

Feasibility Study and Design for Flood Mitigation on Easy Street, Downtown Nantucket

Coastal Resilience Advisory
Committee Update

March 11, 2025

Today's Agenda

1 Welcome and Introduction

2 Project Overview & Context

3 Project Alternatives

4 Discussion

5 Next Steps

Join the upcoming Community Open House on Tuesday, March 18

Access the Zoom link using the QR code or link
below



www.nantucket-ma.gov/easystreet



Easy Street Flood Mitigation Project

COMMUNITY OPEN HOUSE

Easy Street is a critical part of Nantucket's waterfront, but it faces increasing flood risks. To address this, three potential design options have been developed to improve resilience.

JOIN US TO LEARN MORE, ASK QUESTIONS, AND SHARE YOUR INPUT!

TUESDAY, MARCH 18

- Morning session - 9:30 AM to 10:30 AM
- Evening session - 5:30 PM to 6:30 PM

Format: INTERACTIVE VIRTUAL
Each session is identical.

*¡Se contará con intérprete de español
en la reunión!*



WWW.NANTUCKET-MA.GOV
/EASYSTREET

Project Team & Overview

This project is funded by Massachusetts Coastal Zone Management (CZM)



Leah Hill
Coastal Resilience Coordinator



Vince Murphy
Sustainability Programs Manager



William Casey, Jr.
Project Manager



Trevor Johnson
Technical Manager



Michelle MacDonald
Project Engineer



Kathryn Edwards
Public Outreach Lead

Other Town of Nantucket Team Members:

Jeff Carlson, Natural Resources Director
Gregg Tivnan, Asst. Town Manager for Strategic Projects
Chuck Larson, Special Projects Manager
Holly Backus, Preservation Planner
Florescia Rullo, Communications Manager



Woods Hole Group
Coastal Modeling



ONE Architecture
Public Realm and Infrastructure Design

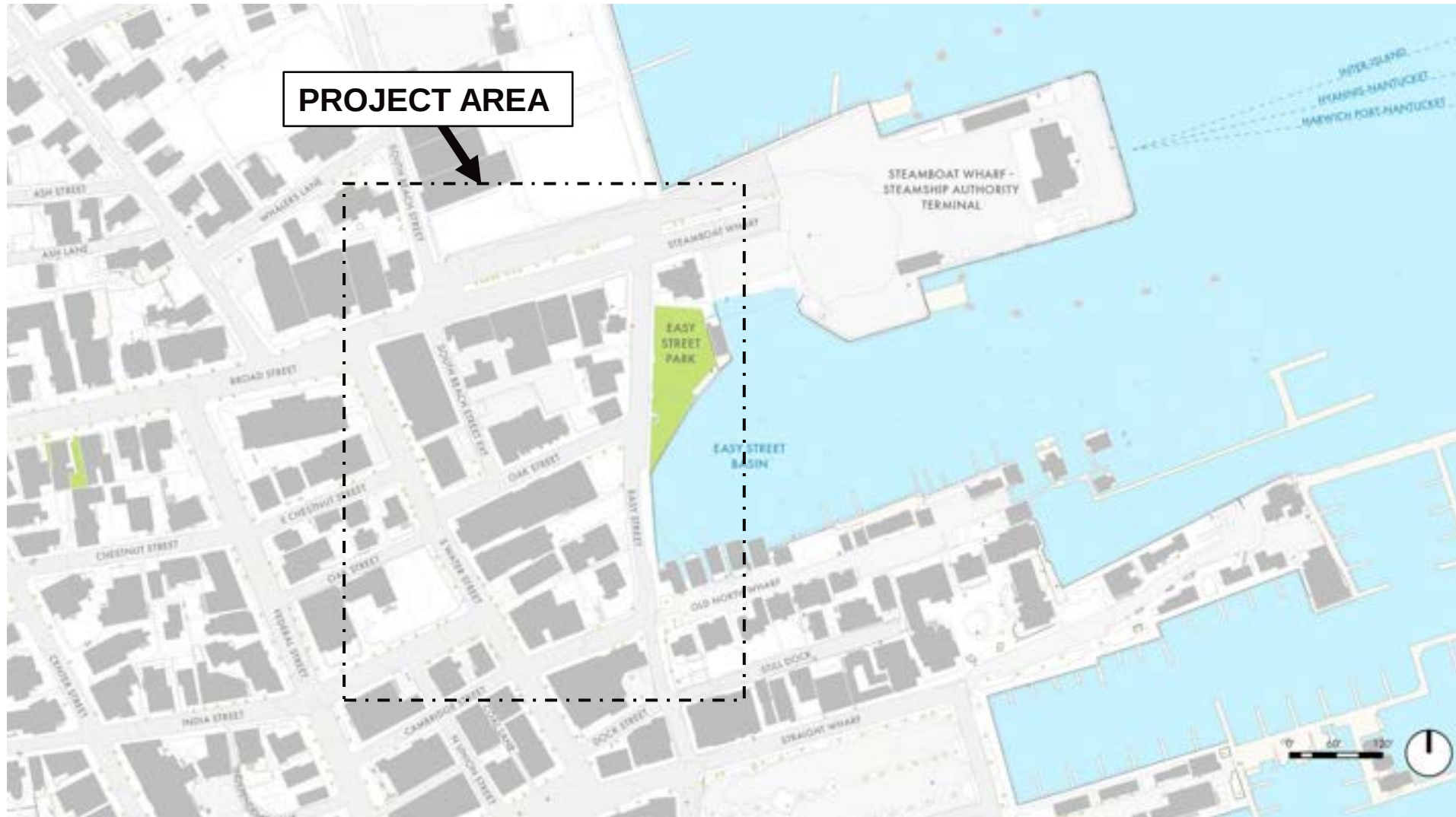


Childs Engineering
Waterfront Structural

Project Overview & Context

Project Team & Overview

This project is funded by Massachusetts Coastal Zone Management (CZM)



Project Goals

- Develop feasible project to mitigate stormwater and coastal flood risk along Easy Street
- Inclusively engage the Nantucket community and stakeholders island-wide in the design development process
- Seek co-benefits that improve access, mobility, and the environment as part of the design development process

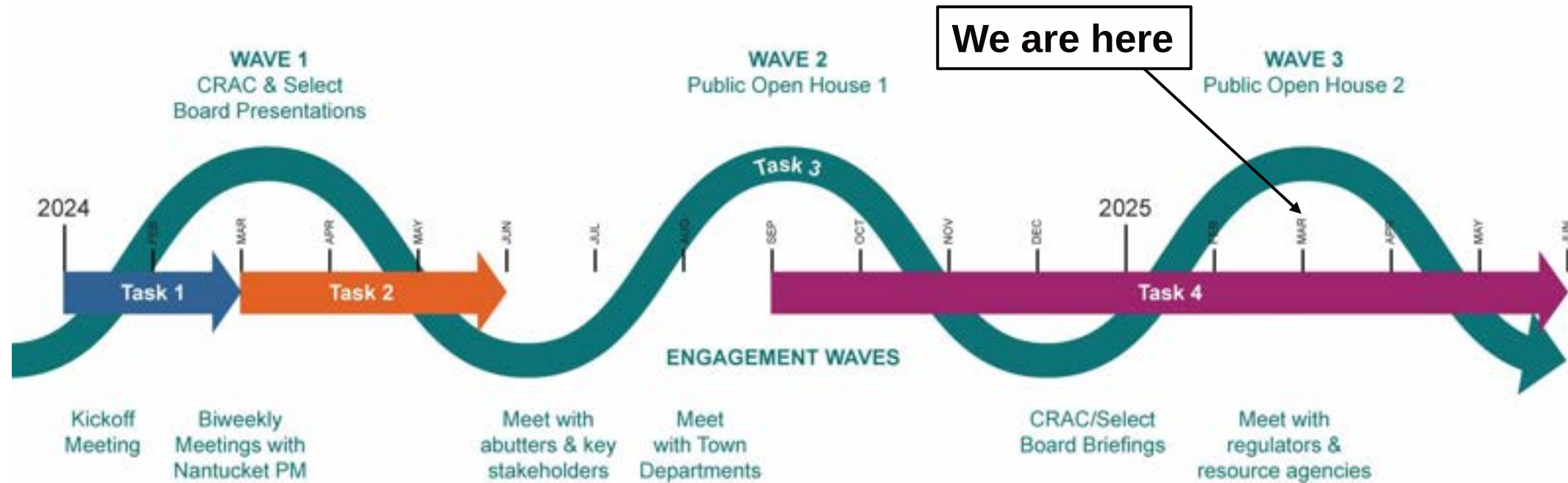


Easy St Flooding, March 7, 2020, Photo by Robert Young



*Oak St and Easy St Flooding
January 10, 2024*

Project Timeline



Previous Work & Engagement



Nantucket Coastal Resilience Plan (CRP), 2021
Highest Priority Downtown Project – Easy Street



