

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
WASHINGTON, D.C.

Prepared by
CITY OF COLUMBIA
DEPARTMENT OF PUBLIC WORKS
COLUMBIA, MISSOURI

IN THE MATTER OF THE COLUMBIA WEST HISTORIC DISTRICT, BROADWAY
CITY OF COLUMBIA, MISSOURI

PRELIMINARY SECTION 4(f) STATEMENT

Broadway is a major east-west street located in Central Columbia and functions primarily as an artery bringing traffic into and out of Central Columbia providing access to the shops, offices, banks, municipal services, professional services, and the University. A secondary function of Broadway is a through-traffic function where traffic moves into and through the downtown area to some destination outside the downtown and University area. Broadway is the only east-west thoroughfare in the central portion of the city and extends from the eastern city limits to the western city limits. The portion of Broadway under consideration for reconstruction is that section between Garth Avenue and Clinkscales Road. The drawing attached shows this 6,000 foot section of West Broadway as well as the remainder of Broadway and its relationship to other major roads in the area. Broadway is located approximately one mile south of Business Loop 70, an arterial alignment, and one mile north of State Route 740, also an east-west arterial alignment. This one-mile spacing of arterial streets is a universally accepted standard for arterial spacing in the urban setting.

Broadway has been recommended as the arterial street to serve West Central Columbia by every study group that has worked on the Columbia Thoroughfare Plans since the early 1960s. Broadway was shown as a major street in 1962 on the Master Street Plan developed by Council-appointed citizen's committee that classified streets throughout the Columbia area. In the later 1960s West Broadway was classified as an arterial street in studies completed in conjunction with the City's Comprehensive Plan. Hare & Hare, a private planning consultant, the Planning and Zoning's sub-committee on thoroughfares, and the Columbia Area Transportation Study Committee comprised of a Technical Committee and a Coordinating Committee, worked on studies and transportation plans showing Broadway as an arterial street. These findings were adopted by the Planning and Zoning Commission after public hearings and subsequently adopted as part of the Master Street Plan by the City Council and adopted as part of the Major Thoroughfare Plan by the City Council and State Highway Commission.

As a result of the arterial classification for the West Broadway corridor the State Highway Department and the City of Columbia have made several improvements based on the arterial alignment criteria. The State Highway Department constructed Broadway to four lanes from Clinkscales Road westward to Fairview Road. Later the State Highway Department reconstructed and fully signalized the Broadway/Stadium intersection with four through-lanes and left-turn lanes on Broadway. The City of Columbia reconstructed the Garth at Broadway and Clinkscales at Broadway intersections providing four through-lanes and a left-turn lane and full signalization. The City of Columbia also constructed sidewalks along all the above noted sections of improvement. The City also improved Broadway from Garth to Providence providing four through-lanes with a fifth center lane to accommodate turning movements. Finally, the City has designed and contracted the Broadway at Route 63 intersection providing for four through lanes with a left-turn lane and full signalization.

PROJECT HISTORY

The West Broadway improvement project, the 6,000 foot section between Garth Avenue and Clinkscales Road, was programmed in June 1971 under the TOPICS Program. The A95 clearances from the State Clearinghouse and the Mid-Missouri Regional Planning Commission were received early in 1973. A negative declaration of environmental impact was submitted and approved by the Federal Highway Administration in February 1973. A combined corridor/design public hearing was held in June 1973. The City Council at the time passed a resolution directing the city administration to proceed with plans and specifications for the proposed improvements to West Broadway. In December 1973, the City Council by resolution, directed the City Manager and staff to not actively pursue the improvement of West Broadway. During the summer and fall of 1977 following various work and study sessions, the Planning and Zoning Commission recommended that further consideration be given to the West Broadway improvement project and placed the project in the City's Capital Improvement Program. Following this action in May 1978, a second combined corridor/design public hearing was held concerning the improvements to West Broadway. The Council, following this public hearing, directed the city staff to proceed with plans for the improvements along West Broadway.

