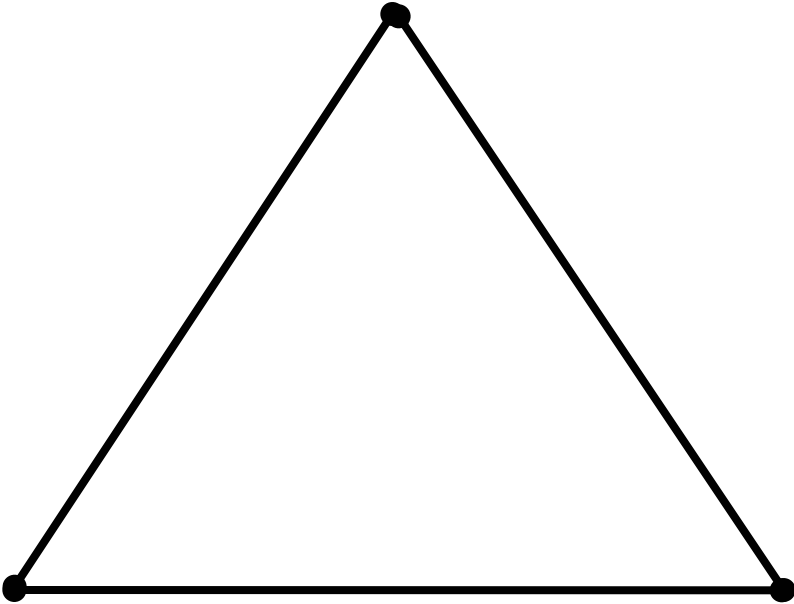


The "Big Dig" of Boston, Massachusetts: Lessons to Learn

SUMMARY

ENVIRONMENT



ECONOMY

EQUITY

BENEFITS OF PROJECT ENORMOUS

- A) Avoid gridlock**
- B) Improve environmental quality**
- C) Allow growth of downtown economy**
- D) Enormous short-term construction benefits**

DELAY IMPOSES SERIOUS CONSEQUENCES

- A) Postponement of benefits**
- B) Inflation drives up construction cost**
- C) Delay leads to scope changes that may be costly**

TRANSITIONS

Transitions, both political and through disciplinary "cultures" of planning, design, construction, are difficult to manage

ADEQUATE PUBLIC OVERSIGHT ESSENTIAL TO SUCCESS

CHALLENGES AND OPPORTUNITIES AHEAD

A. Boston Metropolitan Area

- **Operations and maintenance**
- **Transit**
- **Surface land over Artery**
- **Smart growth**

CHALLENGES AND OPPORTUNITIES AHEAD

B. National

- Re-development of old infrastructure (not petrified wood)
- Maintenance of healthy city during construction
- Stable dedicated Federal funding
- Need for integrated environmental and construction oversight

C. Talent and competency in engineering/public policy interface

<1950s ethnic joke>

INTRODUCTION:

The Central Artery/Tunnel (CA/T) is Like an Escher Print.

- I. A framework to consider large projects**
- II. "Pre-History": 1948-1959; 1959-1970**
- III. Project conceptualization; Environmental analysis: 1970-1990**
“Doing the right job”
- IV. Construction period history, 1991-2002**
“Doing the job right”
- V. Key questions**
- VI. Challenges and opportunities ahead, Boston and national significance**

The Central Artery/Tunnel (CA/T) is Like an Escher Print

- 1) The biggest highway project in the U.S. grew out of the anti-highway movement**
- 2) CA/T is about improved quality of mobility for core, or about increasing quantity of low-quality auto access.**
- 3) The CA/T won't work unless continued improvements are made in mass transit**
- 4) CA/T is about environmental improvement by replacing elevated highway primarily with open space.**
- 5) CA/T is about major urban growth in the South Boston seaport district.**

... Escher Print (cont'd)

- 6) **The CA/T is about construction jobs**
- 7) **The CA/T is about city building and "smart" economic growth**
- 8) **Conditions of political support are often ambiguous and imprecise**
- 9) **Dominant culture of project, as well as political leadership, can change over the life of the project**
- 10) **The CA/T is an example of Massachusetts gaining at the expense of the rest of the US**

... Escher Print (cont'd)

- 11) The CA/T is an example of partisan politics depriving Massachusetts of fair treatment under the Interstate Highway Program (1956) and the National Environmental Policy Act**
- 12) The CA/T is the first interstate highway developed in substantial compliance with the National Environmental Policy Act**
- 13) The cost of the CA/T is higher because of compliance with the National Environmental Policy Act**
- 14) The cost of the CA/T is lower because of compliance with environmental law**

... Escher Print (cont'd)

- 15) The cost of the CA/T is higher because of Federal Interstate Highway standards and highway culture**
- 16) The cost of the CA/T is higher because of an excessive practice of “mitigation”**
- 17) The CA/T could be built only with a public/private partnership**
- 18) The CA/T costs increased because of an excessive view of “privatization”**

