Post Construction Stormwater Management Moving your Project Forward

- Preliminary Plat and the PCSMP
  - *Meeting minimum Requirements is necessary to move Preliminary Plat forward*
- Grading Permit and the PCSMP
  - *Meeting minimum Requirements is necessary to get your grading permit*
- Final Plat and PCSMP
  - *PCSMP approval is necessary to move your Final Plat to Council and to get your 2nd signature*
- Site Design, CO Holds and the PCSMP

S&ID Basins and structures are public infrastructure that will be owned and maintained by the City of Omaha in perpetuity after annexation.

Preliminary Platting and the PCSMP

- *PCSMP submittal is a requirement for the Preliminary Platting Process (Omaha Municipal Code Sec 53-6, 2c8; Sec. 32-122)*
- *Content requirements from Appendix E of the PCSMP Guidance Document – omahastormwater.org*
- *Incomplete submittals will be held up at Planning Board*
- *Upload preliminary submittal on PERMIX*
- *Goal at this stage*
    - *Location – Size – Shape – Accessibility – Maintenance*
- *Review level - Cursory*

Omaha Stormwater

At the top of the list!

POST CONSTRUCTION DOWNLOADS

- PCSMP Guidance Document
- PCSMP Preliminary Platting Requirement List
- PCSMP Applicant Certification Form
- Drainage Study Checklist
- PCSMP Maintenance Agreement
- PCSMP BMP Certification
- PCWP Annual Inspection Form Coversheet
- PCWP Bioretention System Annual Inspection Form
- PCWP Dry Detention Basin Annual Inspection Form

Post-Construction

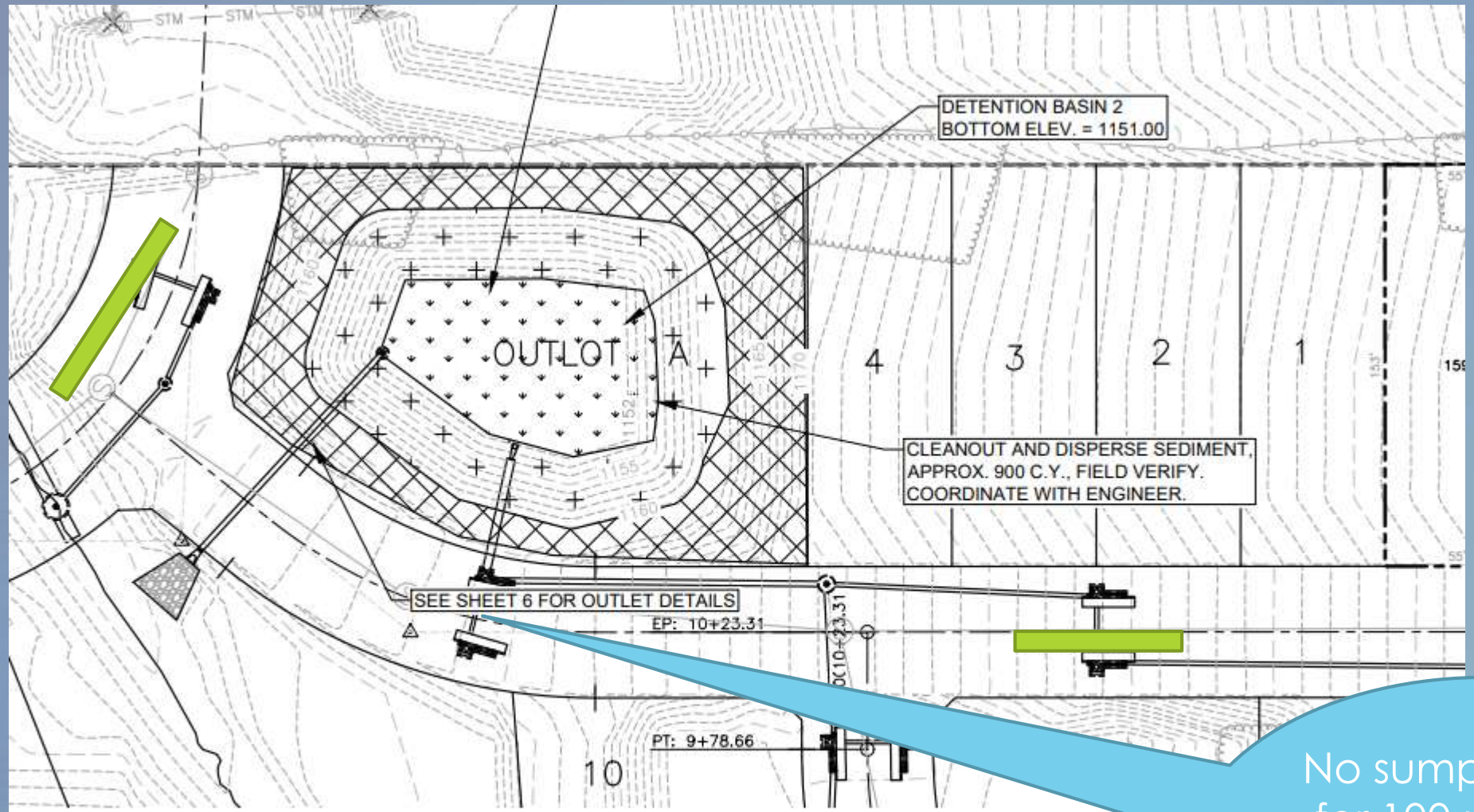
Activities in this element reduce pollutants that can result from new developments. The Omaha Stormwater Program staff provides outreach and guidance to the development community and other City departments on stormwater quality planning principals and treatment controls. Chapter 32 of the Omaha Municipal Code sets standards that new developments must meet (see OMC Chapter 32 Article V).