In June 1978, the City of Columbia received a letter from the Department of Natural Resources which stated that no cultural assessment was necessary for the West Broadway improvement project. Later in the month a letter from the Air Pollution Control Program of the Department of Natural Resources, stated that the project was consistent with the goals established in the state implementation plan. The City received design approval including approval of the noise study and was given authority to proceed with final construction plans in July 1978. Later in July 1978, the City received a letter from the Department of Natural Resources rescinding the previous letter and stating that a cultural assessment must be conducted. The City then contracted with a private consultant, Fisher-Stein Associates, to prepare a cultural assessment for the West Broadway area. The results and recommendations of the Fisher-Stein report were that the street widening project would have no direct adverse impact on the archeological, historical, or architectural resources within the project area. Conclusions further

stated that neither the West Broadway area as a whole, or the 408 to 800 blocks alone, appeared to have sufficient significance to merit nomination to the National Register of Historic Places as an historic district. Their report recommended that an assessment to determine the significance of the 408 to 800 blocks of West Broadway as part of the Westwood and Westmount Additions be undertaken. A final copy of the cultural resources survey and assessment for West Broadway was sent to the Department of Natural Resources in March 1979. In September 1979, the State Historic Preservation Officer presented his opinion that the West Broadway neighborhood area was eligible for inclusion in the National Register. The Keeper of the National Register of Historic Places, on January 28, 1980, determined that the Columbia West Historic District was eligible for inclusion into the National Register. Since the West Broadway improvement project will involve acquisition of permanent easements from 4(f) lands, this 4(f) statement is being submitted for the project.

WEST BROADWAY - CURRENT CONDITION

The section of Broadway scheduled for improvement is that section between Garth Avenue and Clinkscates Road. More specifically, the proposed improvement will tie into the Garth Avenue and Clinkscates Road at Broadway intersectional improvement projects which were constructed in 1973. Improvement at the West Boulevard intersection will extend north and south from Broadway approximately 700 feet each direction.

The existing surface of Broadway between Clinkscates Road and Garth Avenue is asphaltic concrete. The surface condition could be classified as ranging from fair to poor with rutting, roughness, cracking, and excessive crown. The curbs are in generally poor condition, being cracked, dislodged and buried with asphaltic overlay material, and in some sections completely absent. Sidewalks are in place along sections of Broadway and are in generally poor condition. There exists no continuous sidewalk system along West Broadway and dirt paths evidence the need for one. There are two areas where current storm drainage facilities are inadequate. These are in the area of McBaine Avenue and in the area of Hillside Drive. In the case at McBaine, street flooding occurs during heavy rainfall and at Hillside Drive the narrow culvert with inadequate guardrails and no sidewalks, constitutes a safety hazard for pedestrians and motorists alike. The driveways along Broadway are generally quite narrow with short radii turnouts. The intersecting streets also generally have short radii. There are no curb cuts for the handicapped and elderly along West Broadway.

The current West Broadway facility is two lanes throughout, with the exception of several hundred feet at the east end from Aldeah toward Garth Avenue which is four lanes. This four lane section is approximately 39 feet wide and the remainder of Broadway, that is a two lane section, varies from 29 to 36 feet wide. The current right-of-way width along West Broadway varies from 49 to 55 feet with the exception being along the four lane section between Garth and Aldeah where the existing right-of-way varies from 57 to 61 feet.

PROPOSED IMPROVEMENT

The typical section for the proposed Broadway improvement is shown by the attached drawing. The pavement surface width will be 48 feet with 6-inches each side for the curbs for a total back of curb to back of curb measurement of 49 feet. This provides for four 11-foot travel lanes with an 18-inch offset to the curb on both sides and 1-foot for painting of the center stripe.

The West Boulevard section will be 38 feet from back of curb to back of curb. This provides for two through lanes and a left-turn lane. The West Boulevard intersection will be signalized in conformance with the Manual on Uniform Traffic Control Devices, current edition, and will be fully actuated to provide left turns from both streets. Pedestrian indications will also be provided.

Sidewalks being 4-foot wide and 4-foot behind the curb except where meandered to miss trees, will be constructed on both sides of Broadway and on both sides of West Boulevard throughout the project area. All intersections of these sidewalks with driveways and streets will be ramped for the elderly and handicapped.

Electric lines and telephone lines will be undergrounded along both sides of Broadway and will be placed under the sidewalk. The cable TV lines will be coordinated and located with the electric and telephone lines. This undergrounding work will eliminate the existing electric and telephone poles which currently line Broadway. New gas lines will be provided on both sides of Broadway. These gas lines will replace the current single gas line and will preclude any future street cuts as the twin lines will each service one side of Broadway. Only minor adjustments are anticipated with the sanitary sewers and water distribution lines. Street lights will be installed in the project area and will be located between the sidewalk and back of curb. Metal poles and bracket arms will be used for the street light fixtures.