Source: Nantucket CRP

Open House #1, August 7, 2024
Nantucket Whaling Museum



Photo by: Town of Nantucket

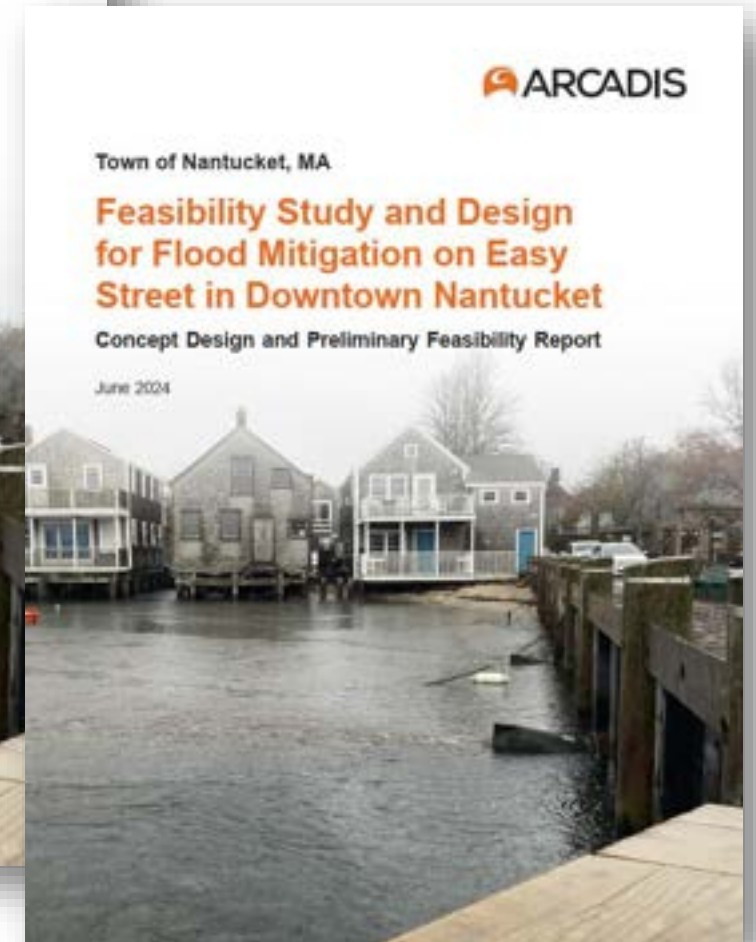
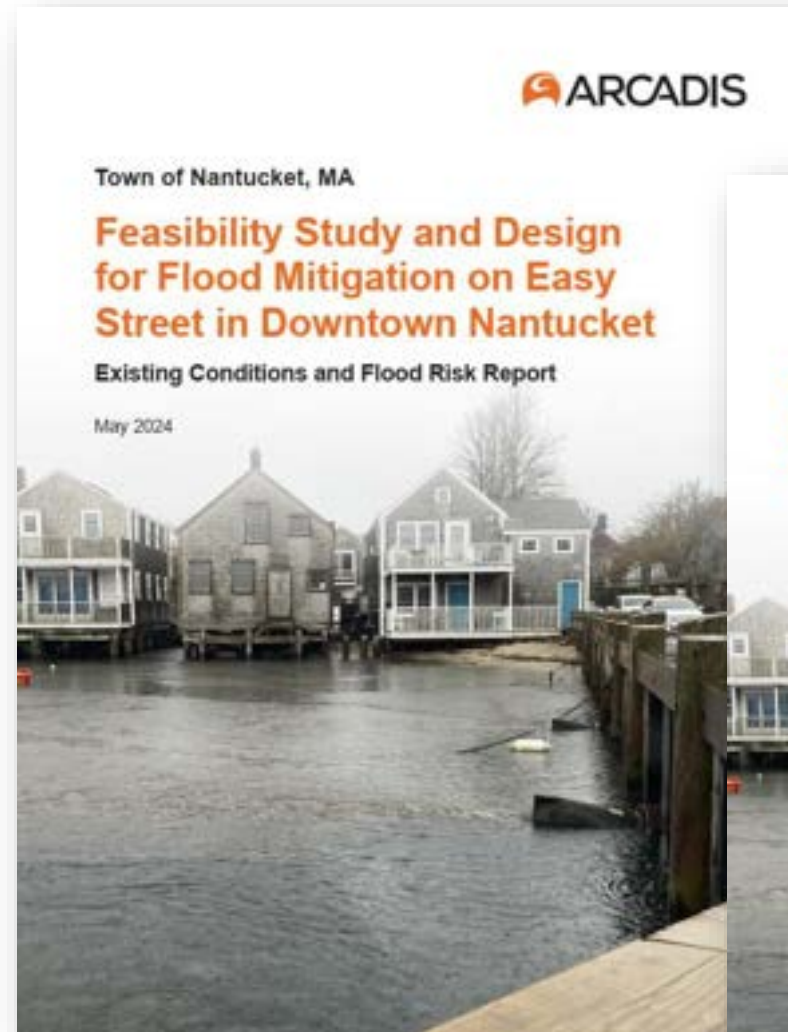
Previous Work & Engagement



Existing Conditions, Flood Risk, and Preliminary Feasibility Reports

Available to read at

<http://www.nantucket-ma.gov/easystreet>



Previous Work & Engagement

Flood Risk Assessment

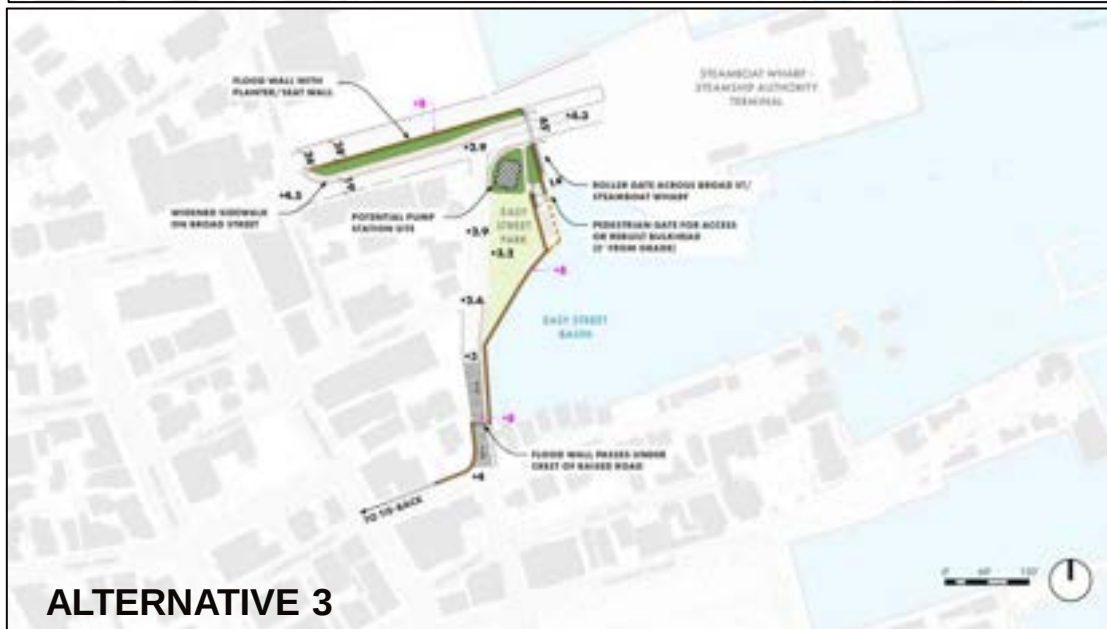
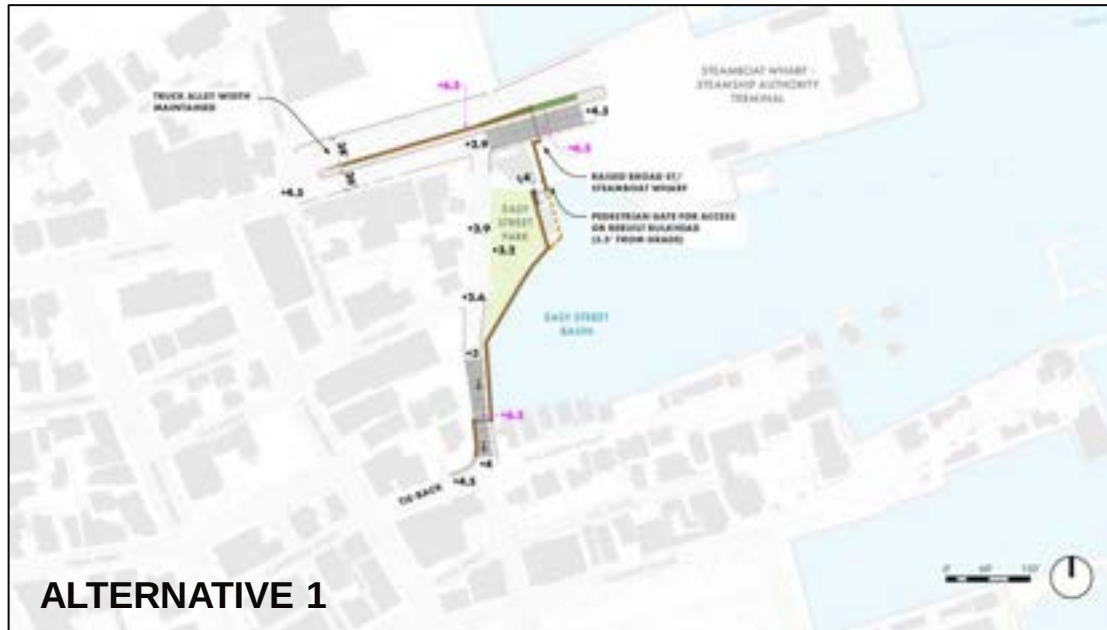
What were **key takeaways** of the flood risk assessment?

