed concrete I-beams			
AASHO Type II (50')-31 Ea.@ $650	20,150		
AASHO Type II (33')-30 Ea.@ $396	11,880		
Concrete-182 C.Y.@ $65.00	11,830		
Reinforcing steel-36,400 Lbs.@ $0.12	4,368		
Waterproofing-643 S.Y.@ $4.50	2,893		
Asphalt protective covering-643 S.Y.@ $2.00	1,286		
Structure drainage	4,834		
Expansion joints	1,000		
Bearings-122 Ea.@ $32	3,904		
Aluminum handrailing-238 L.F.@ $7.50	1,785		63,930
Summary for Item 14. WEST FOURTH STREET:			
STREET, UTILITIES AND ALLIED WORK-ITEMS (a), (b), (c), (d), (e), & (f)			159,500
UNDERPASS-ITEMS (g) & (h)			114,500
TOTAL ESTIMATED COST OF ITEM 14		$	274,000
PIEDMONT AND NORTHERN RAILWAY UNDERPASS			
(a) Underpass substructure:			
Prestressed concrete piles-2,240 L.F.@ $7.00	15,680		
Concrete-160 C.Y.@ $50.00	8,000		
Reinforcing steel-16,000 Lbs.@ $0.12	1,920		
Damp-proofing-100 S.Y.@ $1.00	100		
Retaining wall and arch culvert headwall	6,500		32,200

(b) Underpass superstructure:		
Structural steel (41' span)-160,000 Lbs.@ $0.15...	24,000	
Structural steel (76' span)-195,300 Lbs.@ $0.16...	31,248	
Concrete-220 C.Y.@ $65.00.....	14,300	
Reinforcing steel-44,000 Lbs.@ $0.12.....	5,280	
Waterproofing (3 ply)-630 S.Y.@ $4.50.....	2,835	
Asphalt protective covering-630 S.Y.@ $2.00.....	1,260	
Structure drainage.....	3,762	
Expansion joints-140 L.F.@ $5.00.....	700	
Aluminum handrail-322 L.F.@ $7.50.....	2,415	$ 85,800
TOTAL ESTIMATED COST OF ITEM 15.....		$118,000

WEST MOREHEAD STREET UNDERPASS AND ALLIED CONSTRUCTION

(a) Removing existing facilities:		
Pavement-3,950 S.Y.@ $0.60.....	2,370	
Sidewalk-910 S.Y.@ $0.40.....	364	
Curb inlets-2 Ea.@ $25.00.....	50	2,784
(b) New street work:		
Curb and gutter-1,680 L.F.@ $2.30.....	3,864	
Subgrade treatment, 8" thick-844 S.Y.@ $1.00.....	844	
Bituminous pavement-3,644 S.Y.@ $2.35.....	8,563	
Concrete sidewalk-1,220 S.Y.@ $3.50.....	4,270	
Concrete driveways-378 S.Y.@ $4.00.....	1,512	19,053
(c) New storm sewers:		
Manholes-2 Ea.@ $400.....	800	
Curb inlets-3 Ea.@ $250.....	750	
48" Dia. R.C. pipe-200 L.F.@ $12.00.....	2,400	3,950
(d) Relocating fire hydrant and water services.....		1,213
(e) Underpass substructure:		
Temporary detour trestle for lead track.....	14,000	
Removing existing underpass.....	20,000	
Temporary sheet piling for foundations.....	10,400	
Bridge excavation-440 C.Y.@ $5.00.....	2,200	
Prestressed concrete piling-960 L.F.@ $7.00.....	6,720	
Concrete-408 C.Y.@ $50.00.....	20,400	
Reinforcing steel-40,800 Lbs.@ $0.12.....	4,896	
Concrete slope paving-400 S.Y.@ $5.00.....	2,000	
Damp-proofing-340 S.Y.@ $1.00.....	340	$ 80,956
(f) Underpass superstructure:		
Prestressed concrete I-beams		
AASHO Type II (50')-33 Ea.@ $650.....	21,450	
AASHO Type II (41')-30 Ea.@ $533.....	15,990	
AASHO Type II (33')-14 Ea.@ $396.....	5,544	
Concrete-240 C.Y.@ $65.00.....	15,600	
Reinforcing steel-48,000 Lbs.@ $0.12.....	5,760	
Waterproofing-800 S.Y.@ $4.50.....	3,600	

(f) Underpass superstructure (cont'd):			
Asphalt protective covering-800 S.Y@ $2.00	$	1,600	
Structure drainage		5,612	
Expansion joints		1,120	
Bearings-154 Ea.@ $32		4,928	
Aluminum handrailing-512 L.F.@ $7.50		3,840	$ 85,044
Summary for Item 16. WEST MOREHEAD STREET			
STREET, UTILITIES AND ALLIED WORK-ITEMS (a), (b), (c) & (d)			27,000
UNDERPASS-ITEMS (e) & (f)			166,000
TOTAL ESTIMATED COST OF ITEM 16			$193,000
TEMPORARY GRADE CROSSINGS AND BARRICADES			
(a) Asphalt pavement-2,350 S.Y.@ $2.75		6,462	
(b) Remove asphalt pavement-2,350 S.Y.@ $0.30		705	
(c) Railway-street grade crossings		2,533	
(d) Temporary street barricades		1,200	
(e) Permanent street barricades		1,100	12,000
SALVAGE VALUE OF MATERIALS RELEASED			
(a) Trackwork		97,355	
(b) Railway signal facilities		4,510	
(c) Railway electrical facilities		200	
(d) Railway communication facilities		4,815	
(e) Scrap steel-61,500 Lbs.@ $0.02		1,230	
(f) Timber falsework		1,190	
(g) Cast iron pipe-400 L.F.@ $0.50		200	
(h) Stone ballast		3,500	113,000
ESTIMATED MISCELLANEOUS EXPENSES (to be paid directly by City)			
(a) Right of way estimates and acquisitions		6,000	
(b) Right of way surveys, plats & deed descriptions		4,000	
(c) Sub-surface investigations		6,000	
(d) Reproductions		2,000	
(e) Travel expenses		2,000	$ 20,000

Note: For summary of the total cost of the project, refer to page 19.

TOPOGRAPHY — COMPILED BY PHOTOGRAMMETRIC METHODS
ELEVATIONS REFERRED TO MEAN SEA LEVEL DATUM, ESTABLISHED BY U.S. COAST & GEODETIC SURVEY.
CONTOUR INTERVAL 2 FEET.

VICINITY PLAN

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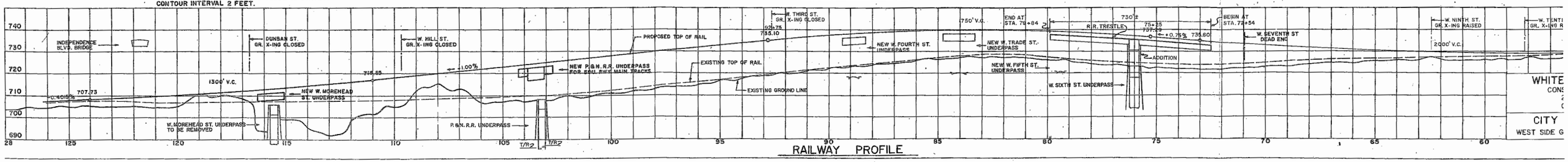

RAILWAY PROFILE

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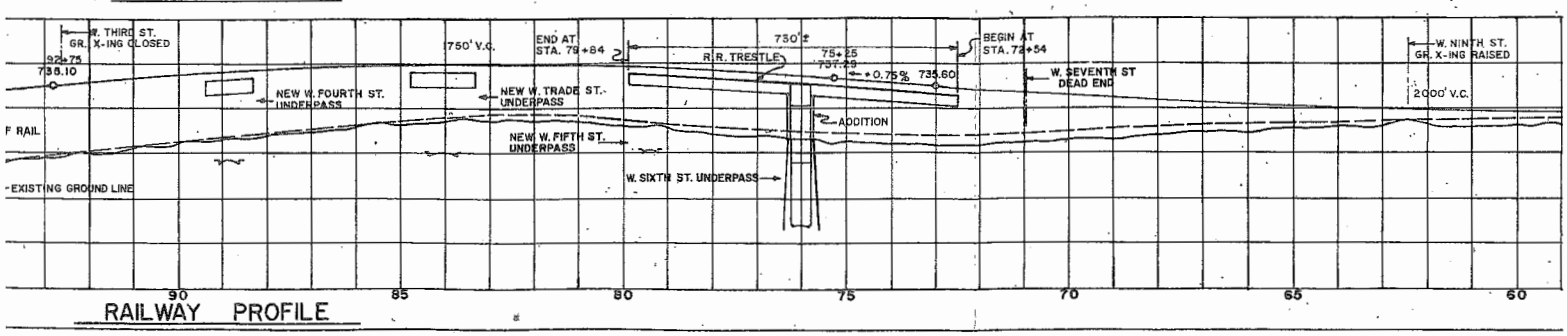
VICINITY PLAN



RAILWAY PROFILE

44-109 City Clerk's Office

REPORT OF

SEPARATION OF STREET AND RAILWAY GRADES IN CITY OF CHARLOTTE, NORTH CAROLINA

BY

Herbert S. Swan, City Planner
and
George W. Tuttle, Engineer

To The
Planning and Zoning Board

January 1931

SEPARATION OF STREET AND RAILWAY GRADES IN CHARLOTTE, NORTH CAROLINA

A Report

By

Herbert S. Swan, City Planner
and
George W. Tuttle, Engineer

To the
Planning and Zoning Board

C O N T E N T S

D I A G R A M S

Plan of Southern Railway

Profile of Southern Railway

Profile of West Trade Street

Profile of West Fourth Street

Profile of West Fifth Street

RAILROAD GRADE SEPARATION

RAILROAD LINES

Four railroad lines enter Charlotte from seven different points, making the city one of the most important railroad centers in the South. The main line of the Southern Railway between Washington and Atlanta passes through Charlotte. One branch of the Southern Railway extends to Winston-Salem, another to Columbia, South Carolina and Augusta, Georgia. The Seaboard Air Line Railway passes through Charlotte to Rutherfordton, via a branch from its main line at Hamlet. The Norfolk-Southern Railway enters Charlotte from the north and terminates in the city. The Piedmont and Northern Railway, an electric railway runs between Charlotte and Gastonia.

LENGTH OF RAILROADRIGHTS-OF-WAY IN CHARLOTTE

The total length of the right-of-way of the Southern Railway and its branches in Charlotte is about 11.8 miles

distributed between the different lines as follows: the Columbia Branch 2.5 miles; the east side freight connection 2.5 miles, and the Winston-Salem Division 1.7 miles.

The length of the right-of-way of the Seaboard Air Line Railway and its freight station connection in Charlotte is 5.9 miles; that of the Norfolk-Southern Railway 3.4 miles; and that of the Piedmont and Northern 2.3 miles.

The total length of railway right-of-way in Charlotte approximates 23.4 miles.

RAILROAD HISTORY
OF CHARLOTTE

The Southern Railway Company is the successor of some of the earliest lines in this part of the country, although the present railway organization has existed only since 1894. The North Carolina Railroad, which is leased by it, was incorporated January 27, 1849. It was completed from Goldsboro to Charlotte by way of Raleigh, Greensboro and Salisbury, January 21, 1856. It entered the city from Greensboro along the tracks of the present Southern Railway Company, east of College Street, and terminated at East Second Street.

The Charlotte and Southern Carolina Railroad Company was incorporated December 18, 1846. The first passenger train ran over this line between Columbia and Charlotte, October 21, 1852. It was consolidated with the Columbia and Augusta Railroad Company to form the Charlotte, Columbia and Augusta Railroad

Company in 1869, which was sold July 10, 1894 to the Southern Railway Company. This railroad also terminated at East Second Street, east of College Street. It continued the Southern Railway Line east of College Street to Columbia and Augusta over what is now called the Columbia Branch of the Southern Railway.

A charter was granted the Atlantic, Tennessee and Ohio Railroad for a railroad between Charlotte and the Northwest, about 1862. This railroad included the part of the Columbia Branch west of the east side line of the Southern Railway and the line to Taylorsville, North Carolina, via Statesville. As it had not been in operation since the close of the Civil War, the County of Mecklenburg in 1870 subscribed $100,000 to rebuild it to Statesville. The road was sold to the Southern Railway Company in 1894.

A railroad was projected from Charlotte to Atlanta shortly before 1870. In that year the County of Mecklenburg voted to subscribe $200,000 to it. The first train to Greenville, North Carolina on the Atlanta & Charlotte Air Line Railway, as this railway to Atlanta was called, was operated April 28, 1873.

The Southern Railway Company soon after its incorporation February 24, 1894, leased the Atlanta & Charlotte Air Line Railway from Charlotte to Armour, Georgia. It now forms that part of the main line south of the Columbia Branch.

