

Detention Basin in City Park Golf Course

The Final EIS

<http://www.i-70east.com/reports.html#feis>

for the proposed new lowered 20-40 feet down 10 lanes wide I 70 between the Brighton Boulevard and Colorado Boulevard was released on January 15th. With the short public comment period until February 16th the project is considered a done deal.

<http://www.northdenvertribune.com/2015/09/i-70-expansion-in-motion/>

To make the project go, however, Denver must build an offsite flood mitigation structure to protect the new highway from floods.

- a. <http://www.lwvcolorado.org/docs/issues-surrounding-I-70-viaduct.pdf>
- b. <http://www.lwvcolorado.org/docs/trench-vs-reroute-of%20I-70.pdf>
- c. <https://www.denvergov.org/content/dam/denvergov/Portals/728/documents/NDCC/IGA%20Overview%20PP.PDF>
- d. http://www.i-70east.com/FinalEIS/chapters/I-70EastFEIS_Vol2AttM_Hydrology-Hydraulics.pdf
- e. <https://www.denvergov.org/content/denvergov/en/wastewater-management/engineering-and-permits/storm-drainage-master-plan.html>
- f. <https://www.fhwa.dot.gov/engineering/hydraulics/policymemo/0650asu3.cfm>
- g. <http://www.fhwa.dot.gov/engineering/hydraulics/policymemo/860402.cfm>

The original 1960's viaduct which is to be replaced was designed as a bridge to protect the highway from natural flooding of the S. Platte; the new design, which calls for lowering the highway into the floodplain, instead must detain, dam and pump waters away from its path.

A public meeting held January 12th at Bogey's City Park Golf Club proposed two storm water runoff mitigation options:

Option 1: Demolish 55 homes in the Cole neighborhood and displace families who live in them

Option 2: Remove trees from 3-4 blocks (approximately 50 acres) of City Park Golf Course, property deemed nationally significant by the Federal government and listed on the National Register of Historic Places, National Register, 9/17/1986, 5DV5311 and the Colorado State Register of Historic Properties.

Discussion was lively and it was clear that of the two alternatives the taking of a golf course or the taking of residences in the Cole neighborhood the golf course had no chance of coming out on top. No other alternatives, no specific hydrologic information, and no design guidelines for the detention basin were shared with the public.

Community leaders believe that both alternatives are untenable and have asked for more time and more alternatives. The City has stated that it needs to make a decision “FAST” by February because I 70 commitments cannot be made without offsite detention.

The problems with Option 1 are obvious impacting human lives directly.

<http://www.denverinc.org/cole-residents-tell-denver-planners-not-to-take-homes-for-drainage-plan/>

The problems with Option 2 are environmental and less apparent to the average citizen. The City argued that the golf course would be improved in spite of the loss of three to four blocks of trees to a hard surfaced industrial structure that can at best support a few grasses and sedges, similar to a green roof on a building, but no trees. Park Hill and City Park West were under the impression that the City Park Golf Course option would mitigate flooding of their streets and basements. The City was clear that the detention pond would not mitigate these flooding problems and that the structure was for I70. <http://denver.streetsblog.org/2015/07/13/how-highway-expansionists-forced-through-funding-for-i-70/> discusses how the City convinced neighbors they would receive storm water improvements in their neighborhoods as a part of the I-70 build out.

Problems include:

1. Lack of respect for one of the oldest golf courses in Denver
 - a. <https://www.denvergov.org/Portals/747/documents/Golf/CityParkGolfCourseHistory.pdf>
 - b. <http://m.tclf.org/landscapes/city-park-golf-denver>
 - c. https://en.m.wikipedia.org/wiki/City_Park_Golf

which has been deemed nationally significant historically in part because of the tree canopy it provides to Denver’s Park and Parkway system.

- d. <http://focus.nps.gov/pdfhost/docs/NRHP/Text/64000072.pdf>

Section 106 of the National Historic Preservation Act of 1966 requires review and avoidance of nationally significant properties unless completely unavoidable. Guidelines for review follow. Since Federal monies are being spent on I 70 and the detention basin is to protect I 70 it follows that the impact to City Park Golf Course should be subject to 106 reviews.

