Roc, Interrupted: The Obsolescence of Infrastructure

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preface_the abstract
At the beginning of 2014, the Congress for New Urbanism released its annual study on urban highways and their relevance (or lack thereof) to the cities they service, these are the roadways they have labeled the “Free-ways with Futures.” Earlier this December, the city of Rochester took its first step in the removal of a portion of number five on said list, the Inner Loop. These city, state, and federally subsidized initiatives are outdated and named inefficient and futureless no more than sixty years post implementation. It is clear that not only have these numerous schemes for arterial highway travel have failed but also that the use of transportation infrastructure cannot continue to be approached through the same lens of singularity.

The research by CNU and the initiative undertaken by the city officials indicates that the decline of urban infrastructure is at the forefront of agendas of Designers and Public officials alike. Before designers are properly equipped to tackle the next generation of infrastructural needs it is more pressing to address the obsolete roadways already in existence and what they may become at the end of their operative lifespan.

In order for the field of architecture to be involved in this conversation for future issues it must begin by questioning how does one recycle what is there right now? How does the designer respond to the surgical removal of infrastructure to avoid leaving a scar in its place? Or, if a scar is to be left behind how does that transform into a “living, connective tissue… between fragments [or confetti].”

This thesis argues that antiquated, arterial roadways must be re-concep-tualized and leveraged as a dual-functioning entity, as a multi-faceted and programmatically “thickened” volume in order to “re-urbanize” downtown districts.
part 1 site
Figure 2.3
[Initial Mapping]
[Left] Block versus road, connection and overlap of exits between I-490 and the Inner Loop.
[Right] Zoning Districts
Figure 2.2
Aerial view of Downtown, and the Inner Loop.
Source: city-data.org/pictures
CONTENTION:

THIS THESIS PROPOSES THAT ANTIQUATED, ARTERIAL ROADWAYS MUST BE RE-CONCEPTUALIZED AND LEVERAGED AS DUAL-FUNCTIONING ENTITIES, AS MULTI-FACETED AND PROGRAMMATICALLY THICKENED VOLUMES IN ORDER TO “RE-URBANIZE” DOWNTOWN DISTRICTS.
part 2 problem
1. I-10/Claiborne Overpass, New Orleans
2. Route 5/Skyway, Buffalo
3. I-81, Syracuse
4. Gardiner Expressway, Toronto
5. Inner Loop, Rochester
6. I-70, St. Louis
7. I-280, San Francisco
8. I-375, Detroit
9. Terminal Island Freeway, Long Beach
10. Aetna Viaduct, Hartford

Figure 1.1
From top. Aerial images of the "Freeways without Futures.”
Image & Article Source: http://www.cnu.org/
Figure 2.1
Map of New York State, highlighting the I-90 highway network connecting Buffalo, Rochester, Syracuse, and surrounding cities. Source: new-york-map.org
The envisioned future for the city at the time of the Inner Loop proposal was a continuously growing industry center, where trailblazers in the digital world such as Eastman Kodak and Xerox were the top employers and innovators in the area. Almost fifty years after the completion of the Inner Loop, Rochester now faces a much different reality from this former vision. The University of Rochester and Rochester General Hospital combined employee 30,700 workers in the area (Rochester Democrat and Chronicle), making Healthcare the top industry in the Rochester area.

The city has changed priorities, beyond and therefore the infrastructure to support the city must adapt to reflect this new chapter. The peak of population in the 1950s reflects the auto-mobile centric ideologies of the city planners and their instincts implement a road way trench to accommodate the traffic problem in Rochester’s city center. In the decades following this completion the population of the city has consistently decreased, a trend that is not likely to change in the near future. The location of the proposed site does have the ambition and the proximity to two thriving neighborhoods to densify and create a more walkable and livable nucleus. Two of the city’s top ten employers, Wegmans (No. 2) and Paychex (No. 8) have remained in the Rochester area but have relocated their headquarters to the outside suburbs, indicating that the downtown area’s priority no longer needs to be providing a speedy commute for the suburbanites but rather to re-urbanize the East End district.
Urban highways - sunken, elevated, or at-grade – create major problems for mid-size cities: they offer no social or economic benefits to an urban center and hinder future development. Given the massive footprint of land they occupy they become the means of exodus from the culturally significant city centers they have devastated. Their unceremonious introduction to the downtown landscape destroys existing city grids and razes acres of former historic fabric. Removal and renewal is necessary and essential for the “re-urbanization” of formerly urban, especially when the culprit of this hindrance is grossly underused.

While highways ease the downtown employee’s daily commute the consequences of this convenience outweigh the few benefits. Urban expressways encourage/promote departure from the city, the champion for expediency of connection from point A to point B. In the case of the Inner Loop in Rochester, NY, the expressway is a trench approximately 2.68 miles long, with a diameter of 1.26 miles along the East Main Street corridor. The Inner Loop transitions from four to six lanes throughout, and has several points of contact with the at-grade street exits, but it is fundamentally a moat, which cuts off the City Center District from the adjacent developing neighborhoods areas.
Figure 2.10
[Left] Cross sections throughout the Inner Loop, showcasing the changes in the landscape.
[Right] Aerial view of site locating the corresponding cross sections. Streetview via maps.google.com
Figure 2.6
[From top] Collection of archive images featuring the traffic problems in the city center during the earlier twentieth century, leading to multiple proposals for a Loop system [right]. Image sources: rochestersubway.com
Figure 2.13
Proposed at-grade boulevard for the city's area of intervention. Proposal includes nine acres of new development area and reduction of roadway to a four lane alternative.
Image source: cityofrochester.gov/innerloopeast.
MAINTAINING CURRENT INFRASTRUCTURE

