Study on the Simulation and Optimization of Integrated Transport ease on Terminal area of Railway Passenger Station

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Abstract: This article clears out the complex question which in view of China big city railway passenger transportation junction station transportation the stream of vehicles supports stops up, uses the advanced computer dynamic simulation technology and the method, cleared out system's optimization plan to the station area synthesis transportation to conduct the research. The large-scale passenger depot synthesis transportation clears out system's dynamic simulation and the optimized appraisal the model and the algorithm design; The large-scale passenger depot transportation clears out system's example simulation appraisal analysis; The station area transportation clears out the stream of vehicles control signal optimization timing, the guest area stream of vehicles optimization organization and the path lane marking optimization disposition and so on system optimization plan. This research results by the practical application, were cleared out for the enhancement station area road network synthesis transportation the service level to provide the science policy-making basis.

Key Words: large railway passenger station, comprehensive traffic organization, dynamic simulation, optimization scheme

1. INTRODUCTION

Along with the rapid development of China's urbanization process, urban traffic congestion, environmental degradation, has become a serious social problem. And railway passenger of China mostly is city foreign and domestic transportation hub station, the traffic congestion and urban transportation, one of the worst hit areas. So, for railway passenger transport station of scientific planning and effective relief organization management, traffic to alleviate the urban traffic congestion, reduce the urban environmental deterioration has great significance. Therefore, China railway in 2009, special group was established in "large-scale railway passenger station of traffic organization traffic organization system optimization scheme" is studied.

Modern city of large-scale railway passenger traffic organization system, general station has a large urban railway transit passenger transportation of foreign urban passenger transport and the transfer of double function, and is set in urban rail transit; the conventional public traffic is various transport means an integrated traffic system which is included taxi, cars and other vehicles etc. Therefore, the system of traffic organization station traffic organization is a multiple factors complex problems. Both at home and abroad to study the issue, mostly
confined to limit the ability to match the macroscopic planning level \cite{1-6}, and actual traffic congestion is often the station due to not correctly grasp the dynamic characteristics of the system microcosmic caused by micro, so, the method of dynamic simulation research organization is an important developing direction.

From the analysis of the dynamic characteristics of the system microcosmic perspective, full consideration of railway station of foreign transport flow dynamic departure time-space distribution imbalance, urban road traffic flow station to the relief of the fusion of dynamic distribution, and various transportation means passenger station launched into space distribution of flow of factors such as the micro dynamic simulation technology, using of comprehensive traffic organization, station system of traffic organization optimization problems have been studied. Main contents include: a large passenger traffic organization system dynamic simulation and optimization evaluation (processes) model and algorithm, The large-scale passenger traffic organization of Beijing south example simulation system of evaluation and analysis, Put the traffic signal control station traffic organization, when optimized stopping district organization and road traffic optimization system such as optimized configuration of marking driveway optimization scheme. The research results have been practical application; to improve the comprehensive transportation network station relief services provided scientific decision-making level.

2 THE METHOD AND EVALUATION MODEL INTEGRATED TRANSPORT EASE ON TERMINAL AREA OF RAILWAY PASSENGER STATION

2.1 The process design of Comprehensive traffic organization station system dynamic simulation

Comprehensive traffic organization system of station evaluation process simulation is shown in figure 1-1. According to the basic steps include: large railway passenger train station and various departure data transfer between passenger transportation and other relevant data, prediction proportion of various transportation means the station transport leading share amount, Establish station network traffic organization model, Determine the traffic flow dynamic simulation parameters of way, Dynamic traffic simulation software system, Output various traffic simulation statistics, on the basis of traffic organization efficiency and evaluation of the configuration file organization situation assessment and adjustment. The “simulation -- evaluation -- optimization – simulation” of traffic organization closed-loop simulation and optimization process simulation, and finally achieve the relief system for the comprehensive evaluation of the station and optimization.
Simulation static data research
Input static simulation parameters
The conversion between Passenger and car
Input dynamic simulation parameters
Using simulation platform dynamic simulation of traffic organization process
Simulation results output
Evaluation of traffic organization efficiency and evaluation technology configuration
Optimization measure of traffic organization efficiency and technology configuration
Whether to continue the optimization
END