To demonstrate how various green infrastructure and other practices can help meet the post-construction requirements, the City of Omaha's has built numerous demonstration projects throughout the Papillion Creek and Missouri River watersheds and were done collaboratively with various community schools and organizations. The goal is to have the public see and experience different types of green infrastructure and how they reduce stormwater pollution and improve and protect water quality. You can visit the Green Infrastructure page to see more details, but some of the demonstration projects include:

- Under The Sink rain gardens
- Cole Creek Restoration Project at Orchard Park
- Saddlebrook Joint Use Facility
- The Pawnee Wetlands
- 58th and Maple, Benson's East Gateway
- UNO Welcome Center
- Creighton Prep
- Florence Streetscape near 30th and Clay
- Dundee Elementary
- Omaha Sewer Maintenance Facility

Preliminary Plat and the PCSMP

- Drainage Study
  - *Provide supporting calculations to show adequate volume to meet water volume and quality requirements:*
    - *Show existing and developed flow paths*
      - *Must consider 100-year flow path*
    - *Provide proper TOCs*
    - *Justifiable CN values*
    - *Outlet structure and outfall pipe sizing*

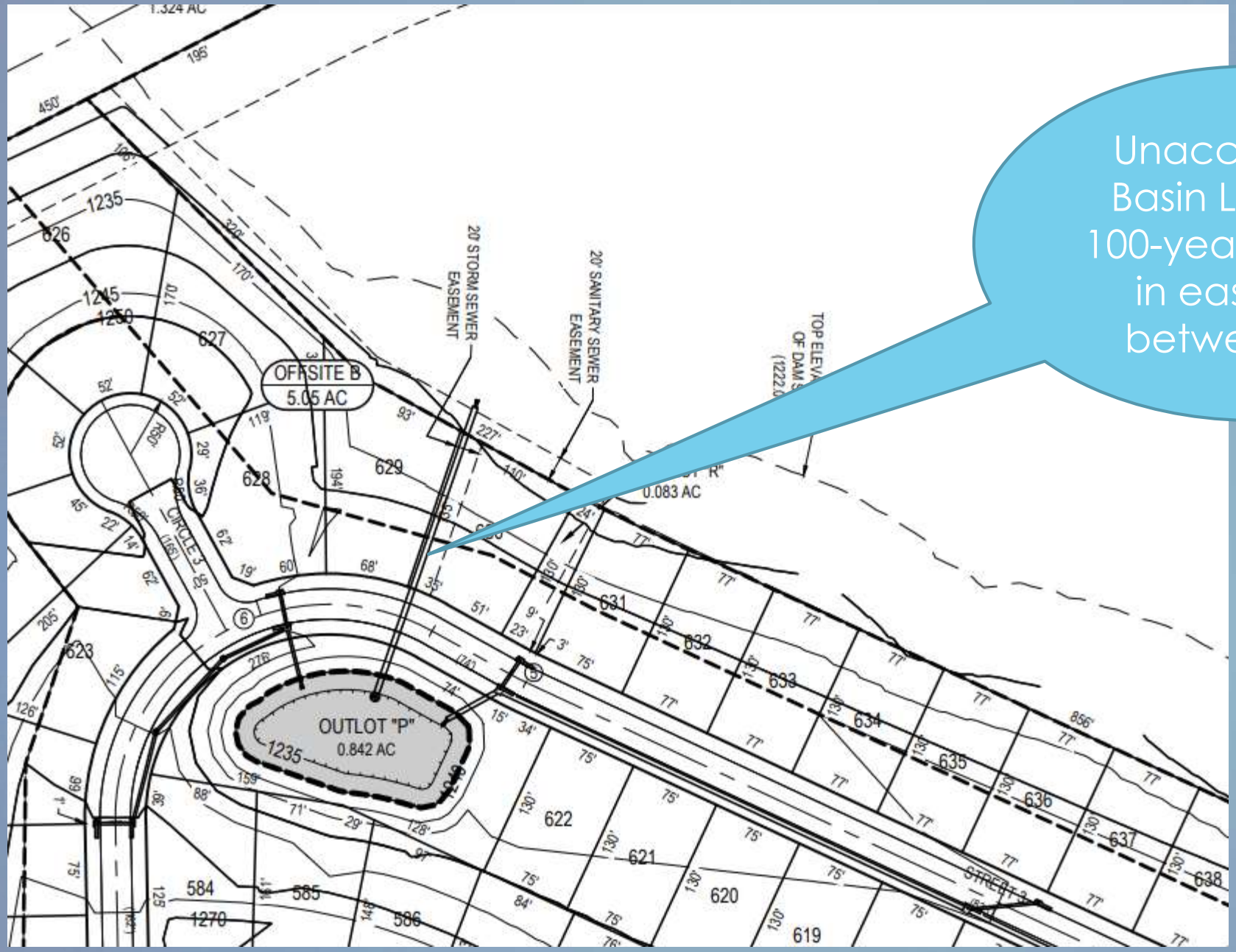


BASIN 2 GRADING PLAN

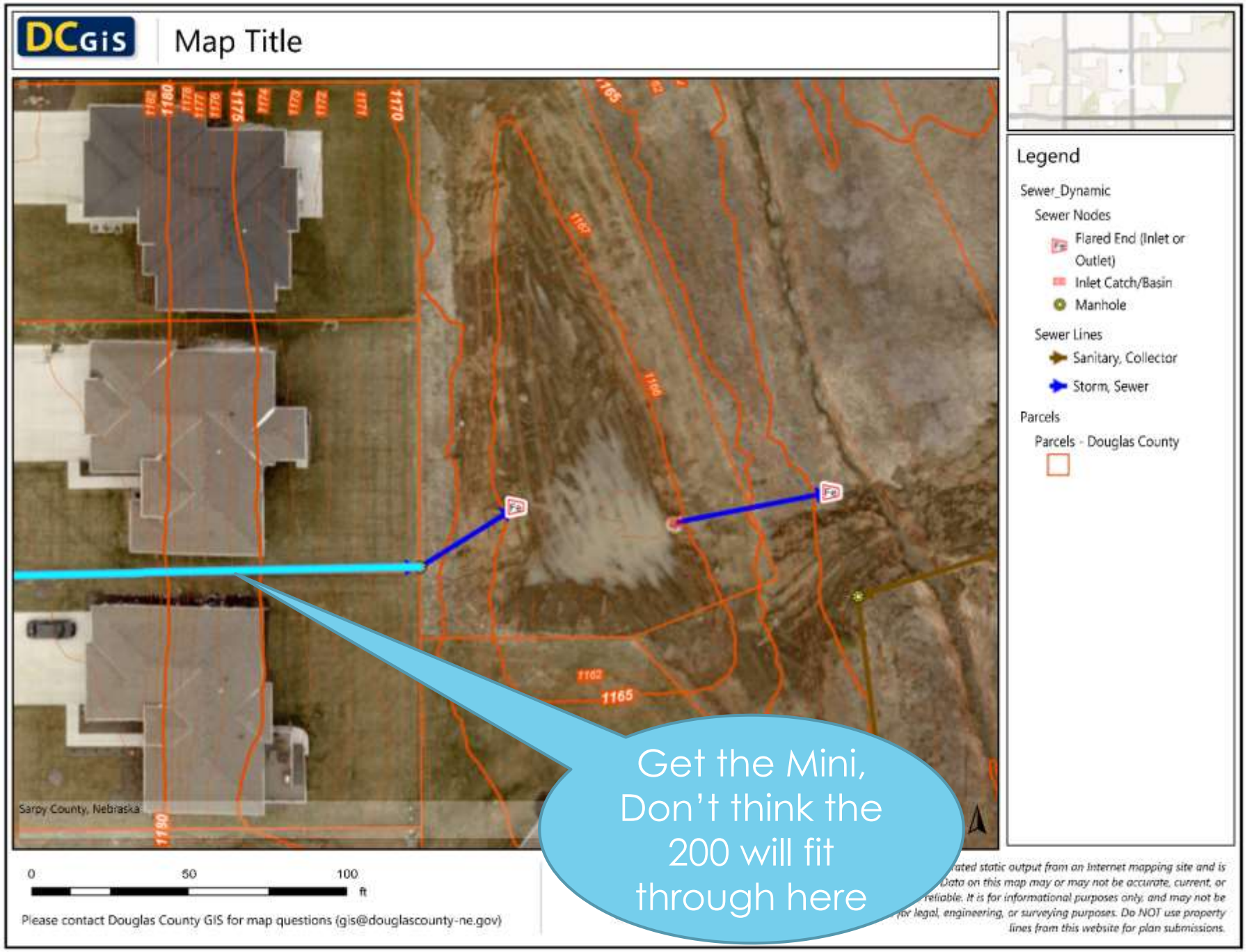
No sump location for 100-year flow path to the basin. Pipe network may need revisions

