

Planning and Referral Agency Comment Letters – presented in reverse chronological order

Summary

1. Planning comments
 - a. Fees applied to property to date
 - b. Revisions to documents
 - c. For more information see pages 1-6
2. Public Works comments
 - a. Revisions to documents and survey information
 - b. For more information see pages 7-247
3. Mile High Flood District
 - a. No comments.
 - b. For more information see page 248
4. South Adams Fire District
 - a. Fees applied to property
 - b. Fire hydrant comments
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5. South Adams County Water and Sanitation District
 - a. General comments responses
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 - c. For more information see page 252-254
6. Tri-County Health Department
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 - b. For more information see page 255
7. GIS
 - a. Changes to street names and document revisions
 - b. For more information see pages 256-264
8. School District 27J
 - a. Fees and general comments
 - b. For more information see pages 265-267
9. Parks, Recreation, and Golf Department
 - a. Fees applied to property – revised as more information provided
 - b. For more information see page 268
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 - b. For more information see page 269
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 - b. For more information see page 274
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- a. Informational comments
 - b. For more information see pages 275-324
- 14. E470 Public Highway Authority
 - a. No comments.
 - b. For more information see page 325



September 24, 2020

Atwell, LLC
Attn: Daniel Madruga
6200 S. Syracuse Way STE 470
Greenwood Village, CO 80111

Re: Case #S-772-20-20, Z-953-D-472-20: Legato Filing 1

Dear Mr. Madruga:

The submitted subdivision plat and PUD permit applications have been reviewed. As a result, the following issues were brought up:

DRT General Comments:

- ☐ As previously discussed, there are multiple pieces to this project currently under review. As each item progresses and revisions are made, please be mindful of consistency between all applicable documents, including final plats, infrastructure plat, the PUD Zone Document, and the Design Guidelines. Please note that the Design Guidelines and infrastructure plat will need to be finalized prior to any additional filings.
- ☐ Once the items identified in this comment letter have been addressed, staff is generally supportive regarding your requests.
- ☐ Staff has referenced certain sections of our Land Development Code (LDC) in this comment letter and our enclosed redlines. A copy of this document is available at <http://www.c3gov.com/LDC>.
- ☐ Staff would encourage you to review Article IX of the LDC in order to get a sense of some of the fees that are associated with development. **Please note:** there may be additional fees associated with your development that are not identified in Article IX.
- ☐ It is important to note that while staff has made every effort to make this comment letter all-inclusive, there may be additional comments on future submittals that have not been identified here based on the changes to your plans. New developments resulting from the infrastructure plat, Design Guidelines, subsurface extraction negotiations, or other new information may result in additional comments and/or necessary revisions.
- ☐ Any comments received from South Adams County Water and Sanitation District (SACWSD) and South Adams County Fire District (SACFD) have been included but you should also contact those agencies directly for their processes.
- ☐ Please note that adequate water resources for each filing must be provided before final plats can be considered for approval. In addition, water infrastructure facilities



(such as a pump station) that will be required to serve this project as a whole will need to be resolved and necessary agreements in place with South Adams County Water and Sanitation District before final plats are approved. Please continue to coordinate with SACWSD regarding these issues for both the infrastructure plan and this residential filing.

- ☐ Comments are expected to follow from other review departments and agencies, including Public Works. The comments may impact some of the comments in this letter. Staff will forward additional comments as they are received.

S-772-20-20 (final plat)

Planning Division- Stacy Wasinger

General Comments

1. Please remove the City Council Certificate from the cover sheet; this is not needed for an administrative plat.
2. Please label block numbers on the overall subdivision on sheet 2 and all sheets for reference.
3. Please correct note 6 on the cover sheet to include the correct PUD name.
4. Please note that no block length shall exceed 600 feet. In particular, block 10 appears to be close to or over 600 feet. Dimensions are not included for the full blocks; please review and show all total block lengths.
5. Adjust the scale to fit whole blocks or tracts onto sheets as much as possible. This will greatly simplify and help expedite the review of subsequent submittals.
6. Please clarify the distance between lots across Tracts B and F. Per the PUD permit, there is to be open split rail fencing on the rear of these lots. Is the Tract layout to facilitate stormwater or utility design? The concern is that the narrow portions of these tracts may create a wall effect, with unmaintained and potentially unsafe areas. Staff wants to ensure that the tract layout does consider safety and design, and potentially some landscape or other elements in the design guidelines to offset any concerns.
7. Please note GIS comments regarding addressing and street names. Please include street names on the plat, to match the address plat.
8. Please note comments from DIA regarding noise and wildlife.
9. Please note comments from Parks and Recreation regarding park fees.
10. Please note SACFD comments regarding access and fire impact fees.
11. Please note Xcel and United Power comments regarding easements.



Z-953-D-472-20 (PUD permit)

Planning Division- Stacy Wasinger

General Comments

1. Please ensure title block includes correct reference to the Legato West infrastructure plat and tract when that plat is complete.
2. In the table on the cover sheet, please round street tree calculations for “trees required”.
3. Please include any additional landscaping (i.e. landscaping provided in the tracts) in the calculations of landscaping provided. If the buffer yard calculations are not needed, please remove that portion of the calculations table.
4. Is the proposed native seed in the tracts to be irrigated or mowed? The LDC has specific notes on native seed in primary landscape areas; in particular, the areas that front ROW should be addressed. Native seed may not be appropriate in these areas.
5. The plans show two neighborhood parks, noted on tracts B and G, as well as several open space tracts. Per LDC Sec. 21-6620(2I), residential lots are not permitted to back to park space. Solid fencing is not permitted to face park or open space.
6. Please reference LDC Article 7, Division 4 for open space, private park, and trail standards. The Design Guidelines should also reflect any specific standards for parks or open space. Please also reference note 11 on page 5 of the PUD zone document. Please cross-reference elements in the Design Guidelines that apply to the park space (i.e. site furniture, etc.).
7. Are all fences to meet the typical detail designs on page 11?
 - a. Where is the semi-screen fence proposed to be utilized, as that does not appear in the key on most sheets?
 - b. What type of masonry/color is proposed for the privacy fence columns? Will the stain/color of the fence be consistent throughout?
 - c. What type of color/material is the proposed wire mesh in the open rail style fence? Wire mesh is not a typical material for residential fence types. Is there additional detail on this fence in the Design Guidelines?
 - d. Please note height of fences on the key sheet. Per LDC Sec. 21-7732 and the Design Guidelines, the type of fence indicates whether the max height is 5 feet or 6 feet. The privacy fence shows a typical height of 6 feet tall, but would be limited to 5 feet when fronting ROW. If the Design Guidelines contain additional fencing information, that should be cross-referenced on the PUD permit.

Please see additional enclosed redlines and comments from other referral agencies and city departments.

- Commerce City GIS
- Commerce City Parks and Recreation
- Denver International Airport (DIA)
- Mile High Flood District



- South Adams County Fire Department (SACFD)
- Tri-County Health Department
- United Power
- Xcel Energy

Please note additional comments and redlines are expected from review agencies and departments. These will be forwarded as soon as they are received and are expected to include:

- Commerce City Public Works

Please address all of these comments and the Public Works comments to follow in your next submittal; the resubmittal can be made electronically at this time. Paper copies will be required at a future submittal for the file documentation, but are not required for this resubmittal under current procedures. Please contact staff with any questions about submittal requirements at the time of resubmittal. In addition, please include a response letter to the issues listed in this letter. If you have any additional questions, feel free to contact me at 303.286.4874 or swasinger@c3gov.com.

Sincerely,

Stacy Wasinger
City Planner
City of Commerce City

Enclosures: Redlines and comment letters
Subdivision "Facts to Know"
Development Plan (PUD Development Permit) "Facts to Know"

CC: Cohen Denver Airport LLC, attn. Brad Burns

June 15, 2021

Atwell, LLC
Attn: Daniel Madruga
143 Union Blvd, Suite 700
Lakewood, CO 80228

Re: S-772-20-21 Legato Filing 1, Final Plat Submittal, Review 2

Dear Mr. Madruga,

The submitted subdivision plat and PUD permit applications have been reviewed. As a result, the following issues were brought up:

S-772-20-21 Legato Filing 1, 2nd Submittal Review Comments

Planning Division – Julia Friedman

Plat Comments

1. **Please review and address redlines on subdivision plat.**
2. **Please label block numbers on the overall subdivision on sheet 2 and all sheets for reference.**
3. Please note GIS comments.
4. Please note SACWSD comments.
5. Please note Xcel Energy comments.
6. Please note South Adams County Fire Department Comments.
7. Please note Parks Department comments.
8. Please note United Power comments.
9. Please note Mile High flood District comments.