Figure 1 Station simulation work on comprehensive exposition of the basic flow chart of traffic

2.2 The model and method of comprehensive traffic organization station system dynamic simulation

(1) Simulation object data selection
Based on Vissim dynamic simulation software platform, according to the type of object choosing simulation object data can be divided into the network related data and related data, public traffic vehicles related data, the relevant data signal control machine, signal intersection control machine related data.

(2) Construct network model
In the background of graphics rendering, using the road sections describe the connector model between the driveway and collaborative relationship, while setting attributes such as each lane road width, highly channelizing condition, this position, speed limits, car constraints, Setting parking type and attributes, Setting traffic control scheme for periodic signals to control, editor of the intersection input signal timing formula, all lanes of signal Lamp combination position; the signal, For no signal intersection control, set priorities and stop sign road rules, For induction signal control, setting detector, the driveway of signal Lamp combination position; the signal, In the last section decision points and driving route set path, set each path traffic allocation proportion.

(3) Setting simulation parameters
According to the investigation of software simulation parameters are accurate calibration, including various sections of traffic flow parameters (structure, and the velocity of flow, the flow of vehicles performance parameters, such as speed, acceleration (expectations and reducing speed curve), driving behavior model (mainly with car model and lane-changing model) and the stop time distribution, etc. For bus system, to set up independently bus routes, stops, stop time and frequency of parameters.

(4) Set collects data
To examine the locale in various types of data, such as travel time to collect, delay time, queuing counter, and evaluation, collect data nodes on the corresponding information analysis.

2.3 The evaluation index system dynamic simulation on comprehensive traffic organization station
After Vissim software simulation output, vehicles, bus stations, sections and node, the evaluation index, and automatically generates 2d and 3d simulation animation. Previously, vehicle, road to signal elements such as setting the three-dimensional display attributes related setting, and provides V3D module for editing and introduction of external, 3d model can also be operational by macro interface and network information and records in the main production quality more excellent three-dimensional simulation of animation.

Simulation platform from vehicles, bus stations, sections and node, network traffic organization station on the dynamic traffic status for comprehensive statistics analysis, evaluation indicators such as shown in table 1.

<table>
<thead>
<tr>
<th>Evaluate Angle</th>
<th>Evaluation index</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Total parking delay, Average delay car parking, Average speed, Total travel time, Emissions of pollutants</td>
</tr>
<tr>
<td>Intersection</td>
<td>Intersection delay, Queue length, Stops number</td>
</tr>
<tr>
<td>Section</td>
<td>Traffic density, Average speed, volume of traffic, emissions of pollutants etc</td>
</tr>
<tr>
<td>Node</td>
<td>Average queue length, Average delay, volume of traffic, number, Parking delay, Stops number</td>
</tr>
<tr>
<td>Bus stations</td>
<td>The number of passengers on bus station, Queue record, Queue times, Passenger service time</td>
</tr>
<tr>
<td>Vehicles</td>
<td>Vehicle speed, acceleration, Stops number, Total travel time, Travel delay, occupancy rate, headway, Emissions of pollutants, The number passengers who up and down the bus, The waiting time on bus station</td>
</tr>
<tr>
<td>Signal control</td>
<td>Green time distribution, Total number of display lights, Average green and red time</td>
</tr>
<tr>
<td>Streamlined path</td>
<td>Travel time, Speed, Delay</td>
</tr>
<tr>
<td>Emissions</td>
<td>Emissions of pollutants</td>
</tr>
</tbody>
</table>