- Sea level rise will contribute to sunny-day flooding caused by monthly and daily high tides as soon as 2030
- Future storm surge can cause damage to the Downtown core of Nantucket
- The existing bulkhead structures are not designed to protect against coastal flood risks

From now through 2070,
cumulative expected
losses from coastal
flooding can total up to
\$1.2 Billion



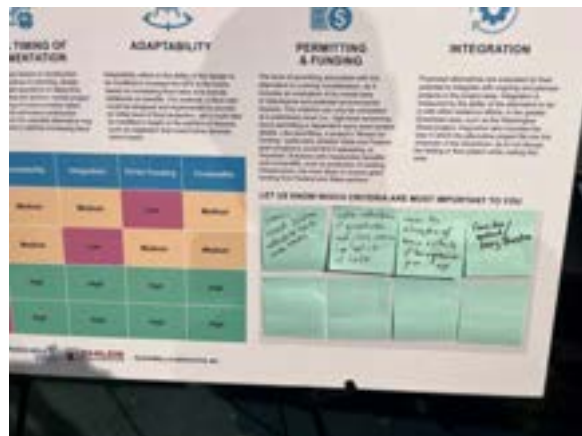
Initial Conceptual Alternatives



Engagement Themes & Today's Open House

*What **general themes** did we hear during Open House #1?*

- Broad support for addressing flooding issues on Easy Street
- Concerns for stormwater flooding during heavy rain events, in addition to tidal flooding
- Desire to incorporate nature-based solutions into design
- Interest in exploring new alternatives including a raised Easy Street



Goals for this Open House

- Provide update on project status since Summer 2024
- Present **revised** alternatives developed as a result of feedback from first Open House
- Answer questions and collect feedback from the Nantucket community on revised alternatives

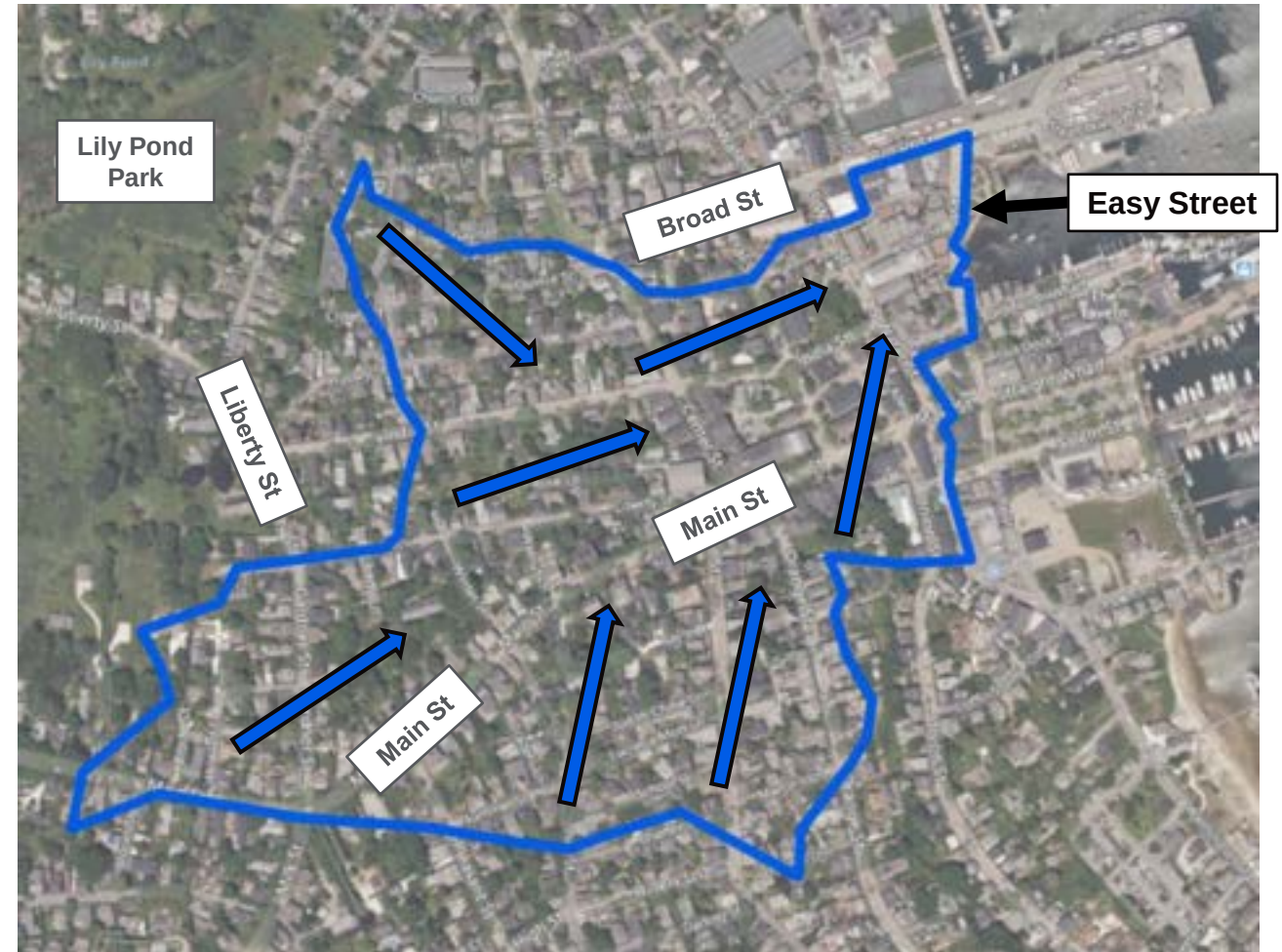
Stormwater Management

Contributing Watershed for Easy Street

A large portion of Downtown, upland of Easy Street, contributes stormwater flows to Easy Street during heavy storm events, causing for precipitation-based flooding on Easy Street.

The contributing watershed, shown to the right, amounts to **53** acres, much of which is impervious area (meaning there is minimal ground infiltration due to pavement, brick, and roof cover).

This project aims to propose solutions to reduce some flooding on Easy Street that is caused by stormwater.





Stormwater Management Options

Project Area (Easy Street) Options

- Replace existing duckbills on outfalls with functioning check valves or tide gates
- 'Green' storage areas
- Pump stormwater out & away

Greater Downtown Watershed Options

- Re-direction of flow to other outfalls
- Reduce impervious area
- Retain stormwater upstream (rain barrels, detention areas, additional subsurface piping)



Photo by Leah Hill, September 19, 2024

Levels of Flood Protection

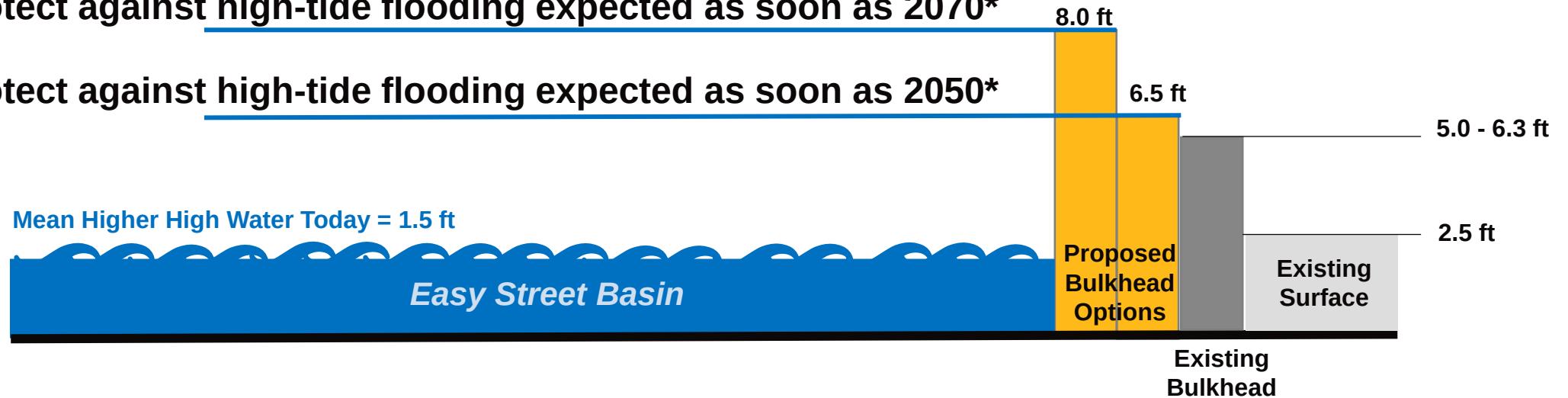


What does the top of wall elevation protect against?

- Long-term over-topping and flooding from high tides
- Near-term over-topping and flooding from storms and waves

Protect against high-tide flooding expected as soon as 2070*

Protect against high-tide flooding expected as soon as 2050*



*High tide flooding elevations are based on MC-FRM (Massachusetts Coast Flood Risk Model) which includes sea level rise (SLR) projections using a HIGH scenario, as adopted by the Commonwealth of Massachusetts. All elevations reference NAVD88.

Project Alternatives



Alternatives Summary

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

144

145

146

147

148

149

150

151

152

153

154

155

156

157

158

159

160

161

162

163

164

165

166

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

182

183

184

185

186

187

188

189

190

191

192

193

194

195

196

197

198

199

200

201

202

203

204

205

206

207

208

209

210

211

212

213

214

215

216

217

218

219

220

221

222

223

224

225

226

227

228

229

230

231

232

233

234

235

236

237

238

239

240

241

242

243

244

245

246

247

248

249

250

251

252

253

254

255

256

257

258

259

260

261

262

263

264

265

266

267

268

269

270

271

272

273

274

275

276

277

278

279

280

281

282

283

284

285

286

287

288

289

290

291

292

293

294

295

296

297

298

299

300

301

302

303

304

305

306

307

308

309

310

311

312

313

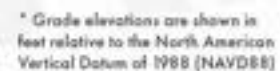
314

315

316

317

Bulkhead Expansion and Elevation



OVERVIEW

Bulkhead Expansion and Elevation

LEGEND

+X.X Existing Grade (ft)

+X.X Proposed Grade (ft)

Potential Flood Barrier Above Grade

Flood / Seepage Barrier Below Grade

Elevated Roadway

Elevated / Modified Sidewalk

Existing Driveways / Pull-in Areas

Driveways Requiring Elevation / Reconfiguration

* Grade elevations are shown in feet relative to the North American Vertical Datum of 1988 (NAVD88)