- e. <http://www.achp.gov/docs/CitizenGuide.pdf>
- f. <http://www.historycolorado.org/oahp/commonly-asked-questions-section-106>
- g. A draft Programmatic Agreement that provides a process to agree on mitigation of adverse effects and reevaluate eligibility and effects to historic properties, as appropriate, has been developed and is in review with SHPO and the consulting

parties. The Programmatic Agreement also includes examples of mitigation measures that could be implemented. The Programmatic Agreement will be executed prior to the ROD and will be included as an attachment. At a minimum, mitigation will include Level II archival documentation, as defined by the Colorado Office of Archaeology and Historic Preservation in Form 1595. CDOT also has committed to provide funding and participation in a documentary covering the history of I-70 East and its relationship to the neighborhoods of Elyria, Swansea, and Globeville, where the majority of adverse effects to historic resources are created by the project. CDOT has completed this mitigation measure, and the documentary is available to view at www.i-70east.com." If it can be shown that Section 106 applies to Cole or City Park Golf Course the same type of review and agreement will have to take place.

- h. http://www.i-70east.com/FinalEIS/chapters/I-70EastFEIS_Vol1Ch5-06_Historic-Preservations.pdf
- i. <http://www.presidioparkway.org/features/greenroads.aspx>
- j. http://www.presidioparkway.org/pdfs/FINAL_PhaseI_sustainabilityreport.pdf

2. Scientific data suggesting that trees and green infrastructure can be as effective in mitigating storm water runoff as hard infrastructure.

- a. **800TreeCityUSABulletin_55.pdf** Please see below importance of trees for storm water management and examples from other cities.
<http://www.fs.fed.us/psw/programs/uesd/uep/products>
- b. http://www.fs.fed.us/psw/programs/uesd/uep/products/11/800TreeCityUSABulletin_55.pdf
- c. <http://www.uaex.edu/publications/pdf/FSA-5029.pdf> tree protection ordinances
- d. <https://en.m.wikipedia.org/wiki/Stormwater> discussion of low impact development
- e. https://www.google.com/search?q=green+roadway+design&client=safari&hl=en&prmd=sinv&tbm=isch&tbo=u&source=univ&fir=VmWQq3cLsRYB0M%253A%252CNq9Kmj2hvzv_rM%252C_%253BAqbuTD4A1z8E1M%253A%252CuBhpmbh_zxmn5M%252C_%253BIX5OtkBqWavDCM%253A%252CqW4nRWaiM4naAM%252C_%253BLSHCasZeEJc4gM%253A%252CBvQ-C2TrEI9NmM%252C_%253BQDptePp8VUSDeM%253A%252CE0ZYjFG2mASDeM%252C_%253BRVk-NBwG-DyeVM%253A%252CdQRH8LjgmYJcM%252C_%253Bx6kBu6-kkBj4rM%253A%252Ciw3BYkGHW2T77M%252C_%253Bf62YEnvoP8iinM%253A%252CfZIQwoC_o8hPJM%252C_%253BbM3pef9qnNfnCM%253A%252CpiQ5wZPM-t339M%252C_%253BuNMA_KDRRBZd6M%253A%252CJnVfC5kW9CH8M%252C_&usg=__UBSDI7mlAJpqfNtrKRLdJzEle8%3D&sa=X&ved=0ahU

[KEwix0964877KAhXDnIMKHdDmA90Q420IQw&biw=320&bih=416](http://www.kewix0964877KAhXDnIMKHdDmA90Q420IQw&biw=320&bih=416)

Examples of Green Roadway Design

- f. https://en.m.wikipedia.org/wiki/Green_highway Green highways with permeable materials
- g. <http://blog.sustainablecities.net/2011/07/13/how-many-metres-of-green-space-does-your-city-have/>
- h. <http://www.hphpcentral.com/article/urban-planning-and-the-importance-of-green-space-in-cities-to-human-and-environmental-health>

- 3. Evidence of the mitigation effects of trees on climate change, change which contributes to such powerful and destructive events as 100 year floods.

- a. **Why Urban Trees Solve So Many of Our Problems – Sierra Magazine September/October 2015**

Trees cover about 20 million acres of urban land in the continental United States, but they're not distributed equally. Low-income and non-white urbanites are missing out on tons of foliage-related benefits. Here's a snapshot of what urban trees do for us:

- 1. They fight crime (seriously).
 - 2. They suppress noise.
 - 3. They reduce wind speeds.