Z-953-D-472-20 (PUD permit)

Planning Division- Julia Friedman

General Comments

1. **Please review and address redlines on PUD plat.**

Please see additional enclosed redlines and comments from other referral agencies

Please address all of these comments in your next submittal; the resubmittal can be made electronically at this time. Paper copies will be required at a future submittal for the file documentation, but are not required for this resubmittal under current procedures. Please contact staff with any questions about submittal requirements at the time of resubmittal. In addition, please include a response letter to the issues listed in this letter. Any subsequent resubmittal requires a typical five (5) week review period. If you have any additional questions, feel free to contact me at 303.227.8861 or JFriedman@c3gov.com.

Sincerely,

Julia Friedman
Planner, Commerce City



November 12, 2020

Daniel Madruga
Atwell
6200 South Syracuse Way
Greenwood Village, CO 80111

Subject: Public Works Engineering Plan Review
Legato Filing No. 1
Case # S-772-20-20, Z-953-D-472-20
Public Works Review #1

Dear Mr. Madruga:

Commerce City has reviewed the submitted PUD Development Permit, Narrative, Address Plat, Title Commitment, Final Plat, GESC Report, GESC Plans, Drainage Report, and Civil Construction Plans for the above reference project and has the following comments:

General:

- A ROW permit will be required for any work within the public ROW.
- Public Works reserves the right to make additional comments during subsequent reviews.
- Please refer to the attached redlined pdf documents for review comments of the afore mentioned submittal.

Public Improvement Agreement (PIA):

1. A public improvement agreement (PIA) will need to be submitted with this project. Please include an itemized quantity/cost estimate for review.
2. The PIA will need to be executed before the Plat, Drainage Study and Civil Construction Plans can be approved.

Next Steps:

Please include the following information in your next submittal:

- Address all comments on the pdf documents, include how the comments has been addressed, or a descriptive reason for not addressing the comment.
- Electronic files with PDF copies of all submittal documents. Please send electronic submittals to pwsbmittals@c3gov.com and cc me.

In the event the City finds that a significant amount of comments are not addressed, the documents will be returned without review for the applicant to rectify.

If you have any questions, please feel free to contact me via email at esmith@corecivil.com or by phone at 720-333-3050 to discuss any of these comments.

Sincerely,



Elna Smith
Consulting Development Review Engineer

ES/ca

Enclosures: [Link to Review Comment Files Legato Filing 1 Revision 3](#)

ec: Joe Wilson, Director of Public Works
Stacy Wasinger, City Planner
Jennifer Jones, City Planner
Brent Soderlin, City Engineer
Lee Alverson, Development Review Engineer
Kevin Rohrbough, Development Review Consultant

1st Review
Due 9/8/2020
CORE
FTK: Subdivision

Legato Filing No. 1
Streets and Boundary changed
from first Submittal

Case #

5-772-20-20

Applicant Name:

Cohen Denver Airport LLC

Property Owner Name:

Approximate Location of Property:

Legato West TRACT D2

SUBDIVISION (PLAT) CHECKLIST

EACH SHEET SHALL INCORPORATE THE FOLLOWING:

No.	Item	Yes	No	Comment(s)	(P/E)
1	18" x 24" sheet with 1/2" border on the top, bottom and right with a 2" border on the left.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		P
2	The precise name of the subdivision, township, section, range, city, county, state, and sheet number.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Reception #	P/E
3	A suitable scale (written and graphic).	<input checked="" type="checkbox"/>	<input type="checkbox"/>		P/E
4	A north arrow.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		P

SHEET #1:

No.	Item	Yes	No	Comment(s)	(P/E)
5	A vicinity map with a scale of at least 1" equals 1,000' with all roadways identified.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		P
6	The total land area in square feet and acres.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		P/E
7	<p>A dedication to be worded as follows:</p> <p>LEGAL DESCRIPTION AND DEDICATION:</p> <p>Know all men by these presents that _____ being the (owner, mortgagee, lien holder) of that part of the (described quarter-section, section, township, range, city, county, state), being more particularly described as follows; to wit; Beginning at (complete legal description); containing (to the nearest one-hundredth) acres more or less; have by these presents laid out, platted and subdivided the same into lots and blocks as shown on this plat under the name and style of (name of subdivision) and do hereby grant to the City of Commerce City, County of Adams, State of Colorado, for the use of the public, the streets and other public ways and easements hereon shown, for public utility, cable TV, and detention pond areas, floodway and floodplain limits, drainage and other public purposes as determined by Commerce City.</p> <p>Executed this ____ day of ____ AD 20__</p> <p>_____ Owner(s) Signature and Printed Name</p> <p>_____ Mortgage or Lien Holder(s) Signature(s) and Printed Name(s)</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>*If there is no dedication to the city, only the legal description is required.</p>	P/E

SUBDIVISION (PLAT) CHECKLIST					
SHEET #1 (continued):					
No.	Item	Yes	No	Comment(s)	(P/E)
8	<p>The signature on the dedication shall be notarized and worded as follows:</p> <p>State of _____</p> <p>County of _____ ss</p> <p>City of _____</p> <p>The forgoing dedication was acknowledged before me this _____ day of _____, AD 20____ by (Seal).</p> <p>My commission expires: _____</p> <p>Notary Public: _____</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		P
9	<p>The following language should be included in the notes if there is a detention/retention pond:</p> <p>A. The storm water detention area shown hereon shall be constructed and maintained by the owner and the subsequent owners, heirs, successors and assigns. In the event that said construction and maintenance is not performed by said owner, the City of Commerce City shall have the right to enter such area and perform the necessary work, the cost of which, said owner, heirs, successors, and assigns agrees to pay upon billing.</p> <p>B. No building or structure will be constructed in the detention area and no changes or alterations affecting the hydraulic characteristics of the detention area will be made without the approval of the City.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		E
10	<p>The first sheet is formatted in accordance with the City's specifications (into three columns, v-map in the middle, etc.) is shown on Exhibit A.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		P

FTK: Subdivision

SUBDIVISION (PLAT) CHECKLIST					
SHEET #1 (continued):					
No.	Item	Yes	No	Comment(s)	(P/E)
10	<p>Land surveyor's certificate shall be worded as follows:</p> <p>Surveyor's Certificate:</p> <p>I, _____ a registered land surveyor, registered in the State of Colorado do hereby certify that there are no roads, pipelines, irrigation ditches, or other easements in evidence or known by me to exist on or across the herein before described property except as shown on this plat. I further certify that I have performed the survey shown hereon, or such survey was prepared under my direct responsibility and supervision, that this plat accurately represents said survey, and that all monuments exist as shown herein.</p> <p>_____ Signature and Printed Name</p> <p>LS No. _____ (seal and date) _____</p> <p>Address _____</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		P/E
11	<p>Administratively approved subdivision signatures to be worded as follows:</p> <p>CITY STAFF CERTIFICATE:</p> <p>Approved by the City Engineer of the City of Commerce City this _____ day of _____, AD 20____</p> <p>_____ City Engineer</p> <p>Approved by the Director, Department of Community Development of the City of Commerce City this _____ day of _____, AD 20____</p> <p>_____ Director Department of Community Development</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	*For administratively approved subdivisions	P
12	<p>Public hearing approved subdivision signatures to be worded as follows:</p> <p>CITY COUNCIL CERTIFICATE:</p> <p>Approval by City of Commerce City, City Council this _____ day of _____, AD 20____</p> <p>Attest: _____ City Clerk Mayor</p>	<input type="checkbox"/>	<input type="checkbox"/>	N/A	P

FTK: Subdivision

SUBDIVISION (PLAT) CHECKLIST					
SHEET #1 (continued):					
No.	Item	Yes	No	Comment(s)	(P/E)
13	<p>Certificate of the Clerk and Recorder shall be worded as follows: ADAMS COUNTY CLERK AND RECORDER'S CERTIFICATE: This plat was filed for record in the office of Adams County Clerk and Recorder, in the state of Colorado, at ____:____M on the ____ day of ____, AD 20____</p> <p>_____ County Clerk and Recorder</p> <p>By: _____ Deputy</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		P/E
14	<p>In the lower right hand corner of the cover sheet, the following shall appear:</p> <p>Reception No. _____</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		P
15	<p>The following language shall appear on all subdivisions: NOTICE IS HEREBY GIVEN: A. Any construction across an existing subdivision lot line is in violation of the subdivision regulation of the City, except as herein authorized. B. Any division of an existing lot, or conveyance of part of an existing subdivision lot, is in violation of this article unless (1) approved by the City of Commerce City; or (2) is excepted from the definition of "subdivision" as provided by the subdivision regulations. C. This Plat does not establish water availability for the subject Property. Water and wastewater service is provided by the South Adams County Water and Sanitation District. Investigation of the current water availability for the Property and acquisition of any additional water required for development of the Property shall be the sole responsibility of the developer, its successors and assigns. Development approvals will not be granted without proof of water availability.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		P