A new box culvert will be constructed just east of McBaine Avenue and also a new box culvert will be constructed at Hillside Drive. These new box culverts will eliminate existing deficient drainage and safety conditions.

The plans for the West Broadway improvement project include the planting of approximately 120 3-4 inch trees. These trees will be planted on a revertable planting easement wherein the City will maintain the trees for an initial period of two to three years to ensure the trees will survive. The lawns where disturbed will have topsoil replaced and will be seeded and mulched.

The total right-of-way width necessary along West Broadway is 69 feet. Additional right-of-way will be needed at the West Boulevard intersection to provide room for the left-turn lanes. No residences will be displaced.

NEED FOR WEST BROADWAY IMPROVEMENT

The improvement to West Broadway will eliminate the existing deficient conditions described above. Each of these deficient characteristics limits the degree of safety provided to both the motorist and pedestrian.

Current traffic counts along West Broadway range from 13,000 west of West Boulevard to 15,500 east of West Boulevard. These traffic counts have remained relatively stable over the past several years, however, a marked increase has been noted on parallel corridors, being Ash Street, Worley Street and Stewart Road. The projected traffic volumes for West Broadway for the design year, 1998, are 21,000 to 23,000. These counts assume that a four lane facility is constructed and that the current congestion by-passes to Ash Street, Worley Street, and Stewart Road, are attracted back to the Broadway corridor.

Traffic on Ash Street, which is one-quarter mile north of and parallel to West Broadway, has shown an average increase of 14% per year over the past five years. This has necessitated four-way stops to be installed at the West Boulevard and at the Clinkscales intersections and has increased vehicle/pedestrian conflicts at these intersections. Worley Street, which is one-half mile north of and parallel to West Broadway, has shown an average traffic increase of 6% per year over the past four years. This increase in traffic has necessitated the installation of traffic signals at Worley Street and Garth Avenue and at Worley Street and West Boulevard North. Ash Street and Worley Street are classified as residential and collector streets respectively. These dramatic increases in traffic will serve to disrupt the residential flavor of these corridors.

Stewart Road, which lies south of and parallel to Broadway, has shown increased congestion especially at the Garth Avenue intersection with resultant traffic cutting through neighborhood local streets and culminating as a source of complaints to the City.

Even with traffic by-passing Broadway in favor of alternate parallel alignments, there is evidence of capacity problems along West Broadway as evidenced by the backing up of traffic for several blocks during peak hours. There is also currently no emergency lane during accidents or for disabled vehicles.

The future development of current fallow lands in Western Columbia, including the Marshal-Gordon tract scheduled for development, will serve to increase traffic along West Broadway and the other east-west corridors. Any improvement to West Broadway should consider the attendant increase in traffic due to the future development.

HISTORIC DISTRICT

The Columbia West Historic District was declared eligible for inclusion to the National Register of Historic Places by the Keeper of the National Register on January 28, 1980. This historic district is generally bounded by the Grant School and Columbia Cemetary on the east, approximately 400 feet north of Broadway on the north boundary, West Boulevard forms the western boundary and Rollins Road is roughly the southern boundary. There is an area of intrusion shown in the Maupin Road, Fedora Avenue, Glendale Drive area. The Historic District is shown on the attached sketch.

The Historic District extends along Broadway from the 110 block to the 922 block on the south side of Broadway and from the 211 block to the 919 block along the north side of Broadway. This distance is approximately 3600 feet, or about 60% of the total proposed improvement project.

It was not until after the turn of the century that the area along present-day West Broadway was developed and urbanized. There occurred three main periods of development between 1900 and roughly 1950. The early development which occurred between 1900 and 1917 included Garth's Addition, Westmount Addition, Westwood Addition, Wise's Subdivision, and Payne's Addition. The Westmount Addition which has its northernmost boundary along the south side of West Broadway was influenced by John A. Stewart, a former judge of Boone County. Judge Stewart set a precedent for residential developments in Columbia by providing such amenities as macadamized streets with curbs and gutters, cement walks and utility connections on each lot and the restrictions on building size.

The second period of development is typified by the bungalow and bungaloid houses. These are especially evident in the Parkhill Additions of 1924 and 1925, and the A. J. Estes Subdivision of 1923. Concentrations of these bungaloid houses may be observed along the south side of Broadway between 300 and 406, between 901 and 915 on the north and south sides, and between 916 and 1120 on the south side.