[Read eight more incredible perks of living near urban trees.](#)

- 4. Mayors' commitments to protect tree canopies

- a. U.S. Conference of Mayors' commitment to protecting the tree canopy!

<http://www.usmayors.org/trees/treefinalreport2008.pdf>

- 5. General consensus that detention basins are unattractive. See images of such structures.

- a. https://getd.libs.uga.edu/pdfs/shinde_pallavi_s_200212_mla.pdf
 - b. <http://www.cityoffortwayne.org/utilities/images/stories/designman/4.12%20detention%20basins.pdf>
 - c. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=10&cad=rja&uact=8&ved=0ahUKEwiLy-b4-MPKAhUqyYMKHUwhAHQOFghGMAk&url=https%3A%2F%2Fen.wikipedia.org%2Fwiki%2FDetention_basin&usq=AFQjCNHevjs6bGfOfTictA5U_Gr7p7Sokw
 - d. https://www.google.com/search?q=stormwater+detention&client=safari&hl=en&prmd=inv&tbm=isch&tbo=u&source=univ&fir=jo3zHQ6W-D2KOM%253A%252C668KxDbC2J0ONM%252C_%253BdlecwZLipnvfDM%253A%252C668KxDbC2J0ONM%252C_%253BmiykSAyhBA83yM%253A%252C_0_tm74z-

[hdX8M%252C %253B1eswhlCxp88TMM%253A%252CG7a2-JrN_1DJ0M%252C %253BwC6lt-IfXX7buM%253A%252CMS158gbv9m25XM%252C %253BxHiPPz5NHvRqM%253A%252CA34N0GrJvGXZAM%252C %253BX67mJV4ygsZkfM%253A%252C-4xIPgvxrWk5KM%252C %253BFmy-9nKkjmBVXM%253A%252CzlhGO47sHgUZiM%252C %253BAqzWNvy0NhMfPM%253A%252COjyMr_x6mUvSoM%252C %253BssnObCZcW-cAHM%253A%252CTEpqCzdqs6mjgM%252C_&sa=X&ved=0ahUKEwiR5tWIr6zKAhUP8WMKHfY-DtgQ420ITA&biw=320&bih=416&usg=__NRBZt0YOL7JRNWN15k3t1nhkDqY%3D](http://www.lakesuperiorstreams.org/stormwater/toolkit/underground.html)

e. <http://www.lakesuperiorstreams.org/stormwater/toolkit/underground.html>

6. Lack of consideration of the heat island effect, a consequence of which is the need to use more air conditioning with its attendant air pollution costs, heating of streams, and destruction of habitat. Trees are the best protector against the heat island effect.

a. Las Vegas, Albuquerque and Denver lead the list of cities with the worst heat island effect: <http://www.usatoday.com/story/weather/2014/08/21/urban-heat-islands-study/14389371/>

b. <http://aceee.org/files/proceedings/2014/data/papers/10-356.pdf> Best mitigation practices for combating heat island effect.

c. <http://www.climatecentral.org/news/urban-heat-islands-threaten-us-health-17919>

d. <http://www.epa.gov/sites/production/files/2014-06/documents/basicscompendium.pdf> Strategies for combating heat island effect

7. Lack of consideration of today's science and best management practices for reducing flooding.

a. Alternative Stormwater Best Management Practices Guidelines

- <https://www.lincoln.ne.gov/city/pworks/watrshed/educate/bmpguide/pdf/bmpguide.pdf>
- b. <http://www.ladpw.org/general/forms/download/964.pdf>
- c. <https://www.denvergov.org/content/dam/denvergov/Portals/711/documents/Water%20Quality%20Management%20Plan.pdf> Chapter 6 discusses low impact development
- d. <https://www.denvergov.org/Portals/711/documents/StormMasterPlan/StormDrainageDesignTechnicalCriteria.pdf> Parks and National Register sites should be last resorts
- e. <http://www.denver.org/denver-meetings-conventions/decide-on-denver/green-meetings/greenprint/>
- f. <http://eschooltoday.com/natural-disasters/floods/flood-prevention-methods.html>
- g. <http://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/BMP-Performance-Analysis-Report.pdf>
- h. <http://www.epa.gov/sites/production/files/2015-10/documents/region-8-fact-sheet.pdf>
- i. <http://www.epa.gov/region8/green-infrastructure>
- j. <http://theconversation.com/how-should-we-design-cities-to-make-the-most-of-urban-ecosystems-47221>

8. The fact that the City Park Golf Course is over three miles from I-70 and outside the portion of the Montclair Basin deemed optimum for mitigating flooding to I-70. See area studied by Department of Public Works.