AT-GRADE BOULEVARD (OR COMPARABLE SOLUTION)

$4,400,235

$38,882,173

MAINTAINING CURRENT INFRASTRUCTURE

DESIGN EXPENSES BEFORE CONSTRUCTION

$2,400,000

$5,900,000

Funds Matched by the City of Rochester

$17,700,000

$26,000,000

TIGER FEDERAL GRANT

TOTAL COST OF THE INNER LOOP PROJECT

$17,700,000

$26,000,000

PROJECT TOTAL + BOULEVARD MAINTENANCE

$30,400,235

$38,882,173

Cost of the City's Inner Loop East Project (2013-Present)

Life cycle costs over a 31 year period

Conversion to boulevard v.s. Inner Loop life cycle cost

Figure 2.12 (Cost Comparison)
Figure 2.11
Traffic Daily vehicle average in downtown Rochester.
Individual takes it upon himself to create new pedestrian path. Source: reconnectrochester.org.
Collage panorama of Inner Loop East at Broad Street.
Roc, Interrupted proposes that urban, transportation infrastructure cannot continue to be approached through the same lens of singularity.

Intervention: In its present state there is a conflicting duality to the Loop: while a portion is critical to local and regional traffic, a majority is obsolete. The segment in use is reinforced by its connection to the I-490 thruway, and averages over 20,000 cars per day. The area of intervention of this project is a reaction to the mile and a half that services less than 8,000 vehicles in the same amount of time. Divided into three districts: Business, Campus, and Entertainment, Roc, Interrupted leverages Megaform as a means of reconnection and establishment of new monuments.

The ambitions of Roc, Interrupted are to rebrand the primary function of the Loop: no longer viewed as an underutilized artery severing the urban fabric as a singular, sunken route, but as a means to re-stitch the surrounding districts and to re-inscribe the edge of the Loop.
part 3_analysis
“ARCHITECTURE TODAY CANNOT CONCERN ITSELF ONLY WITH THAT ONE SET OF STRUCTURES THAT HAPPEN TO STAND UPRIGHT AND BE HOLLOW “BUILDINGS” IN THE CONVENTIONAL SENSE. IT MUST CONCERN ITSELF WITH ALL MAN-MADE ELEMENTS THAT FORM OUR ENVIRONMENTS: WITH ROADS AND HIGHWAYS, WITH SIGNS AND POSTER, WITH OUTDOOR SPACES AS CREATED BY STRUCTURES, AND WITH CITYSCAPE AND LANDSCAPE…”

-Victor Gruen
The Inner Loop is not a line, moat, or noose, it is a Volumetric Form, which creates (positive and negative) space. It has multiple points of contact with its at-grade and below grade surfaces, and several conditions of a horizontal layering of the Loop and the connecting bridge.

The Loop does not respond to those conditions in its present state. The negative space created by the Inner Loop is the volume salvaged from the original piece of infrastructure.
Optimized Condition

Typical Condition

Proposed Condition

Negative Space Condition

Emergence of the Network

Activation of the Armature
Figure Ground

left            Positive spaces (buildings)
right       Reversal of condition, removal of built form, roadways and adjacent blocks to Loop as negative space

Figure Ground

left             Roadways and Loop as positive space, begins to gain thickness
right           Loop expands its area of intervention to encompass sounding blocks

Figure Ground

left             Spine scheme within area of intervention, Loop begins to create network
right           Reversal of condition, the activated blocks adjacent to the Loop

Figure Ground

left             Positive spaces (buildings), no connection between figures
right           Loop and roadways as negative space, defining the blocks

Figure Ground

left             Roadways and Loop as positive space, begins to gain thickness
right           Loop expands its area of intervention to encompass sounding blocks

there is no longer a Loop, it becomes the largest site in Rochester

Figure Ground

left             Spine scheme within area of intervention, Loop begins to create network
right           Reversal of condition, the activated blocks adjacent to the Loop
**Figure Ground**

left: Negative spaces (landscape) within the blocks adjacent to the loop creating a patchwork condition.

right: Reversal of condition. How do the negative spaces compare when there is no infrastructure - city blocks organized via grid system.
[STRATEGY] Figure Ground

left  Positive space of block, no connection to the negative Loop space [adjacent blocks]
right Loop as [positive] space, largest building / site / landscape in Rochester
Figure Ground

**Left**
Positive space of block, no connection to the negative Loop space (adjacent blocks)

**Right**
Loop as positive space, largest building / site / landscape in Rochester
Figure Ground

left  Positive space of block, no connection to the negative Loop space (adjacent blocks)
right Loop as [positive] space, largest building / site / landscape in Rochester
part 4_scenarios
How big is the Loop?
How does the immediate site compare to the scale of the project and comparable scenarios?
part 5_zones
Zone 1

ZONE 1 - EAST END (ILE Project Site)
Collaged Ideogram of Precedents by OMA & West 8
Zone 2

ZONE 2 - EASTMAN CAMPUS
Collaged Ideogram of Precedents
Zone 3

ZONE 3 - AREA OF INTERVENTION
Collaged ideogram of images from LTLm’s "Water Proving Ground" Rising Currents
part 6_zone 3
The ambitions of Roc, Interrupted are to rebrand the primary function of the Loop: no longer viewed as an underutilized artery severing the urban fabric as a singular, sunken route, but as a means to inscribe, infill, and stitch together the surrounding districts. To dissolve and reinforce the barrier of the Loop.
Roc, Interrupted proposes that urban, transportation infrastructure cannot continue to be approached through the same lens of singularity.
Infill
Stitch
appendix_works cited


Wall, Alex. "Programming the Urban Surface." 233-249.