3 STUDIES ON THE OPTIMIZATIN SCHEME OF TRAFFIC ORGANIZATION SYSTEM ON BEIJING SOUTH STATION

3.1 The dynamic simulation analysis of integrated transport ease on Terminal area of Beijing south station

Beijing south station is China's largest modern large railway passenger, Jinghu railway, the direction of the inter-city rapid rail and the direction of ordinary speed Jingha direction of railway station, foreign transport way traffic organization system of urban rail transit by metro line no. 4 and 14 buses and taxi, cars and other vehicles of urban transportation manner. Station of road network traffic organization system structure: south west road to open the sun, elevated station north road transport hub channel (happiness), YongDingMen long-distance bus station to station north bus hubs channel, south to north bus station project follows the road to the 3rd ring road, south station, majiapu east road transport hub station intersection to south road, majiapu east road intersection to east station, elevated floor majiapu east road intersection to station, underground parking lot majiapu east road intersection to south east of passenger area such as taxi.

According to the investigation and satellite map station network structure, data flow, signal, established in vissim software station south road network model, according to the characteristics of road traffic data, the related parameters of the model, the accurate calibration of Beijing south station will be the basic data and input data simulation model of dynamic simulation Settings, network evaluation, delay, the travel time, travel time, flow
statistics and other relevant data queue length.

(1) Station network traffic organization average service level and dynamic simulation
Due to various modes of transportation Station Road network combination of practical, vehicle for easy simulation analysis, the research on simulation flow set small cars and approximate two large passenger vehicles of mixed traffic flow. The statistics data of station network traffic simulation as shown in table 2.

<table>
<thead>
<tr>
<th>Vehicle Category</th>
<th>Car Network in the number of vehicles</th>
<th>Whole</th>
<th>Each vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Travel time (h)</td>
<td>Distance (km)</td>
<td>Delay (h)</td>
</tr>
<tr>
<td>Cars</td>
<td>218</td>
<td>4668.31</td>
<td>92.43</td>
</tr>
<tr>
<td>Bus</td>
<td>14</td>
<td>517.93</td>
<td>6.1</td>
</tr>
<tr>
<td>Total</td>
<td>232</td>
<td>5186.23</td>
<td>98.53</td>
</tr>
</tbody>
</table>

From table 2, we can see that small cars for the average speed network 22.8 km/h, the large-scale passenger car (mainly for the bus) average speed for 22.7 km/h, total vehicle average speed for 22.8 km/h. The car and bus stops on average for 2 times. The car and bus average delay time are respectively 89.5s and 53.4s, the total vehicle delay time are 87.3 s. Cars and buses delay time parking car are respectively 53.2s and 28.1s, car parking delay time for both 51.7 s.

Based on the statistical data of road station, according to all the simulation of vehicle travel 5186.2 km, type of traffic simulation 3883 car and car trip, all available 1.34 km station network units of parking number, on average, the average time average parking travel delay time average service level of traffic organization, such as evaluation index is shown in table 3.

<table>
<thead>
<tr>
<th>Appraisal target</th>
<th>Value</th>
<th>Single factor evaluation service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appraisal target (km/h)</td>
<td>22.75</td>
<td>Moderate jams</td>
</tr>
<tr>
<td>The average number of units parking ( Time )</td>
<td>1.49</td>
<td>Moderate jams</td>
</tr>
<tr>
<td>The average unit parking time (s)</td>
<td>40.3</td>
<td></td>
</tr>
<tr>
<td>Unit for the average delay in (s)</td>
<td>70.6</td>
<td>Moderate jams</td>
</tr>
</tbody>
</table>

According to evaluation of table 3, Beijing south station of road traffic organization station service level in mild to moderate traffic jams. So it is need for network congestion node analysis to strengthen station optimization of traffic organization traffic organization management. It's important to explain that because of traffic network taxi station, and taxi and for a long time in the parking area, the provisions in the average unit values high mileage parking time.