The later development began around 1937 when Taylor's Addition, bounded by West Broadway, Greenwood Avenue, Stewart Road and the western boundary of lots facing onto Greenwood Avenue, were platted.

IMPACT OF IMPROVEMENT OF WEST BROADWAY ON THE COLUMBIA WEST HISTORIC DISTRICT

There are some 34 structures along the north side of Broadway and 37 structures on the south side of Broadway in the Columbia West Historic District. The average setback of the structures from the existing right-of-way line on the north side of Broadway through the district is 91 feet and on the south side of Broadway through the district it is 60 feet.

The average taking of permanent easement through the district as a result of the West Broadway improvement is 9 feet on the north side and 6.2 feet on the south side. This results in an average setback of the structures after the permanent easement taking from the right-of-way line of 82 feet along the north side of Broadway and 53.8 feet along the south side of Broadway through the Columbia West Historic District.

The nearest structure to the right-of-way line after the improvement is 29 feet. Additionally, there are 14 homes which will be from 30 to 40 feet from the proposed right-of-way line. The remaining structures are more than 40 feet from the proposed right-of-way line. The right-of-way line is 10 feet behind the curb. No structures in the Columbia West Historic District, or throughout the entire project, will be removed or demolished due to the improvement project.

Section 106 of the Historic Preservation Act of 1966 is currently being implemented. A "no adverse" effect finding concurrence is being coordinated with the State Historic Preservation Officer and the Advisory Council on Historic Preservation. Appropriate documentation will be included in the Final 4(f) Statement.

AIR QUALITY IMPACT

It has been determined by the engineering staff of the Air Pollution Control Section that the West Broadway improvement project is consistent with the air quality goals in the State Implementation Plan. It is generally agreed that the project will result in reduced traffic congestion and improved traffic flow, thus reducing the emission of hydro carbon, carbon monoxide, and nitrogen dioxide emissions consistent with expected growth in the Columbia area.

NOISE IMPACT

A noise study report was prepared for this project in the summer of 1978 and was submitted and subsequently approved by the Federal Highway Administration. The noise study was prepared in accordance with instructions set out in the Federal Aid Urban Program Manual. The L10 design noise level was taken as 70 dba exterior and Land Use Category B in accordance with Table I of the noise standards from the FAU Manual. The existing 70 dba, the design year dba and the "do-nothing" design year 70 dba lines were shown on plan sheets. One could determine from the plan sheets which structures were effected by the various design sound levels.

There are a total of 71 structures along Broadway within the Columbia West Historic District. Of these 71 structures, 16 are currently within the 70 dba line. This is 23% of the existing structures. Following construction of the four-lane facility, 44%, or 31 of these 71 structures, will be within the 70 dba line in the design year 1998.

In the "do-nothing" alternative 24 structures of the 71 lie within the 70 dba line, which computes to 34%. Therefore, 7 additional structures will be included within the 70 dba line as a result of the widening of West Broadway as compared to the "do-nothing" alternative in the design year 1998.

Various measures were considered to reduce noise levels along the affected tracts in the project. Among these were grade alterations, realignments, insulation noise barriers including fences, berms and trees, and the acquisition of land for buffer areas.

The grades and alignment along West Broadway have been optimized to provide best vertical controls possible while not being a detriment to adjacent properties. The acquisition of land for buffer areas would be quite expensive and would involve relocation of some of the owners. Any noise barriers such as fences and earth berms would not be of a continuous nature due to the access rights of adjacent property owners. Sound proofing effects from intermittent fences or berms would be practically negligible and also not economically or aesthetically feasible.

It has been proposed, however, to plant approximately 120 trees of three to four inch variety throughout the project. Although the trees offer very little or no reduction in noise levels there is a psychological effect of the break between the street and the houses by planting trees and shrubs or bushes.

It has also been shown that the smoother riding surface afforded by a new overlay will result in reduction of noise from rattles and vibrations of

vehicles travelling West Broadway.

TREE IMPACT

It will be necessary to remove numerous trees from along West Broadway through the historic district to accommodate the wider pavement and sidewalks along Broadway. Preliminary plans show approximately 48 bushes will be removed, 12 trees in the two to five inch range (it would be these bushes and small trees which have a potential to be replanted), 6 trees in the six to eight inch variety, and 21 trees nine inches and up, are shown to be removed. In addition, four hedges will have to be partially or entirely removed. Of the 21 large trees to be removed, many are not in a healthy condition, showing evidence of disease and bouts with nature. Approximately five to eight specimen hardwood trees in the nine inch and up category will have to be removed as part of this project through the Columbia West Historic District.

