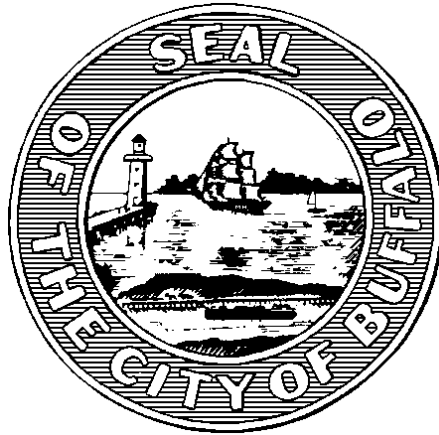


**SCOPE SUMMARY MEMORANDUM**

**MAIN STREET MULTI-MODAL ACCESS AND  
REVITALIZATION PROJECT**

**(CARS SHARING MAIN STREET)**



NYS DOT P.I.N 5822.12  
FTA No. NY-03-0428



PREPARED BY

**DIDONATO ASSOCIATES, ENGINEERING, ARCHITECTURE, P.C.**

IN CONJUNCTION WITH:

**URS CORPORATION  
FOIT-ALBERT ASSOCIATES  
MATHEWS NIELSEN LANDSCAPE ARCHITECTS, P.C.**

January 17, 2006

# MAIN STREET MULTI-MODAL ACCESS AND REVITALIZATION PROJECT

## **STATEMENT OF PROJECT OBJECTIVE**

The primary objective of the project is to reopen Main Street to two-way vehicular traffic from Scott Street to Goodell Street through the implementation of the preferred alternative identified under the Environmental Assessment (EA), the *Share the Trackbed Alternative*. The purpose of meeting this objective is to stimulate economic development in downtown Buffalo, increase multi-modal access options including improved transit ridership and traffic circulation, and to improve the quality of life in downtown Buffalo. An EA has been prepared to consider the potential adverse impacts of the project on natural and human environments. The findings of the draft EA determined that the *Share the Trackbed Alternative* will best achieve the stated purposes while maintaining public safety and creating an attractive and pedestrian friendly street. The Federal Transit Administration is currently reviewing the Draft Final EA.

## **NEEDS ASSOCIATED WITH PROJECT OBJECTIVE**

The client group, the City of Buffalo (COB), Buffalo Place (BP) and the Niagara Frontier Transportation Authority (NFTA), has identified several issues that are vital to the implementation of the project objective. An Advisory Committee has been appointed by the Mayor of Buffalo to insure community involvement and help refine the scope of the project. The central scope issues include:

- ROADWAY GEOMETRY
- TRAFFIC ENGINEERING AND SIGNALIZATION
- TRACK BED AND RAIL ELEMENTS
- STATION REHABILITATION AND LOCATION
- ACCESSIBILITY/ADA COMPLIANCE
- STREETScape/URBAN DESIGN
- SAFETY AND SECURITY MEASURES
- CONSTRUCTION PHASING
- COST ESTIMATING

Through discussions with the client group, advisory committee, review of record information and field observations, design criteria associated with each of the central issues has been identified to include the following:

### **ROADWAY GEOMETRY**

- ❖ Lane widths
  - Non-standard conditions (11', no shoulders)
  - Emergency Vehicles
  - Design Vehicle
  - Bicycle accommodation
    - Narrow lanes
    - Alternate route
    - Curb safety issue
- ❖ Turn Lanes
  - Storage Length (as determined by Traffic Analysis & Station locations)
  - Tapers
  - Width
  - Radii
- ❖ Intersections
  - Side Road lane configurations

# MAIN STREET MULTI-MODAL ACCESS AND REVITALIZATION PROJECT

- Turning movements & radii
- Cross walks
- New connection considerations
  - Mohawk
    - Lane widths
    - Parking
    - Turn movements
  - Eagle
    - Lane widths
    - Parking
    - Turn movements
- ❖ Roadside elements
  - Stations
    - Platforms
    - Ramps
  - Medians
    - North of Tupper
    - Other locations
  - Portal
    - Lane transitions
    - Measures to prevent vehicles from entering tunnel
    - Removal of planting areas/high curb
      - Review the use of railing vs. fencing.
    - Prevent access to Catenary wires
  - Train loading areas
    - Step down to sidewalks
  - Curb
    - Mountable/Non-mountable considerations
  - Pinch areas
    - Stations/Catenary Poles – coordinate feature locations to allow for maneuvering
  - Catenary Poles
    - Protective Measures
    - Clearance at intersections
- ❖ Sight distance issues
  - Intersections
  - Portal railing
  - Stations
- ❖ Parking
  - Short term
  - Parallel
  - Diagonal (700 Block)
- ❖ Loading Zones
  - Landlocked properties