NORTH TIE-BACK AT RAISED SOUTH BEACH STREET

SOUTH TIE-BACK AT CAMBRIDGE STREET

EASY STREET GRADE UNCHANGED

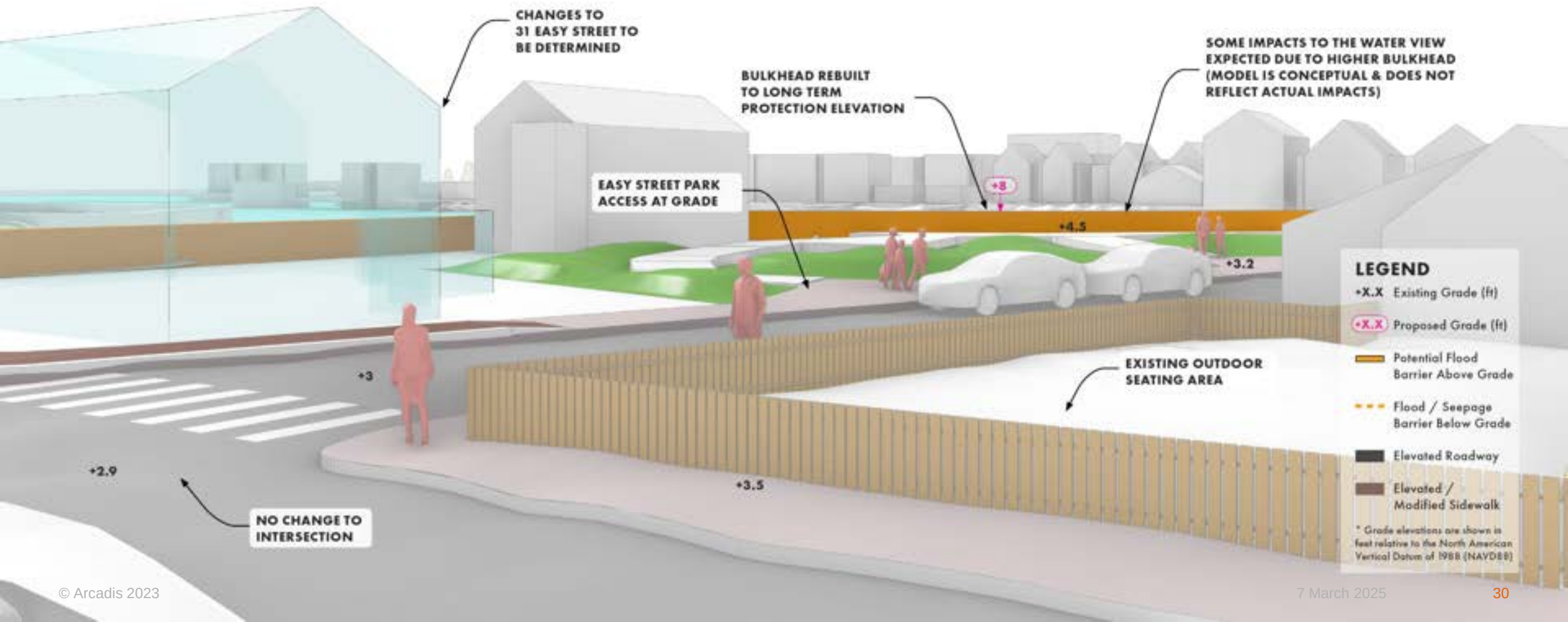
BROAD STREET CROSSING AT +6.5

POTENTIAL WETLAND RESTORATION OPPORTUNITIES

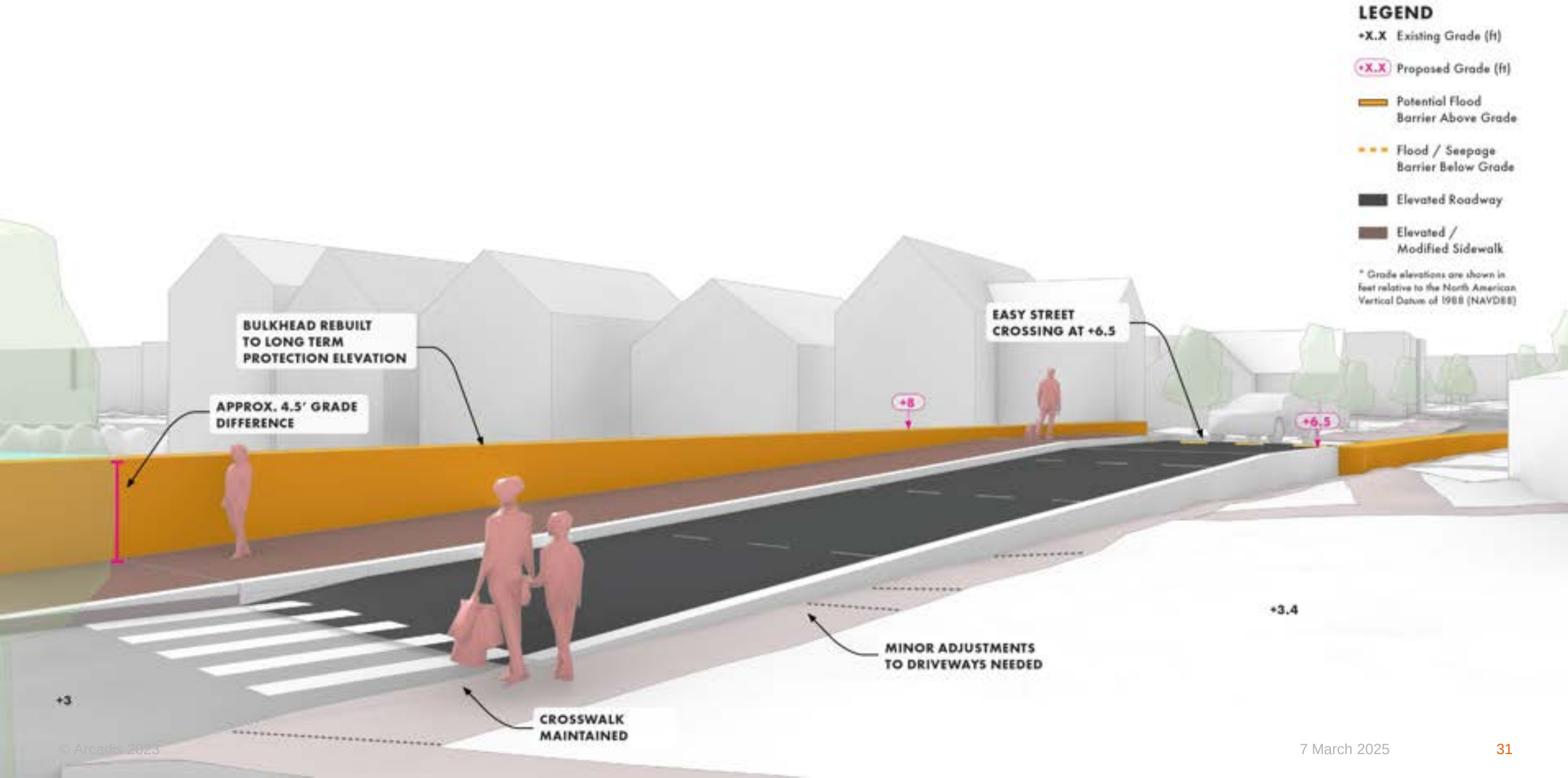
Bulkhead Expansion and Elevation



EASY STREET
Bulkhead Expansion and Elevation

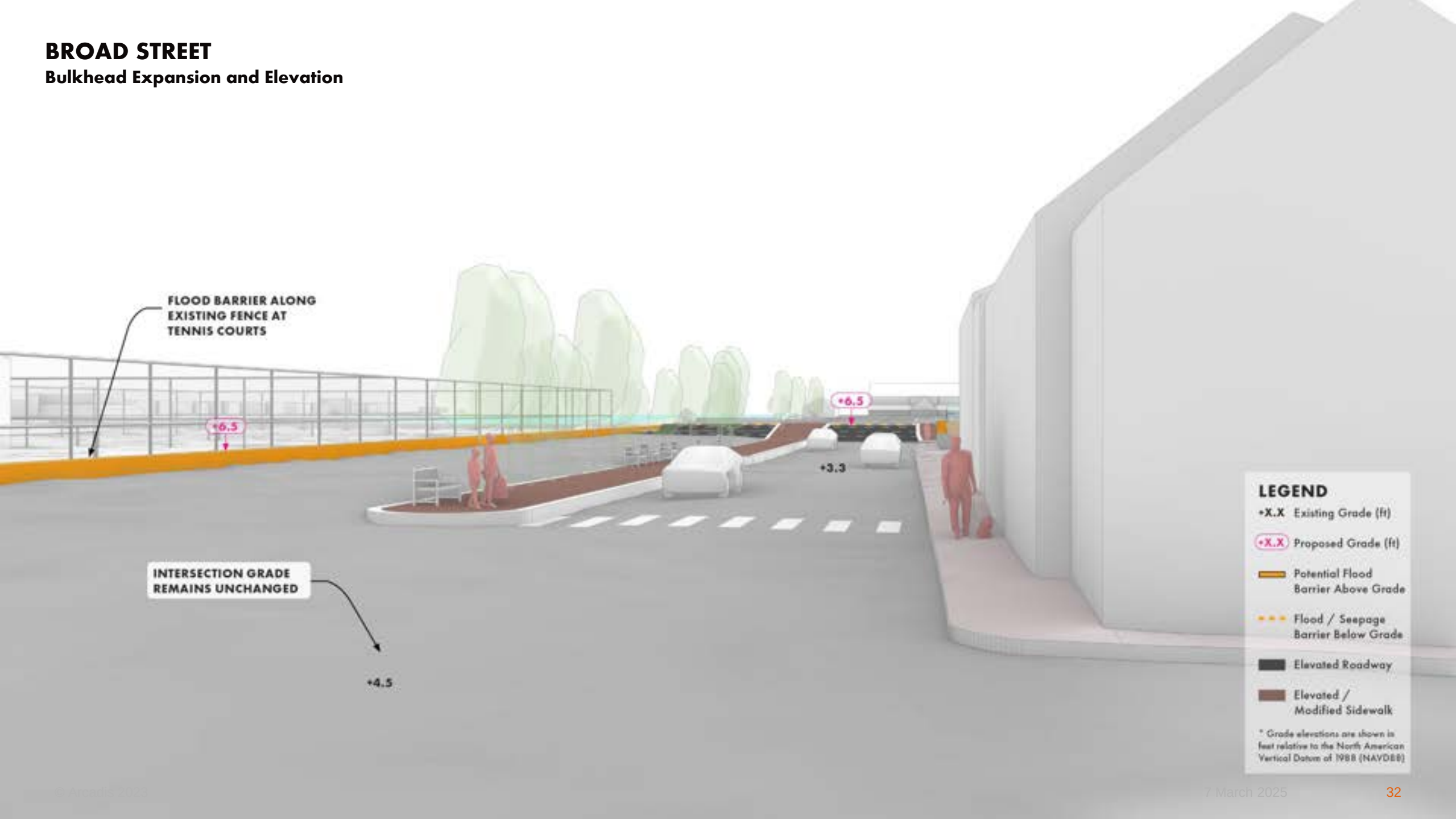


Bulkhead Expansion and Elevation



BROAD STREET

Bulkhead Expansion and Elevation





**What do you like about
Bulkhead Expansion and
Elevation?**



**What would you change
about Bulkhead Expansion
and Elevation?**

PLAN VIEW

Adaptable Road Raising to 6.5 feet NAVD88

LEGEND

- +X.X Existing Grade (ft)
- (+X.X) Proposed Grade (ft)
- Potential Flood Barrier Above Grade
- Flood / Seepage Barrier Below Grade
- Elevated Roadway
- 1:XX - Slope ratio & direction (down)