STORM WATER IMPACT

It is not expected that the additional paving will effect the storm water runoff noticeably to the downstream environ. The additional paving area is very small when compared to total area of the watersheds. As will be discussed later, piping under Broadway and parallel piping may be oversized to store water during a heavy rain then the water will be metered downstream at a constant rate similar to that now discharging.

TRAFFIC IMPACT

As mentioned previously, the projected traffic on West Broadway will increase from the current 13,000 to 15,000 range to a 21,000 to 23,000 range for the design year 1998. This figure is arrived at by projecting an annual 2.5% increase per year in traffic. Though this constitutes a substantial increase in traffic, the four-lane facility will move and handle the traffic in a safe and efficient manner and reduce the existing congestion evident on the two-lane facility.

The West Broadway improvement project should reduce the north/south cut-through traffic on narrow neighborhood streets to the parallel streets such as Ash Street, Worley Street, and Stewart Road. This north/south cut-through traffic generally severs the neighborhoods and is not a desirable condition.

MITIGATING PROCEDURES

There are several procedures in design considerations incorporated into the West Broadway design to mitigate any negative or adverse impact onto the Columbia West Neighborhood Historic District. One of the most important mitigating factors is the actual reduction in width of the proposed improvement project. In arriving at the current minimum width of 49 feet from back of curb to back of curb, total cross-sectional width, and material type were considered to arrive at this minimum width. Asphaltic concrete pavement with barrier type curbs was chosen because this type of construction effects a net reduction in width of approximately five

to six feet over a curb and guttered roadway section. In other words, when curb and gutter is used this 2.5 to 3 foot section cannot be included in the driving lane width.

It was originally thought that a 51 foot width from back of curb to back of curb facility was the minimum that would be eligible for federal funds. However, after discussions and meetings with the State Highway Department and Federal Highway Administration, a reduction to 49 feet was approved. This 49 feet allows for a substandard 11 foot lane rather than the normal 12 foot lane which is the desirable design standard.

The normal sidewalk setback on an arterial street such as West Broadway would be a minimum of 9 feet. In the case of West Broadway, the sidewalk is set back four feet from the curb with some variations due to meandering to miss trees. A sidewalk width of four feet is the minimum width allowed in the City of Columbia for sidewalk construction and was approved over the five foot sidewalk by the City Council at the May 1978 Council meeting.

Currently there is not a continuous sidewalk system along West Broadway and the project proposes to install sidewalk on both sides of West Broadway and West Boulevard South for the entire extent of the project. The new sidewalks constructed will be barrier free with curb ramps to aid the elderly and handicapped.

The existing electric, telephone and cable TV overhead lines will be undergrounded as part of this improvement project. These lines are slated to be installed beneath the sidewalk and the electric, cable TV and telephone organizations have met on several occasions to work out joint burial agreements to allow for this unique type of construction. The existing steel gas line will be abandoned in favor of twin gas lines running down each side of Broadway in the two-foot section behind or on the property side of the sidewalk. With this twin line concept, no street cuts will be necessary in the future for gas service lines as each side of the street is served off their individual main.

A new street lighting system will be installed using metal poles and bracket arms to provide a more functional and aesthetically pleasing lighting system for the West Broadway corridor.

The driveways along West Broadway will be widened and the turning radii lengthened to provide for better ingress and egress into the individual properties. Also, the side streets will have their radii lengthened to provide for better turn movements into and from these side streets.

The signals to be installed at the West Boulevard and Broadway intersection will conform to the current Manual on Uniform Traffic Control Devices and will be fully actuated with pedestrian indications. Left-turn lanes will be provided on all approaches.

The City is proposing to plant 70 to 75 trees through the historic district and a total of 120 trees along the entire project. These trees will be of a three to four inch variety and consist primarily of little leaf linden, silver leaf linden, tulip tree, red oak, Norway maple, sweet gum, ginko, amur, cork tree and honey locust. It is intended to evenly space these trees throughout the project and they will be planted behind the sidewalk in a revertable planting easement area. These trees will be set either by contract or with the City Parks

and Recreation crews and will be maintained by the City for a period of two to three years when the planting easement will expire by its own terms. This two to three year period will allow for maintenance of the trees and ensure that a high rate of survival will be achieved on these trees to be planted. The City of Columbia will work with individual property owners during right-of-way negotiations to designate the smaller trees and bushes which can be moved prior to construction.