## TRAFFIC ENGINEERING AND SIGNALIZATION

- ❖ Forecasting
  - Utilize data from adjacent downtown streets
  - Turning Movements

## MAIN STREET MULTI-MODAL ACCESS AND REVITALIZATION PROJECT

- 24 Hour counts
  - Evening entertainment peak locations
- Review pedestrian studies from BP and counts from GBNRTC
- Review parking studies
- Estimate of percentage of traffic
- ❖ Roadway and Intersection Geometry
  - Number of lanes/turn lanes on each intersection approach
  - Length of turn lanes
  - Location of current off-street loading zones along Main Street
  - Short term parking
  - Emergency vehicle access
  - Roadway Design vehicle (limiting vehicle for turning movements)
- Intersection Modifications
  - Changes to traffic patterns
  - Consideration of new street connections
    - Mohawk
    - Eagle
- ❖ Traffic Signals
  - Evaluate signal timing plans for Main Street intersections and adjacent parallel corridors.
    - phasing order
    - cycle lengths
    - offset times
    - clearance intervals
    - location of detectors or how they work if video detection is used
    - other signal timing parameters (e.g., min, max, extension, gapout, etc.)
    - modes
      - protected, permissive
  - Evaluate signal phasing options for turning movements
    - coordination of Main Street signals/adjacent streets
    - control software requirements.
- ❖ LRRT Operational Impacts
  - Emergency backup systems and plans
  - LRT Headways, Existing headways, post construction headways, Church Street cross-over impact on headways, car rebuild headways
  - Length of LRT trains by time of day, typical operations, 2 car train and special event train (4 car)
  - Average passenger loadings and dwell time distributions by station, Existing ; proposed
  - LRT travel time and delay time for corridor and by intersection
  - LRT vehicle performance parameters, travel speeds= 15 mph (20 mph after 8 PM), Acceleration rate ; Deceleration rate
- ❖ Bicycles
  - Allowable movements
  - Alternate bike route consideration
- ❖ Traffic Modeling
  - Model entire corridor
    - Existing conditions (a.m. & p.m. peaks)
    - Build conditions (ETC - a.m. & p.m. peaks)
    - Build conditions (Design year - a.m. & p.m. peaks)

## MAIN STREET MULTI-MODAL ACCESS AND REVITALIZATION PROJECT

- Single Event
- Dual Event
- Evaluate left turn options
- Construction Phasing Considerations
- ❖ Loading Zones

### TRACK BED AND RAIL ELEMENTS

- ❖ Evaluation of Existing Conditions
  - Determine extent of rehabilitation/reconstruction required
  - Identify various conditions that exist
    - HSBC
    - Theatre station area/portal
- ❖ Evaluate Rehabilitation/Reconstruction Options to consider:
  - Cost
  - Maintainability
  - Phasing impacts
  - Rideability
  - Intersection pavement materials
- ❖ Rail Issues
  - Flangeway
    - Tripping hazard
    - Bicycle tire hazard
    - ADA/ANSI compliance
  - Rail Fixation vs. Gauge Roads
    - Reflective Cracking
    - Constructability
- ❖ Stray Currents
  - Electrical isolation options
- ❖ Catenary Poles and Power
  - Pole protection options
  - Pole location options
    - Intersections
    - Stations
    - Church Street crossover
  - Control Panel Relocations
    - Identify systems
    - Evaluate option of incorporating into station design or below
- ❖ Rail Alignment
  - Feasibility of shifting rail to accommodate stations and loading areas
    - Foundation impacts
    - Catenary wires
    - Rail transitions
- ❖ Church Street Crossover
  - Examine feasibility based on study & record information
  - Cost-benefit
    - Operations
    - Phasing