FTK: Subdivision

16	<p>If the subdivision plat application is submitted as part of a PUD Permit or divides land previously approved with a PUD designation, the following language shall appear on the subdivision:</p> <p>This subdivision is part of the (PUD name), PUD # (from Adams County) or Reception # (from Adams County)."</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
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FTK: Subdivision

SUBDIVISION (PLAT) CHECKLIST					
SHEET(S) #2:					
No.	Item	Yes	No	Comment(s)	(P/E)
1	All lots and blocks numbered in connecting order.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		P/E
2	All dimensions necessary to establish boundaries in the field.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		E
3	Location and width dimensions of all recorded and apparent easements and rights-of-ways.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		E
4	The names of abutting subdivisions or "unplatted" noted.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		E
5	All public areas identified.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		E
6	All boundary, lot and easement lines shall have lengths to 100 th of a foot. Surveyor to provide error of closure check (within 1:20,000)	<input type="checkbox"/>	<input checked="" type="checkbox"/>		E
7	Right-of-way dedication, utility, transportation and drainage easements shown as required.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		E
8	All section, range, and township lines which are within plat boundary or border the property within 100' are shown.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		E
9	All curve data shown in chart form on the face of the plat.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		E
10	Radii, internal angles, points of curvature and lengths of all arcs shown.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Chord bearings & distances	E
11	Ingress/egress drive locations shown.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		E
12	Storm water detention area with volume stated and drainage easements shown.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		E
13	Proof of legal nonconforming parcels.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		P
14	The plat is consistent with the deed.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		E
15	The floodplain information is verified.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		P/E
16	Basis of bearings statement and labeled line on plat. State the basis of bearing and label on the drawing. Bearings shall be based on Commerce City Control Diagram or Colorado State Plane Central Zone.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		E
17	Location of the subdivision as part of some larger subdivision or tract of land, and by reference to permanent survey monuments with a tie to a section or quarter section corner. Description of all monuments both found and set.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		E

FTK: Subdivision

For large, mixed-use or residential subdivisions, the following chart(s) must appear on the first page:

Technical Data:

LAND USE	NUMBER OF LOTS/PARCELS	ACRES	PERCENT OF THE PROJECT (ACRES)
Land Use – (Residential, Commercial, Industrial)			
Public Open Space/Floodplain			
Right-of-Way			
HOA owned & maintained open space			
Gross Acres:			

Tract Use Summary Table:

TRACT	Area (S.F. +/-)	Area (AC. +/-)	Use (Defined)	Owner*	Maintained By*
A					
B					
C, etc.					
Total Tracts:					
Total ROW Area:					
Total Lot Area:					
TOTAL PROJECT AREA:					

Total Number of Lots:	
Total Number of Tracts::	

Total Number of Lots:	
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*Legend for "Owner/Maintained By" columns:

CCC = City of Commerce City

HOA = Home Owners Association

POA = Property Owners' Association

Owner = Property Owner

Due
7/13/2020

Legato West

S-751-19-20

Legato Filing No 1

This Plat narrative should be for Filing No. 1, not the Legato West area in total. Be more specific as to what this Filing is about, referencing the Legato Filing 1 PUD Development Permit.

LEGATO ~~SUBDIVISION~~ FILING NO.1 PLAT NARRATIVE

INTRODUCTION:

West

The property located at the northeast corner of East 88th Avenue and Tower Road in Commerce City is known as Legato (herein after referred to as "Property"). The Property is bisected by E-470 and this application is for the first phase of residential development on the Property, west of E-470, which is approximately 33.9 acres. The Adams County Parcel Number for the Property is 0172323100002.

The Property sits within the City of Commerce City (City) and is currently zoned PUD. This phase of development will sit within the medium density residential area, at the center of the site.

overall

SITE CHARACTERISTICS:

The Property is bordered on three sides by arterial roadways. Tower Road, to the west, and East 96th Avenue, to the north, are principal arterials and East 88th Avenue, to the south, is a minor arterial. The first phase of residential development will be on the southwest corner of 95th Avenue and Himalaya Parkway and will fall within Planning Area D of the Legato PUD Zone Document.

add "E."

? rephrase to Legato West

PROPOSED LAND USE:

The proposed land uses for the Property is Medium-density Residential and is consistent with the City's Future Land Use Map, dated 09/27/10 and the Legato PUD Zone Document, recorded July 9, 2020. Residential Area D is defined as single-family detached ~~housing~~, ranging from 4 to 8 DU/acre. Filing 1 of project is proposing 181 residential lots, yielding a density of 5.3 du/acre. In addition to the residential lots, this ~~phase~~ will have a 1.6-acre neighborhood park. The site is surrounded (on three sides) by landscape buffer/green belt tracts to shield the proposed lots from the collector roads on the boundary of the project. There is also a green belt that will provide a corridor through the site in an east/west direction, with multiple trails from the green belt towards the neighborhood park (located adjacent to the future school site), that will provide access for the lots to either park. A total of 7.2 acres, approximately 21.2% of the area, will be dedicated to open space in this phase of development.

state rec no

residential

Filing

The proposed uses for the Property fit within the surrounding development by mirroring the Second Creek Farm project on the west side of Tower Road. Second Creek Farm has a similar buffer with future commercial or mixed uses proposed along Tower Road with residential uses in the central and western portion of the site. The office/flex and landscape areas along East 88th Avenue will serve as a buffer to the proposed residential area from the existing landfill on the south side of 88th Avenue.

The Comprehensive Plan shows a future school site located on the Property to solve schooling needs for the future development. This submittal is directly north of the future school and northeast of the

neighborhood park. The development attempts to incorporate the community park and school site into the lot layout by providing a green belt through the lots for access to and from the community park and/or the school.

Access to the Property will be provided from the adjacent ~~collect~~^{four}nd residential roads. Access from the east will be provided at the intersection of E. 93rd Place and Himalaya Parkway. The site is bordered on the south by E. 93rd Place ~~Avenue~~ and there are ~~three~~ access point that provide entrance to the development from the south. Access from the north of the project will be gained at two access points from E. 95th Avenue. There are no access points from either Himalaya Parkway or E. 94th Avenue/Biscay Street, bordering the site on the east and west, respectively.

Sanitary service will be provided by a sanitary line within 95th Avenue and another sanitary line within Road 17 that will be constructed as part of phase 1 of the Legato Spine Infrastructure. Water and irrigation will be provided by 12" water mains and 8" irrigation mains within 95th Avenue and 93rd Place. These lines will also be constructed as part of phase 1 of the Legato Spine Infrastructure. The irrigation (non-potable) water system will be designed and installed part of the project, but, based on discussions with South Adams County Water and Sanitation District (SACWSD), there is not a connection point for non-potable, at this time. The development will install the "purple pipe" and use potable water until a non-potable connection is brought to the site. The storm sewer system required for this development will connect to storm sewer mains in 95th Avenue and Road 17, where the run-off will be conveyed to Regional Pond A.

Use approved street names

Gas, electric and telephone will be installed along all of the proposed roads. Coordination with Xcel, United Power and Comcast, respectively, will be completed as part of the Final Plat/Construction Drawing process for the spine infrastructure. Provisions for the installation of these utilities have been provided through the dedication of an 15-foot utility along all of the spine roads and a 10-foot easement in front of the proposed lots.

CONCLUSION:

The proposed uses shown for the Property are in compliance with the City's master plans and fit within the existing and future development plans for the surrounding area. The location of the Property with its proximity to Denver International Airport (DIA), E-470 and the Rocky Mountain Arsenal National Wildlife Refuge make this an exciting and desirable development proposal.

Utility & Transportation Easement

and along the Local Public Roads and 8' Utility Easements in the rear of the lots.

LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST, OF THE 6TH PRINCIPAL MERIDIAN, CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO SHEET 1 OF 8

LEGAL DESCRIPTION AND DEDICATION:

KNOW ALL MEN BY THESE PRESENTS THAT COHEN DENVER AIRPORT LLC, A NEVADA LIMITED LIABILITY COMPANY, BEING THE OWNER OF THAT PART OF SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST, CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS; TO WIT:

TRACT D2, LEGATO WEST, RECORDED UNDER RECEPTION NO. _____ ADAMS COUNTY, COLORADO RECORDS, BEING A PART OT SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF ADAMS, STATE OF COLORADO;

CONTAINING 1,475,365 SQUARE FEET, OR 33.87 ACRES, MORE OR LESS.

HAVE BY THESE PRESENTS LAID OUT, PLATTED AND SUBDIVIDED THE SAME INTO LOTS AND TRACTS AS SHOWN ON THIS PLAT UNDER THE NAME AND STYLE OF LEGATO FILING NO. 1 AND DO HEREBY GRANT TO THE CITY OF COMMERCE CITY , COUNTY OF ADAMS, STATE OF COLORADO, FOR THE USE OF THE PUBLIC, THE STREETS AND OTHER PUBLIC WAYS AND EASEMENTS HEREON SHOWN, FOR PUBLIC UTILITY, TELECOM, AND DRAINAGE AND OTHER PUBLIC PURPOSES AS DETERMINED BY COMMERCE CITY.

EXECUTED THIS _____ DAY OF _____, A.D. 20____

COHEN DENVER AIRPORT LLC, A NEVADA LIMITED LIABILITY COMPANY

BY: _____

AS: _____

STATE OF COLORADO)
COUNTY OF ADAMS)SS
STATE OF COLORADO)

THE FOREGOING DEDICATION WAS ACKNOWLEDGED BEFORE ME

THIS _____ DAY OF _____ A.D. 20____

BY: _____

MY COMMISSION EXPIRES: _____

NOTARY PUBLIC: _____

NOTES:

- NOTICE: ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.
- ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUTE 18-4-508, C.R.S.
- BASIS OF BEARINGS: BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEING MONUMENTED AT THE WEST END BY A FOUND 2-1/2" ALUMINUM CAP IN RANGE BOX STAMPED "ISI 2018 PLS 29425" AND AT THE EAST END BY A FOUND 2" ALUMINUM CAP STAMPED "WESTERN STATES SURVEYING INC. 1994 PLS 24960". SAID NORTH LINE BEARS N89°35'58" EAST, WITH ALL BEARINGS CONTAINED HEREIN RELATIVE THERETO.
- THE SUBJECT PROPERTY LIES WITHIN ZONE X, AREAS DETERMINED TO BE OUTSIDE OF THE ANNUAL 0.2% CHANCE FLOODPLAIN, PER FEMA FLOOD INSURANCE RATE MAP FOR ADAMS COUNTY, COLORADO, MAP NO. 08001C0635H, REVISED DATE MARCH 05, 2007.
- THE SUBJECT PROPERTY IS THE SAME AS THE PROPERTY DESCRIBED IN THAT CERTAIN TITLE COMMITMENT NO. NCS-911124-CO ISSUED BY FIRST AMERICAN TITLE INSURANCE COMPANY, WITH AN EFFECTIVE DATE OF JUNE 13, 2018 AND THAT ALL EASEMENTS, COVENANTS AND RESTRICTIONS REFERENCED IN SAID TITLE COMMITMENT OR APPARENT FROM A PHYSICAL INSPECTION OF THE SUBJECT PROPERTY OR OTHERWISE KNOWN TO ATWELL, LLC HAVE BEEN PLOTTED HEREON OR OTHERWISE NOTED AS TO THEIR EFFECT OF THE SUBJECT PROPERTY.



VICINITY MAP
SCALE: 1"=2000'

NOTES:

- DISTANCES SHOWN HEREON ARE EXPRESSED IN U.S. SURVEY FEET AND DECIMALS THEREOF. ONE U.S. SURVEY FOOT EQUALS EXACTLY 1200/3937 METER.
- THIS PLAT IS THE SAME AS THAT PROPERTY SHOWN ON THE HIGHTOWER RANCH PUD ZONE DOCUMENT RECORDED AT RECEPTION NO. _____, ADAMS COUNTY RECORDS.
- REFER TO THE CITY OF COMMERCE CITY DESIGN GUIDELINES FOR ADDITIONAL INFORMATION.
- NOTICE IS HEREBY GIVEN:
 - ANY CONSTRUCTION ACROSS ANY EXISTING SUBDIVISION LOT LINE IS IN VIOLATION OF THE SUBDIVISION REGULATION OF THE CITY, EXCEPT AS HEREIN AUTHORIZED.
 - ANY DIVISION OF AN EXISTING LOT, OR CONVEYANCE OF PART OF AN EXISTING SUBDIVISION LOT, IS IN VIOLATION OF THIS ARTICLE UNLESS (1) APPROVED BY THE CITY OF COMMERCE CITY; OR (2) IS EXCEPTED FROM THE DEFINITION OF "SUBDIVISION" AS PROVIDED BY THE SUBDIVISION REGULATIONS.
 - THIS PLAT DOES NOT ESTABLISH WATER AVAILABILITY FOR THE SUBJECT PROPERTY. WATER AND WASTEWATER SERVICE IS PROVIDED BY THE SOUTH ADAMS COUNTY WATER AND SANITATION DISTRICT. INVESTIGATION OF THE CURRENT WATER AVAILABILITY FOR THE PROPERTY AND ACQUISITION OF ANY ADDITIONAL WATER REQUIRED FOR DEVELOPMENT OF THE PROPERTY SHALL BE THE SOLE RESPONSIBILITY OF THE DEVELOPER, ITS SUCCESSORS AND ASSIGNS. DEVELOPMENT APPROVALS WILL NOT BE GRANTED WITHOUT PROOF OF WATER AVAILABILITY.

This Plat will be recorded after the Legato West Plat, which does dedicate easements as shown on this Plat.

SURVEYOR'S CERTIFICATE:

I, MICHAEL LLOYD POOL, A REGISTERED LAND SURVEYOR, REGISTERED IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THERE ARE NO ROADS, PIPELINES, IRRIGATION DITCHES, OR OTHER EASEMENTS IN EVIDENCE OR KNOWN BY ME TO EXIST ON OR ACROSS THE HEREIN BEFORE DESCRIBED PROPERTY EXCEPT AS SHOWN ON THIS PLAT. I FURTHER CERTIFY THAT I HAVE PERFORMED THE SURVEY SHOWN HEREON, OR SUCH SURVEY WAS PREPARED UNDER MY DIRECT RESPONSIBILITY AND SUPERVISION, THAT THIS PLAT ACCURATELY REPRESENTS SAID SURVEY, AND THAT ALL MONUMENTS EXIST AS SHOWN HEREON.



MICHAEL LLOYD POOL, PLS
COLORADO REG. NO. 38304
FOR AND ON BEHALF OF ATWELL, LLC

~~NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATE SHOWN HEREON.~~

Already in Notes, see Note 1

CITY STAFF CERTIFICATE:

APPROVED BY THE CITY ENGINEER OF THE CITY OF COMMERCE CITY

THIS _____ DAY OF _____, A.D. 20____

CITY ENGINEER

APPROVED BY THE DIRECTOR, DEPARTMENT OF COMMUNITY DEVELOPMENT OF THE CITY OF COMMERCE CITY

THIS _____ DAY OF _____, A.D. 20____

DIRECTOR, COMMUNITY DEVELOPMENT

CITY COUNCIL CERTIFICATE:

APPROVED BY CITY OF COMMERCE CITY, CITY COUNCIL

THIS _____ DAY OF _____, A.D. 20____

ATTEST: _____
CITY CLERK MAYOR

ADAMS COUNTY CLERK AND RECORDER'S CERTIFICATE:

THIS PLAT WAS FILED FOR RECORD IN THE OFFICE OF ADAMS COUNTY CLERK AND RECORDER, IN THE STATE OF COLORADO, AT _____ M., ON THE