Preliminary Plat and the PCSMP

- Post Construction Plans
  - *Provide adequate detail to demonstrate the basins function within the constraints of the plat and surrounding area:*
    - *Overall view of the site with BMPS called out*
      - *Show necessary stream setbacks*
    - *Preliminary grading contours and storm network*
      - *100-year flow path must be considered and discernible*
    - *Plan view of the basin*
      - *Size, shape, side slopes, bottom slope, top width, accessibility*
    - *Permanent outfall locations based upon ORSDM Sec 3.7.1*



Unacceptable Basin Location: 100-year overflow in easement between lots.


DCGIS
Map Title
Legend
Sewer_Dynamic
Sewer Nodes
Flared End (Inlet or Outlet)
Inlet Catch/Basin
Manhole
Sewer Lines
Sanitary, Collector
Storm, Sewer
Parcels
Parcels - Douglas County
Sarpy County, Nebraska
1165
1162
0
50
100
ft
Please contact Douglas County GIS for map questions (gis@douglascounty-ne.gov)
Get the Mini, Don't think the 200 will fit through here

Basin Design Refresher

- Health, safety and welfare
- Basin Size and shape
  - *Must fit in an outlot (unless private)*
  - *3:1 max side slopes (4:1 required by ORSDM)*
  - *10' max depth*
  - *1% min slope in bottom (2% required by ORSDM)*
  - ***MINIMUM** 8', flat top around the basin*
    - *Must be drivable – 25' radius – No hard angles*
  - *Grading must allow it to be accessible*

The reviewers sure go easy on us!

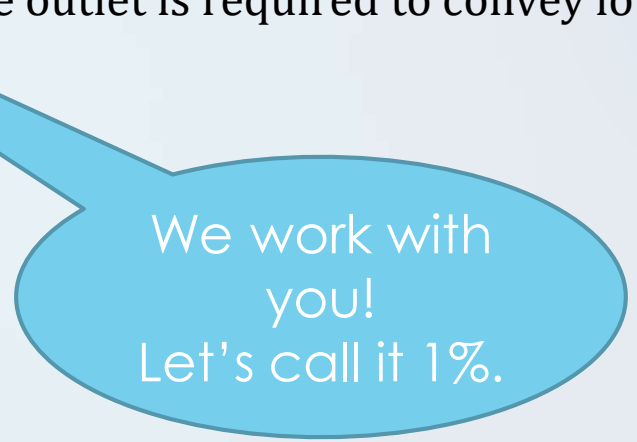
6.4.4.1 General

The construction of storage facilities usually requires excavation or placement of earthen embankments to obtain sufficient storage volume. Dams shall be designed as per the applicable Department of Natural Resources requirements. Specific City of Omaha requirements are that vegetated embankments of storage facilities shall have side slopes no steeper than 4:1 (horizontal to vertical), unless approved in writing by the Director of Public Works; that the top width of any embankment shall be no narrower than 14 ft.; and that traversable vehicular access for maintenance purposes shall be provided from public right-of-way.