The present Seaboard Air Line Railway was formed by merger and consolidation of the Seaboard Air Line Railway and the Carolina, Atlantic and Western Railway in 1915. It owns the line passing through Charlotte between Wilmington and Rutherfordton, as well as a branch used for freight purposes running south from its main line east of College Street to East Trade Street.

The Carolina Central Railroad between Wilmington and Rutherfordton was the predecessor of the present portion of the Seaboard Air Line Railway which passes through Charlotte on the north side of the business center.

The piedmont and Northern Railway Company (electric) was incorporated February 24, 1911. The railway was built soon afterwards. It runs between Charlotte and Gastonia.

The Norfolk-Southern Railway Company was incorporated in 1910. The new company acquired the physical property of the Raleigh, Charlotte and Southern Railway Company, which, upon completion, gave the company 295.81 additional miles of main track, including a line from Raleigh to Charlotte. On January 1, 1914, this addition was consolidated with the Norfolk-Southern Railway Company.

SOUTHERN RAILWAY OPERATION

The Southern Railway operates what is known as its main line through the city on the westerly side of the central business district. The main line enters the city from the north,

in a southwesterly direction; it leaves in a westerly direction. It is double-tracked road, and heavy passenger and freight trains operate over it between Washington and Atlanta.

From the passenger station, situated on the principal street leading west from the business district, a branch line, single-track, known as the Columbia Division, runs south to Columbia and Augusta, while another line, known as the Winston-Salem Division, single-track, runs north to Winston-Salem and Taylorsville, The freight station is located at Third Street and A Street on the original railway line passing through the center of the city. This line is known as the "east side line". Between the Main Line and the Columbia Branch, the east side line is used only for freight purposes.

The daily passenger service over the railway lines of the Southern Railway June 1930, was as follows:

Through trains on Main Line	16
" " " " " north of station and over Columbia Division	2
Trains on Columbia Division terminating at station	6
Trains on Winston-Salem Division terminating at station	6
Total	30

Since the passenger station at West Trade Street is the terminal for a considerable number of trains, a yard for passenger coaches in the vicinity is necessary. This yard blocks West Fourth Street and extends across West Third Street, West Trade Street and West Fifth Street. So much switching of

passenger coaches and light locomotives is done over these crossings as well as of freight cars that considerable delay and danger is caused to vehiclar traffic. Train movements are, of course, also delayed.

In addition to the passenger trains there are from six to ten freight trains per day passing over the main line, and from eight to sixteen trains passing over the east side line through the center of the city. Many of these trains contain 50 or 60 cars. The ea st side line passes many long fruit and vegetable trains from the south, - beans, oranges, peaches, watermelons, etc. In season, as many as four or five such trains pass in a day. Besides the freight passing through Charlotte, there is also a large amount received in and shipped from the city. This freight is delivered at private sidings at the local freight station situated at Third Street and A Street, and at team tracks.

The average amount of inbound and outbound freight per day over the Southern Railway is estimated as follows:

	Carloads.
Outbound from freight station	60 - 70
Inbound to freight station	50 - 75
From private sidings	25 - 50
To private sidings	45 - 50
Outbound from team tracks	0
Received at team tracks	15 - 25
Total	195 - 270

From eight to ten carloads per day is transferred from the Southern Railway to other lines at Charlotte. The amount of freight received by the Southern Railway from other lines is about the same.

The location of the freight station in the heart of the city with its attendant storage of cars and switches across streets is a source of delay and danger to street traffic. It is also a serious obstacle to the efficient handling of freight since the trains frequently have to be cut in order not to obstruct street crossings more than necessary.

East First Street and East Third Street are entirely cut off by the railroad yard and freight station. East Second Street, however, crosses the many tracks in the freight yard. There is usually stored in this yard about 230 freight cars. Of these, 48 are in the station north of East Second Street, 42 on the team tracks and storage tracks between East Second and East Fourth Street, and 140 south of East Second Street.

SEABOARD AIR LINE OPERATION

The main line of the Seaboard Air Line Railway does not pass through Charlotte. It passes through Hamlet, 77 miles away. From Hamlet, a branch of the main line runs through Monroe to Atlanta and Birmingham. Charlotte is located on a branch of this division between Monroe and Rutherfordton. This east and west branch passes to the north of the central business

section. It is single-tracked with a passenger station at North Tryon and 13th Streets. A small yard for passenger and freight trains is located in the vicinity of the passenger station. A branch track runs up into the central part of the city to its freight station, located on A Street between East Trade Street and East Fifth Street, where its package and team track freight are received and delivered.

There are six passenger trains per day over the Seaboard Air Line Railway in Charlotte. Four of these terminate in the city, - the two between Charlotte and Monroe and the two between Charlotte and Wilmington, while the other two are through trains between Rutherfordton and Monroe. About six freight trains pass through Charlotte daily, some with 50 or more cars. The daily local freight traffic is estimated as follows:

	Carloads.
Outbound from freight station	17
Inbound to " "	13
From private sidings	18
To " "	23
From team tracks	2
To " "	3
Total	76

The daily number of carloads transferred between the Seaboard Air Line Railway and the several railroads in Charlotte is approximately as follows:

	Carloads.
From Southern Railway	20
To " "	13
From Norfolk-Southern Railway	3
To " " "	3
Total	39

Transfers to the Piedmont and Northern Railway are effected at Pinoca. The above transfers are effected at the junctions of the respective railroads. This transferred freight does not therefore come into the heart of the city at all.

The railroad yard near the passenger station extends across Church Street. This street is obstructed to a considerable extent in the making up and breaking up of trains. Considerable switching is also done in delivering and collecting cars to and from the freight station. This delays vehicular movements across East Fifth and East Sixth Streets.

The number of freight cars stored by the Seaboard Air Line on the tracks along A Street between East Trade Street and East Sixth Street is about 44. The track of the Seaboard Air Line Railway along A Street, extending down to its freight station, is on a separate right-of-way to the west of and parallel to that of the Southern Railway.

NORFOLK AND SOUTHERN RAILWAY OPERATION

The Norfolk and Southern Railway enters Charlotte from the north on a single-track parallel to and about 500 feet east of the Southern Railway. It crosses both the Seaboard Air Line and the freight track of the Southern Railway as it continues on a track parallel to and west of these railroads to its freight station between East Sixth Street and East Seventh Street. Its freight yard crosses East Seventh Street with some eleven tracks, and East Eighth Street with

six tracks. Usually about 32 freight cars are stored on the Norfolk-Southern tracks between Sixth and Seventh Streets. The railway connects with steamship at Norfolk. It consequently transports a considerable quantity of through freight. Although the freight business of the Norfolk-Southern is quite considerable, its passenger business is insignificant. It runs only two passenger trains of one or two cars, one train in each direction daily.

PIEDMONT AND NORTHERN
RAILWAY OPERATION

The Piedmont and Northern Railway is a single-track electric railroad. Its passenger station is located at Mint Street and West Fourth Street. Its freight station is located on Mint Street, between West Third Street and West Fourth Street. Its yard tracks cross West Second Street and West Third Street.

There are six passenger trains per day over this line between Charlotte and Gastonia, and about the same number of freight trains. There are many industrial spurs from this line and many connected industries. The daily freight traffic to and from Charlotte over the Piedmont and Northern Railway is estimated to average about as follows:

	Carloads.
Inbound to freight station	4-5
Outbound from " "	1-1
Inbound to team tracks	4-5
Outbound from " "	0-0
Inbound to private siding	35-40
Outbound from " "	2-2
Total	46-53

The transfers to and from other railroads are approximately as follows:

So Southern Railway	2 cars per day
From Southern Railway	2--3 " " "
To Seaboard Air Line at Pinoca	30-40 " " "
From " " " "	50-60 " " "

Forty freight cars are usually on the tracks in and around the station.

RAILROAD GRADE CROSSINGS

There are within the city limits of Charlotte about 60 railroad grade crossings, eight highway bridges crossings and eight underpasses. They are distributed among the several railroads as follows:

	Grade	Bridge	Underpass
Southern Railway, Main Line	15	1	2
" " Columbia Branch	10	2	1
" " East Side Freight Connection	8	1	2
Total Southern Railway	33	4	5
Seaboard Air Line Railway	14	2	2
" " " " freight connection along Southern Railway	6	1	2
Total Seaboard Air Line Railway	20	3	4
Piedmont and Northern Railway	8	1	
Norfolk-Southern Railway	5	1	
" " " along Southern & Seaboard Air Line Rwys.	4	1	1
	9	2	1
Total number of all railway crossings	71	9	10
Net number of railroad crossings in Charlotte	60	7	8

WEST TRADE STREET
CROSSING

On account of the frequency of high speed passenger trains over the main line of the Southern Railway, its crossings call for particular attention. Among these crossings is West Trade Street, the most important outlet to the west from the business district, indeed, the only westerly outlet from the central business district. As such, it calls for first consideration, not only on account of its heavy vehicular traffic but on account of the many delays incident to switching across the street. The street, it must be remembered, is across the throat of the passenger coach yard.

A traffic count on a typical May day in 1930 showed the following obstructions to vehicular traffic by the grade operation of the railroad at West Trade Street:

Hour	No. of times grates were down	Longest time grates were down	Total times grates were down
7 - 8 A.M.	4	70 seconds	2 min. 54 sec.
8 - 9 "	3	300 "	6 " 10 "
9 -10 "	16	155 "	13 " 58 "
10-11 "	11	70 "	8 " 28 "
11-12 M.	6	126 "	6 " 42 "
12- 1 P.M.	9	107 "	6 " 01 "
1 - 2 P. M.	8	75 "	5 " 38 "
2 - 3 P. M.	4	170 "	3 " 46 "
3 - 4 P. M.	13	80 "	8 " 20 "
4 - 5 P. M.	7	58 "	4 " 41 "
5 - 6 P. M.	7	65 "	5 " 00 "
6 - 7 P. M.	4	195 "	7 " 00 "
	91		1 hr. 18 min. 39 sec.

The grates were down and vehicular traffic stopped 11 per cent. of the time during the 12 hour day. During the hour from 9 to 10 A. M., when the street suffered the greatest obstruction, the grates

were down 23 per cent. of the time. The unusual length of time the gates were down at certain times was often due to the passage of a long freight train. Such trains sometimes take five minutes to pass.

West Trade Street passes much more vehicular traffic than any other street leading to the west, but there is a considerable amount of traffic crossing the railroad on Fifth Street and also on Third Street. The future growth of the business district demands that as many of the existing east and west streets as practicable be continued across the railroad. Free vehicular access from one side of the railroadto the other is indeispensable to the proper future gowth of the city. To cut off any of the east and west streets in the center of the city, that can possibly be carried across the railroad will inevitably retard the city's westerly development. To cut off permanently any of these streets will throttle and congest the city's traffic in the streets that are carried across the railroad.

The plan for the West Trade Street crossing should therefore be made in conjunction with the plans for the elimination of other crossings on either side. This is of the utmost importance, since the railroad grades not only reach a summit at this point, but are so steep as to diminish the operating efficiency of the railroad. As any change in railroad grades will change conditions over a considerable length of railroad

right-of-way, it is obvious that all crossings involved in such change of railroad grade should be considered hand in hand with railroad improvements. The section between West Morehead Street and West Eleventh Street has therefore been considered as a unit in planning the separation of street and railroad grades on the main line in the downtown district.

PREVIOUS REPORTS

In the early part of 1927, a report was made to the City of Charlotte by Mees and Mees on the elimination of grade crossings on the main line of the Southern Railway between Morehead Street and the Seaboard Air Line Railway.

It was stated in this report that "For the city of the future, according to all tenets of city planners, the Southern Railway would be restricted to the use of one artery through the city." Should such a plan be carried into effect there could be little doubt but that the present main line would virtually be abandoned and with it the Columbia Division Crossover. Traffic would be handled entirely over the freight lines lying east of College Street, a connection with the Atlanta Division being established south of the city. For permanent occupation of the present main line tracks it was recommended that at Trade Street the railroad tracks be depressed about 24 feet, and the street carried over the railroad at substantially its present grade. West Fifth Street would be carried over the tracks at about its present grade; West Fourth

Street would be extended across the tracks some one and one-half feet above its present level. It was deemed impracticable to continue Third Street across the railroad on account of undesirable approaches.

According to this scheme, the main line of the railroad would have an upgrade of 1.14 per cent. from West Fifth Street to West Eleventh Street and the Columbia Branch, a down-grade of 1.6 per cent. from South Graham Street to West Fourth Street. The cost of this elimination was estimated at $1,650,000. If, however, an agreement would be reached on the future abandonment of the main line tracks in this section, it was proposed to build immediately, without disturbance of the present railroad tracks, an underpass at West Trade Street and progressively thereafter underpasses at West Fourth Street, at West Fifth Street and at West Third Street, as future traffic conditions might make necessary. The estimated cost of these underpasses was as follows:

West Trade Street	$465,000.00
" Fourth "	300,000.00
" Fifth Street	250,000.00
" Third Street	230,000.00
	$1,245,000.00

For early abandonment of the tracks in question, it was considered that no remedial measures need be undertaken. Estimates and plans were made on the basis of the present layout of tracks.