_____ DAY OF _____, A.D. 20____

COUNTY CLERK AND RECORDER

BY: _____
DEPUTY

RECEPTION NO. _____



REVISIONS

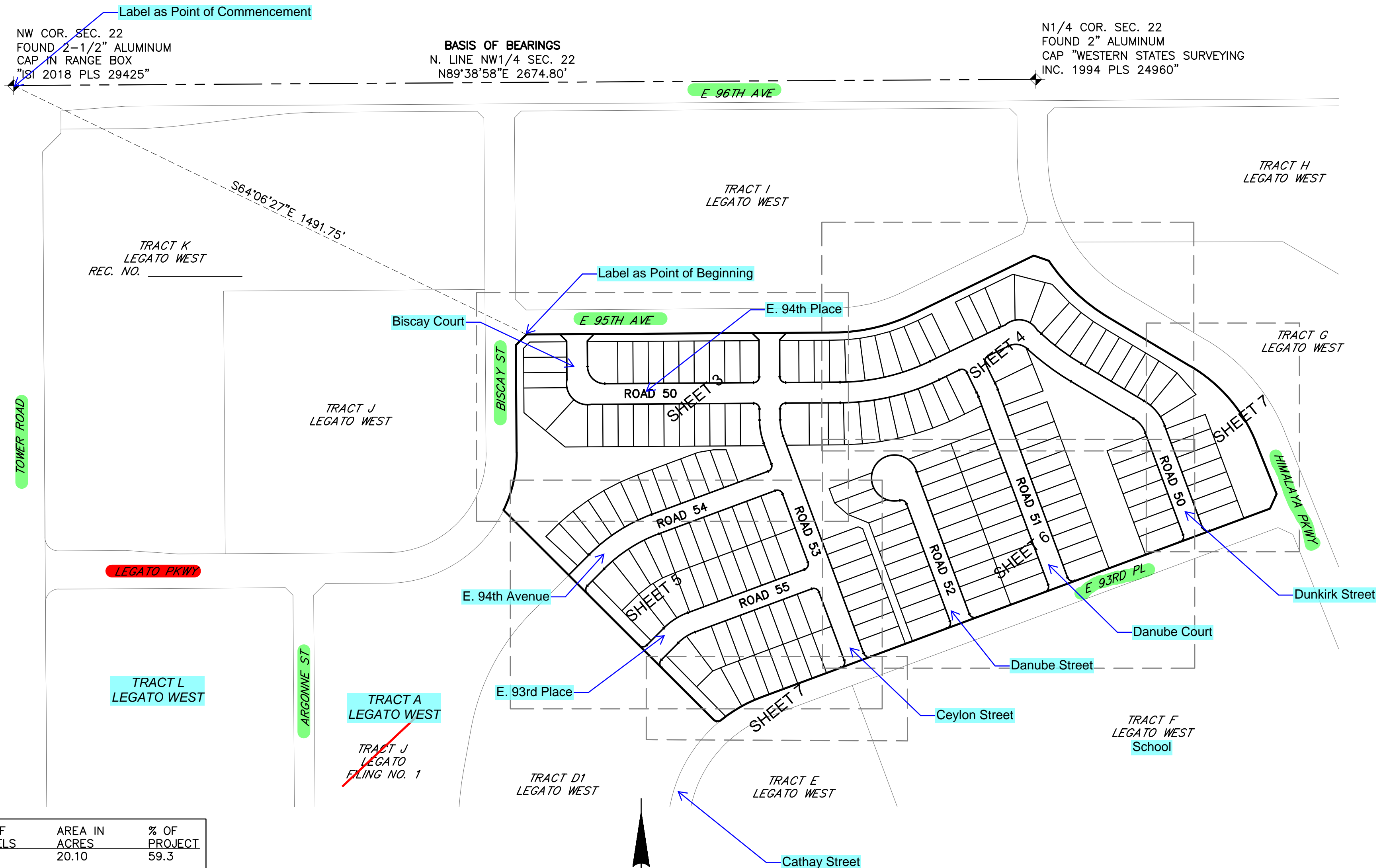
SHEET
1
OF 8

FILE NO. 19002860_FINAL PLAT
DATE 07/19/2020
DRAWN BY TWK
CHECK BY MLP
JOB NO. 19002860

LEGATO FILING NO. 1

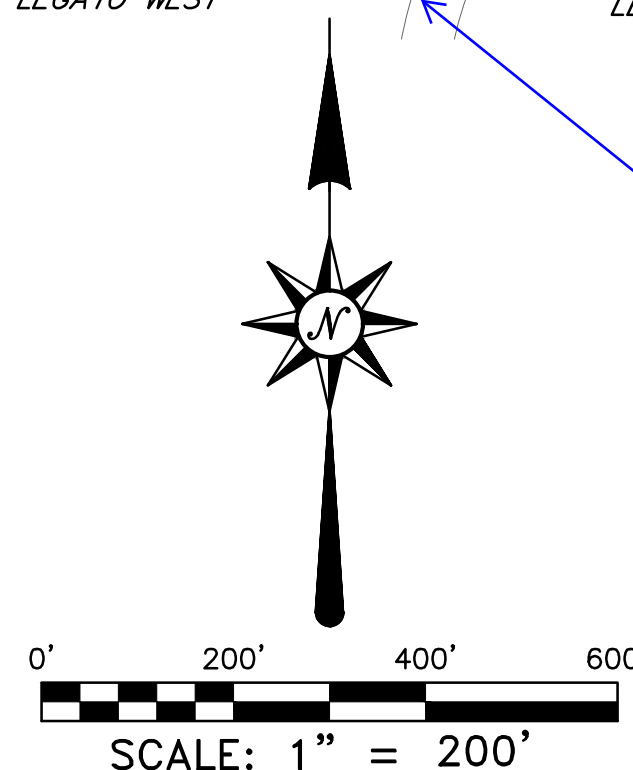
A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO
SHEET 2 OF 8

Street names do not match Legato West Plat
Tract designations do not match Legato West Plat



LAND USE	NO. OF PARCELS	AREA IN ACRES	% OF PROJECT
LOTS	181	20.10	59.3
TRACTS	7	7.17	21.2
RIGHT OF WAY		6.6	19.5
TOTAL		33.87	100.0

TRACT	AREA (S.F.)	AREA (AC.)	USE	OWNER/ MAINTENANCE
A	8,657	0.20	OPEN SPACE	HOA
B	86,153	1.98	OPEN SPACE	HOA
C	6,975	0.16	OPEN SPACE	HOA
D	6,486	0.15	OPEN SPACE	HOA
E	78,872	1.81	OPEN SPACE	HOA
F	55,701	1.28	OPEN SPACE	HOA
G	69,063	1.59	OPEN SPACE	HOA
TOTAL	311,907	7.17		



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REVISIONS		SHEET 2 OF 8
		FILE NO. 19002860_FINAL PLAT
		DATE 07/19/2020
		DRAWN BY TWK
		CHECK BY MLP
		JOB NO. 19002860

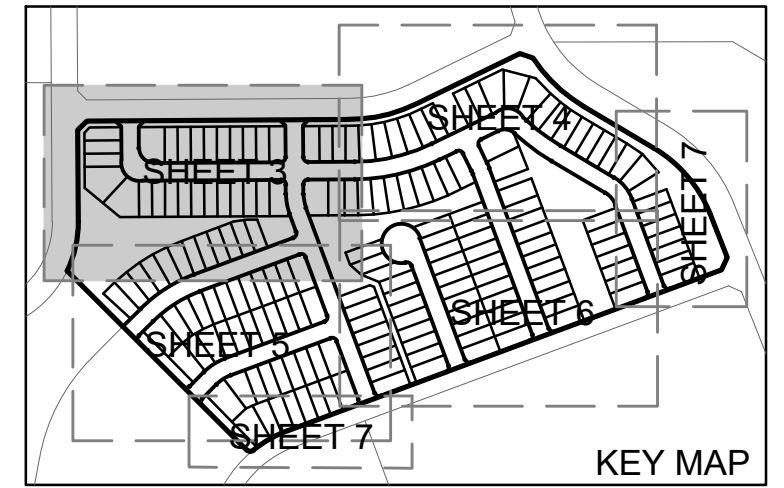
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All curves shall have chord bearing and distance

LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF ADAMS,
CITY OF COMMERCE CITY, STATE OF COLORADO

SHEET 3 OF 8



Typical all sheets

Legato West
Tract I
Rec. No. 00000000

Please do not just throw these
around on the Plat. Be specific.