Temporary construction easements will be secured prior to construction and will allow for the grading and blending of the yard areas behind the sidewalks. The resultant area will be covered with topsoil, seeded and mulched. The temporary construction easements will expire at the end of construction.

During the actual design of the storm drainage facilities, the design staff will look into providing larger sized pipes under Broadway to act as storage areas for runoff. The water will then be conveyed from Broadway to the downstream environ at the normal pipe sized rate. This is an attempt to convey and manage the storm water system as it relates to the rest of the Broadway project.

PROJECT ALTERNATIVES

Project Alternate No. 1 would provide a reversible center lane which would allow for two lanes of traffic in the heavy traffic direction. The minor flow would then have one lane of traffic. The direction of flow in the center lane could be reversed to provide for two-lane flow in either direction.

Reversible lanes should be considered when certain criteria are met. These criteria are noticeable backup of vehicles at the signalized intersections causing a vehicle to miss one or more green indications, a noticeable decrease (25% or more) in average speed at peak hour, periodicity of congestion, ratio of directional traffic volumes greater than two to one and preferably at three to one, and adequate capacity at the end points. These four system considerations are met under the current West Broadway conditions.

If a reversible lane is to be considered on West Broadway, there would need to be an increase in width of the current facility of two to nine feet. This would allow for a 38-foot from back of curb to back of curb measurement. The intersection of West Boulevard and West Broadway would need to be widened to a full five lanes in order to accommodate the reversible lane concept. This would allow for two lanes to pass through the intersection from either direction. There would also need to be a minimum of six-lane control signal systems spaced throughout the project to advise motorists of direction of flow.

For the following reasons the reversible lane concept is felt not to be a satisfactory solution to the West Broadway situation.

1. With a three lane facility and only one lane in the direction of minor flow, a slow or disabled vehicle, a bus stop, a vehicle turning into a private drive, or a bicycle would impede or could stop traffic in the one lane section.
2. When entering or leaving a reversible lane system long transition areas are required to allow a driver to adjust his movement to the system. When

applied to West Broadway, the actual usable reversible lane would be reduced to sections as short as 900 feet (approximately three city blocks).

3. As there are numerous streets and driveways entering or crossing West Broadway, a method of signing or advising the driver of the type of facility and which direction the reversible lane is moving must be developed. Lack of clear directions to the driver would result in increased accidents which could be serious, if head-on.
4. In the direction of minor flow (one-lane operation) left-turns from Broadway must be prohibited except at the signalized intersections to prevent severe congestion and potential accidents.
5. To provide the driver with proper directions, intensive signing and signalization on West Broadway would be required. As noted in (3) above, intensive signing will also be required at cross streets. As a result of the numerous signs both overhead and along the side of the street, an adverse aesthetic impact will be experienced by the neighborhood, especially the adjacent properties.
6. To provide adequate visibility of the overhead signals any tree canopy over the lanes would need to be trimmed back and the sight clearance maintained over the years the system is operated.
7. As the project will require reconstruction to a width greater than presently exists (32-36 feet), right-of-way will need to be acquired, utilities adjusted, and new curb and gutter, street surface, etc., constructed.
8. Use of the reversible center lane will also require the reconstruction of the major intersection of West Broadway and West Boulevard to accommodate traffic volumes entering the intersection. The entry of two moving traffic lanes from West Broadway during different periods of the day and in different directions will require provision of two through lanes and a separate left-turn lane from each direction at the intersection.
9. Experience has shown that directional traffic distribution tends to equalize in time as the typical high density development in the core area moves out further from the center and new traffic generators are created. This normal trend in traffic distribution must be anticipated and may effect advisability of reverse flow sections or indicate the need for a design that is sufficiently flexible to permit an eventual return to conventional operation.

Alternate No. 2 considered for West Broadway is to convert Broadway into a one-way street eastbound and pair it with Ash Street, making Ash Street a one-way street westbound.

One-way streets are normally installed to reduce congestion and to increase the capacity of an existing two-way street. One-way streets have also important

effects on highway safety, traffic operations, and economic conditions. One-way streets normally reduce congestion and increase capacity. This capacity increase is attributed primarily to the non-delay by left-turning movements. Traffic safety is generally increased on one-way streets because they provide a divided highway effect with no interference from on-coming traffic.