* Grade elevations are shown in feet relative to the North American Vertical Datum of 1988 (NAVD88)

1:20 SLOPE INTO TRUCK ALLEY
(WIDTH MAINTAINED)

RAISED INTERSECTION
TO +6 WITH KNEE WALL
ALONG SIDEWALK

RAISED BROAD STREET
WITH EXTENDED
SIDEWALK

FLOOD BARRIER
UNDER SIDEWALK

APPROX. 3'
DIFFERENCE BETWEEN
EXISTING DRIVEWAYS
AND RAISED ROAD

EASY STREET
RAISED TO +6.5

POTENTIAL STORMWATER
PUMPING STATION SITE

POTENTIAL
PULL-IN AREA

WETLAND RESTORATION
OPPORTUNITIES

EASY STREET
BASIN

STEAMBOAT WHARF -
STEAMSHIP AUTHORITY
TERMINAL



OVERVIEW

Adaptable Road Raising to 6.5 feet NAVD88

LEGEND

- +X.X Existing Grade (ft)
- +X.X Proposed Grade (ft)
- Potential Flood Barrier Above Grade
- Flood / Seepage Barrier Below Grade
- Elevated Roadway
- Elevated / Modified Sidewalk
- Existing Driveways / Pull-in Areas
- Driveways Requiring Elevation / Reconfiguration

* Grade elevations are shown in feet relative to the North American Vertical Datum of 1988 (NAVD88)