The scheme for a full depression of the railroad would permit the streets to be carried across the railroad at full width, open to the sky, and at substantially present grades.

According to the underpass projects, however, the streets would be seriously narrowed by service streets on either side and by masonry construction. The widths proposed for the several streets were as follows:

West Third Street, a 20-foot readway and one 5-foot sidewalk
" Fourth " , a 20-foot " " two 5-foot sidewalks
" Fifth Street, a 20-foot " " two 5-foot "
" Trade " , two 19-foot roadways and one 8-foot wide pedestrian passage, and a trolley car station between the two roadways reached by stairs from the present sidewalks.

The existing foot-walks across the tracks at grade would be continued.

Some of these underpasses, over 200 feet long, 19 to 20 feet in width, 13 to 14 feet high, and pedestrian passageways five feet wide and about 10 feet high, would be practically tunnels. They would, even in daytime, require artificial lighting. They would also be damp and disagreeable. An underpass at Harrisburg, Pa., of similar design has recently, on account of its obstruction to traffic and other disagreeable features, given way to a full width subway, much to the universal public satisfaction. Subways, even under the best conditions, usually obstruct the view more or less. They are also apt to be damp. Stairways for pedestrians are, moreover, almost invariably inconvenient. Subways should, therefore, generally be made of full width and adequate height. Open air bridges are, as a rule, to be greatly preferred to such narrow subways of limited capacity, as have been above described. This is true, even if the cost of the bridges were considerably to exceed that of the subways.

The Southern Railway at the time this report was made, presented a plan for the elimination of the West Trade Street crossing, with tracks at their present elevation, but increased to six in number, by a viaduct centrally situated in the street. This viaduct would have a roadway 41 feet wide rising to about 24 feet over the tracks, with a maximum grade of 7.34 per cent. and a clearance over the tracks of 20 feet. Service roadways 16 feet wide were provided on each side of the viaduct. There were no sidewalks on the viaduct; provision for pedestrians crossing the tracks was made via an underpass in the center of the street, with stairway connections to the present sidewalks. This viaduct, built of reinforced concrete, was estimated to cost $490,000.00. It was regarded with disfavor in the report.

Immediately after this report of Mees and Mees was submitted, Mr. John Stevens, Consultant, made a report in which he questioned whether or not the Southern Railway passenger station would remain permanently in its present location. He pointed out the tendency to establish union stations, stating that "the location of the present railways now serving the city lends itself remarkably well to a centralization and consolidation of the now scattered passenger station facilities." He regarded the matter of grade crossings as being dependent upon the manner of solving the whole problem of passenger terminal facilities in the city. In the meantime,he throught the least expenditure should be recommended which would relieve traffic conditions. He therefore advocated an underpass at West Trade

Street with tracks at present levels substantially in accordance with the underpass plan of Mees and Mees, with the possibile addition of stairways.

Mr. Stevens suggested that the movement of vehicular traffic would be improved by the construction at the same time of an underpass at Fourth Street. He therefore recommended the continuation of that street westerly into West Trade Street, to relieve traffic on West Trade Street in the business center. He also believed that it might be possible to close West Fifth Street across the railway right-of-way until such time as an underpass should be built.

POSSIBLE ABANDONMENT OF MAIN LINE TRACKS
BETWEEN IRWIN CREEK AND SEABOARD AIR LINE

The abandonment of the main line between Irwin Creek and the Seaboard Air Line Railway would concentrate all of the Southern Railway traffic in the heart of the city where the freight facilities of three of the four railroads are now located. The building of at least three miles of new track to connect the east side railway with the Atlanta Division would be required. Such connection would increase the length of the main line by at least 0.7 miles. It would also require additional tracks on the east side. Where now the Southern Railway has one tract on A. Street, at least three tracks would be required. The additional width required for two additional tracks would not only be expensive, but running all trains over this route would greatly interfere with freight distribution. It would also disturb the

industries located there. The passenger train movements and the freight yard movements would interfere with each other in this limited space to an extent which would be very troublesome. It should be avoided.

There are many grade crossing on the east side which, were the main line trains run through, would require immediate elimination. Even if the fast passenger trains and freight trains were to be routed by the east side line, it is very doubtful whether the present main line tracks would ever be given up. The experience of other cities at least suggests that they would not be abandoned. Their use as a detour contingent upon obstruction occurring on the other line, as well as the service which they give by some 18 sidings to industries in the section from which the trains would be removed precludes their abandonment.

It is understood that surveys have been made for the relocation of the main line track along the westerly bank of Irwin Creek. But this location offers no advantage over the present location, and it would, moreover, cost a large sum of money.

The location of the main line tracks on the edge of the business district is certainly to be preferred to their location in the heart of the city. For these reasons, it is believed that the Southern Railway Main Line is certain to remain in its present location.

PASSENGER STATION

The present passenger station is in fair structural condition. With minor changes and refitting it will probably meet all requirements for some years to come. Its location is convenient to the business interests of the city. Some important buildings in the city have, no doubt, been located with reference to the present depot; to move the station would naturally discommode these buildings.

The present stations accessibility to all parts of the city, one of the most important considerations in the location of a passenger station, cannot be improved upon.

Some people think that a union station to accommodate all lines would be very desirable in Charlotte. The location of the several railroads is, moreover, said to favor such a station. A site that has been suggested for it lies between the Southern Railway and the Seaboard Air Line east of Graham Street.

The location of the several passenger stations and the number of trains entering them in Charlotte are as follows:

	No. of trains	Location
Southern Railway Main Line	16	West Trade St. and Depot Place
Columbia Division	8	" " " "
Winston-Salem Division	6	" " " "
Total Southern Railway	30	
Seaboard Air Line	6	No. Tryon St. and 13th Street
Norfolk-Southern Railway	2	East Sixth St. " A Street
Piedmont & Northern Railway	6	Mint Street and West Fourth St.
Total all railways	44	

The Southern Railway has more than double the number of trains of all the other lines combined. The length of its trains and the number of its passengers when considered would moreover give it a rating a number of times that of all the other railroads. The passenger traffic of the Norfolk-Southern Railway is negligible. The passenger traffic of the Piedmont-Northern Railway is short-distance rapid transit service. The Seaboard Air Line Railway, although in Charlotte it is a branch of a branch, is the only line which coulc to any great advantage be brought into a union station with the Southern Railway. Where there is a considerable interchange of passenger traffic between the railroads, a union station is an advantage to the traveling public, but with the little interchange between these two raods in Charlotte, the advantages of a union station are slight. It is not believed that the advantages of bringing these two railroads into a union station would begin to compensate for the disadwantages of such a site as that on North Graham Street, a site which lacks accessibility in nearly all directions.

In fact, the present Southern Railway passenger station appears to be as good a site for a union passenger station as any that has been proposed.

The Seaboard Air Line can enter it over the tracks of the main line or the Winston-Salem Division of the Southern Railway. The Norfolk-Southern Railway can also enter it over the main line tracks. The Piedmont-Northern can enter it over the P.& N. connection

with the passenger yard of the Southern Railway.

All passenger trains in Charlotte can whenever it is desirable to do so, operate satisfactorily from the present Southern Railway passenger terminal. An increase in yard facilities may be needed to fit it for a union terminal, but for these there is an abundance of available room.

The most serious objection to the present site is the lack of room around the station and the narrow width of Depot Place. But locating the main tracks about 50 feet west of their present location as shown on the plans herewith submitted will permit this street to be widened whenever a new station is built.

The main line of the Southern Railway should undoubtedly be continued in its present location. The passenger station should remain where it is.

ELIMINATION OF GRADE CROSSINGS NEAR PASSENGER STATION

The main tracks of the Southern Railway rise at a grade of one per cent. from the P. & N. underpass to the north side of West Trade Street. They then descend to the north at a grade of 0.8 per cent. Trains going north stop at the station south of West Trade Street so as not to obstruct vehicular passage. Consequently, the long, heavy trains - often there are trains 10 cars in length - require the use of a helper locomotive to start them on this one per cent. up-grade. Obviously, an elevation of the tracks at West Trade Street would increase

these grades, as well as the difficulty of starting northbound trains, - at least unless elevation were carried over a long distance. To improve railroad grades and operation, the tracks at West Trade Street should be lowered, not raised. To leave the railroad tracks where they are and carry the streets under and 18 feet below the railroad would involve long approaches, deep cutting and large damage to adjacent property. On the other hand, partial depression of the railway tracks and yard will improve the railway grades and operating conditions, without at the same time seriously disturbing industrial connections. The elevation of streets over railway will, moreover, not be so great as to make the street approaches unreasonably long or expensive. Besides, all necessary streets can be carried over the railway tracks at full width at reasonable expense. The streets, - West Third Street, West Fourth Streot, West Trade Street, West Fifth Street - would be carried over the railroad at full width. Being open to the sky and only about 10 feet above the present street level at Trade Street, they would allow perfectly free inter-communication between the two sides of the railroad.

At West Trade Street, it is proposed to lower the grade of the railroad 13 feet, and to continue this grade level to the south until it meets the existing railroad grade at West Second Street. It would also be continued north to West Fourth Street where it would rise at 0.8 per cent. until it met the present railroad grade near West Eighth Street.

The Columbia Branch would rise at 0.5 per cent. from West Fourth Street to West Third Street and at a grade of 0.9 per cent. from West Third Street to the bridge over South Graham Street.

Trains going either way from the station would start from a level grade. Lesser grades would be encountered than at present. The bridges over the railroad would be steel and concrete structures, supported by columns between tracks with minimum clearance of 10 feet from top of rail to under side of bridge.

The idea behind the elimination of the grade crossings in this manner is to carry the streets over the railroad at full width with as little change in existing grades as satisfactory railroad grades and operating conditions will permit. The railroad grade at West Trade Street was thus determined. The City Engineer of Charlotte, Mr. Wayt Thomas, was the first person to suggest to us that the West Trade Street crossing should be eliminated, half by elevating the street and half by depressing the railroad substantially as herein proposed.

It was suggested in Mr. Stevens' report that West Fifth Street might be closed. Traffic counts show that it has considerable traffic which would be inconvenienced. Valuable buildings will be damaged considerably, and will have to be rebuilt or at least new entrances will have to be constructed, if the street is to cross the railroad according to the plans

herewith proposed. But it is considered certain that the damage inflicted to property will be less in the long run by carrying the street over the railroad at full width than by closing it across the railroad or by giving properties a narrow service roadway at present level, ending at the railroad. The advantage of a full width bridge to the public will be very great. This crossing is one of considerable danger, as in addition to the regular trains there are many switching movements over it. It is entirely without protection and the manner in which motor cars attempt to beat the locomotive indicates the danger of accident that is always present.

A new underpass should take the place of the existing grade crossing at West Seventh Street. This would be provided immediately north of the present culvert at West Sixth Street to connect both West Sixth Street and West Seventh Street with a projected new street along the creek in the cemetery.

West Stonewall Street would also be extended westerly into West First Street by an underpass which would be immediately north of the present P. ' N. underpass.

The elimination of the grade crossings and the extension of existing streets as thus proposed will, it is believed, be adequate for a long time to come. This arrangement of grades, while improving operating conditions on the railroad, also enables the streets to be carried over the railroad at their full width. It is much better to pay the damage which

may be occasioned by a change of grade or by damage to buildings than to narrow streets by service roadways which will never be satisfactory to the abutting owner and which will also at the same time greatly diminish the traffic capacity of the street. The change of grade in the approaches, however, introduced a somewhat uncertain factor as to cost. Sketches showing the railroad grades as well as those proposed for the several crossing streets are herewith presented.

THE COLUMBIA BRANCH CUTOFF

Starting at the Southern Railway passenger station, the Columbia Branch cutoff, a single track line with rather sharp curves, turns eastward within the business section of the city and crosses some of the principal business streets at grade to join the east side line, which continues south to Columbia. Eight passenger trains per day pass over the line, four each way, besides some switching of freight cars to local industries. This cutoff is about 4,200 feet long and furnishes five sidings to industries along the line. It crosses or obstructs the crossing of eight public streets, - South College Street, South Tryon Street, South Church Street, South Poplar Street, Mint Street, West Stonewall Street, South Graham Street and West Second Street. All trains slow down or stop at the principal street crossings and trainmen flag the street traffic before advancing over the crossings.

South Graham Street crosses by an underpass. South Church Street crosses by a bridge. Plans have been prepared for extending South College Street across by an underpass. South Poplar and West Second Streets are unimportant at these crossings and can properly be closed. This leaves Mint Street, South Tryon Street and West Stonewall Street as proposed, for grade separation. Mint Street, as illustrated in the accompanying sketch, can easily be continued by an underpass. The track is seven to ten feet above the street at Stonewall Street and an underpass can be carried through at small cost. At South Tryon Street, however, the problem is a difficult one, owing to important buildings close to the railroad as well as to cross-streets. The damage to buildings by a change of grade will here be considerable. An underpass for the full width of the street and an elevation of the track as much as may be permissible, - perhaps one and one-half feet - is considered the most practicable way to eliminate this crossing.