Fix street names

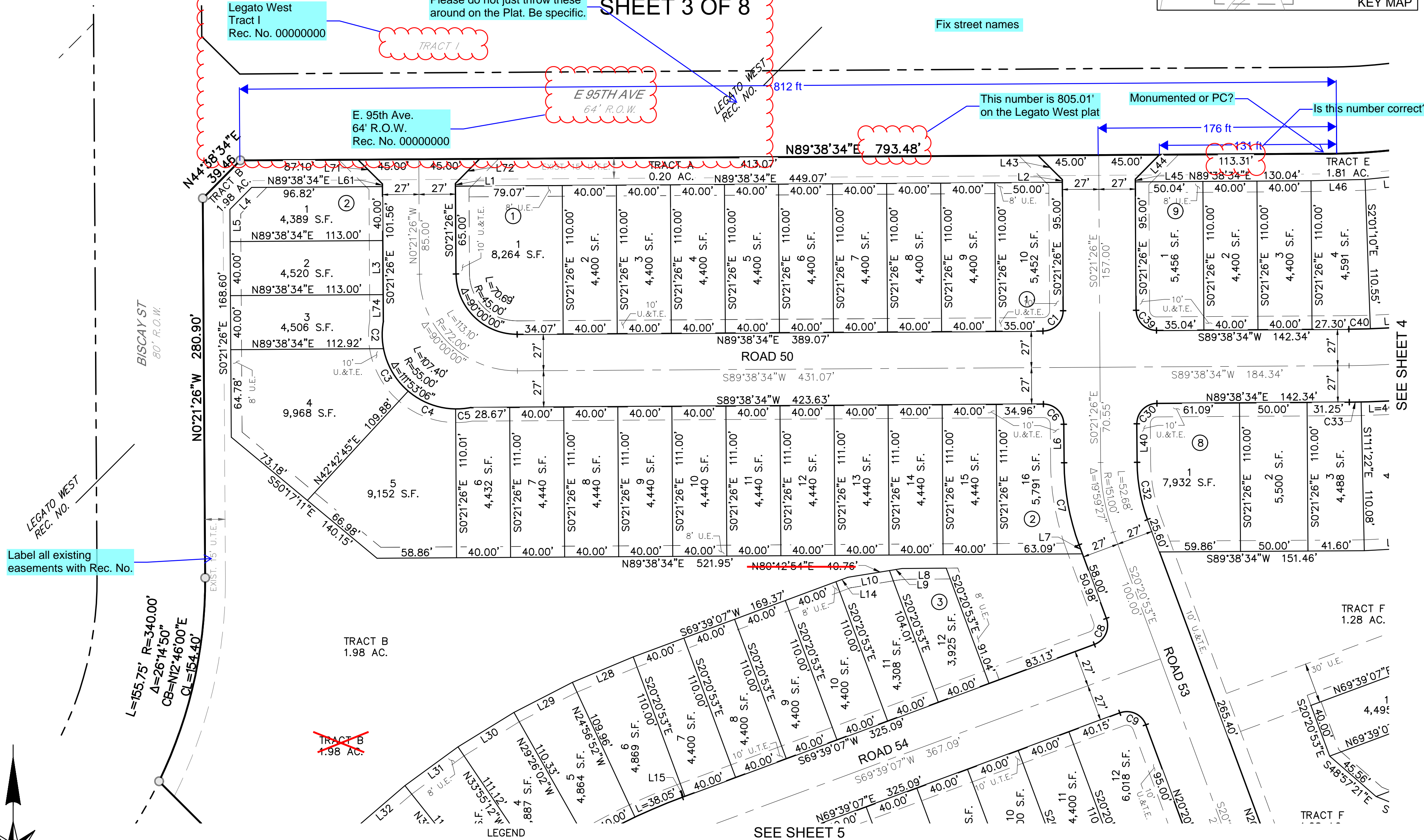
E. 95th Ave.
64' R.O.W.
Rec. No. 00000000

E 95TH AVE
64' R.O.W.

This number is 805.01'
on the Legato West plat

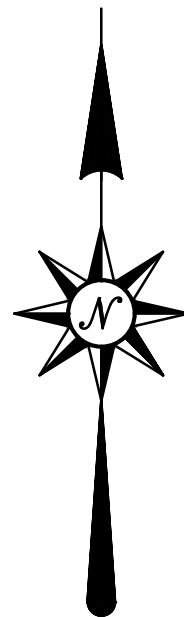
Monumented or PC?

Is this number correct?



Label all existing
easements with Rec. No.

L=155.75' R=340.00'
Δ=26°14'50\"



0' 50' 100' 150'
SCALE: 1" = 50'

~~TRACT B~~
1.98 AC.

LEGEND	
---	SUBJECT PARCEL BOUNDARY LINE
---	CENTERLINE
---	LOT/TRACT LINE
---	ADJACENT PROPERTY LINE
---	PROPOSED EASEMENT LINE
---	EXISTING EASEMENT LINE
---	SET #4 REBAR WITH BLUE PLASTIC CAP "ATWELL PLS 38304"
---	U.E. = UTILITY EASEMENT
---	U.T.E. = UTILITY & TRANSPORTATION EASEMENT
(11)	BLOCK NUMBER



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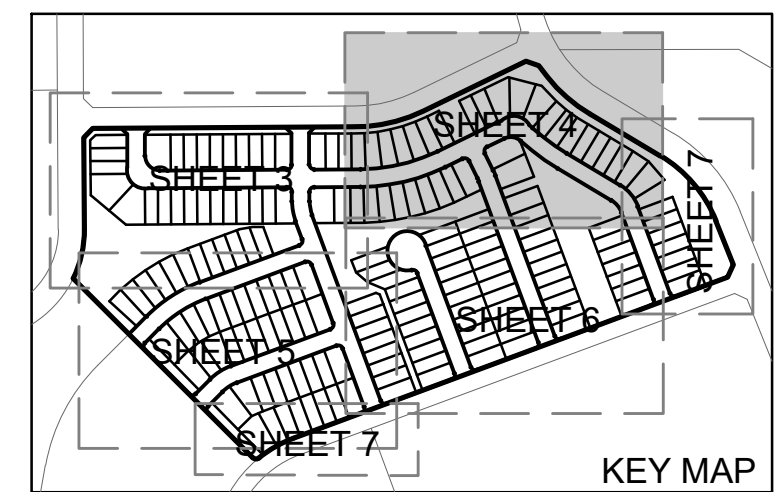
REVISIONS		SHEET 3 OF 8
		FILE NO. 19002860_FINAL PLAT
		DATE 07/19/2020
		DRAWN BY TWK
		CHECK BY MLP
		JOB NO. 19002860

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LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF ADAMS,
CITY OF COMMERCE CITY, STATE OF COLORADO

SHEET 4 OF 8



See comment on sheet 3

LEGATO WEST
REC. NO.