THE BIG DIG

1. A major civic initiative for the improvement of the environment of the City of Boston

or

An agglomeration of “business” opportunities for:

- **developers**
- **contractors**
- **consultants**
- **Massport**
- **Masspike**

THE BIG DIG

- 2) **Civic enterprise consensus**
-- or 51/49 “spoils” politics; $(.9)^6 < .5$
- 3) **Full cost and benefit sharing -- or burden shifting**
Public private partnership -- or privatization

FRAMEWORK

Basic Characteristics Which Distinguish Very Large Projects

- **Many phases (6) of life of project, over a long period of time, during which new information and changing values may change the context of the project.**
 - (1) Prehistory**
 - (2) Project conceptualization, environmental analysis**
 - (3) Design of project; procurement process**
 - (4) Construction**
 - (5) Operation & Maintenance**
 - (6) Land use accessibility and use changes**

FRAMEWORK

Basic Characteristics Which Distinguish Very Large Projects

- **Changes in political leadership may occur every 2 to 4 years, changing the context, and key players appointed by governors are likely to change during course of the project development.**
- **Technical requirements of 6 phases bring large numbers of specialists and interest groups temporarily into and out of the project, and may change the “culture of the projects.”**
- **Changes in political leadership may change the philosophy of the project**

FRAMEWORK

Phase	Time Scale	Political (Governors Terms)	Transportation Philosophies
Prehistory	Decade s (1948 -1969)	2 Year - 1968; 4 Year - 1968 - present Sargent	Local & state highway, 1958 -1956
			Federal Highway, 1956 -2000 Interstate; 90% Federal funds
Project Conceptualization EIS	3-5 Year (1970 -1980)	Sargent Dukakis King Dukakis Dukakis Weld	Federal Highway National Environmental Policy Act Multi-modal, highway/transit/ rail/airport
	20-24 Years		1991 ISTEA , 80% Federal funds but funding capped at \$6 billion
Procurement Engineering Design Land Acquisition	2-4 Years (1986 -1991)	Dukakis Weld Cellucci Swift Romney	
	12 Years (1991 -2003)		
	6 Years (1991 -1997)		
Construction	10 Years (1987 -2000)	Weld Cellucci Swift Romney	
	15 years (1991 -2005)		
Operation and Maintenance	50 Years (1996 -> 2046)	Weld Cellucci Swift Romney ?	

TIMELINE

Pre-1956

- **Bottleneck relief**
- **Unimodal**
- **Location standards**
- **Externalize costs**
- **State and local funds**
- **Patronage politics**

1956-1969

- **Interstate system**
- **90% Federal funds “cost-plus”**
- **Uniform highway standards**
- **Uniform relocation benefits**
- **Patronage, but less corruption**
- **Growth in use of models for design**

TIMELINE

1966-1991

- **Section 4(f)**
- **National Environmental Policy Act (1969)**
- **Internalize external costs**
- **Multi-modal planning**
- **Boston Transportation Planning Review (1970-1972)**
- **Interstate transfer, flexibility (1973)**
- **Operating subsidies for transit**
- **Growth in use of models for planning**

TIMELINE

1991-1997

- **ISTEA - flexibility and fixed pot of State funds**
- **Metropolitan planning organization**
- **Flexible standards**
- **Models vs. MPO**
- **Management studies (bridges, congestion, air quality, etc.)**

1997 - today

- **ISTEA continues**
- **No Federal transit operating subsidy (1997)**
- **Less emphasis on management studies**

FRAMEWORK

Over-Arching Federal Funding Role

- **A Tale of Two Republicans**
Eisenhower (Nixon, Ford)
Reagan
- **Nature of Public/Private Relationship**

FRAMEWORK

**Strong Federal Role with bipartisan support helps set priorities
(Eisenhower, Nixon, Ford)**

- **Reduces peanut butter effect**
- **Prioritizes future**
- **accepts responsibility for external costs of Federal program**

vs.

Ambiguous Federal role

Congressional Earmarks

Politicization of program (Reagan)

WHOSE IDEA WAS THE BIG DIG?

John Volpe

Vincent Barletta

Kevin Lynch

Paul Lusk

Tony DiSarcina

Bill Reynolds

Kevin White

Tom Winship

Bill Lamb

Miguel Rosales

Rebecca Barnes

Norm Leventhal

Bob Weinberg

FRAMEWORK

- **Project Conceptualization and EIS**
- **Doing the Right Job**

Physical concept developed through interactive process of communication with key constituencies during EIS process

ESSENTIAL ROLE OF PRESS

Supportive

Contrarian

Conflict will exist, so how does it work for you?