### STATION REHABILITATION AND LOCATION

- ❖ Station Design
  - ADA Compliance

## MAIN STREET MULTI-MODAL ACCESS AND REVITALIZATION PROJECT

- Ramp option
  - Layout and space considerations
  - Consideration of retaining existing ramps with new shell structure
- Lift option
  - Operational and safety concerns
  - Maintenance concerns
- Interface with possible Rail Car Modifications
- Train Boarding
  - Platform
    - As small as possible
      - ◆ Consider ridership volumes & dwell times
    - Maximize distance from trainway
  - Curbside
- Transparency
- Right Look for Buffalo
- Material options
  - Maintainability
  - Replacement parts
  - Aesthetics
- ❖ Location
  - Lateral offset
    - Increase distance from trainway
    - Shielding
    - Curb location
  - Intersection clearance
    - Turn lanes
    - Sight Distance
  - Alignment with cross station
  - Shifting/Combining
    - Walking distance considerations
    - Headway impacts
    - Congestion
    - Pedestrian Safety
    - Portal Interface
    - Key destinations
    - Development assumptions
- ❖ Wind/Weather Protection
  - Typical Locations
  - Special Conditions
  - Snow & Ice Removal
    - Snow melt technology for ramps
  - Consider push button heat per bus transfer centers
  - Minimize size of shelter areas to maximize sidewalk areas
  - Shelter limits
    - Ridership considerations
- ❖ Furnishings
  - Seating
  - Lighting
  - Ticketing
  - Emergency Systems

# MAIN STREET MULTI-MODAL ACCESS AND REVITALIZATION PROJECT

- Consider potential for LED displays on shelter walls

## ACCESSIBILITY/ADA COMPLIANCE

- ❖ Station Design
- ❖ Sidewalk Ramps
  - Intersection
  - Mid Block
- ❖ Rail flange (addressed under track bed issue)
- ❖ Sidewalk Slope

## STREETSCAPE/URBAN DESIGN

- ❖ Sidewalks
  - Layout and sequencing of circulation gathering spaces
    - Width requirements: Pedestrian volumes (LOS)/Spatial Constraints
    - Width requirements: Special events areas
  - Material selections
    - Façade interface
    - Right look for Buffalo
    - Maintenance
    - Cross Walks
    - Heating elements
  - Subgrade Condition
    - Existing fills
    - Drainage
  - Vaults
  - Utilities
- ❖ Trees and shrubs
  - Evaluation of existing street trees
  - Selection of appropriate varieties
  - Planting Methods
  - Maintenance
    - Watering system
- ❖ Pedestrian Amenities
  - Seating
  - Street Furnishings
  - Bike Racks
  - Lighting
  - Displays
  - Power outlets
  - Signage/Directory/You are here mapping
  - Artwork
    - Comply with federal requirements
- ❖ Event Spaces & Parks
  - Lafayette Square
  - Eagle
  - Mohawk
  - Roosevelt Park
  - Main Street
  - Access to power
- ❖ Encroachments

## MAIN STREET MULTI-MODAL ACCESS AND REVITALIZATION PROJECT

- Cafes
- Buildings
- Signs
- Stairs
  - Hyatt retail building
  - Key Center R-O-W)
- Sidewalk vaults and elevators
- Structures
  - AM&As/ Main Place Bridge,
- Seneca wind screen
- ❖ Landscaping
  - Median north of Tupper
  - Other opportunities
    - Hanging baskets
    - Pots & planters
    - Catenary pole zone solutions
- ❖ Feature Removals
  - Arches
  - Structures (M&T Kiosk, Mohawk and Eagle Pylons)
- ❖ Wind Protection

### SAFETY AND SECURITY MEASURES

- ❖ Evaluation of Existing Monitoring System & Determine Proposed Needs
  - CCTV
    - Existing surveillance area
    - Proposed surveillance area
  - Emergency notification systems
    - What's in place
    - What improvements are needed
- ❖ Identify Existing Hazards
  - Obstruction areas
  - Low lighting areas
  - Low activity areas
- ❖ Station Needs
- ❖ Lighting Requirements
- ❖ Special considerations
  - HSBC security
  - Portal entrance
- ❖ Pedestrian crossing concerns at stations
  - Bike path crossing (if a separate bike path runs behind stations)
  - Vehicular crossing