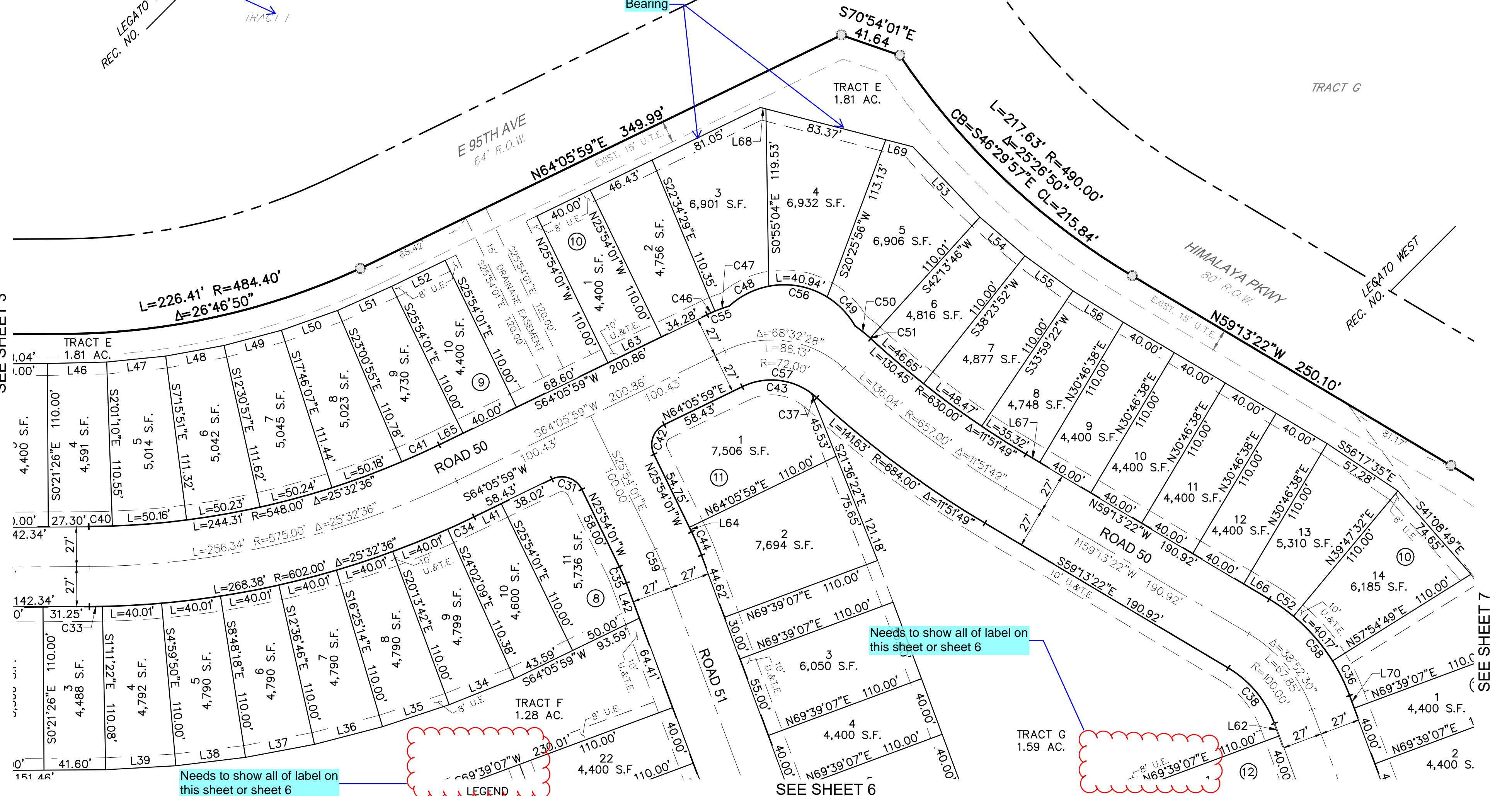
Bearing

Fix street names

TRACT H

TRACT G

SEE SHEET 3



Needs to show all of label on
this sheet or sheet 6

Needs to show all of label on
this sheet or sheet 6

LEGEND

SUBJECT PARCEL BOUNDARY LINE
CENTERLINE
LOT/TRACT LINE
ADJACENT PROPERTY LINE
PROPOSED EASEMENT LINE
EXISTING EASEMENT LINE

SET #4 REBAR WITH BLUE
PLASTIC CAP "ATWELL PLS
38304"

U.E. = UTILITY EASEMENT
U.T.E. = UTILITY &
TRANSPORTATION EASEMENT

11 BLOCK NUMBER



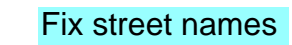
REVISIONS

SHEET
4
OF 8

FILE NO. 19002860_FINAL PLAT
DATE 07/19/2020
DRAWN BY TWK
CHECK BY MLP
JOB NO. 19002860

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF ADAMS,
CITY OF COMMERCE CITY, STATE OF COLORADO

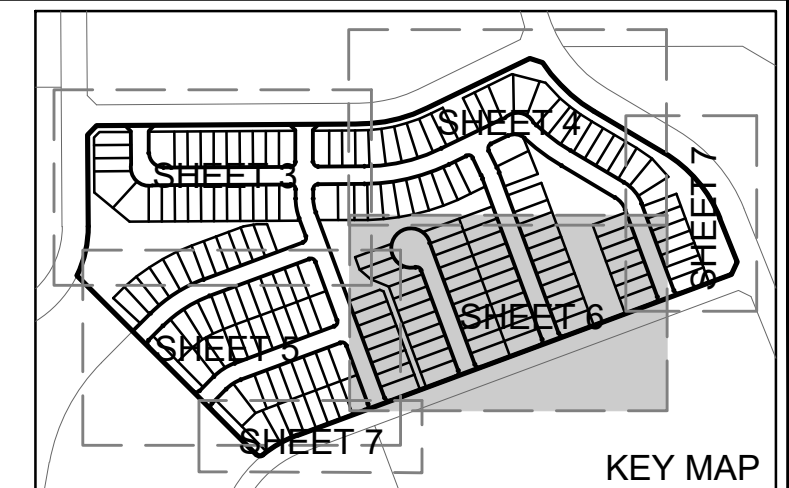
SEE SHEET 3



LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF ADAMS,
CITY OF COMMERCE CITY, STATE OF COLORADO

Fix street names



KEY MAP

SHEET 6 OF 8

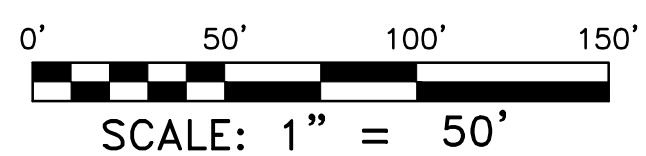
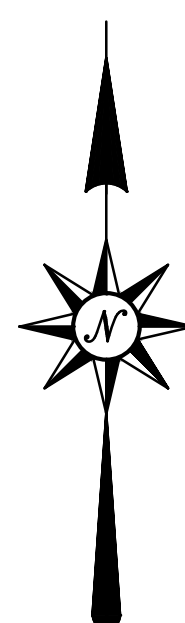
SEE SHEET 4



SEE SHEET 5

SEE SHEET 7

SEE SHEET 7



SCALE: 1" = 50'

LEGEND

- SUBJECT PARCEL BOUNDARY LINE
- CENTERLINE
- LOT/TRACT LINE
- ADJACENT PROPERTY LINE
- PROPOSED EASEMENT LINE
- EXISTING EASEMENT LINE
- SET #4 REBAR WITH BLUE PLASTIC CAP "ATWELL PLS 38304"
- U.E. = UTILITY EASEMENT
- U.T.E. = UTILITY & TRANSPORTATION EASEMENT
- (11) BLOCK NUMBER