An alternative to eliminating these crossings has been suggested by the construction of a railway in place of this cut-off, to the south of the city. On account of building development and prospective growth such a line should branch off south of Irwin Creek. It would necessarily be at least five miles long and the route would be longer than via the present cutoff, by nearly a mile. Irwin Creek would have to be crossed. Moreover, other grade crossings would have to be eliminated along the new route.

This prospect does not appear inviting, especially when we remember that on account of the industries on the existing cutoff and the convenience of switching over this cutoff from one line to the other, the abandonment of the present cutoff is improbable. The elimination of the grade crossings above mentioned, it is believed, will be more satisfactory to all interests concerned than would the development of a new line in place of the present Columbia Branch.

But with all its grade crossings eliminated, the cut-off would, on account of its short curves, be unsuited for heavy freight movements. Long freight trains would still have to go over the present east side line.

THE EAST SIDE FREIGHT LINES

The street corssings over the east side freight lines, which connect the business center with the large and rapidly growing population in the eastern part of the city, merit very careful attention. Much more vehicular traffic enters and leaves the business center over these lines than over the Main Line on the west side. Moreover, the business section will inevitably expand across the railroad to the east. Unobstructed access to the business center from this direction is therefore of the greatest importance. The East Trade Street Underpass, built in 1913, was a considerable step in improving the street connections across the railroad. It is a good example of what such underpasses should be. It is architectural

in appearance, open to light and air for the full width of the street and the grades do not exceed six per cent. It is a credit to its designers, for it has proved its usefulness ever since it was built and it has been an important factor in the development of East Trade Street east of the railroad.

Some of the underpasses more recently built in Charlotte with their narrow roadways and their concrete sidewalk passage-ways show by contrast, the satisfactory character of the East Trade Street underpass.

The traffic from the business center to the east is carried by East Trade Street and East Fourth Street through underpasses; by East Second Street, East Fifth Street, East Sixth Street, East Seventh Street, East Eighth Street and East Ninth Street via grade crossings; and by East Eleventh Street over a bridge. East First Street and East Third Street are prevented from crossing the railroad by the Southern Railway freight yard and freight station.

Freight yards with many tracks extend over most of these crossings. Vehicular traffic across these tracks is very large in volume and this traffic is bound to increase greatly with the expansion of the business district and the surrounding areas. Ample crossings are therefore necessary. The area between College Street and Brevard Street from Vance Street to East Ninth Street, including street crossings is a large freight yard where three railroads, each with its independent tracks and stations, received, delivers, and to some extent,

transfers freight between the different lines. Usually about 300 freight cars are to be found on the tracks in this area. Much switching is done across the streets in delivering and removing freight from the stations and to and from the many industries located near the tracks. Every day, moreover, some eight to sixteen freight trains of the Southern Railway pass over this line to and from the Columbia Branch. Many of these trains contain from 50 to 60 cars. Often they take five minutes to cross a street.

At East Second Street, 19 tracks cross the street; at East Fifth Street, 4 tracks; at East Sixth Street, 8 tracks; at East Seventh Street, 12 tracks; at East Eighth Street, 9 tracks; and at East Ninth Street, 3 tracks.

Freight station operation in this area is a detriment to the orderly growth and development of Charlotte. Steps should be taken for its ultimate removal north of the Seaboard Air Line Railway. Traffic on the east side line should be confined to freight movements over the Columbia Division and to the serving of industries on either side. The necessity of cutting trains into sections and the protection of the numerous crossings places a burden on the railroads which would not be necessary if the freight stations were removed from the business center. Certainly, if railroad freight is to be received and delivered in this section of the city, the stations, tracks, and yards should be brought together for more efficient operation. Thereby the number of tracks might be reduced making

the separation of street and railroad grades less costly. On account of the existing grade separations and the many industrial tracks, no material change can be made advantageously in the existing grade of the railroads. Separation of grades will have to be effected by either depressing or by elevating the streets.

Indications are that crossings will sooner or later be required over or under the railroad at East Stonewall Street, East Second Street, East Fifth Street, East Sixth Street, East Seventh Street and East Nineth Street, in addition to the present underpasses at East Fourth Street and at East Trade Street and the bridge at East Eleventh Street. East Third Street should also be continued across the railroad as, if and when the Southern Railway freight station is moved to some other location.

Studies have been made for the elimination of these several crossings on the basis of removing only those tracks across the street which can be dispensed with under present operating conditions, that is, for immediate elimination. But if arrangements can be made for the Norfolk-Southern to join the Southern Railway near 36th Street and to establish its freight station east of the Seaboard Air Line or make use of the other stations, the numerous tracks to its station across East Seventh Street, and East Eighth Street could be done away with. So could that part of its main track south of East 36th Street.

A great saving in the cost of grade separation on all the streets that cross the Norfolk-Southern would then be effected. Similarly, if the freight stations of the Southern Railway and Seaboard Air Line Railway were removed to the north, a great saving in the cost of grade separation would be effected. What will probably be the central portion of the city would, moreover, be made available for a better, more sightly and more valuable use. Reduction in the number of tracks will not only reduce the cost of the underpasses; it will also enable them to be safer and less obstructive to light and air.

EAST STONEWALL STREET CROSSING

East Stonewall Street would be continued with a width of 60 feet across the railroad by an underpass. For this there is sufficient headroom, with the present track grades, as per plan and profile.

EAST SECOND STREET CROSSING

East Second Street, widened to 60 feet on its south side, would cross the railroad by an underpass, with a maximum grade of 6.6 per cent. It would pass under three tracks to the east of the freight house and four tracks entering it. The team tracks to the north would be cut off. The team trackage north of Second Street would be abandoned. A track to supply industries would cross at grade. Were the freight station removed,

this underpass need only be 60 feet long. A service roadway would be provided on the south side of the street, 30 feet wide, at present grade, for the convenience of vehicular traffic to and from the station and to the team tracks to the south. This service road would not be necessary if the station were removed. A plan and profile for this crossing is submitted.

EAST FIFTH STREET CROSSING

East Fifth Street, widened to 60 feet on its north side, should cross the railroad by an underpass, with a clearance of 13 feet and a maximum grade of seven per cent. Five tracks pass over this street, two of which would not be necessary if the Seaboard freight station were removed. The railroad tracks can be raised about a foot, to advantage. A plan and profile for this elimination is submitted. Some of the vehicular entrances would be cut off by the grade change, but others further from the tracks can be arranged. The vehicular entrance to the Seaboard Railway freight station would be shut off by a cut of about 15 feet and another entrance by a service roadway would be necessary, if the station were not removed.

EAST SIXTH STREET CROSSING

An underpass is to be preferred to an overhead bridge for the elimination of this grade crossing. The difference in cost would not be great, but the adjacent property could be adjusted more easily to the new grades required by an underpass.

The street would be widened to 60 feet on the north side; a clearance of 13 feet would be provided, and the maximum grade would be seven per cent. Entrance to the team tracks of the Norfolk-Southern Railway would be cut off but access would be obtained from Seventh Street. Were the team tracks to the Seaboard Air Line removed, the tracks over the crossing could be reduced to three, with a considerable reduction in the cost of the elimination.

EAST SEVENTH STREET CROSSING

A large amount of vehicular traffic uses this grade crossing, and its early elimination is necessary. Twelve tracks cross this street, nine of these belong to the Norfolk-Southern Railway. They are spread over a distance of about 220 feet to the east of the Seaboard Air Line Railway tracks. These numerous tracks, greatly spread out, make the crossing very expensive to eliminate. It will be necessary to provide service roadways to the Norfolk-Southern Railway freight station and also to the large three-story building nearly opposite. In the separation of grades at this crossing, three tracks crossing the street, it is proposed to abandon; one of these is not in use and the other two are used as team tracks. Sufficient facilities are, however, available in the block to the north to take care of the traffic. The maximum grade would be seven per cent. A plan and profile of this crossing is appended.

EAST NINTH STREET CROSSING

East Ninth Street would be widened to 60 feet on the north side. It would cross the tracks of the railways by an underpass, with a clearance of 13 feet. The maximum grade would be 6.5 per cent. as shown on the accompanying plan and profile.

SOUTHERN RAILWAY MAIN LINE CROSSINGS

Other crossings on the main line of the Southern Railway which have been studied to determine how they should be eliminated are at Dowd Road, where a bridge over the railroad at its present grade is proposed, and at Irwin Creek where an underpass is projected. West Eleventh Street would be carried over the Southern Railway main line and Winston-Salem Branch, as well as the Seaboard Air Line, at about the present railroad grades, by a viaduct with a 40 foot roadway and one eight foot sidewalk. A service roadway on the north side of West Eleventh Street east of the railroad would give access at present grades to the buildings on the north side of the street. Smith Street would go under the viaduct. Clearance over the tracks would be 18 feet, and the maximum approach grade seven per cent. West Eleventh Street, between North Graham Street and Smith Street would be widened 42 feet on its south side.

Pine Street would be continued northerly at a width of 60 feet by a bridge over the railroad, which is in a cut.

North Church Street, which is some 12 or 15 feet below the main tracks of the Southern Railway, would be continued north under the tracks of the Southern Railway, with a clearance of at least 13 feet. Crossings are also planned to carry East 20th Street, East 27th Street and East 35th Street across the Southern Railway.

COLUMBIA BRANCH CROSSINGS

On the Columbia Branch it is proposed to connect Gold Street and Rennselaer Street by an underpass 60 feet wide with 13 feet headroom. The grade crossing at East and West Boulevard it is also proposed to eliminate by means of an underpass, with clearance of 13 feet and a maximum grade of seven per cent; the railroad grade would remain substantially as at present.

The grade crossing at Tremont Avenue should also be eliminated by an underpass. As the railroad has a long, straight grade in the vicinity, changes of railroad grade cannot here be effected to advantage.

SEABOARD AIR LINE
RAILWAY CROSSINGS

The grade crossings of the Seaboard Air Line Railway on its freight branch east of College Street have already been discussed in conjunction with those of the Southern Railway. There remains to consider, its line through the city from east to west. The number of trains being so much less than that

on the Southern Railway, the obstruction to vehicular traffic and the necessity for elimination is, of course, not nearly so great. The greatest obstruction occurs at North Church Street where there is a good deal of switching. The considerable vehicular traffic on Central Avenue makes grade separation on that street very desirable.

Since the Seaboard Air Line cross the drainage nearly at right angles, a succession of cuts and fills characterizes its location in Charlotte. It is not difficult therefore to locate new streets so that their grades can easily be separated from that of the railroad. This has been the aim in laying out new major thoroughfares. A thoroughfare is proposed crossing the railroad by an underpass through its embankment near Steward Creek. Another through the embankment at Irwin Creek, by an underpass. The proposed viaduct to carry West Eleventh Street over the railroad has already been discussed. North Graham Street already crosses the railroad by a timber bridge about to be reconstructed. It is proposed to extend Pine Street over the railroad by a bridge to join Bancroft Street. This can readily be done, as the railroad is in a cut 12 to 15 feet deep at this point.

North Church Street, as already pointed out, is often obstructed to considerable extent by the switching of freight trains. The railway yard extends over this street. This crossing can be eliminated, either by a bridge or by an

underpass. It is considered, however, that a bridge would cost less than an underpass. The problem of satisfactorily draining an underpass, one of some difficulty, would be eliminated by the construction of a bridge.

North Brevard Street and North Davidson Street should, on account of the topography, cross on bridges. Myers Street should have an underpass. Hawthorne Lane should be continued northerly across the railroad by an underpass where the trolley now crosses.

Central Avenue, one of the important radial streets of the city carrying a considerable amount of traffic, is a grade crossing which it is important to eliminate but, on account of the building development near the railroad, it will be expensive to carry out. The topography at this point demands that the crossing be a bridge. Sketches have been made showing how it should be done. As the railroad is on a long grade of over one per cent., its grade cannot readily be changed. All of the change, some 22 feet, will have to be in the street. Still further to the east, it is proposed to connect Clement Avenue into Pecan Avenue by a bridge. This can be easily effected, as the streets to be connected on either side of the railroad are about 12 feet above the tracks.

COST OF RAILROAD GRADE CROSSING ELIMINATION IN THE VICINITY OF WEST TRADE STREET AND ORDER IN WHICH IT SHOULD BE CARRIED OUT

The Southern Railway Company on June 27, 1928, made a detailed estimate of cost based on lowering tracks at West Trade Street 10 feet, constructing a viaduct at West Trade Street and underpass at West Sixth Street and West First Street. The estimate included a large addition to the track facilities and many betterments. It would not be reasonable to plan the elimination of the grade crossings adequate for the future street development of Charlotte without at the same time including in such plan the additional facilities which will be needed by the railroad.