FRAMEWORK

Development of Political Constituency of Support

- Identification of Opponents

Development of Modification and Mitigation to Compensate “Losers”

- Develop a Pareto Optimum
- Refuse to Pay Extortion

Embrace the EIS

- Institutionalize the Constituency
- Adopt Clear Mechanisms for Modification

FRAMEWORK

Institutional Analysis - Who Are The Key Constituencies?

User Groups	Drivers, Shippers, Real Estate Developers Affected Third Parties & Environmentalists
Funding Groups	FHWA, Congress, Legislature, Governor
“Surrogate Customers”	Taxpayer/Toll Paying Constituents, Operations & Maintenance Entity, City Planners, Construction Constituencies

**MITIGATION vs.
CO-PRODUCTION & SYNERGY**

SUMMARY OF PROJECT CONCEPTUALIZATION: “Doing the Right Job”

- 1) Fairness of Interstate money for CA/T**
- 2) Combination of CA/T**
- 3) Lack of suitable alternative to deal with:**
 - physical decay of structure**
 - traffic problems of elevated Central Artery**
 - physical ugliness of elevated**
 - need to maintain traffic during construction**
- 4) Technical feasibility**
- 5) Competency, public & private**

SUMMARY OF PROJECT CONCEPTUALIZATION: “Doing the Right Job”

- 6) Building opportunities program to deal with construction labor**
- 7) Lazard Freres financial study; operation and maintenance role**
- 8) DeVillars certificate & CLF agreement. Park, Spectacle Island, cable-stayed bridge transit, Park & Ride ITS**
- 9) Move Mass 2000; Artery business committee, environmental oversight committee, environmental process**
- 10) Competent public sector project management, “second opinion committee”**

(VIDEO)

DOING THE JOB RIGHT

Construction technology

Maintenance of traffic during construction

Excellent safety record

DOING THE JOB NOT SO RIGHT

- **No designation of "owner" with operation and maintenance responsibility at the table**
- **Dismantling of second opinion capacity**
 - other public agencies
 - interfaces between basic design/final design
 - value engineering threatening
 - reduction of benefits and cost-shifting
 - right-of-way acquisition
 - government oversight of environmental commitments weak, excessive reliance on unfunded advocacy groups
 - neglect of "building opportunities program"
 - unprogrammed traffic mitigation
- **No longer an ICE process**

"PRE-HISTORY": 1948-1959; 1959-1970

Original Central Artery

1948-1959: Development and Construction

- **Good news:** -- traffic
- **Bad news:** -- disruption of city
-- demise of Old Colony Railroad

1959-1970: Living with the Artery

- **Widen the highway/narrow the highway**
- **Renewed interest in public transportation**
- **Antibodies**

PROJECT CONCEPTUALIZATION: "Ancient" History 1969-1975

"Revolt" against the "Inner Belt" Highway;

Shift to emphasis on public transportation, urban supportive transportation.

< Religious anecdote >

Bill Reynolds, MIT graduate

Kevin White, Boston Globe

<A Tale of Two Republicans; Sargent & Nixon >

(1971) Sargent philosophy; decision

MBTA institutional and financial capacity building

CONSTRUCTION PERIOD HISTORY , 1991-present

1991 Weld

Partisanship

Denigration of public employees

Fund raising and Bechtel/Parsons

"Scheme Z" controversy

Schedule slippage

Tunnel focus

Change in Interstate Highway funding

CONSTRUCTION PERIOD HISTORY , 1991-present

Bad News

Reneg on building opportunities program

- Transit**
- East Boston mitigation**

Schedule slippage

Cost increases

Operation and maintenance ignored

Loss of public sector management

CONSTRUCTION PERIOD HISTORY , 1991-present

Good News

Project goes forward

Safety record extremely good

Technical ingenuity

**Congressional delegation delivers \$5 billion net during
1990s**

Traffic mitigation goes well

KEY QUESTIONS

A. Why are costs up?

1983 (uninflated)	\$2.8 billion
1990 (including mitigation and inflation)	\$6 billion
2001	\$15 billion

Not environmental mitigation but land taking settlements and delay

<Tale of two more Republicans: Reagan and Weld>

Post 1991 scope changes

Compare Big Dig and Boston Harbor Cleanup

KEY QUESTIONS

B. Is the project still worth it?

For the Boston Metropolitan area?

- Fiscal stimulus
- Economic value of core

C. Why should the Federal government pay for this?

- National equity
- Rebuilding infrastructure

CHALLENGE AHEAD IS PRUDENT USE

- 1) Proper operation and maintenance**
- 2) Continued improvement to transit**
- 3) Continued limits on parking**
- 4) Smart growth**

FEDERAL AND STATE OVERSIGHT ESSENTIAL

- 1) Environmental**
- 2) Cost monitoring**
- 3) I.C.E. and inflation, changed conditions**
- 4) Federal funding essential**