In applying the one-way couplet concept to West Broadway, the only corridor acceptable to couple with Broadway to serve as a one-way pair, would be Ash Street.

For the following reasons the one-way couplet concept is not considered feasible for the West Broadway situation.

1. The termini locations are not desirable, especially on West Broadway. On West Broadway the termini points would be at signalized intersections with an existing five-lane capacity where transition to one-way operation would be difficult and wasteful of the existing intersection capacity. On the west end of Ash there is no natural terminus, therefore an artificial terminus would be determined, probably at the Clinkscapes intersection.
2. The connecting streets (Garth and Clinkscapes) do not have a width adequate to accommodate the two lanes of traffic volumes entering from the designated one-way couplet and still maintain their two-way operation. To be an adequate system, these connecting streets would require reconstruction to provide an additional traffic lane.
3. The couplet is too widely separated and could cause visitor confusion. Normally when encountering a one-way street a driver expects a one-way street in the opposite direction within one block (typically 600 feet or less) and readily visible from the other street. The proposed one-way couplet does not meet this need.
4. An inherent problem with a one-way system is the additional travel time and distance added to some trips, including emergency vehicles, bicyclists, possibly transit vehicles, and residents of the neighborhood.
5. Traffic signals would need to be installed on Ash Street at its intersections with Garth Avenue, West Boulevard, and Clinkscapes Road due to the increased traffic volumes on Ash Street and to aid in termini control. Typical one-way street signing will be required on both West Broadway and Ash Street. The intensive signing required for one-way operations is not aesthetically pleasing.
6. A larger number of property owners and residents will be impacted by the one-way couplet due to the increased area penetrated by the through traffic volumes and by circulation of traffic between these streets.
7. On streets less than 32-feet in width, parking will need to be restricted to allow two moving lanes of traffic. This would occur on sections of West Ash and West Broadway, if not improved to a width greater than presently exists.

8. As traffic volumes using the West Broadway corridor will be using both Broadway and Ash Street, a significant increase in traffic along Ash Street will occur. Generally houses along Ash Street are closer to the street than those on West Broadway, therefore the impact on residents would be greater.
9. Although no major widening would be required, sections of both Ash Street and West Broadway are in need of reconstruction. Higher construction standards would be required on Ash Street if it is part of a major one-way couplet.

The third alternate considered would be widening of the West Boulevard intersection with West Broadway and the reconstruction of the remainder of West Broadway at the current width.

It is becoming increasingly evident that intersectional constrictions are responsible for much of the traffic congestion on arterial streets in the urban areas. This alternative would provide for a signalized intersection similar to that at Clinkscapes and Broadway, and Garth and Broadway, which were constructed in the early 1970s. The remainder of West Broadway would be reconstructed and improvements made at the current width with the exception of certain side streets where left-turn lanes may be necessary. Some modification of existing width may be necessary to accommodate bicycle lanes and to maintain a uniform width throughout the project.

This alternative is not being considered further due to the following reasons:

1. The Major Thoroughfare Plan, Land Use Plan, and other documents, classify West Broadway as an arterial street. This is the only arterial street in this particular traffic corridor and reconstructing West Broadway at its current width is not in accordance with street standards specified in these documents.
2. Reconstruction of West Broadway as proposed by this alternative will provide a life span of a newly constructed street (approximately 20 years). Although this alternative may at the present time accommodate the existing traffic volumes at a level of congestion which may be tolerated by some segments of the population, there is no flexibility for accommodation of future traffic volume predictions. If a future reconstruction project is necessary within this life span, a double expenditure of construction monies would be required and a repeated impact on the neighborhood and environment would occur. Any future widening improvements would require relocation and reconstruction of utilities, sidewalks, curbs and gutters, driveways, etc.
3. This proposed alternative would not solve the existing problem of four lanes of traffic merging into two lanes, which occurs at all of the major Broadway intersections and at Aldeah.

4. As additional traffic volumes are generated and travel increases in the Broadway corridor, these volumes will choose alternate routes of travel impacting collector and residential streets in the corridor, such as Ash Street, Worley Street, Stewart Road, and connecting streets, thus requiring improvements to a higher classification or standard than presently anticipated. A general deterioration of neighborhoods in West Central Columbia could occur from this impact.

The fourth alternate is widening of Broadway to four lanes from Clinkscates Road to Garth Avenue with the widening and signalization of the West Boulevard at West Broadway intersection.