### CONSTRUCTION PHASING

- ❖ Develop phasing based on available funding
- ❖ Consideration of other significant projects/events
- ❖ Turn movements at phasing limits
- ❖ Work hours & durations
- ❖ Rail Operation impacts
  - Single Tracking
  - Shuttle Service

## MAIN STREET MULTI-MODAL ACCESS AND REVITALIZATION PROJECT

- Church Street Crossover

### COST ESTIMATING

- ❖ Evaluate costs for alternatives
- ❖ Cost impacts for phasing
- ❖ Cross-over cost benefit
- ❖ Considerations for maintenance

### ADDITIONAL PROJECT ELEMENTS

- ❖ Maintenance Responsibility Determination
- ❖ Snow Handling Procedures
- ❖ Maximize Short Term Parking
- ❖ AM&A's/Main Place Bridge
- ❖ Design various elements to minimize maintenance costs
- ❖ Electrical system power cost considerations

# MAIN STREET MULTI-MODAL ACCESS AND REVITALIZATION PROJECT

## SUMMARIZING STATEMENTS

### ROADWAY GEOMETRY

Implementation of the preferred shared trackbed alternative, poses a unique challenge of creating lanes that will accommodate varied transportation modes consisting of light rail vehicles, cars, emergency vehicles and bicycles as well as pedestrians. Lane widths and configurations must be coordinated with the positioning of rail stations and loading areas as well as the catenary pole system. The curb location in the vicinity of stations is of particular concern in order to insure that adequate vehicular clearance is provided around the stations as well as maintaining the proper interface between the stations and rail cars. Turn lane size and configurations will be established as part of the traffic analysis. Other important geometry related issues include the transition and delineation of the vehicular lanes around the portal, crosswalk configurations, bike access at stations, turning radii at intersections to accommodate the selected design vehicle, maximizing the number of parallel parking spaces, providing for loading zones, clearing of obstacles to maximize sight distance and the protection of potential roadside hazards.

### TRAFFIC ENGINEERING AND SIGNALIZATION

The reintroduction of automobile traffic onto Main Street creates a unique challenge for maintaining the schedule of light rail vehicles in this corridor. Careful coordination of the station locations, turn lanes at intersection, on-street parking areas, and the traffic signal system will be required for this project. The traffic engineering modeling will be used to determine the interaction between all of these factors and adjustments can then be made to the design parameters. Construction phasing scenarios, traffic circulation patterns and the options of connecting Eagle and Mohawk Streets with Main Street will be evaluated.

### TRACK BED AND RAIL ELEMENTS

The deteriorated condition of the concrete track bed pavement has been a continual maintenance problem and requires extensive rehabilitation work to repair joints and broken pavement slabs. Additionally, the track rails are generally secured by gauge rods and are not directly fixed to the base slab, which results in significant vibrations and cracking. Rehabilitation options will be considered for the track bed along with the possibility of fixating the existing rail to the base slab. The size of the rail flange is a potential tripping hazard as well as a concern for bicyclists as it allows for wheels to get caught. Measures to reduce the space in the flange and minimize the potential hazard will be evaluated. The existing track in Main Street will be visually inspected. Readily accessible components (top of rail) will be viewed, and as possible, other components below the pavement surface will be examined. Necessary replacement of materials or other corrective work will be identified.

The rail electrification system must be a consideration for all rehabilitation methods as there are various components located within the track bed. The overhead catenary system is generally supported by poles located in the center of the trackbed with cantilever arms. Relocation of poles at intersections and stations to accommodate vehicular traffic movements will be required along with protection of poles to mitigate potential hazards. Additional considerations such as repositioning the catenary poles outside the track bed or realignment of the tracks to provide adequate clearance around the poles in the track bed will be evaluated. Moving the tracks would require longer cantilevers to support catenary wires as well as widening of the existing track foundation slabs.