The estimated gross cost was $1,550,000, including the West Trade Street viaduct and the West First Street and West Sixth Street underpasses. It did not include property damage nor relocation and cost of streets, and delays. The estimated cost of the West Trade Street viaduct was $252,500, that of the West Sixth Street underpass $110,300; and that of the West First Street underpass $148,500, making a total of $511,300 for the three street crossings. The cost of lowering tracks, of laying additional tracks and of making other incidental changes in the railroad plant amounted to $1,038,700. A great part of this cost did not change materially with the amount

of railroad depression. A large part of this cost was due to proposed railroad betterments.

On the basis of these estimates, with substantially the same additional track facilities and betterments, we estimate roughly the cost of carrying out the recommended plan, providing for lowering the railroad grade 13 feet at West Trade Street and for the crossing of six streets at their full roadway and sidewalk width, four streets by bridges and two streets by underpasses as follows:

West Trade Street bridge and approaches	$ 220,000.00
" Fifth " " " "	213,000.00
" Fourth " " " "	210,000.00
" Third " " " "	343,000.00
" Sixth " underpass	176,000.00
Stonewall Street "	146,500.00
Cost of depressing tracks to 13 feet, with additional tracks, railway betterments, etc.	1,219,500.00
	$2,530,000.00

This estimate does not include property damages or cost of streets other than construction cost of approaches. Bridge girders would in all cases, according to this plan, be kept below the street surface by the use of piers or columns at suitable intervals. Too often an otherwise satisfactory grade elimination is disfigured by girders projecting several feet above the surface and dividing the roadway into two parts. The ends of such girders are serious danger points. This construction should not be tolerated.

West Trade Street, as has previously been pointed out, should be the first grade crossing to be eliminated. West Fourth Street, on account ot its importance as a traffic artery across the city to the east, should be the second street to be continued to the west so as to relieve West Trade Street and provide a continuous traffic artery through the central portion of the city. The West Sixth Street - Seventh Street underpass should be the third street to be carried out, to detour traffic to the north of West Trade Street. The early carrying out of the proposed East Seventh Street grade crossing elimination via the east side tracks, would make this a third continuous east and west traffic route through the city without any grade crossings.

With the West Trade Street, the West Fourth Street and the West Sixth- Seventh Street crossings carried out, the other proposed crossing eliminations in this section can then be taken up as need arises. It, however, appears that West Fifth Street, Stonewall Street and West Third Street, if constructed in the order named, will best suit the public convenience.

It cannot be too strongly emphasized in this connection that all work should, from the very first, be done in conformity with the plan providing for the elimination of all the above-mentioned street crossings.

ORDER OF CARRYING OUT
MAIN LINE IMPROVEMENT

It is suggested that the various sections of the main line improvement be carried out according to the following program:

First Stage

1. Build turntable, coal trestle, transformers, repair shops, etc., now in positions which will be occupied by new tracks, in permanent location outside of the track area, and make temporary grade crossing of West Second Street over railroad into West Third Street, and when completed close West Third Street while work is going on.
2. Start excavation on west side of yards from the south, leaving present yard tracks until five or six of the westerly proposed yard tracks are completed and ready for use.
3. Put the new yard tracks into use and dismantle old tracks up to the passing track west of the southbound main track. Support the bank on which that track rests by sheet piling where necessary. Continue excavation up to said passing track between West Second Street and West Trade Street, and lay the two main tracks and westerly platforms.

4. Close West Trade Street across the railroad and reconstruct the fronts of buildings on West Trade Street to the extent necessary, and build West Trade Street bridge and approaches, so far as operation of present tracks across street will permit. Also excavate for new tracks across West Trade Street to West Fifth Street west of tracks now in use and lay all new tracks in area, including new main track north and main track south, supporting where necessary bank of excavation, by piling.

5. Lay additional track at final grade west of present southbound main track from West Fourth Street to West Eighth Street. Use the present northbound main track in this section as the southbound main track, and the track to the east as the northbound main track. Then lower the present southbound main track and complete the connection into the new track system, except for the gap at West Fifth Street.

6. Open West Seventh Street temporarily across the tracks at grade through the cemetery, for vehicular traffic. Also open West Third Street. Then close West Fifth Street across the railroad, excavate the railway area in the street, and connect the new tracks across the street as rapidly as practicable.

Second Stage.

1. Put the new track system in use, including the new temporary southbound track and the existing southbound track to be used temporarily as a northbound track. Operate Columbia Division trains over the east side tracks. Complete the West Trade Street bridge across the present tracks as rapidly as possible.
2. Close West Third Street and West Seventh Street to traffic when the West Trade Street bridge is opened to traffic.
3. Excavate the reminder of the depressed system from West Second Street to West Eighth Street, pushing the depression of the Columbia Division tracks and the construction of a second passenger platforms, to early completion.
4. Resume operation over Columbia Division cutoff as soon as the tracks leading to this division have been depressed.
5. Lay new tracks and platforms, etc., and remodel station to fit the changed track level.

Final Stage.

1. Put into operation the entire new track system.
2. Construct West Fourth Street, West Fifth Street and West Third Street bridges and approaches.
3. Close West Second Street temporary grade crossing upon completion of either the West Third Street or the West Fourth Street bridges.

The above program predicates, of course, that the West Trade Street crossing will be eliminated before any other crossing. The proposed West Sixth and West Seventh Street underpass near the northerly end of the improvement, and also the porposed West Stonewall Street underpass at the southerly end of the improvement are practically independent of the West Trade Street elimination. Either or both of these crossings can be constructed either before or after the West Trade Street crossing. Both of these latter projects involve street widening and extensions before they can be made available for traffic. If they were built in advance of the West Trade Street bridge, all of the grade crossings could, upon their completion, be closed between West Morehead Street and West Ninth Street, thus obviating the crossing of tracks at grade, while the West Trade Street elimination is in progress. The earlier construction of these underpasses would also to some extent facilitate the work of construction as crossings would not have

to be guarded nor trains delayed on account of vehicular movements. The excavation could also proceed without break across all of the streets at once.

ORDER OF CARRYING OUT EAST SIDE FREIGHT LINE IMPROVEMENT

It has been recommended in this report that railroad grade crossings be eliminated across the east side freight lines at the following streets: East Stonewall Street, East Second Street, East Third Street - when and if the freight station is relocated - East Fifth Street, East Sixth Street, East Seventh Street and East Ninth Street.

East Seventh Street carries a large amount of traffic across the freight tracks which should not be subject to the delays due to switching of freight and the passing of long trains. This grade crossing should be the first to be eliminated on the east side, and after the elimination of the West Trade Street crossing and the extension of West Fourth Street over the main line of the Southern Railway, it is the most needed crossing elimination. It should be eliminated by a viaduct over the railroad, 60 feet wide. It will cost about $202,000.00. This would be exclusive of property damage and the cost of widening the street or of providing service roadways.

The other crossings on the east side should be eliminated, it is believed, in the following order:

East Fifth Street, East Stonewall Street, East Sixth Street, East Ninth Street, East Second Street and East Third Street. The order in which these crossings should be eliminated, however, will depend to a considerable extent on the order in which the elimination of the railroad crossing on the same thoroughfare is carried out on the main line. It will also be subject to the order in which the street widenings, extensions and improvements, as proposed in the thoroughfare plan, are made on these thoroughfares and their connecting thoroughfares.

RECOMMENDATIONS

The chief recommendations made for the elimination of the grade crossings in accordance with the thoroughfare plan are as follows:

1. Both the Main Line of the Southern Railway and the passenger station should remain in their present locations. The tracks, however, should be depressed about 13 feet at West Trade Street. West Trade Street, West Fourth Street, as well as West Fifth Street should cross the railway at full width by bridges. Stonewall Street should be extended by an underpass across the railroad into West First Street and West Sixth Street and West Seventh Street should be extended to the west across the railway by an underpass common to the two streets. The first two

crossings which should be eliminated are West Trade Street and West Fourth Street.

2. Freight stations and yards should be removed from the business center of the city to the north at a location in the vicinity of the Seaboard Air Line Railway. Only the tracks necessary for through movements of freight and joint operation of freight cars to private sidings should remain.

3. Grade crossings on the east side freight line should be eliminated by street elevation or depression, the railway remaining at substantially its present grade. The following crossings should be eliminated: East Seventh Street by a viaduct; East Fifth Street, East Stonewall Street, East Sixth Street, East Ninth Street and East Second Street by underpasses. When and if the Southern Railway Freight Station is relocated, East Third Street should also be continued across the railroad by an underpass.

4. Grade crossings should be eliminated on the Columbia Branch cutoff at South Tryon Street, Mint Street and West Stonewall Street by underpasses.

5. Other important crossings on the Southern Railway main line proposed for elimination are Dowd Road, West Eleventh Street and Pine Street by bridges, and North Church Street extended by an underpass.

Grades would also be separated when East 20th Street, East 27th Street and East 35th Street are continued across the railroad according to the Thoroughfare plan.

6. Crossings on the Columbia Branch south of the cutoff would be eliminated by underpasses as follows: Gold Street, Ransselaer Street connection, East and West Boulevard, and East and West Tremont Avenue.

7. Crossings on the Seaboard Air Line Railway would be eliminated as follows: North Church Street, Central Avenue, Pine Street, West Eleventh Street, North Brevard Street, North Davidson Street, Clement Avenue by bridges; and a proposed parkway near Irwin Creek, Myers Street and Hawthorne Lane by underpasses.

There is every reason to believe that the rapid growth of Charlotte during the last decade will continue for many years. It is still a young city. There is a great area tributary to Charlotte which as yet is only slightly developed. The growth of this surrounding territory will stimulate the growth of Charlotte.

The highway plan of the city must be adequate to meet the demands of this growth. The streets must be sufficient in width and number to carry the city's future traffic. The railroads, too, are of fundamental importance to Charlotte. Their arrangements for handling increased traffic with economy

and dispatch also merits the most careful attention.

It has been sought in this report to take equally into account the requirements of the railroads and the streets of the Charlotte that is to be. Additional railway trackage and facilities where necessary have been provided in the elimination. Nearly all of the streets near the business center are continued at their full width unbroken, across the railroads. It is believed that this program is necessary for the continued development of Charlotte. Any lesser program would tend to restrict and hamper its business activities.

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SUPPLEMENTARY REPORT ON THE SEPARATION OF STREET AND RAILWAY GRADES IN CHARLOTTE, NORTH CAROLINA

By

Herbert S. Swan, City Planner

and

George W. Tuttle, Engineer

To the
Planning and Zoning Board

SUPPLEMENTARY REPORT ON THE SEPARATION OF STREET AND RAILWAY GRADES IN CHARLOTTE, NORTH CAROLINA

Since the report on the separation of street and railway grades in Charlotte was prepared, numerous plans, surveys and estimates prepared by the Southern Railway Company for the elimination of grade crossings have been furnished us by the company. It is thought that a brief review of this material, as well as a comparison with the recommended plan, is advisable.

PROJECTS DISCUSSED BY CITY AUTHORITIES AND SOUTHERN RAILWAY

In March, 1926, the matter of separating the street and railway grades at West Trade Street was brought up by the city authorities who requested the Southern Railway Company to make a study of the best possible plan for separating the grades.

On September 7, 1926, the city commissioners called a meeting with a view of passing an ordinance requiring, among other things, the separation of grades at West Trade Street

by lowering the railway tracks so as not to disturb the present grade of the street. The ordinance was not passed, but another meeting was arranged for September 27, 1926, at which time the Southern Railway Company was expected to appear and,

(a) Advise that the grade of its main line would be under the proposed ordinance.
(b) How this grade would affect other grade crossings in the city.
(c) Whether or not the railway company deemed a plan according to the ordinance practicable; if not, the railway company was requested to present counter plans and reason for same. It was also asked to state any objections it might have to the passage of the proposed ordinance.

Surveys were started by the Couthern Railway Company and a number of plans and estimates were prepared among which were plans and profiles of streets, tracks, etc., affected by the ordinance. An estimate dated Spetember 19, 1926, was also made, based on maintaining the present grade of West Trade Street, lowering the tracks to go under the street, and constructing overhead bridges at West Trade Street, West Third Street, West Fifth Street and West Seventh Street. The cost was estimated at $3,723,310.00. The estimated cost of the four bridges was $570,000.00, that of depressing tracks and all the incidental changes involved, $2,796,645.00, and engineering and contingencies, $356,665.00. Plans were proposed as alternate propositions and submitted by the railway company, as follows:

(a) Plans Nos. 3515 and 3517 dated October 7, 1926 and October 12, 1926, respectively, of a reinforced concrete viaduct at West Trade Street with tracks lowered 4.3 feet.

These plans would provide a viaduct with a roadway 41 feet wide, with approach grades of seven per cent. and headroom over tracks of 20 feet. The viaduct would be 850 feet long. No provision for pedestrians would be made on the viaduct, but a tunnel under the tracks, eight feet by nine feet, and 147 feet long, reached by stairways from the sidewalks at each end, would be provided. The northerly sidewalk would also be continued across the tracks.