(2) Station network traffic congestion node dynamic simulation analysis
Putting forward evaluation of traffic organization optimization scheme is fundamental basis dynamic simulation analysis of traffic congestion in the station network simulation model of key nodes. Station Road station key nodes with neighboring cities including road network integration of each intersection, the main station, stopping area network main channels or sections, it mainly hubs location, etc. This study were selected 11 key nodes as shown in table 4 on traffic congestion dynamic simulation analysis.
Table 4 Beijing south station area road network essential node stream of vehicles supports stops up the dynamic simulation appraisal

<table>
<thead>
<tr>
<th>Key node</th>
<th>German HC congestion standards</th>
<th>Cars average delayed time</th>
<th>Queue length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liangshuihe River</td>
<td>A level of service (unblocked)</td>
<td>&lt; 10s</td>
<td>20m from east to west</td>
</tr>
<tr>
<td>South bus hubs</td>
<td>A level of service (unblocked)</td>
<td>&lt; 10s</td>
<td>19m from north to south</td>
</tr>
<tr>
<td>Western elevated position</td>
<td>A level of service (unblocked)</td>
<td>&lt; 10s</td>
<td>22m</td>
</tr>
<tr>
<td>Eastern elevated position</td>
<td>A level of service (unblocked)</td>
<td>&lt; 10s</td>
<td>24m</td>
</tr>
<tr>
<td>South 3rd ring road to south hub channels</td>
<td>A level of service (unblocked)</td>
<td>&lt; 10s</td>
<td>23m</td>
</tr>
<tr>
<td>North bus hubs intersection</td>
<td>B level of service(Times unblocked)</td>
<td>10-20s</td>
<td>37m</td>
</tr>
<tr>
<td>Second east enter south station</td>
<td>B level of service(Times unblocked)</td>
<td>10-20s</td>
<td>53m from east</td>
</tr>
<tr>
<td>Kaiyang road west viaduct</td>
<td>C level of service(light congestion)</td>
<td>20-35s</td>
<td>88m from south;65 turn right</td>
</tr>
<tr>
<td>intersection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection of Kaiyang and Xingfu Road</td>
<td>C level of service(light congestion)</td>
<td>20-35s</td>
<td>93.3m from south;94.4 turn left</td>
</tr>
<tr>
<td>ChengMing hotel Intersection</td>
<td>D level of service (congestion)</td>
<td>35-55s</td>
<td>69m from east</td>
</tr>
<tr>
<td>Second west enter south station</td>
<td>E level of service (Heavy congestion)</td>
<td>Over 80s</td>
<td>124m from west</td>
</tr>
<tr>
<td>stopping area</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to the microscopic simulation analysis of the dynamic 11 key nodes, the conclusion is shown as follows.

1. Comparative analysis the delay time of the key nodes is shown that station of road network is flow. According to Germany, each node HC standard service level evaluation, belong to A level of service (the car were delayed time than 10s) node has 5, respectively the river of Liangshuihe, the transport hub, western and eastern parts elevated position, the 3rd ring road viaduct project, the flow passage to the south road is very clear; Belong to grade B level of service (the car were delayed 10-20s) node respectively in north bus station, and the second intersection hub, driving the import traffic flow time; Belong to grade C service level (the car were delayed 20-35s node) have 2, respectively Kaiyang road to west intersection, intersection of Kaiyang road and Xingfu road, traffic congestion mild; Belong to grade-D service level (the car is 35-55s delay the node 1), the intersection of ChengMing hotel where traffic is congested; Belong to E service level (the car were delayed in 80s above) node 1, 2 floor of the south west imports fell guest area, serious traffic congestion driving.

ChengMing hotel intersection traffic congestion the main reasons the intersection west to the north, the left-turning peak hour traffic flow direction, peak hour traffic flow is 326 in this direction, set 2 smaller left lanes of traffic, but left phase green signal, only short setting time, plus 10s green light, and 4s yellow light, the direction only have 14s through traffic signal, in a time period vehicles lined up empty. The west to the east straight overhead intersection traffic, characteristics through channels through west to east went to congested channel, accepts certain relieve congestion, also can adjust signal timing formula that accepts the congestion solved.