Other considerations when setting depths include flood elevation requirements, public safety, land availability, land value, present and future land use, water table fluctuations, soil characteristics, maintenance requirements and required freeboard. New development shall be designed so the lowest opening of adjacent new buildings should be is one ft. above the 100-year flood elevation or 1 ft. above the auxiliary spillway elevation, whichever is greater. Inclusion of public safety features and aesthetically pleasing features is also important for storage facilities in urbanizing areas.

6.4.4.2 Detention

Areas above the normal high-water elevations of storage facilities shall slope at a minimum of 2% toward the facilities to provide effective drainage. Careful finish grading is required to avoid creation of upload surface depressions that may retain runoff. The bottom area of storage facilities shall be graded toward the outlet to prevent standing water conditions. A minimum 2% bottom slope is required on unpaved areas. A low flow or pilot channel constructed across the facility bottom from the inlet to the outlet is required to convey low flows, and prevent standing water conditions.



Basin Design Refresher

- Outlet structures and pipes
  - *Locate at toe of basin slope*
  - *2-year and 10-year through the outlet structure*
  - *100-year through the outlet structure and spillway*
  - *2” water quality weep holes*
  - *Water quality volume is at bottom of principal spillway*
  - *Include Anti-Seep Collars*
  - *Outlets to stream should be 2’ above the normal annual average water surface elevation of a stream*
  - *Use H-piles when required*
  - *Use footing walls, etc on all FES*

(Gopher of Unusual Size)

Grading Permit and the PCSMP

- Obtaining a Grading Permit through Permix requires Post Construction Reviewer's OK.
- Post Construction information must be submitted to Permix.
- Permanent structures must be accepted.

➢ Temporary riser and temporary outlet pipe
  - *Does the basin location make sense?*
  - *Review Level – Minimal (my favorite kind)*

Grading Permit and the PCSMP

- Temporary riser and permanent outlet pipe (public infrastructure)
  - *Plan and profile view of outlet structure and pipe required.*
  - *Design calculations showing pipes adequately sized required.*
  - *Dissipation sized for the 100-year event (volume through riser)*
  - *Review Level – Medium*
    - *Does the outfall location meet ORSDM 3.7.1?*
    - *Are there concerns with head cutting in adjacent streams?*
    - *Is the basin accessible*


Jan 19, 2022 at 9:11:53 AM
United States
SB 6
30" RCP, 8' above water level
Does this meet ORSDM 3.7.1?

Grading Permit and the PCSMP

- Permanent riser and permanent outlet pipe
  - *Full PCSMP design required for review in Permix*
  - *Must demonstrate that this will work.*
  - *Not the ideal path forward*
    - *PCSMP risers and temporary sediment basin risers are not the same and function differently.*
  - *Review Level - Intense*
- Closing any grading permit requires PCSMP is fully complete in Permix.

Ground cover looks great!
But, PCSMP is not complete…

Final Plat and the PCSMP

- Prior to a final plat going to City Council
  - *A complete PCSMP must be uploaded to Permix.*
  - *Study and plans must demonstrate that BMP designs will work, outlots are large enough, flow paths considered, basins are accessible and maintainable*
- Prior to a final plat receiving its 2nd signature
  - *PCSMP documents must be accepted with no additional comments.*
  - *Maintenance Agreement and Applicant Certification must be signed and notarized.*
- At time of recording the final plat
  - *All required easements and maintenance agreement should be recorded and uploaded to Permix to complete design approval.*

Site Design, CO Holds and the PCSMP

- Assume your site has a CO Hold due to post construction
- PCSMP process must be complete, including as-built records

Questions?


Something may have failed here…
Hopefully it wasn't the presentation…

Post Construction Contacts:

- Selma Kessler
  - Selma.Kessler@cityofomaha.org
  - 402-444-3915
- Bill Ratekin
  - William.Ratekin@cityofomaha.org
  - 402-444-5032
- Justin Zetterman
  - Justin.Zetterman@cityofomaha.org
  - 402-444-3628