NORTH TIE-BACK AT RAISED BROAD/SOUTH BEACH INTERSECTION

EASY STREET RAISED TO +6.5

BROAD STREET CROSSING AT +6.5

SOUTH TIE-BACK AT DOCK STREET

POTENTIAL WETLAND RESTORATION OPPORTUNITIES

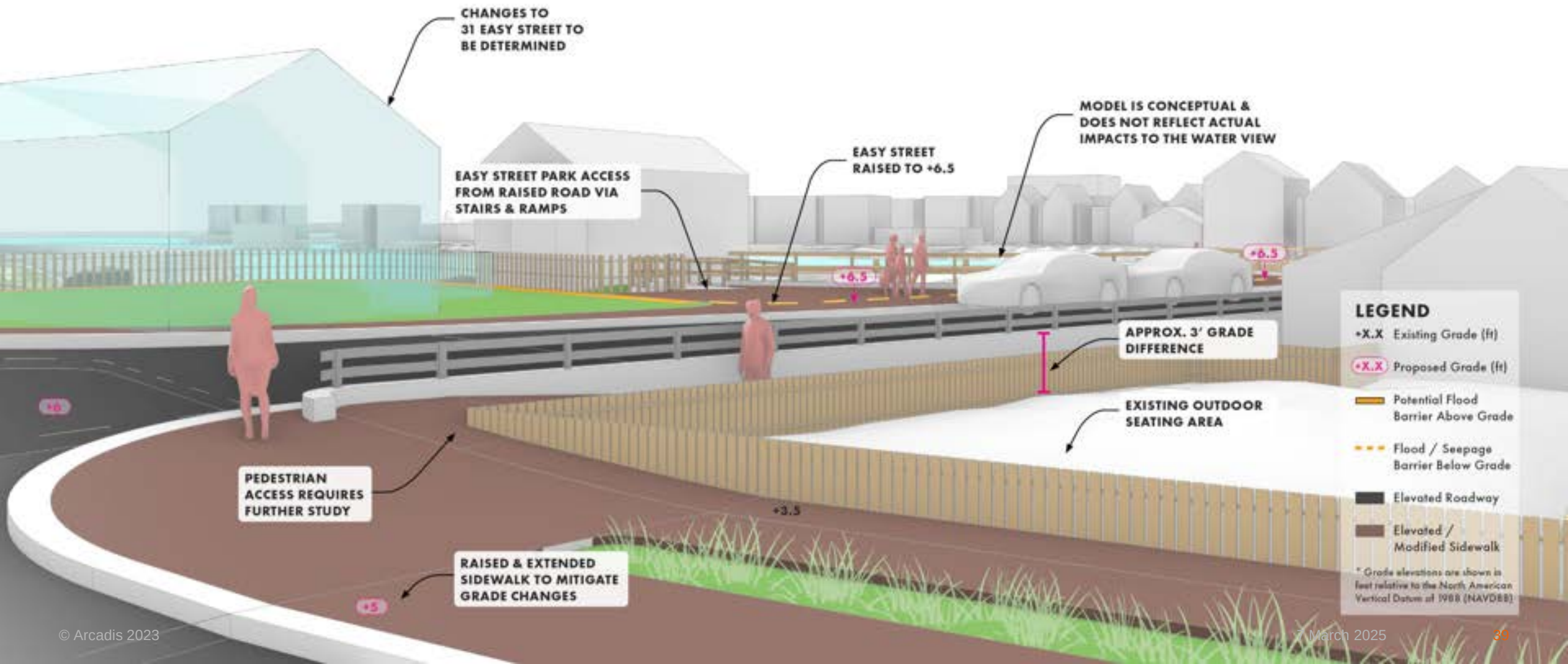
BROAD STREET

Adaptable Road Raising to 6.5 feet NAVD88



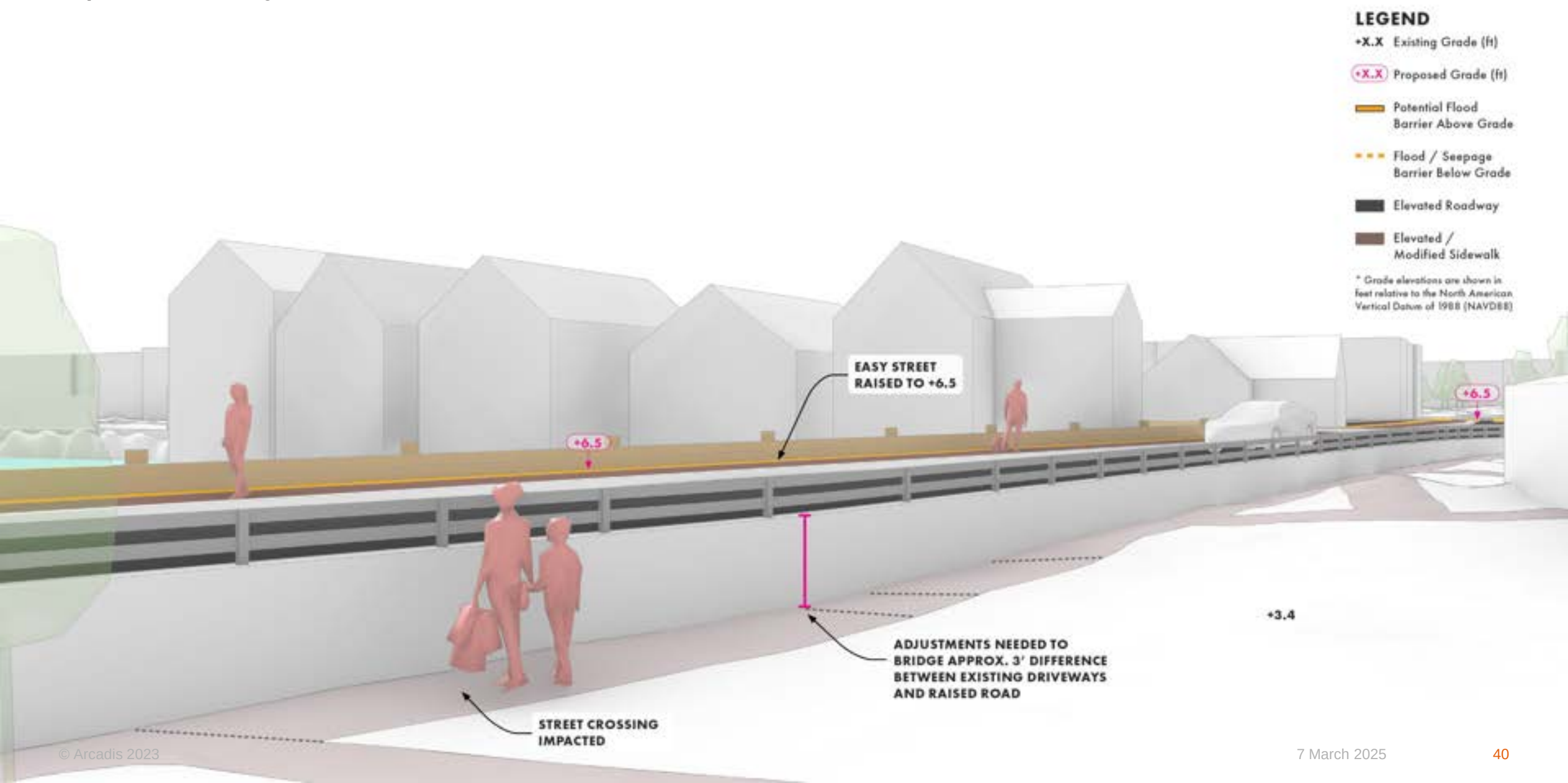
EASY STREET

Adaptable Road Raising to 6.5 feet NAVD88



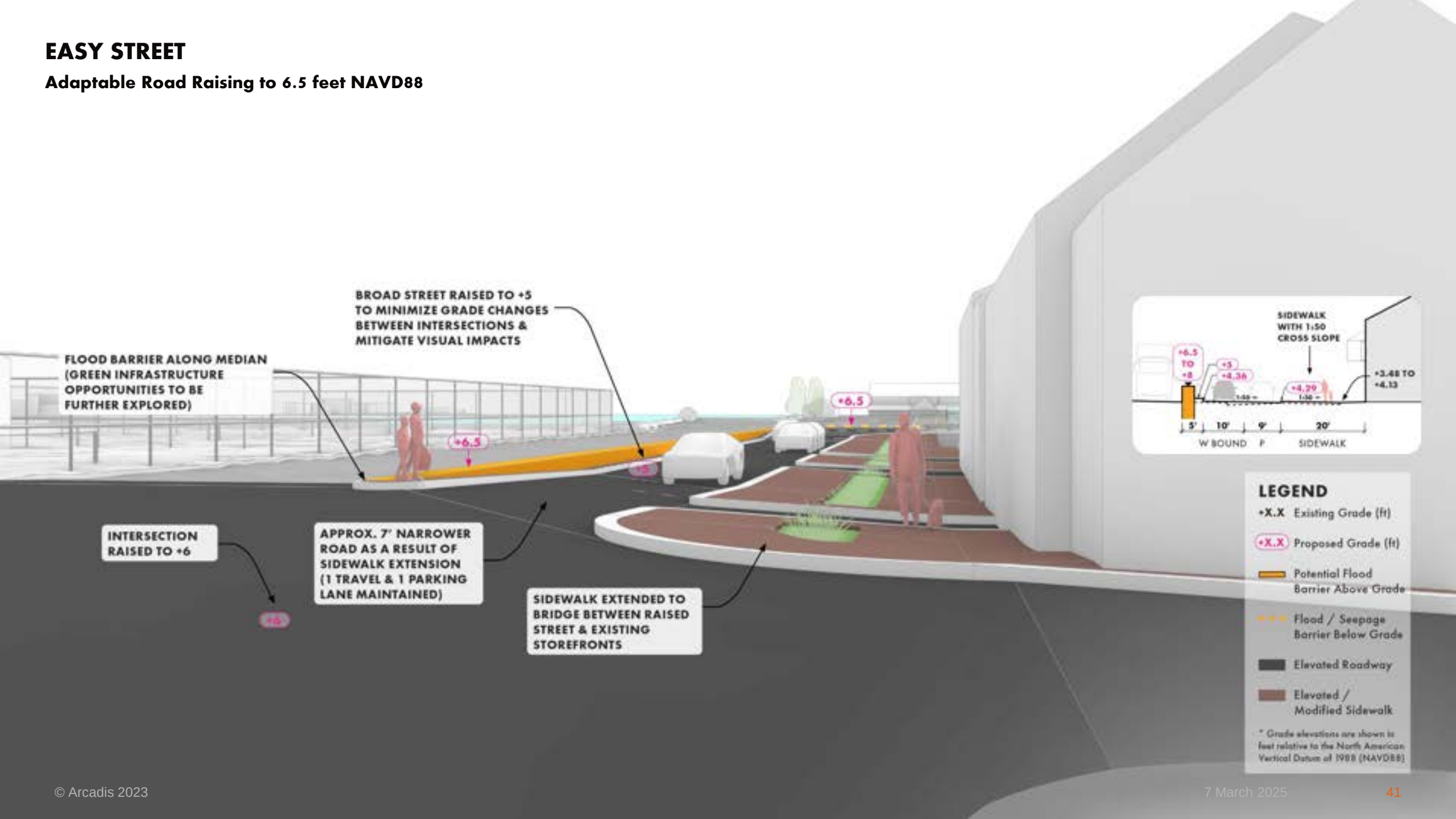
EASY STREET

Adaptable Road Raising to 6.5 feet NAVD88



EASY STREET

Adaptable Road Raising to 6.5 feet NAVD88





**What do you like about
Adaptable Road Raising to
6.5 feet NAVD88?**



**What would you change
about Adaptable Road
Raising to 6.5 feet NAVD88?**

PLAN VIEW

Road Raising to 8.0 feet NAVD88

LEGEND

- +X.X Existing Grade (ft)
- (+X.X) Proposed Grade (ft)
- Potential Flood Barrier Above Grade
- Flood / Seepage Barrier Below Grade
- Elevated Roadway
- 1:XX - Slope ratio & direction (down)

* Grade elevations are shown in feet relative to the North American Vertical Datum of 1988 (NAVD88)



STEAMBOAT WHARF -
STEAMSHIP AUTHORITY
TERMINAL



OVERVIEW

Road Raising to 8.0 feet NAVD88

LEGEND

- +X.X Existing Grade (ft)
- +X.X Proposed Grade (ft)
- Potential Flood Barrier Above Grade
- Flood / Seepage Barrier Below Grade
- Elevated Roadway
- Elevated / Modified Sidewalk
- Existing Driveways / Pull-in Areas
- Driveways Requiring Elevation / Reconfiguration

* Grade elevations are shown in feet relative to the North American Vertical Datum of 1988 (NAVD88)