South west imports fell guest floor area congestion attribute to taxi fell guest without stopping and parking, the organization for peak hour traffic 996 in this nodes, set 6 lanes for vehicles through the parking area and parking falls, parking area is 124m length. The area of traffic organization responsible for nobody or no-signal, taxi arrived after the area according to independently choose convenient traffic near the site of stopping and first priority to the vehicle, import local area near the park, and stopping parking time is long, often cause congestion and the channel flowing is blank, however, because of the free passage to arrive after vehicles cannot spare area, causing delays fall. So we should through the organization to ease flow channel, alleviate the regional balance channel congestion.
(2) The travel delay time analysis of critical sections indicates, big vehicle and long delay time road sections are the second floor viaduct to the 3rd ring road, the west of Kaiyang road to Kaiyang road elevated viaduct, Kaiyang road intersection to ChengMing hotel intersection, etc. The traffic congestion of Kaiyang road and the west import caused delay. In optimization measures we should put emphasis on conditions of imported Kaiyang road and the west stopping area.

(3) Key nodes queue length statistics show that turn right and go south exit flow queue line in intersection of Kaiyang road and Xingfu road is long, respectively is 88m and 65m; Kaiyang road and Xingfu road and left-turning estuary export goes a long queue for 63m; Kaiyang road to west viaduct intersection export flow line with north exit left-turning long, respectively is 70m and 107m; the import of the second floor queue length is 95.4 m, the left-turning queue of ChengMing hotel intersection west export is s 69m length. Many factors influence the queue length, such as the road construction, speed, flow, signal; we should analysis each node respectively.

(4)The essential road section traffic flow magnitude and the path load statistical data indicated that the south station two west bound stopping places fall the guest area load level to achieve 81.6%, soon achieves saturated; The western high structure spot road section load level is high, achieves 50.9%, this road section not road intersection signal influence; The Kaiyang road section load level is more balanced, maintains between 20-30%, but this road section receives the road intersection signal the influence, its ability is smaller than the theoretical duty inevitably, may act according to the various road sections correspondence signal green letter in the computation compared to the traveling capability conversion, obtains the consideration finally the road intersection influence under road section load level

3.2 The transportation clears out the system optimization plan on Beijing south station area

Clears out the system dynamic simulation appraisal analysis conclusion based on the station area transportation to indicate that the transportation supports stops up the node mainly to concentrate on the south station two west bound stopping place rental cars falls the guest area, the Kaiyang road happy road intersection, the Kaiyang road to the west side high structure road intersection, to become spots and so on inscription guesthouse road intersection, the south station two west bound stopping place rental cars fall the guest area to support stop up seriously, needs the key solution. Using “simulation - appraisal - optimization - simulation” the closed loop stream of vehicles organization simulation optimization strategy, the research proposed the following several solution station area transportation clears out the system optimization plan which supports stops up.

(1) Falls the guest area stream of vehicles organization optimization plan
In the station area falls the guest area is located at the station building access nearby region, is the stream of vehicles to the place which stops issuing, is also the station area transportation clears out system's pharynx and larynx region. Beijing south station falls the guest area the unit interval/unit time traffic capacity is 1186 pcu/h, at present the current capacity is 968pcu/h, already close saturated. The dynamic simulation appraisal analysis indicated that at present falls the guest area stream of vehicles distribution not to be imbalanced, assumes obviously falls the guest area front part region to support stops up, but behind region idle condition. In the near future may establish parks the homing system or sends the specialist value to defend the pilot engine to flow falls behind the guest area to anchor, urges to fall the guest region balanced utilization, the alleviation front part supports stops up. But along with
the Beijing-Shanghai high speed clear, the south station passenger flow will certainly to increase sharply; the above measure will not be able to satisfy the request which the transportation cleared out. Therefore, this research thought that fundamentally solves the guest area stream of vehicles to support stops up the question, needs to fall the guest area berth the establishment and the streamline organization carries on the redesign, and proposed shown in Figure 2 falls the guest area parking lot and the streamline organization optimization plan.