The intersection at West Boulevard would be widened as described in the third alternate above. Five lanes would be provided on Broadway at the intersection and three lanes on West Boulevard. The intersection would be signalized in accordance with the current Manual on Uniform Traffic Control Devices and pedestrian indications would be provided.

The remainder of West Broadway would be widened to a 49-foot back of curb to back of curb dimension. This would provide for four 11-foot travel lanes with an 18-inch shy distance at the curb and 1-foot for painting in the middle of the street. Four-foot wide Portland cement concrete sidewalks would be provided on each side of the road at a standard location of 4-feet behind the curb with alterations as necessary to avoid trees. Current overhead utility lines will be undergrounded as part of this project. Trees will be planted on a planting easement behind the sidewalk throughout the project.

The advantages of this alternative are as follows:

1. Provides adequate capacity to handle future traffic needs.
2. Will correct existing deficient physical conditions, i.e., curbs, sidewalks, drainage, surface, etc.
3. Is a permanent, rather than temporary, solution to the West Broadway traffic corridors.
4. Provides continuous (minimum) of 4-lane facility from Fairview to downtown area, eliminating existing narrowing/merging problems.
5. Left turn movements would not block traffic or emergency vehicles, nor would disabled car block traffic.
6. Is easier to keep at least one lane of traffic open during heavy snows.
7. Will reduce need for major improvements on other streets, Ash Street, Worley Street, Stewart Road.
8. Provides a smoother flow of traffic.
9. Will eliminate existing narrow 4-lane section (east of Aldeah)

10. Will improve utilities along West Broadway (burial of overhead lines, new gas lines, new street lights, etc).

The disadvantages of this alternative are as follows:

1. Will require more right-of-way than other proposals.
2. Higher initial construction expense.
3. Impact on adjacent properties (yard areas, trees, etc.) is greater.
4. Will have a moving lane of traffic near to structures resulting in higher noise levels at the structures than other proposals.
5. More difficult for pedestrians to cross street.

The final alternate is the "do-nothing" alternate. This alternate is not being seriously considered as it would do nothing to eliminate the present traffic congestion, peak hour tie-ups, and would increase the transportation needs of Columbia on other streets. This alternate would ignore the demands for future traffic growth and a safer facility. It is felt that this alternate would continue to divert traffic onto alternate routes thus decaying the neighborhoods along the alternate routes, such as Ash Street, Worley Street, and Stewart Road.

The other deficiencies along West Broadway, such as inadequate storm drainage, inadequate sidewalks and curbs, and poor surface condition, would not be rectified by this proposal.

1900 -- 1919

1910 -- 101 S. Glenwood	*1902 -- 917 W. Broadway
1910? - 105 S. Glenwood	pre-1914 -- 211 Edgewood
1906 -- 111 S. Glenwood	1910-20 -- 404 W. Broadway
1910 -- 202 S. Glenwood	1919 -- 408 W. Broadway
1906-08 -- 205 S. Glenwood	1908-10 -- 500 W. Broadway
1909 -- 206 S. Glenwood	1906 -- 504 W. Broadway
1909 -- 210 S. Glenwood	pre-1910 -- 505 W. Broadway
1910 -- 213 S. Glenwood	pre-1920 -- 601 W. Broadway
1918 -- 107 Westwood	1910 -- 604 W. Broadway
1917 -- 109 Westwood	1903 -- 607 W. Broadway
1909 -- 204 Westwood	pre-1905 -- 611 W. Broadway
1900-10 -- 211 Westwood	1919 -- 615 W. Broadway
1907 -- 210 Westwood	1908 -- 700 W. Broadway
1910 -- 302 Westwood	1909 -- 703 W. Broadway
1911 -- 303 Westwood	1908 -- 706 W. Broadway
1918 -- 500 W. Stewart	1908 -- 707 W. Broadway
1911 -- 503 W. Stewart	1919 -- 709 W. Broadway
1916 -- 606 W. Stewart	1909 -- 716 W. Broadway
1912 -- 608 W. Stewart	1910? - 900 W. Broadway
1905 -- 611 W. Stewart	
1917 -- 802 W. Stewart	
1910 -- 907 W. Stewart	
1910 -- 910 W. Stewart	
1905-10 -- 914 W. Stewart	

PRE-1900

1878 -- 407 Stewart
1880 -- 906 Stewart
* ? -- 917 W. Broadway
pre-1875? - 11 Edgewood
1870? - 605 W. Broadway
pre-1875 -- 800 W. Broadway