Roadways 16 feet wide and sidewalks eight feet wide would be provided up to the railway on either side at present grade. Tracks across Trade Street were increased from four to six in number.

On May 7, 1928, the viaduct, according to the above plans, was estimated to cost $444,000.00. Track, signal, and station changes, etc., railwoad retaining walls and platform occassioned by railroad depression, amounting to $116,000.00, were included in the amount.

(b) Plan No. 3508 was prepared October 4, 1926, for a similar viaduct 975 feet long, with tracks at present grades. Its estimated cost May 7, 1928, was $355,000.00

(c) Plan No. 3514 was prepared October 6, 1926, for an underpass at West Fifth Street, with a 30 foot roadway.

12 feet 1-1/2 inches clearance, and two 4.5 foot sidewalks. The approach grades from the east were eight per cent. and from the west six per cent. The present railroad grade was unchanged. An estimate date October 12, 1926, made the cost $85,000.00.

(d) Plan No. 3516 was prepared October 11, 1926, for an underpass for West First Street extension. It shows a roadway of 36 feet and headroom of 12 feet, with two 7.5-foot sidewalks. The approach grade from the east would be seven per cent. The present three tracks only were taken care of in the plan.

The estimate of cost was $66,500.00, dated October 12, 1926. The railroad management did not approve the plan for a viaduct, based on not lowering tracks, but approved the submission of the plans for the viaduct at West Trade Street, based on lowering the tracks at that point 4.3 feet, and the underpass plans for West First Street and West Fifth Street.

The City Commission held a conference with the Southern Railway executives on October 29, 1926, at which no decision was reached. On January 14, 1927, the Board of Commissioners of the City of Charlotte employed Mees & Mees, engineers, to make a report on the grade crossing separation on the main line of the Southern Railway between the Seaboard Air Line Railway and Irwins Creek. This report was submitted April 25, 1927 and has already been referred to in this report.

The City Commissioners called a meeting October 24, 1927, and another on November 2, 1927, at which time consideration was given the question of separating the grades at West First Street and at West Sixth Street, instead of at West Fifth Street. The question of separating the grades at West Trade Street was not considered at these meetings, but on the part of the city the question was brought up of separating the grades at some future time at South College Street across the Columbia Division outoff, East First Street or Stonewall Street, East Seventh Street and East Ninth Street across the east side lines. The city representatives asked that plans and estimates be prepared for separation of grades at East Seventh Street, and it was agreed that the Norfolk-Southern Railway would prepare them.

The City representatives next called a conference with the Southern Railway representatives on February 23, 1928, at which plans prepared by Mees & Mees for lowering the tracks 10 feet at West Trade Street were discussed. The railway company was asked to check the plans and advise the railway's view regarding them.

The Southern Railway Company then prepared plans and profiles for grade separation at West Trade Street and the lowering of its tracks in considerable detail with estimates of cost, based on a 10-foot depression of tracks at West Trade Street, including two designs for a viaduct at West Trade Street

changes in the passenger station required by the depression, and plans for the carrying out of the track depression in three stages.

Plans were also prepared with estimate of cost for an underpass on an extension of West First Street that had been proposed by the city engineer. An estimate of cost according to a plan prepared by Mees & Mees and submitted by the city for an underpass at West Sixth Street was also made. These plans and estimates were prepared between April and July, 1928.

The city authorities also arranged with the Southern Railway Company for straightening the underpass at North Tryon Street, which is now being carried out.

An underpass at South College Street, under the Columbia Division cutoff, has also been asked for by the city authorities for which the Southern Railway Company is now preparing detailed plans.

PROJECT FOR LOWERING TRACKS
AT WEST TRADE STREET TEN FEET

The 1928 plans above-mentioned, while providing underpasses at West First Street and at West Sixth Street did not provide for any crossing between these streets except at West Trade Street. West Third Street and West Fifth Street would be discontinued across the tracks.

Plan No. 3866, dated April 28, 1928, showing grade separation at West Trade Street, provides for lowering the tracks

10 feet and erecting a bridge with 18 feet clearance over tracks. Seven tracks would cross West Trade Street, instead of the existing four tracks. The approach roadway with seven per cent. grades would be 70 feet wide with two 10-foot sidewalks. The bridge, however, owing to the considerable span (68 feet) would have girders about eight feet deep, which would project some four feet above the surface of the roadway and divide it into 33.5-foot roadways. Two 10-foot sidewalks would be cantilevered outside the girders. Retaining walls 0 to 8 feet from the property line would support the appraach fill and leave room outside the structure for stair ways to entrances to buildings at present level. The estimated cost of this structure, dated April 30, 1928, was $252,000.00.

A later plan, No. 3900, dated July 2, 1928, with the same depression of tracks, clearance, approach, grades, etc., provided for a viaduct crossing the tracks, centrally located in the street with approach roadway 40 feet wide. There would be two 20-foot roadways on bridge separated by a girder rising about four feet above the surface. A 16-foot service roadway with an eight-foot sidewalk against the property at present levels would remain on each side of the street. Pedestrians would be provided for by eight-foot sidewalks cantilevered out on each side of the bridge and reached at each end by stiars rising about 14 feet from the present sidewalks.

The cost of this structure would be $200,000, according to an estimate which was dated July 5, 1928.

As a part of this project, a plan, No. 3842, dated April 9, 1928, was prepared of an underpass for the extension of West First Street. It provided for a 40-foot roadway with underclearance of 13 feet, and two eight-foot sidewalks.

Five railway tracks were provided for, in place of the three tracks which now pass at this locality. The estimate of cost dated April 10, 1928, amounted to $148,500.00, which, to provide for seven tracks was on June 19, 1928, increased to $169,500.00.

A plan for a highway underpass and connecting street at West Sixth Street from North Graham Street on the east to West Fifth Street on the west, in connection with lowering tracks at West Trade Street 10 feet was prepared by Mees & Mees, January 18, 1928.

The railway tracks would be lowered at West Sixth Street two feet. A roadway 27 feet wide, with a clearance of 12.5 feet and two five-foot sidewalks would be provided over a culvert which would be lowered three feet. Outside the underpass, the roadway width would be increased to 30 feet. The improvement was 1,283 feet long, extending from North Graham Street to West Fifth Street. The estimate of the cost, dated May 8, 1928, was $110,300.00

The cost of grade separation, based on lowering tracks at West Trade Street 10 feet, constructing viaduct at West Trade Street with two 33.5-foot roadways and two 10-foot sidewalks and underpass at West First Street (five tracks) and West Sixth Street as above described, including additional track facilities and changes in passenger station, under estimate of the Southern Railway Company, June 27, 1928, was $1,550,000.00 made up as follows:

West Trade Street viaduct	$252,500.00
West First Street underpass	148,500.00
West Sixth Street underpass	110,300.00
Depressing tracks 10 feet including additional track facilities and changes in passenger station	904,820.00
Engineering and contingencies	133,880.00
	$1,550,000.00

PROJECT FOR LOWERING TRACKS 4.3 FEET

The cost of grade separation, based on lowering tracks at West Trade Street 4.3 feet and constructing vaiduct at West Trade Street having a 41-foot roadway with tunnel under track reached by stairs for pedestrians, underpass at West First Street (five tracks) and West Sixth Street, as above described, including additional track facilities and changes in passenger station, under estimate of the Southern Railway Company, dated June 27, 1928, was $1,370,000.00, made up as follows;

West Trade Street viaduct	$410,000.00
West First Street underpass	148,500.00
West Sixth Street underpass (Including construction of street connections)	110,000.00
Depressing tracks 4.3 feet, including additional track facilities and changes in passenger station	609,892.00
Engineering and contingencies	91,608.00
	$1,370,000.00

The cost of grade separation, based on lowering tracks at West Trade Street 4.3 feet and constructing viaduct at West Trade Street with a 41-foot roadway with tunnel under tracks, reached by stairways for pedestrians, underpasses at West First Street and at West Sixth Street as above described, including incidental lowering of present tracks under traffic, but with no increase in present track facilities, according to estimate of Southern Railway Company dated July 7, 1928, was,-

West Trade Street Viaduct, plans No.s3515 and 3517	$444,000.00
West First Street underpass Plan No. 3842	148,000.00
West Sixth Street underpass (including construction of street connections)	110,000.00
	$702,000.00

The scheme of depressing the railway 4.3 feet would result in considerable advantage to the railway. It would remove the objectionable one per cent. grade on either side of West Trade Street from Fourth Street to about 250 feet beyond West Fifth Street, enable trains to start on a level grade, and enable switch operations to be conducted to better advantage. Such a

cut would be of very slight advantage to the grade separation of the streets, wholly incommensurate with its cost.

ESTIMATES

All estimates were for construction; they did not include any items for property damage, delays, or cost of new streets. The estimate for the 4.3 foot depression of the railroad appears excessive. Apparently, items such as changes to passenger station, waiting-room over tracks, etc., which are slight or are not required in this case are entered in the estimate for the same amount as for the 10-foot depression.

IMPORTANT FEATURES OF THE PLANS

The plans prepared by the Southern Railway Company based on a 10-foot depression of the railway at West Trade Street and an overhead bridge carrying West Trade Street over the tracks are in many respects similar to the plans we have recommended for the grade separation in this vicinity. We pointed out, however, that the depression of the tracks, owing to the large cost, would not be economically justified, if West Trade Street only were to cross over the streets. We made it clear that in our opinion the present needs of Charlotte demanded more than this one crossing between West First Street and West Sixth Street and that West Fourth Street, West Fifth Street and West Third Street should ultimately cross over other than at grade. One street in

addition to West Trade Street should be separated as soon as practicable. The plans should therefore be made with these grade separations in view, and the track depression planned so as to favor all the grade separations above mentioned. This the railroad plans fail to do.

The new boiler house and coal trestle are located directly in the way of the extension of West Fourth Street. The new coach yard planned by the railway at the existing grade should be depressed, with the main tracks so that West Fourth Street can be bridged over them satisfactorily or else they should terminate south of the proposed extension. The new position of the turntable is located squarely across West Third Street and the failure to depress the coach track along with the main tracks add to the difficulties of bridging West Third Street across the railroad. Tracks should be sospaced that suitable columns and piers can be provided for viaducts with moderate spans.

TRACK LAYOUT

The track layout primarily concerns the railroad. It has been planned by the railroadwith a considerable expen sion to existing facilities. Eight tracks take the place of the present four, and station platforms 22 feet by 1,117 feet and 22 feet by 1,280 feet are proposed. With the depressed

tracks, allowance should be made for growth. The track plan proposed by the railroad can properly be accepted after such changes have been made as will further the economical and satisfactory briding of West Third Street, West Fourth Street, West Trade Street and West Fifth Street across the railroad. This track plan with its independent freight tracks will occupy all the space between the signal and electrical storehouse and passenger station.

NECESSITY FOR A CUT OF 13 FEET

The depression of 10 feet makes the railroad cut somewhat shorter and gives the railroad slightly easier grades than those proposed in the report with a cut of 13 feet. The railroad grades that we propose, however, are considerably less than those with which the railroad is now operating and should be entirely satisfactory. This additional cut of three feet will admit of the carrying of the bridges and viaducts across the railroad at considerably less cost and with easier grades than otherwise, will enable property on the approaches to adjust itself much more readily to the new grades and front directly on the approaches, and will cause less damage to such property and will give a better appearance to the street than if it is carried over at the higher level. We are therefore firm in the conviction that the railroad should be depressed 13 feet, rather than 10 feet.

TRANSVERSE SLOPE ACROSS TRACKS

The streets and intervening ground slopes something over two per cent. down to the west and the railway plans carry their tracks across West Trade Street on this slope.

In the report we have planned all tracks all the same level from east to west, but they can be stepped down to advantage to the west on a grade of about two per cent., as indicated on the railway plans. This change will lessen the rather heavy fill of the street approaches on the west side of the railroad.

DISADVANTAGES OF THE VIADUCT PROPOSED BY THE RAILWAY

The latest plan of the Southern Railway Company for a viaduct across West Trade Street, No. 3900, dated July 2, 1920, provides a 40-foot roadway divided into two 20-foot roadways over the tracks in place of the present roadway width of 70 feet. Provision is made for two trolley tracks. These Two 20-foot roadways we regard as very inadequate. A service roadway 16 feet wide with an eight-foot sidewalk abuts the property on either side of the viaduct at present levels to give access to the property fronting the approaches to the viaduct. These service streets would dead-end at the railroad and are so narrow as to be of little use. Vehicular traffic from properties near the railroad to reach the opposite side of the railroad would have to go back the length of the approach before it could enter

the viaduct. Some of the properties would be more effectively shut off from the traffic and movement of West Trade Street than if they were on a side street two blocks away. Although no building on the property need be touched, a great amount of damage would nevertheless be done to the properties fronting this viaduct by cutting them off from the traffic of West Trade Street. There would be no room and little occasion to park vehicles along the frontage as it would be so completely shut off from business contracts.