![Figure 2 Drop-off parking lots and streamline the organization diagram](image)

Figure 3 will fall the guest area the berth design to arrange two rows for the slanting row type (in schematic drawing dashed area to show, after vehicles park, tailstock faces stopping place direction), establishes three channels to clamp around the berth, three channel's functions are various, most approaches the station to enter the stopping place the channel to treat for the back row falls the guest rental car to park the corridor, uses in the rental car advance seeking for the idle berth; The middle channel is two traffic lane establishments, approaches the back row berth traffic lane to use in the back row berth falling the guest vehicles to embark, approaches the front-row traffic lane to use in the front row treating falls the guest rental car advance to seek for the berth; Most is far away from the stopping place the channel to fall the guest vehicles for the front-row berth to embark as well as not to need to park the vehicles to pass fast.

The slanting row type arrangement's merit is the rental car individual motion is been small other vehicles influence, after does not exist the question which the front vehicle falls when guest prevents, the car dealership enters, and the vehicles sail to and drive out of the berth to be convenient, the berth parking falls guest's process not to constitute the influence to the channel transportation, can alleviate effectively parks stops up road's question; Treats falls the group of craftsmen function to suffice to observe the berth to take the situation clear, makes the response fast, drives into the idle region the parking spot; The convenience not parks vehicles' fast passing; The berth standardization, parks the region and the vehicles travel regionalism is bright, the vehicles travel direction is fixed, is advantageous in guaranteeing the passenger and vehicles' safety; After the vehicles park, the tailstock faces the stopping place direction, facilitates has the baggage passenger to take out the baggage.

Uses the present situation rental car stopped time distribution and the vehicles travel parameter is the foundation, the traffic lane width according to the standard width 3.5m establishment, the parking spot angle of tilt according to 45 degrees establishments, because standard vehicle size 4.5m*1.7m, establishment parking berth size 6m*2.5m ("Beijing Haidian District Public Parking lot Operation Supervisory service Standard" stipulated that in the parking lot uses in parking the vehicles berth size request is: 5m×2.3m (perpendicular rectangle) or 2.2(2.3)m×6m (run-in diamond)), needs the surface width after the examination center is 3.5*4+6*sin45o*2=22.5 (m), the actual passage width satisfies needs the width. The establishment fall the guest area optimization plan simulation model, diamond berth two rows of total 70. The dynamic simulation structure indicated: The unit interval/unit time traffic
capacity is 1866 pcu/h, the vehicles average vehicle speed is 5.10km/h, may promote 57.3% traffic capacity, to alleviates falls the guest area stream of vehicles to support stops up has the tangible effect.

(2) Station area traffic signal control timing optimization plan

The dynamic simulation appraisal conclusion indicated that becomes the inscription guesthouse road intersection and the Kaiyang road happy road intersection is Beijing south station area transportation clears out the bottleneck which in the road network the stream of vehicles supports stops up, uses the reasonable stream of vehicles control optimization plan, to alleviates the entire station area road network the transportation to support stops up has the important meaning.

a. Chengming hotel road intersection signal control optimization plan

The dynamic simulation appraisal conclusion to indicate that becomes the inscription guesthouse road intersection service level is D, the west import three traffic lane establishments, the road section traffic loading 12.8%, but west to the northern stream of vehicles lining up length is 68.6, this is because the signal establishes causes the stream of vehicles not to be able unreasonable prompt clear spatial, needs to carry on the optimization to its signal establishment, after optimization phase timing plan as shown in Figure 3.