# MAIN STREET MULTI-MODAL ACCESS AND REVITALIZATION PROJECT

## STATION DESIGN

Integration of new station designs which accommodate passengers with disabilities, passengers awaiting and boarding trains during inclement weather, peak travel times, late hours and standard commute times will require a systematic analysis of all components for the proposed plan. New stations with a partially enclosed shelter area, an integrated ADA accessible ramp, accessible ticketing machine area and clear lines of vision for both riders and pedestrians are of great importance. The creation of lighter, more compact and more transparent stations will be considered for this project. Relocating the panel boxes from their current positions to subsurface enclosures located beneath the raised platform areas of each station will be evaluated as a way to increase station visibility. Natural and artificial lighting levels should promote ease of station use and rider safety. The selection of materials should favor those that are durable, low maintenance, and allow for a high degree of visibility and natural light levels at each station. Stainless steel and transparent or translucent glazing seem to be natural choices for these structures, which will be impacted by road salts and other chemicals during the course of their anticipated usage.

Options which explore the use of stations without ramps are also under investigation, however long term maintenance issues and the possibility of lift breakdowns make this a difficult solution to propose under the present circumstances. Windbreaks, sheltering roof areas, seating areas, emergency call and response systems, and overall maintainability of these stations will also be considered. It is important that the new stations do not detract aesthetically from Main Street with its historic architecture and newly landscaped street areas. Station designs, which do not compete with existing environments and create a newly integrated appearance will be developed during the preliminary and subsequent design phases.

## ACCESSIBILITY/ADA COMPLIANCE

All aspects of the project will address the requirements for compliance with the latest ADA Standards for Accessible Design. Crosswalks, sidewalk slopes, train boarding and parking provisions are among the key elements that will be designed to meet ADA requirements to the full extent possible.

## STREETSCAPE/URBAN DESIGN

Reintroduction of traffic to Main Street provides an opportunity to revive Downtown Buffalo's image through constructing the "right look for Buffalo" in a vital but inaccessible area of the city. The design process will include a preliminary analysis of existing conditions in light of the necessary changes to pedestrian, bicycle, and vehicular circulation. Evaluation of materials, landscaping, amenities, event spaces, circulation and special event and gathering areas will be performed. Existing successful urban design strategies and materials that meet specific needs identified in the preliminary design process will be integrated into the final plan. The design objective is to create a desirable destination for the public that will result in improved building occupancy, especially at the first floor level.

## SAFETY AND SECURITY MEASURES

In addition to traffic safety measures being evaluated for the reintroduction of vehicular traffic to the shared trackbed roadway, various other safety and security measures will be addressed along the project corridor. Currently, the stations are monitored through closed circuit television and NFTA police patrols the mall area. Expansion of the

## MAIN STREET MULTI-MODAL ACCESS AND REVITALIZATION PROJECT

monitoring system will be evaluated to enhance security along the entire corridor. Areas that present unique safety challenges are the portal opening and the roadway segment under One HSBC Center. Lighting improvements will be evaluated to help create a safe feeling for pedestrians. The interface with cars, trains, bicyclists and pedestrians will be addressed in the project design.

### CONSTRUCTION PHASING

A primary objective of the project is economic revitalization. As such, the construction must occur in a manner that maintains access to existing properties along the corridor to minimize disturbances. A balance must be established between disturbances and construction duration, limiting the duration on any block to one construction season. Work hours, rail operations and funding are all factors in the phasing of construction. Nighttime construction is a primary concern for residences along Main Street, which are predominately located north of Court Street. Rail operations create limitations for trackbed improvements during daytime hours. Considerations of single tracking and alternate modes of transporting passengers such as shuttle service will be evaluated. The installation of a crossover at Church Street is a consideration for mitigating service impacts during single-track operations. Based on the available funding, it is anticipated that the project will be constructed in segments consisting of one to three blocks at a time. Traffic operations and signalization will be evaluated for the completion of the probable phasing.

### COST ESTIMATING

An initial construction cost estimate of \$ 53 million in 2003 dollars was developed in the EA for the overall project for the Shared the Trackbed alternative. This included roughly \$30 million to rebuild the deteriorating trainway and Metro Rail Stations. Construction costs will be developed for each of the scope items to determine an overall budget and establish a means of prioritizing the various needs for the project. Construction phasing impacts will be accounted for in the construction estimates. Items that involve continual long-term maintenance will be evaluated to determine cost benefit implications. Operational impacts during and following construction will be considered with input from the client group.