West Trade Street would be very inefficiently used by this arrangement, cluttered up as the street would be with side roadways and partition walls. Its capacity for traffic would be reduced at least one half. The provision for pedestrians is entirely inadequate. Eight-foot sidewalks would be provided, one on each side of the roadway over the tracks. Steps would lead up to them, with a rise of about 14 feet from the present sidewalk level. An offset of about 15 feet to the bridge walk would add to the inconvenience of this foot passage. Such an arrangement for pedestrians is inadmissible.

Another blemish in this plan is the deep girders caused by the long apan of the bridge. They project about four feet above the roadway level and are an obstruction as well as an ever-present source of danger to traffic. Bedides,

they present a very bad appearance. By rearrangement of tracks or spreading them a small amount, intermediate supports can be introduced and girders of reasonable depth can be kept below the street surface.

The ingress and egress between the station and West Trade Street are also unsatisfactory. There is a gap of only 22 feet between the end of the parapet of the viaduct and the curb at the Stonewall Hotel. All traffic to and from West Trade Street into Depot Street and the station would have to pass through this throat, and traffic over the viaduct from the west would have to turn in this throat nearly 130 degrees to reach the station. This feature would be very unsatisfactory, even for present traffic. Other viaduct plans with less depression of tracks are even more unsatisfactory in this particular.

Seven per cent. approach grades are usually employed in the railroad plans, although on one profile the grade on West Trade Street for a short distance exceeded nine per cent. These grades are too steep. Grades on West Trade Street should not exceed six per cent., which is the westerly approach grade of the East Trade Street crossing.

UNDERPASSES

Underpasses have been proposed in the report near West First Street and West Sixth Street that differ somewhat in location from those for which plans and estimates have been made by the Southern Railway Company and Mees & Mees. By this

change these crossings will be an integral part of the thoroughfare system and be of greater service than if connecting local streets.

Each of these underpasses should have a roadway not less than 40 feet wide and sidewalks not less than eight feet wide with clearance of not less than 13 feet. The railroad plans for the West First Street underpass satisfied these requirements, but those of West Sixth Street with a 27-foot roadway, five-foot sidewalks and 12.5 foot clearance are inadequate.

INCREASE IN FACILITIES

The Southern Railway Company would increase the number of its tracks across West Trade Street from four to seven, and presumably its traffic capacity at the station in that ratio.

The present roadway widths of public street crossings of the Southern Railway between West Morehead Street and West Seventh Street are now-

West Third Street	20 feet
West Trade "	70 "
West Fifth "	30 "
Total roadway width	120 "

The latest plans and estimates prepared by the Southern Railway would furnish for this section, roadways across the railroad, of the following widths:

West First Street	40 feet
West Trade Street	40 "
West Sixth "	27 "
	107 "

Increase in railway facilities have been provided for by the railway plans, of perhaps 75 per cent. On the contrary, the plans that appear to be favored by the railway for street crossings provide less roadway width across the tracks than now exists, and the larger part of it is outside of the central business district.

When we consider the rapid growth of Charlotte, that it is only beginning to grow to the west and that vehicular traffic is increasing much faster than railway traffic, it is plain to be seen that this provision for vehicular crossings is inadequate for the present, not to say anything about providing for the next 20 years when the population will have doubled.

The roadway width for railway crossings in this section proposed in the report is as follows:

East Stonewall Street	40 feet
East Third Street	40 "
East Fourth Street	40 "
East Trade Street	72 "
East Fifth Street	40 "
East Sixth-Seventh Street	40 "
	272

CONCLUSION

The several railroad plans only confirm our previous opinion that to secure a satisfactory elimination of the West Trade Street corssing, as well as of the other streets mentioned, the railroad tracks should be depressed not less than 13 feet and that West Trade Street, West Fourth Street, West Fifth Street and West Third Street should be carried over the tracks at full width without break in surface of roadway. The grades on the approaches of the West Trade Street viaduct should, moreover, not exceed six per cent. On the other streets where long fills are involved, the grades should not exceed seven per cent. All of these crossings need not be eliminated at once, but the plans of any one should be prepared on the basis of constructing all.

To - Hay 3/5/48
see Loan Book

Contract

An adjourned meeting of the City Council was held in the Council Chamber, City Hall, at 4 o'clock p.m., on Friday, July 22, 1949, with Mayor Shaw presiding, and Councilmen Aitken, Albea, Boyd, Coddington, Daughtry, Jordan and Wilkinson present.

CONTRACT WITH FRANK T. MILLER, WITH RESPECT TO GRADE CROSSING ELIMINATION PROGRAM APPROVED.

Councilman Boyd advised that Mr. John D. Shaw, City Attorney and he had reviewed the proposed contract with Mr. Frank T. Miller, Engineer, relative to the grade crossing elimination program, as requested by Council, and were ready to present the redrafted contract in which only minor revisions had been made.

The contract between the City and Mr. Miller, providing for the Survey of ~~grade crossings~~ the Southern Railway mainline tracks on the west of the city and freight tracks on the east, between the Seaboard Railway on the north and Morehead Street on the south, at a fee of $16,000.00 for the Survey, and ~~the~~ amount not to exceed $1,500.00 for necessary drilling during the survey, and the payment of an engineering fee of 6 percent of the construction costs in the grade crossing elimination work, with certain deductions, should Mr. Miller be retained to supervise the work, was read by the City Attorney and each paragraph discussed as presented.

During the discussion, it was pointed out by Councilman Boyd that the contract provides that the Mayor, City Manager and City Engineer will decide with the Engineer (Mr. Miller) regarding problems that arise during the project. He suggested that the provision be added that their decisions be subject to Council approval. It was explained by the City Attorney, and Mr. Miller, that the problems so referred to were those of a minor nature requiring immediate decision in order that the work not be delayed; that all major problems would be presented to the Council and decisions thereon be made by them.

Mr. Miller stated that the Survey could be completed not later than March 1950, and would be made in the order designated by Council.

It was explained by Mr. Shaw, City Attorney, that it was a personal service contract, and that should Mr. Miller become incapacitated then the City would have no Engineer in connection with the work, to which statement Mr. Miller, who was present, agreed.

Following the reading of the contract, Councilman Boyd stated he would prefer to know first where the funds were coming from for the construction of the grade crossing elimination program before signing the contract, in order to justify the expenditure of the survey fee. That he objected to the payment for the survey from taxpayers funds and then it be shelved because of unavailable funds for the project construction. Mr. Miller stated the Survey would be good for the next ten years at least should it be decided to postpone immediate construction.

Mayor Shaw stated he agreed with Councilman Boyd, however, the importance of a grade crossing elimination program was vital to the development of Charlotte and he believed the program to unbottle the City should be inaugurated by going ahead with the survey.

Councilman Aitken moved that due to the far reaching effects of the contract, and the fact that it was submitted to Council in its final form

only today, that it would be wise to defer final action until next week's meeting. Motion was seconded by Councilman Daughtry, and did not carry, with the votes cast as follows:

AYE: Councilmen Aitken and Daughtry.
NAY: Councilmen Albea, Boyd, Coddington, Jordan and Wilkinson.

Several of the Councilmen stated they did not believe further study of the contract was necessary due to it having been explained by paragraph as it was read, and fully discussed, and, therefore, they felt a decision could well be reached today.

Whereupon, the following resolution was introduced andread:

RESOLUTION APPROVING CONTRACT WITH
FRANK T. MILLER RELATIVE TO GRADE
CROSSING ELIMINATION.

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CHARLOTTE:

That the Mayor and City Clerk be, and they hereby are, empowered with the authority, on behalf of the City of Charlotte, to execute a contract with Frank T. Miller, Greensboro, North Carolina, with respect to grade crossing elimination in the City of Charlotte, and said contract is hereby ordered to be spread in full upon the minutes of this meeting.

Councilman Jordan moved the adoption of the resolution. Motion was seconded by Councilman Wilkinson, and the resolution was unanimously adopted.

C O N T R A C T

STATE OF NORTH CAROLINA
COUNTY OF MECKLENBURG

THIS AGREEMENT made and entered into this the 22nd day of July, 1949, by and between the CITY OF CHARLOTTE, Mecklenburg County, North Carolina, a municipal corporation organized and existing underand by virtue of the laws of said State, party of the first part, and hereinafter for convenience styled the City, and;

FRANK T. MILLER, Consulting Engineer, of Greensboro, Guilford County, North Carolina, party of the second part, and hereinafter for convenience styled the Engineer;

W I T N E S S E T H:

THAT WHEREAS, the said City desired to determine its best interests in the matter of locations for grade crossing elimination along the main line tracks of Southern Railway, from their crossing with the main line track of Rutherfordton Branch, Seaboard Air Line Railway, south to or near West Morehead Street underpass, and along the midtown or Columbia Division tracks of Southern Railway from their intersection with the main line track of Rutherfordton Branch, Seaboard Air Line Railway south to or near East Morehead Street overhead bridge, and along the A.T. & O. Railroad Company track from its junction with the midtown or Columbia Division tracks of Southern Railway to its junction with the main line tracks of Southern Railway at the Southern Passenger Station, and to determine further the necessary revisions, if any, to the grades of these railway tracks and city streets between the several points, which will better facilitate the design of grade crossing elimination structures at selected suitable locations, and

WHEREAS, the said City further desires to undertake grade crossing elimination projects at certain of the selected suitable locations, and

WHEREAS, the said City has selected and does hereby employ the said Engineer to handle the aforesaid work for it; and

WHEREAS, the said Engineer does hereby accept the said employment from the said City;

NOW, THEREFORE, in consideration of the premises and of the covenants hereinafter mentioned, to be performed by the parties hereto, and of the payments to be made, as shall hereinafter be specified, it is mutually agreed as follows:

ARTICLE I. It is agreed between the parties hereto that the Mayor, the City Manager, and the City Engineer, shall represent the City in all matters and things to be considered under the provisions of this agreement, and the said Representatives, as they shall hereinafter be known, are hereby vested with full power and authority so to act.

ARTICLE II. It is further agreed between the parties hereto that all matters and things mutually decided upon by the said Representatives and the said Engineer, in connection with the work done under this agreement, shall be final and conclusive, so far as the Engineer and his duties under this agreement are concerned.

ARTICLE III. It is further agreed between the parties hereto that the Engineer will, as he may see fit, appoint all of his assistants, servants, and/or employees, who, when so assigned by him, may act for and in his stead in carrying on the work to be done under this agreement.

ARTICLE IV. It is further agreed between the parties hereto that the services to be performed by the Engineer, under this agreement, shall be divided into two parts, viz.,

Part 1. A General Prospectus.

Part 2. Detailed Plans for Grade Separation Structures And Supervision of Construction.

ARTICLE V. Part 1. A General Prospectus. This document will constitute general plans and profiles, setting forth the locations, where and how grade crossing elimination can be made feasible and practical within the area hereinabove designated for study, together with a description of each of the selected locations. The Prospectus will also include a statement of calculated quantities and estimated costs for the undertaking of each grade crossing elimination project recommended, such statements to be based upon field data obtained on the ground by the Engineer.

ARTICLE VI. Part 2. Detailed Plans for Grade Separation Structures And Supervision of Construction. Following consideration by the City of the Prospectus furnished to it by the Engineer and a determination as to which of the suggested grade crossing elimination projects shall be built, the City Council shall advise the Engineer of such determination. Thereupon it shall become the duty of the Engineer, in connection with each of the grade crossing elimination projects desired by the City to be undertaken and constructed, to prepare the designs, plans, specifications, estimates of cost and supporting construction contract documents, to cover the structure and approaches necessary to accomplish the separation of grades between the railway tracks and each street selected to be the subject of a grade crossing elimination project as aforesaid. The designs, plans, specifications, estimates of cost and other documents prepared by the Engineer in this connection shall show in detail such street grading and paving, and underground utility revisions as are necessary to provide the approaches to such grade separation structures as well as such retaining walls and other structures as may be found necessary to develop a completed project. The Engineer will supervise the construction work on each of said grade crossing elimination projects.

ARTICLE VII. It is further agreed between the parties hereto that when the Engineer shall have completed the plans and supporting papers incident to his work in each of the two parts contemplated by this Agreement, and the same have been approved by the City's Representatives, the said Engineer will, at his own expense, provide the City, through its Representatives

five (5) copies thereof, and if later it should be found that additional copies, in full or in part, are needed, he will, upon request from the said Representatives, furnish such additional copies to them, at cost.

ARTICLE VIII. It is further agreed between the parties hereto that the Engineer will prepare the advertisement for contractors' bids, which the City, at its own expense, will have published in such publications as its Representatives may see fit; that the Engineer will, on the days designated in the said Advertisement, have a representative from his staff on the ground to show prospective bidders over the work; that the proposals covering the work will be received by the City Council as prescribed in the said advertisement; and when opened and read they will be turned over to the said Engineer, who will tabulate the same, and turn a copy of the said tabulation over to the said Representatives, with his recommendations, and within ten days thereof the said City Council will award the work, or decline all bids and readvertise.