![Figure 3 Into the Ming Hotel intersection optimized phase timing scheme](image)

Contrasts the original road intersection lining up length and the delay time data may know, in each import current capacity invariable situation, through the optimized signal timing plan, becomes the inscription guesthouse road intersection biggest lining up length to drop 38.7m from 68.6m, the biggest delay time drops 31.5s from 64.5s, the node service level transfers C by D, the road section by moderate supports stops up transfers supports mildly stops up, the path supports stops up the situation to have the distinct improvement.

b. Kaiyang road happy road intersection signal control optimization plan

The dynamic simulation appraisal conclusion indicated that at present the Kaiyang road happy road intersection uses 3 phase timing plan, first phase south import turns right and the direct acting vehicles, the north import direct acting and the counterclockwise vehicles passes through, the second phase south import counterclockwise vehicles pass through, third phase east import, the west import vehicles pass through. In the first phase, the north import counterclockwise vehicles and the south import direct acting cars line conflict, serious influence road intersection traveling capability, simultaneously lays down the safe hidden danger.

The suggestion the north import counterclockwise stream of vehicles will be separated from the first phase stream of vehicles, establishes the north import counterclockwise signal specially, because the north import counterclockwise streamline and the south import counterclockwise streamline do not save the conflict, may place in the second phase, after optimized phase timing plan following shown in Figure 4.
Figure 4 Kaiyang Road, Xingfu Road intersection after the signal timing optimization program

(3) Station area path lane marking optimization disposition plan
The dynamic simulation appraisal conclusion indicated that the road section either the road intersection stream of vehicles supports one which of reasons stops up is the lane marking disposition is not clear or unreasonable. If north the present south station the public transportation key position comes in and goes out road intersection west import is 3 traffic lane establishments, the 1st, 2 lanes marking for the right-turn public transportation exclusive lane, the 3rd lane marking is the direct acting traffic lane. According to investigates and studies on the spot, north at present does not have the public transportation line right-turn to enter the public transportation key position, and imports 1, 2 traffic lane right-turn to the north the compact car current capacity is very small (is only 6/hours), the 3rd lane marking direct acting traffic flow magnitude oversizes is 244/hours, assumes supports stops up. Obviously, has 2 revolution of 1 straight disposition plans, also disposes 2 graticules (the 1st, 2 traffic lanes) is the right-turn public transportation exclusive lane, 1 direct acting lane marking (the 3rd traffic lane) the plan is unreasonable, is causes the 3rd traffic lane direct acting traffic flow magnitude to be oversized, the transportation supports the substantial clause which stops up. Regarding this, this research suggestion proposed 1 revolution of 2 straight graticule optimization disposition plans, also maintains the 1st lane marking is invariable for the right-turn public transportation exclusive lane graticule, changes the 2nd lane marking the right-turn public transportation exclusive lane for the direct acting traffic lane.

4 CONCLUSIONS
This article clears out the complex question which in view of China big city railway passenger transportation junction station transportation the stream of vehicles supports stops up, uses the computer dynamic simulation technology and the method, cleared out system's stream of vehicles organization optimization plan to the station area synthesis transportation to conduct the research. Established the large-scale passenger depot synthesis transportation to clear out system's dynamic simulation optimization evaluation model and the algorithm, and unified Beijing south station example to propose the station area transportation cleared out the stream of vehicles control signal timing, to fall the guest area stream of vehicles organization and optimization plans and so on path lane marking disposition, the application effect is good.

The station area synthesis transportation clears out system's optimization is a complex systems engineering question, but also has the actual problem to treat deepens the research unceasingly. If the station area each kind of transportation way traffic flow magnitude's coordinated organization and the control question, the station area clears out the stream of vehicles to converge remits the peripheral road network the channelized lane to optimize the question, to reduce the municipal transportation way to transfer the volume of traffic to clear
out the stream of vehicles influence to the station area the optimized question, to reduce the non-motor vehicle to clear out the stream of vehicles disturbance to the station area the optimized question and so on, will be the important topic which we will continue to study from now on.

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