NORTH TIE-BACK AT RAISED BROAD/SOUTH BEACH INTERSECTION

EASY STREET RAISED TO +8

BROAD STREET CROSSING AT +8

SOUTH TIE-BACK AT DOCK STREET

POTENTIAL WETLAND RESTORATION OPPORTUNITIES

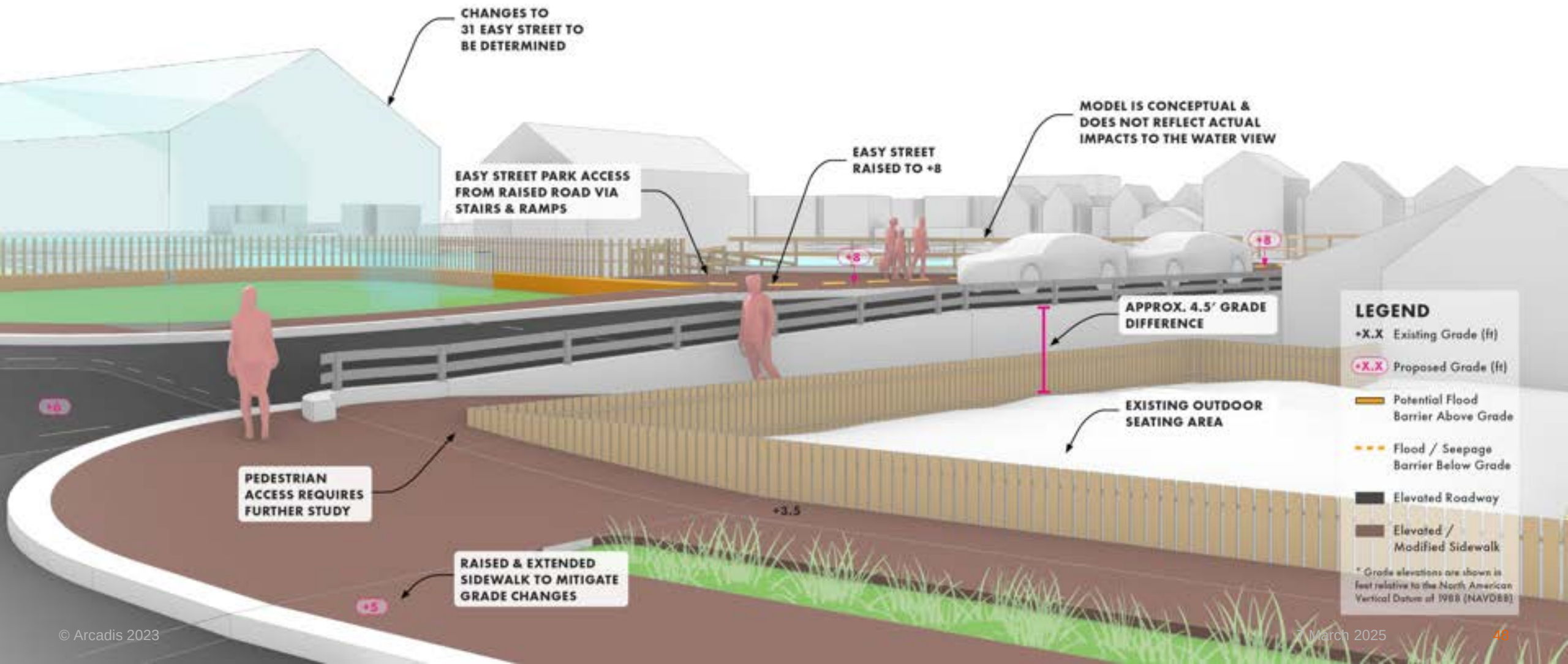
BROAD STREET

Road Raising to 8.0 feet NAVD88



EASY STREET

Road Raising to 8.0 feet NAVD88



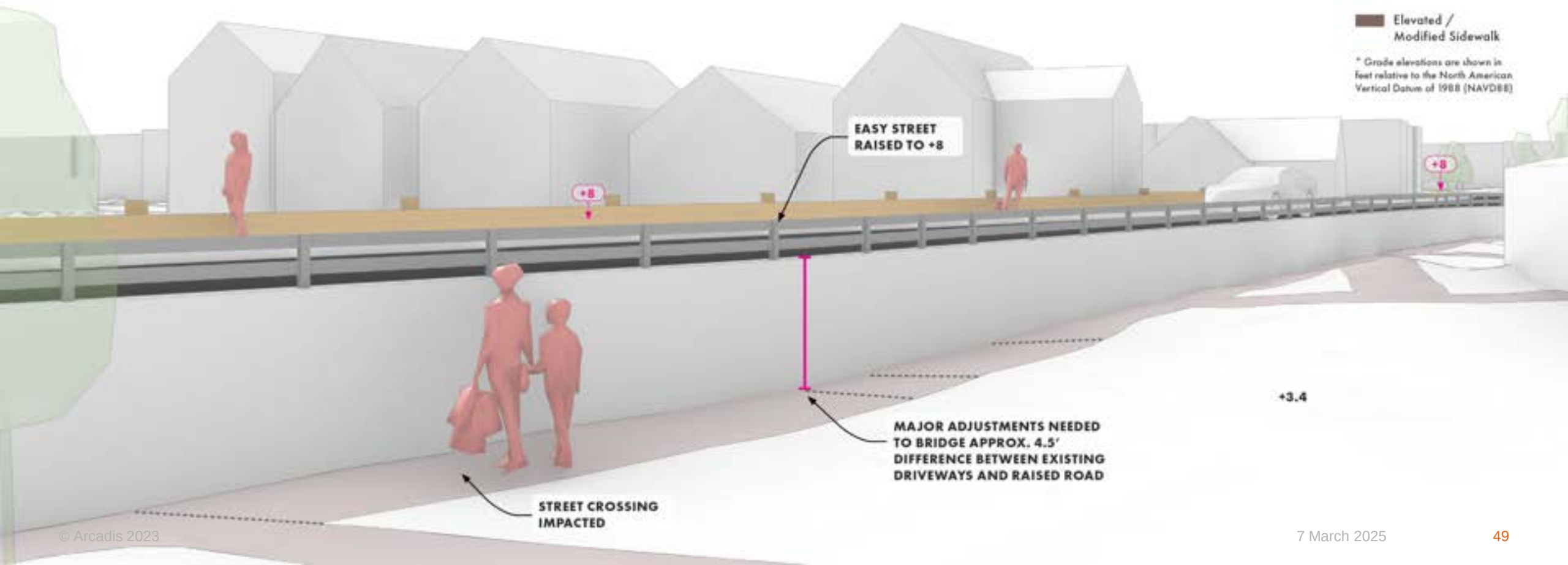
EASY STREET

Road Raising to 8.0 feet NAVD88

LEGEND

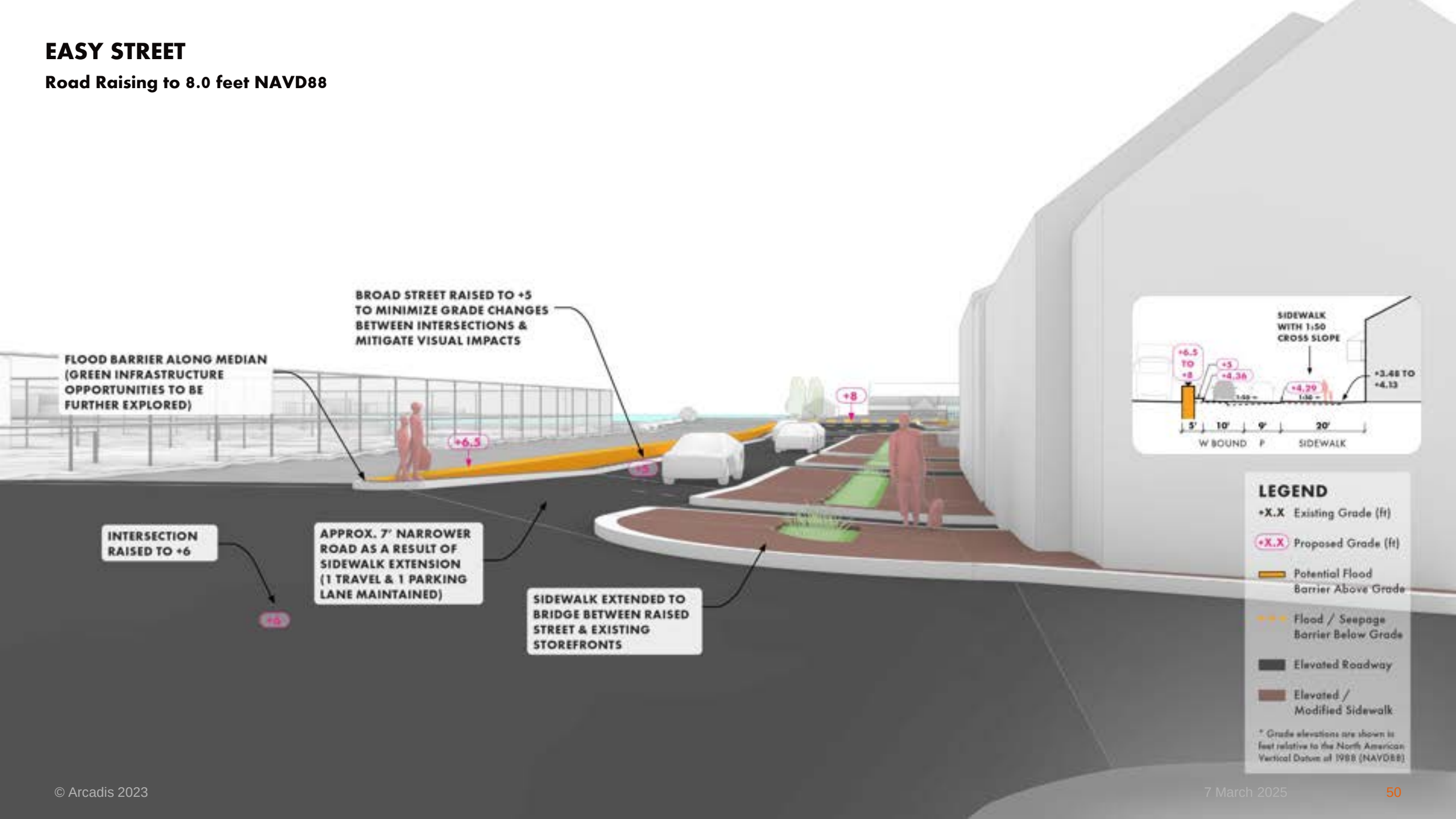
- +X.X Existing Grade (ft)
- +X.X Proposed Grade (ft)
- Potential Flood Barrier Above Grade
- Flood / Seepage Barrier Below Grade
- Elevated Roadway
- Elevated / Modified Sidewalk

* Grade elevations are shown in feet relative to the North American Vertical Datum of 1988 (NAVD88)



EASY STREET

Road Raising to 8.0 feet NAVD88



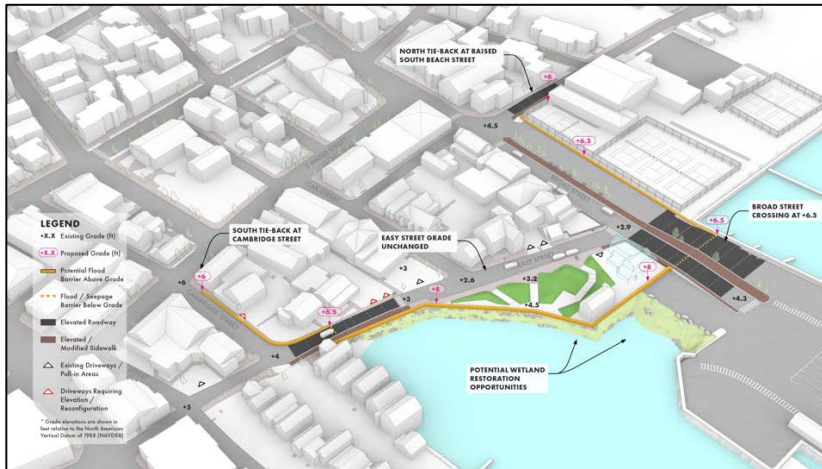


What do you like about Road Raising to 8.0 feet NAVD88?



What would you change about Road Raising to 8.0 feet NAVD88?

Alternatives Comparison



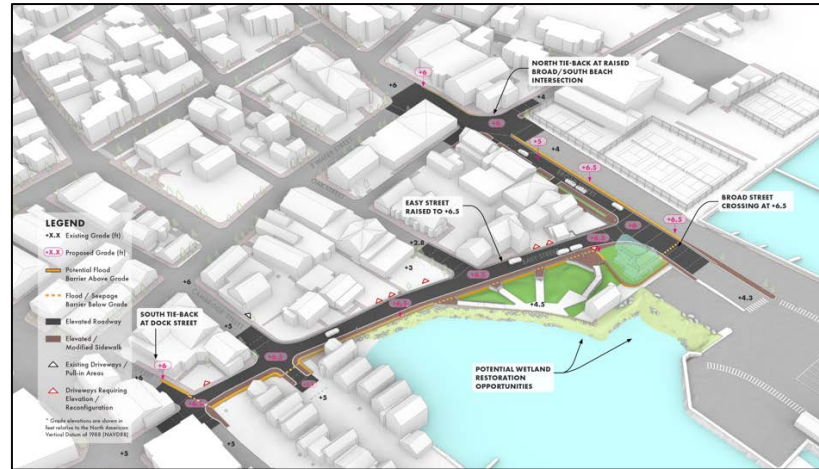
Bulkhead Expansion & Elevation

Attractors

- Rebuilds and expands bulkhead to provide consistent line of flood protection
- Designed to long-term level of protection
- Minimizes disruption to private properties on Easy and Broad Streets

Detractors

- Does not mitigate future groundwater impacts on roadways
- May require reconstruction of Easy Street Park