- a. <https://www.denvergov.org/content/denvergov/en/denver-department-of-public-works/projects/current/platte-park-hill-stormwater.html>

To convert City Park Golf Course to an industrial site full of concrete and plastic, albeit covered with open space vegetation, and to lose well established trees that are on it, while seemingly the easiest (no homes to remove) and least expensive solution (no eminent domain), it neglects the above mentioned factors, destroys the fabric of the community, and ignores the reasons people like the Park in the first place.

The value of floodplains

<http://snohomishcountywa.gov/955/About-Flooding-Floodplains-Benefits-and->

<http://charmeck.org/stormwater/regulations/Pages/FloodplainRegulations.aspx>

<http://www.nature.org/ourinitiatives/habitats/riverslakes/benefits-of-healthy-floodplains.xml>

<https://books.google.com/books?id=9ClFdkVjlfwC&pg=SA1-PA26&lpg=SA1-PA26&dq=locating+highways+in+floodplains&source=bl&ots=JvFWLd0kII&sig=sP2xPskbzPUsRmhZe2zxFojoik&hl=en&sa=X&ved=0ahUKEwjxMCZ6sbKAhXFn4MKHV60Bo4Q6AEIzAC#v=onepage&q=locating%20highways%20in%20floodplains&f=false>

<http://www.epa.gov/cwa-404/floodplain-management>

<https://www.austintexas.gov/page/floodplain-development-information>

http://www.americanbar.org/content/dam/aba/administrative/environment_energy_resources/committees_dch/PL_robisch_first_place.authcheckdam.pdf

<http://www.repository.law.indiana.edu/cgi/viewcontent.cgi?article=3324&context=ilj>

<http://www.matrixdesigngroup.com/denver-storm-drainage-master-plan>

<http://www.matrixdesigngroup.com/denver-storm-drainage-master-plan>

<https://www.denvergov.org/content/dam/denvergov/Portals/711/documents/StormMasterPlan/Master%20Plan%20Final%20September%202014%20Corrections%20for%20Web.pdf>

<http://www.matrixdesigngroup.com/denver-storm-drainage-master-plan>

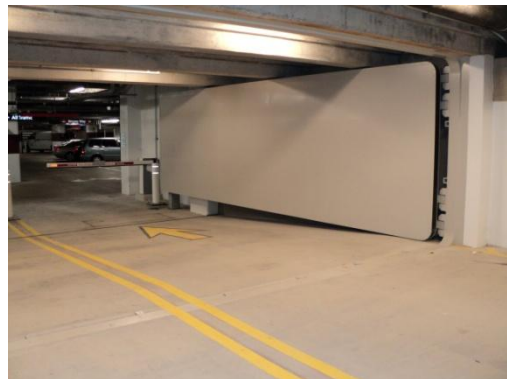
<https://www.denvergov.org/sirepub/agdocs.aspx?doctype=agenda&itemid=69481>

<https://www.denvergov.org/content/denvergov/en/denver-department-of-public-works/projects/current/platte-park-hill-stormwater.html>

Floodproofing Below-Grade Parking

Parking garages are of particular concern because the flooding of these enclosed areas may result in significant damage to the building and any mechanical, electrical, or other utility equipment located there, such as ventilation equipment, lighting, elevator equipment, and drainage pumps.

All below-grade parking garages must be dry-floodproofed; therefore, hydrostatic and hydrodynamic forces must be considered in the design. In most designs, the loadings on the above-grade portion of the building are transferred to the structural elements of the below-grade parking garage. Therefore, any structural failure in the parking garage may well result in a failure of the entire building.



A Presray FB77 protects a below-grade parking garage at the Texas Medical Center.

Protecting below-grade parking garages represents significant engineering challenges and is a specialty for Presray. We design our floodgates and flood doors to exceed all FEMA and NFIP standards. These products include the [FB44 Hinged Floodgate](#) and the [FB77 Hinged Flood Door](#).