ARTICLE IX. It is further agreed between the parties hereto that as soon as the construction contract between the City and the Contractor has been executed, the said Representatives of the City will so notify the Engineer, in writing, including therewith a copy of the said executed contract between the City and the said Contractor, the receipt of which by the Engineer shall, of itself, vest him with full authority to proceed, for account of the City, and to carry to conclusion the Engineering supervision of the construction work on the said project.

ARTICLE X. It is further agreedbetween the parties hereto that the Engineer will, with the beginning of construction work on the said project, assign thereto such personnel as he may consider necessary, to assure the Contractor's faithful fulfillment of his contract.

ARTICLE XI. It is further agreed between the parties hereto that the Engineer will prepare both the partial payment and final payment estimates for the City's use in making partial and final settlements with the Contractor. The said estimates shall conform to the stipulations providing for the same as shall be written into the construction contract by the said Engineer.

ARTICLE XII. It is further agreed between the parties hereto that the City will pay the cost of the sounding investigations found necessary to be made by the Engineer, in the preparation of the Prospectus, in determining the quality of excavation quantities, and the depth of suitable foundation material for the grade separation structures recommended; provided, however, that the costs so assumed and paid by the City shall not exceed, in the aggregate, the sum of FIFTEEN HUNDRED DOLLARS ($1,500,00).

ARTICLE XIII. It is further agreed between the parties hereto that the City will advance to the Engineer for traveling expenses to be incurred by him in connection with the work of preparing the Prospectus the sum of SIX HUNDRED DOLLARS/($600.00), said sum to be paid in six monthly instalments of ONE HUNDRED DOLLARS ($100.00) each, the first instalment becoming due and payable thirty (30) days following the date of the execution of this agreement. In addition, it is agreed that the said Engineer will bear the expenses and salaries of his assistants, servants and employees engaged on the said work at the Headquarters office at Greensboro, North Carolina; between Greensboro, North Carolina, and Charlotte, North Carolina; and at Charlotte, North Carolina, but that the said City will bear the traveling and hotel expenses of the said Engineer, his assistants, servants and employees on trips otherwise incident to the project, said trips to be authorized in writing by the City's Representatives before they are taken.

ARTICLE XIV. It is further agreed between the parties hereto that for his services and those of his staff as rendered hereunder, the Engineer's fees shall be as follows:

Section 14.1. For the development and preparation of the Prospectus as described in Article V hereof, the Engineer shall receive and the City hereby agrees to pay him, the sum of SIXTEEN THOUSAND DOLLARS ($16,000.00) which sum shall be paid to the Engineer by the City upon the completion of the Prospectus and the delivery of five copies thereof to the City's Representatives, one copy of which shall bear the approval of the Southern Railway with respect to the grade crossing elimination projects recommended at locations along Southern Railway mainline tracks between the points hereinbefore designated and the grade crossing elimination project recommended at the intersection of the midtown or Columbia Division tracks of Southern Railway with a projection of Stonewall Street.

Section 14.2. It being specifically understood by the parties hereto that grade crossing elimination projects entailing total construction costs in excess of ONE MILLION DOLLARS ($1,000,000.00) are expected to be undertaken by the said City, the Engineer shall receive, and the City hereby agrees to pay him, for his services and those of his staff as rendered in connection with Detailed Plans For Grade Separation Structures and Supervision ofConstruction as described in Article VI hereof, a fee aggregating six percent (6%) of the total construction cost of said work. In computing the total construction cost of the work there shall be included every item of expense incurred in connection therewith, such as costs of rights-of-way, street changes and the like; and in track construction the cost of track material shall be included, whether they be new, salvaged, or re-lay.

Section 14.3. The payments specified to be made under the terms of Section 14.2 above shall be made at such times and in such amounts as shall be mutually agreed upon by the Engineer and the City's Representatives at the time when the work specified to be done under Part 2. Detailed Plans for Grade Separation Structures and Supervision of Construction, shall be undertaken. It is distinctly understood between the parties hereto that it is within the sole discretion of the City Council of the City of Charlotte as to whether or not any construction project contemplated herein shall be undertaken. Should the City Council determine to undertake a construction project or projects as contemplated herein, a supplemental contract shall be entered into between the City and the Engineer with respect thereto, providing for terms of payment, etc. It is further distinctly understood and agreed that the six percent (6%) fee as hereinbefore provided for is not to apply unless the total construction cost of such projects initially authorized and undertaken shall aggregate at least ONE MILLION DOLLARS ($1,000,000.00); and that in the event the total construction cost of such projects initially authorized and undertaken shall aggregate less than ONE MILLION DOLLARS ($1,000,000.00), the fee payable to the Engineer for his work in connection therewith shall be the subject of further negotiation between the City and said Engineer.

Section 14.4. When construction work aggregating a total cost of ONE MILLION DOLLARS ($1,000,000.00) shall have been completed in accordance with the plans and designs submitted by, and under the construction supervision of, the said Engineer, there shall be credited against the sums becoming due to the said Engineer under the terms of Section 14.2 above, FIVE THOUSAND DOLLARS ($5,000.00) of the amount previously paid to him under the terms of Section 14.1 above; and when construction work aggregating a total cost of TWO MILLION DOLLARS ($2,000,000.00) shall have been completed in accordance with the plans and designs submitted by, and under the construction supervision of, the said Engineer, there shall be credited against the sums becoming due to the said Engineer under the terms of Section 14.2 above, an additional FIVE THOUSAND DOLLARS ($5,000.00) of the amount previously paid to him under the terms of Section 14.1 above; and when construction work aggregating a total cost of THREE MILLION DOLLARS ($3,000,000.00) shall have been completed in accordance with the plans and designs submitted by, and under the construction supervision of the said Engineer, there shall be credited against the sums becoming due to the said Engineer under the terms of Section 14.2 above, the remaining SIX THOUSAND DOLLARS ($6,000.00) of the amount previously paid to him under the terms of Section 14.1 above.

ARTICLE XV. It is further agreed between the parties hereto that all field notes, original drawings, sketches, computations, and manuscripts done and made by the said Engineer hereunder, shall be and remain the property of the said Engineer, it being to the best interest of both parties hereto that these documents remain in the files of the Engineer. The Engineer will, however, furnish to the said City, process copies of all of the said Drawings and/or duplicates of the said documents, at cost, if and when such request is made upon the said Engineer by the said City before or within thirty days after the final settlement date between the said City and the said Engineer covering the services rendered hereunder.

THIS AGREEMENT shall inure to the benefit of and be binding upon the legal representatives, successors and assigns of the parties respectively.

IN WITNESS WHEREOF, the said City, by authority of its City Council, has caused these presents to be signed by its Mayor and attested by its City Clerk and its Corporate Seal to be hereunto affixed, and the Engineer has hereunto set his hand and seal, all as of the day and year first above written; this agreement being executed in duplicate originals, one of which is retained by each of the parties hereto.

CITY OF CHARLOTTE, NORTH CAROLINA

_____
Mayor

ATTEST:

_____
City Clerk

_____
Consulting Engineer

WITNESS AS TO ENGINEER:

_____

APPROVED AS TO FORM:

John D. Shaw
City Attorney

APPOINTMENT OF L. L. LEDBETTER, CITY TREASURER, AS ACTING CITY MANAGER DURING ABSENCE OF CITY MANAGER ON VACATION.

Upon motion of Councilman Jordan, seconded by Councilman Coddington, and unanimously carried, Mr. L. L. Ledbetter, City Treasurer, was appointed Acting City Manager, without additional salary, during the absence of Mr. H. A. Yancey, City Manager, on vacation.

ADJOURNMENT.

Upon motion of Councilman Coddington, seconded by Councilman Jordan, and unanimously carried, the meeting was adjourned.

Lucian R. Hoffman
City Clerk

RESOLUTION AUTHORIZING THE EXECUTION OF AN AGREEMENT WITH SOUTHERN RAILWAY COMPANY WITH RESPECT TO GRADE CROSSING ELIMINATION PROGRAM.

A resolution entitled, "Resolution Authorizing the Execution of an Agreement with Southern Railway Company with respect to Grade Crossing Elimination Program" was introduced and read, and upon motion of Councilman Baxter, seconded by Councilman Coddington, was unanimously adopted. The resolution is recorded in full in Resolutions Book 1, at Page 452.

CITY MANAGER DIRECTED TO HAVE CHARLOTTE BOARD OF REALTORS FURNISH VALUATION OF CERTAIN PROPERTY NECESSARY FOR AIRPORT RUNWAYS EXTENSION, AND NEGOTIATE WITH PROPERTY OWNERS FOR PURCHASE THEREOF.

Councilman Coddington moved that the City Manager be authorized and directed to have the Charlotte Board of Realtors furnish a valuation on the several pieces of property necessary for the extension of the NE -SW runway at Douglas Municipal Airport, and that they be instructed to negotiate with the property owners for the purchase of the property, and to purchase it at these values if possible, and in the event they cannot acquire the property at this price, report the results of his negotiations to the Council. The motion was seconded by Councilman Baxter, and unanimously carried.

COUNCILMAN BAXTER ABSENT FROM REMAINDER OF SESSION.

Councilman Baxter left the meeting at this time and was not present for the remainder of the session.

CITY MANAGER DIRECTED TO ENFORCE SMOKE ABATEMENT LAWS.

Councilman Van Every moved that the Council place the matter of Smoke Abatement Laws enforcement in the hands of the City Manager and that he carry out the provisions of the ordinance and that he supervise the work of the Smoke Abatement Engineer so as to bring about good public relations. The motion was seconded by Councilman Albea.

Councilman Dellinger requested that no action be taken today because of the absence of Councilman Baxter, and offered a substitute motion that the matter be deferred until the meeting on January 2, 1952. The motion was seconded by Councilman Boyd, who stated that in his opinion Councilman Van Every's motion is surplusage as there is already an ordinance on the books for the City Manager to administer. The motion was lost with the following votes cast:

AYE: Councilmen Boyd and Dellinger.

NAY: Councilmen Albea, Coddington, Jordan and Van Every.

The vote was then taken on the main motion by Councilman Van Every, and carried, with the votes cast as follows:

AYE: Councilmen Albea, Coddington, Jordan and Van Every.

NAY: Councilmen Boyd and Dellinger.

Mr. Yancey, City Manager stated that he will attempt to carry out the instructions of the Council with the least possible embarrassment to the Council and with the least friction.

TRANSFER OF FUNDS FROM EMERGENCY FUND TO TRAFFIC ENGINEERING DEPARTMENT FOR SIGNS FOR NEW TRUCK ROUTES.

Upon motion of Councilman Van Every, seconded by Councilman Jordan, and unanimously carried, the transfer of $1,760.67 was authorized from the Emergency Fund (Code 110) to Traffic Engineering Department Budget, Street Lighting & Traffic Information Outlay Account (Code 1518-G-53) for the purchase of 661 signs for the new truck routes.

TRANSFER OF FUNDS WITHIN WATER DEPARTMENT BUDGET FOR SEWER LATERALS IN 36TH STREET.

Councilman Dellinger moved that the transfer of $1,075.00 be authorized from the Water Department Budget, Water & Sewer Emergency Fund (Code 613-621-A) to the Water Department Sewer Lateral Connection Account

Resolution Authorizing the Execution of an Agreement With Southern Railway Company with Respect to Grade-Crossing elimination Program in The City of Charlotte

RESOLUTION AUTHORIZING THE EXECUTION OF AN AGREEMENT WITH SOUTHERN RAILWAY COMPANY WITH RESPECT TO GRADE-CROSSING ELIMINATION PROGRAM IN THE CITY OF CHARLOTTE

WHEREAS, it is in the public interest and safety of the citizens and property of the City of Charlotte that traffic congestion in the uptown portion in the City of Charlotte be given immediate attention and alleviation.

AND, WHEREAS, the City Council of the City of Charlotte finds as a fact that the plans prepared by Frank T. Miller, Consulting Engineer are the best available and practical solution of unbottling the uptown portion of the City of Charlotte by eliminating through trains on the east side of Charlotte upon the Charlotte-Columbia division of the Southern Railway and providing for the elimination of grade-crossings on the west side of town.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CHARLOTTE:

THAT, the Mayor and the City Clerk be and they are hereby authorized and empowered and directed by and on behalf of the City of Charlotte to enter into a contract in form hereto attached with Southern Railway Company to accomplish said purpose and the various officials and employees of the City are requested with all due dispatch to prosecute said program as outlined in said contract to a speedy conclusion in the best interest of the citizens of the City of Charlotte; it being understood and agreed that the City of Charlotte will not be called upon to spend, and will not spend as its part of the cost of the project more than one-fourth thereof at any time.

APPROVED AS TO FORM:

John D. Shaw
City Attorney

Read, approved and adopted by the City Council of the City of Charlotte, North Carolina, on the 19th day of December, 1951, and recorded in Minute Book 34, at Page 168, and in Resolutions Book 1, at Page 452.

Lillian R. Hoffman
City Clerk