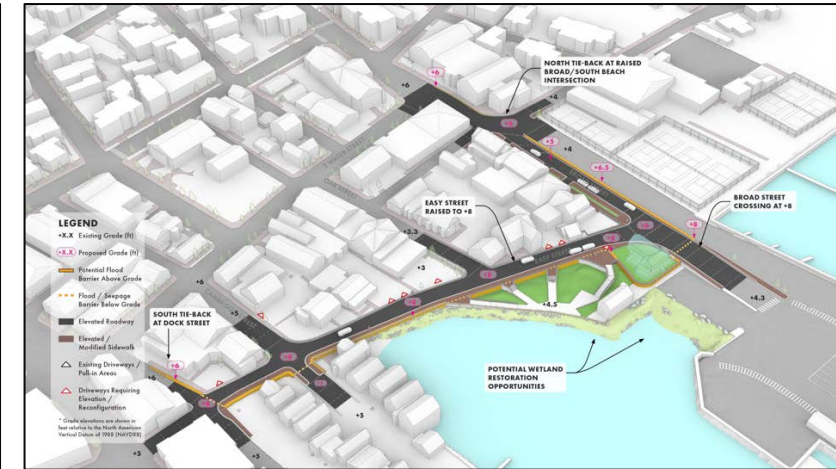
Adaptable Road Raising to 6.5 feet NAVD88

Attractors

- Addresses groundwater impacts on roadways
- Includes opportunity to reconfigure pedestrian access along Broad Street
- Lower level of protection is less disruptive to abutting parcels

Detractors

- Requires adaptation (additional construction) to higher level of protection in the future
- Road raising requires reconfigured access to private/public properties abutting roadways
- Requires redesign of access to Easy Street Park



Road Raising to 8.0 feet NAVD88

Attractors

- Addresses groundwater impacts on roadways
- Designed to long-term level of protection
- Includes opportunity to reconfigure pedestrian access along Broad Street

Detractors

- Road raising requires reconfigured access to private/public properties abutting roadways
- Requires redesign of access to Easy Street Park

Anticipated Permits



Feasibility Study and Design for Flood Mitigation on Easy Street

Federal and State Level:

- National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP)
- Department of the Army Massachusetts General Permit (MGP)
- Massachusetts Department of Environmental Protection (MADEP) Water Quality Certification (WQC)
- Massachusetts Wetland Protection Act (WPA) Notice of Intent (NOI)
- Massachusetts Endangered Species Act (MESA)
- Massachusetts Waterways Act (Chapter 91)
- Massachusetts Environmental Policy Act (MEPA)
- Massachusetts Historical Commission (MHC)

Local Policies and Regulations:

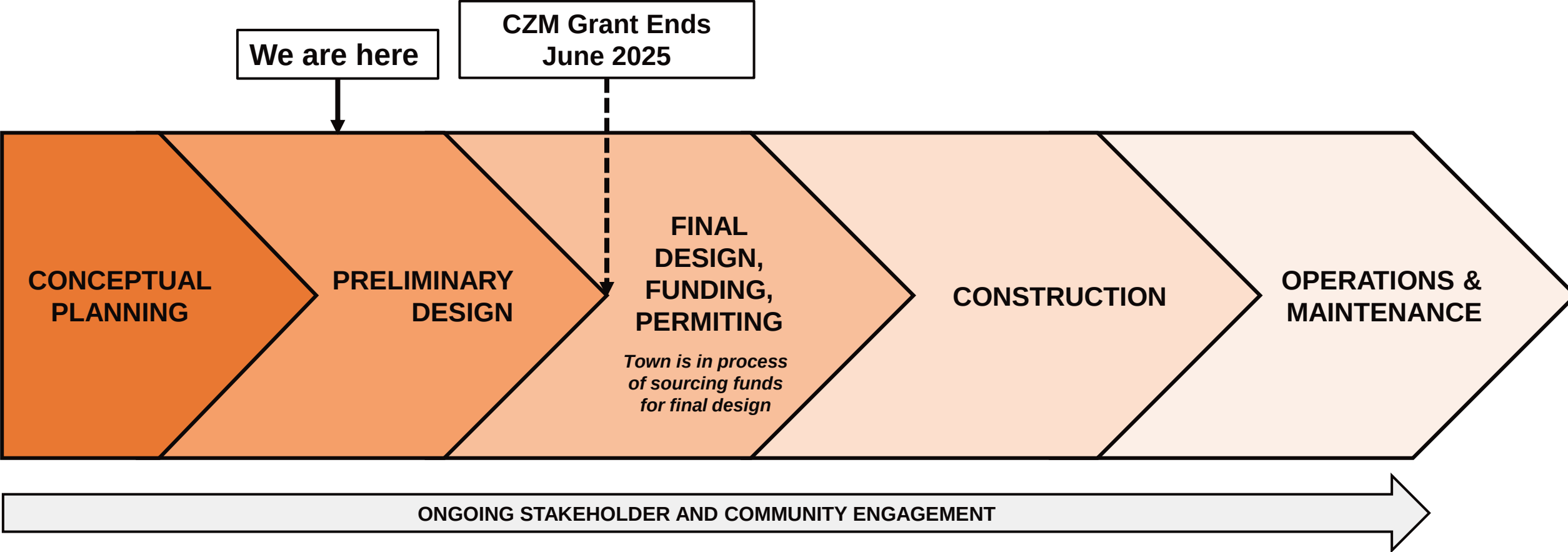
- Resilient Nantucket
- Nantucket Historic District
- Nantucket Wetlands Protection Regulations
- Nantucket Historic Commission
- Nantucket Street & Sidewalk Blocking Permit
- Nantucket Municipal Harbor Plan

What permitting challenges do the revised alternatives entail?

- In-water impacts (new bulkhead construction)
- Excavation & fill in Nantucket Harbor
- Shellfish Habitat in Nantucket Harbor
- Impacts to Coastal Bank and Coastal Beach areas along Nantucket Harbor
- Filled Common Tidelands

Next Steps

Feasibility Study and Design for Flood Mitigation on Easy Street



Join the upcoming Community Open House on Tuesday, March 18

Access the Zoom link using the QR code or link
below



www.nantucket-ma.gov/easystreet



Easy Street Flood Mitigation Project

COMMUNITY OPEN HOUSE

Easy Street is a critical part of Nantucket's waterfront, but it faces increasing flood risks. To address this, three potential design options have been developed to improve resilience.

JOIN US TO LEARN MORE, ASK QUESTIONS, AND SHARE YOUR INPUT!

TUESDAY, MARCH 18

- Morning session - 9:30 AM to 10:30 AM
- Evening session - 5:30 PM to 6:30 PM

Format: INTERACTIVE VIRTUAL
Each session is identical.

*¡Se contará con intérprete de español
en la reunión!*



WWW.NANTUCKET-MA.GOV
/EASYSTREET

Thank you!



Dear Members of the Selectboard,

The Coastal Resiliency Advisory Committee, after meeting with John Giorgio to review financing strategies and discuss our ideas last December, respectfully requests that you explore the following options to develop dedicated funding mechanisms for the Coastal Resilience Plan (CRP) and determine whether any of these proposals could be included in the Fall 2025 STM Warrant.

The CRP represents a long-term, large-scale investment in the Town's future. With a high-end cost estimate of \$930 million (in 2020 dollars) to implement all 40 recommendations, it is clear that a multi-faceted funding strategy will be necessary to bring this plan to fruition. While Article 10 Coastal Resilience Planning funds (\$1 million) provide critical support for preliminary work, such as surveys, designs, grant writing, and feasibility studies, these funds are not available for construction, maintenance, or direct project implementation. Furthermore, Article 10 funds require Town Administrator approval and can be accessed by any department for various planning purposes, making it an important but limited resource for moving projects beyond the planning phase.

To ensure that we establish a stable and predictable funding source for actual project implementation, we propose the following financial mechanisms:

1. Establishing a Special Purpose Stabilization Fund

A dedicated Coastal Resiliency Stabilization Fund would ensure that revenue allocated for CRP-related capital projects is preserved for construction, infrastructure investments, and long-term adaptation efforts. Unlike the Article 10 funds, this account would be explicitly dedicated to funding tangible projects rather than planning activities.

Potential funding sources for the stabilization fund could include:

- A small percentage of an existing tax or fee (e.g., 1% of the local hotel tax) to create a sustainable revenue stream.
- A future tax override or debt exclusion to support large-scale, high-priority projects.
- Betterments or special assessments for properties directly benefiting from resilience improvements.

Establishing this fund would also enhance the Town's ability to leverage matching funds from state and federal grants, as many grant programs require local contributions to demonstrate municipal commitment.

2. Creating a Revolving Fund for Coastal Resiliency Activities

A Coastal Resiliency Revolving Fund would provide a mechanism to collect and allocate revenue from specific user-based fees tied to CRP efforts. This account would ensure that revenue from designated sources is directed immediately toward smaller-scale resilience projects, maintenance efforts, and ongoing operational needs. For example, we propose:

-



- A \$50 increase in beach sticker fees, with 50% allocated to the stabilization fund and 50% to the revolving fund.
- Future expansion of dedicated user fees related to access, permitting, or other relevant activities that align with CRP goals.

While initial revenue from these sources may be modest compared to the overall project scope, establishing these mechanisms now will ensure that we have dedicated funding streams in place as we scale up efforts over time.

Why These Funding Mechanisms Are Critical

1. Bridging the Gap Between Planning and Implementation: The Article 10 funds are a necessary but insufficient step toward realizing the CRP. Without dedicated capital funding, projects may be planned but lack the financial backing for execution.
2. Ensuring Financial Stability and Predictability: A proactive funding approach will allow the Town to avoid financial shocks and reliance on emergency funding when resilience projects become urgent.
3. Leveraging State and Federal Grant Opportunities: Dedicated municipal funds will position the Town for competitive grant applications, many of which require matching local contributions.
4. Demonstrating a Community Commitment to Resilience: A clear, sustainable funding strategy will reinforce public confidence in the Town's long-term coastal adaptation efforts.

We recognize that Town Meeting approval is required to create both accounts and that a ballot measure would be necessary for the stabilization fund. However, taking these steps now will prepare the Town for the enormous financial undertaking ahead and allow us to strategically phase in funding over time.

We welcome any ideas, feedback, or refinements and appreciate your consideration of these proposals.

Thank you,

The Coastal Resilience Advisory Committee