For links to a FEMA Floodproofing Certificate, an Elevation Certificate and other valuable resources related to NFIP insurance, go to [NFIP Flood Insurance Resources](#).

http://r.search.yahoo.com/_ylt=AwrC3LNIwKdW9HIAaPIInnIIQ;_ylu=X3oDMTBybGY3bmpvBGNvbG8DYmYxBHBvcwMyBHZ0aWQDBHNIYwNzcg--/RV=2/RE=1453863113/RO=10/RU=https%3a%2f%2fwww.fema.gov%2ffloodplain-management/RK=0/RS=VqaSZiICO.SE6hTHZ9EtJIETBuM-

http://r.search.yahoo.com/_ylt=AwrCwC5CwqdWCW4AEAknnIIQ;_ylu=X3oDMTByOHZyb21tBGNvbG8DYmYxBHBvcwMxBHZ0aWQDBHNIYwNzcg--/RV=2/RE=1453863619/RO=10/RU=http%3a%2f%2fwww.denvergov.org%2fmaps%2fmap%2ffloodplain/RK=0/RS=gA_J8aFKzM2I_o.kjktPY7h4A98-

4500 N BRIGHTON BLVD, 80249

Denver, CO

Floodplain Designation:

[Zone: X](#)

Floodway:

No

FEMA Flood Panel Index:

0800460089G

For answers to floodplains questions, please contact:

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[ZONE CLASSIFICATIONS](#)

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ZONE CLASSIFICATIONS

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Zone C, Zone X - Areas determined to be outside 500-year floodplain determined to be outside the 1% and 0.2% annual chance floodplains.

Zone B, Zone X500 - Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood. An area inundated by 0.2% annual chance flooding.

Zone A - An area inundated by 1% annual chance flooding, for which no BFEs have been determined.

Zone AE - An area inundated by 1% annual chance flooding, for which BFEs have been determined.

Zone AH - An area inundated by 1% annual chance flooding (usually an area of ponding), for which BFEs have been determined; flood depths range from 1 to 3 feet.

Zone AO - An area inundated by 1% annual chance flooding (usually sheet flow on sloping terrain), for which average depths have been determined; flood depths range from 1 to 3 feet.

Zone AR - An area inundated by flooding, for which BFEs or average depths have been determined. This is an area that was previously, and will again, be protected from the 1% annual chance flood by a Federal flood protection system whose restoration is Federally funded and underway

Zone A1-A30 - An area inundated by 1% annual chance flooding, for which BFEs have been determined. .

Area Not Included

(ANI),(N) - An area that is located within a community or county that is not mapped on any published FIRM.

Zone D - An area of undetermined but possible flood hazards.

Undescribed

(UNDES) - Area of Undesignated Flood Hazard. A body of open water, such as a pond, lake, ocean, etc., located within a community's jurisdictional limits, that has no defined flood hazard.

Zone VE - An area inundated by 1% annual chance flooding with velocity hazard (wave action); BFEs have been determined.

Zone V(1-30) - Coastal flood with velocity hazard (wave action); BFEs have not been determined.

FWIC - An area where the floodway is contained within the channel banks and the channel is too narrow to show to scale. An arbitrary channel width of 3 meters is shown.

BFEs are not shown in this area, although they may be reflected on the corresponding profile. (Floodway Contained in Channel)

- 100IC -** An area where the 1% annual chance flooding is contained within the channel banks and the channel is too narrow to show to scale. An arbitrary channel width of 3 meters is shown. BFEs are not shown in this area, although they may be reflected on the corresponding profile. (1% Annual Chance Flood Discharge Contained in Channel)
- 500IC -** An area where the 0.2% annual chance flooding is contained within the channel banks and the channel is too narrow to show to scale. An arbitrary channel width of 3 meters is shown. (2% Annual Chance Flood Discharge Contained in channel)
- of 3 meters is shown. BFEs are not shown in this area, although they may be reflected on the corresponding profile. (1% Annual Chance Flood Discharge Contained in Channel)
- 500IC -** An area where the 0.2% annual chance flooding is contained within the channel banks and the channel is too narrow to show to scale. An arbitrary channel width of 3 meters is shown. (2% Annual Chance Flood Discharge Contained in channel)

http://www.fema.gov/media-library-data/20130726-1756-25045-6956/fy11_rm_report.txt

<https://cdxnodengn.epa.gov/cdx-enepa-II/public/action/eis/details?eisId=185401>