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REVISIONS	

SHEET 6 OF 8

FILE NO. 19002860_FINAL PLAT

DATE 07/19/2020

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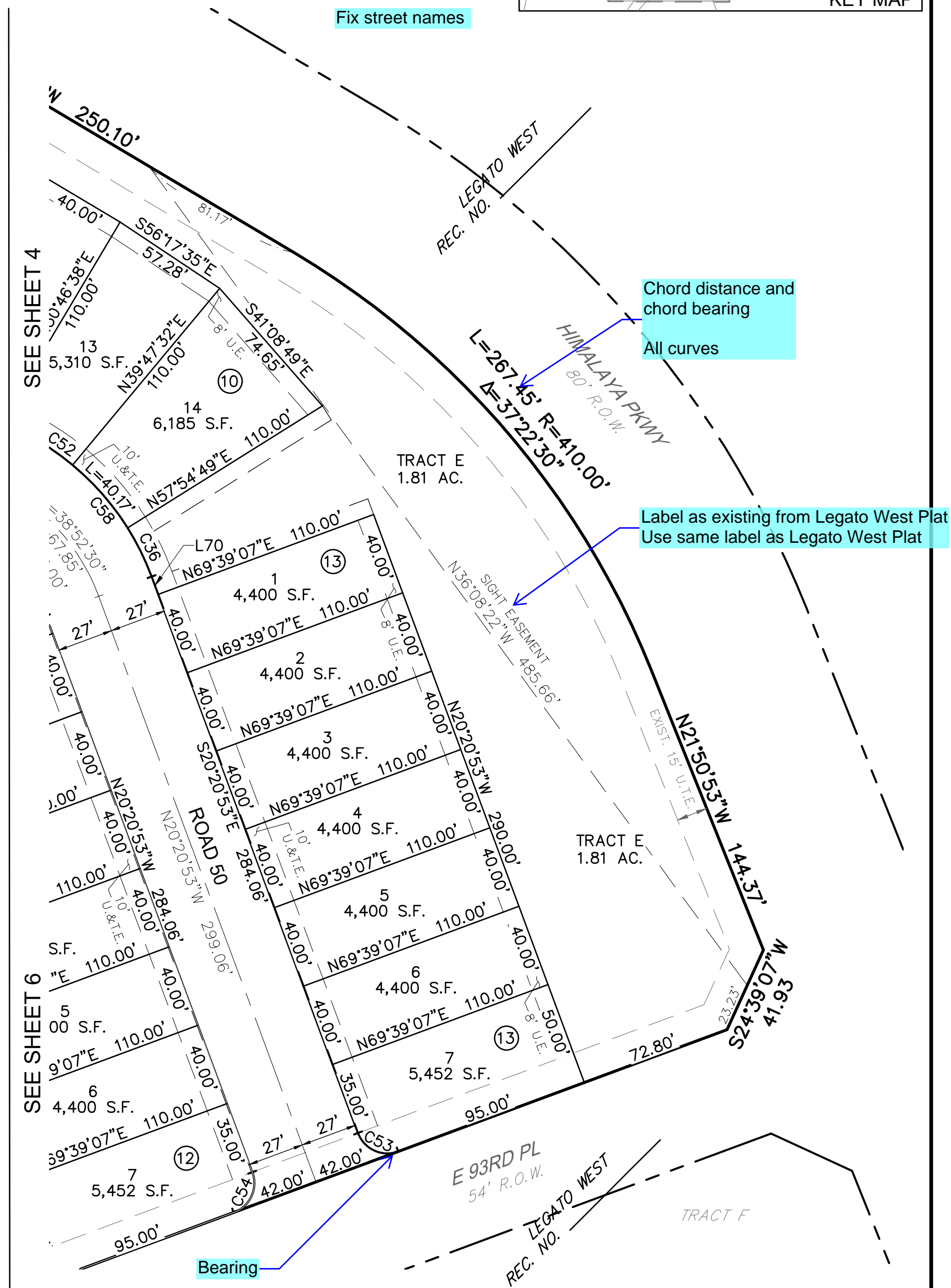
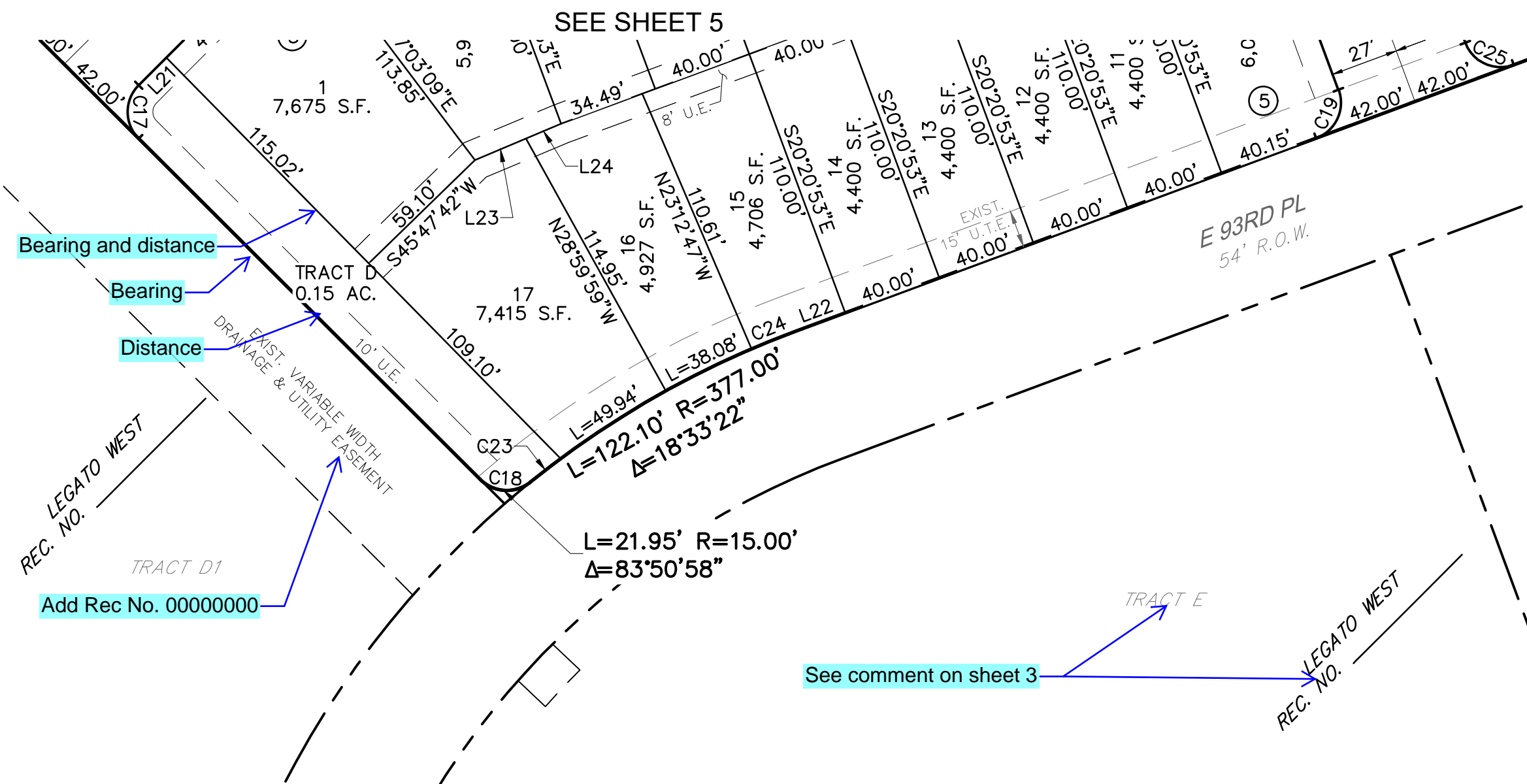
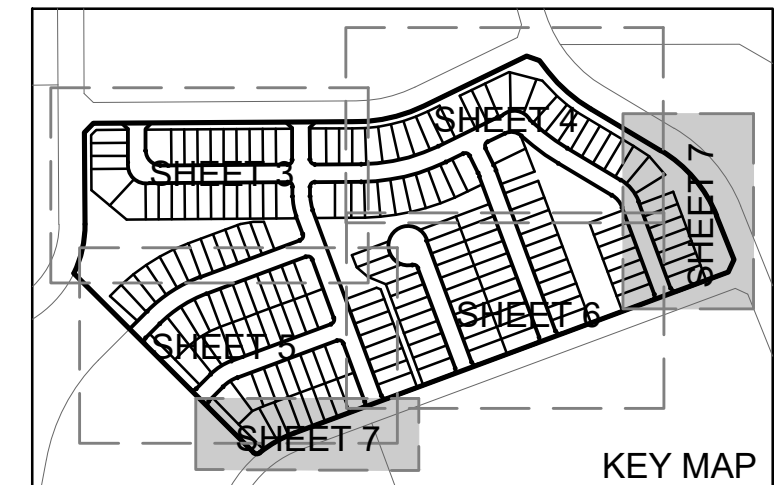
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LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF ADAMS,
CITY OF COMMERCE CITY, STATE OF COLORADO
SHEET 7 OF 8



0' 50' 100' 150'
SCALE: 1" = 50'

LEGEND	
	SUBJECT PARCEL BOUNDARY LINE
	CENTERLINE
	LOT/TRACT LINE
	ADJACENT PROPERTY LINE
	PROPOSED EASEMENT LINE
	EXISTING EASEMENT LINE
	SET #4 REBAR WITH BLUE PLASTIC CAP "ATWELL PLS 38304"
	U.E. = UTILITY EASEMENT
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	BLOCK NUMBER

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REVISIONS		SHEET 7 OF 8
		FILE NO. 19002860_FINAL PLAT
		DATE 07/19/2020
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		CHECK BY MLP
		JOB NO. 19002860

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LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO
SHEET 8 OF 8

LINE TABLE		
LINE	LENGTH	BEARING
L1	2.00'	S00°21'26"E
L2	2.00'	S00°21'26"E
L3	40.00'	S00°21'26"E
L4	22.89'	N44°38'34"E
L5	23.82'	N00°21'26"W
L6	28.55'	S00°21'26"E
L7	7.02'	S20°20'53"E
L8	32.59'	N89°38'34"E
L9	9.55'	N80°42'54"E
L10	31.21'	N80°42'54"E
L13	3.24'	S44°56'43"W
L14	9.37'	N69°39'07"E
L15	1.96'	S69°39'07"W
L16	7.53'	N59°59'47"E
L17	18.17'	S44°56'43"W
L18	4.94'	S69°39'07"W
L19	16.11'	N44°56'43"E
L20	4.94'	N69°39'07"E
L21	15.60'	S44°56'43"W
L22	21.13'	N69°39'07"E
L23	22.07'	S67°10'58"W
L24	15.15'	S67°10'58"W
L25	13.03'	S67°51'13"E
L26	12.14'	N20°20'53"W
L27	2.18'	S20°20'53"E

LINE TABLE		
LINE	LENGTH	BEARING
L28	48.83'	S67°18'16"W
L29	48.61'	S62°48'33"W
L30	48.61'	S58°19'23"W
L31	48.61'	S53°50'13"W
L32	48.61'	S49°21'03"W
L33	48.61'	S44°51'53"W
L34	47.32'	S68°19'28"W
L35	47.31'	S71°40'32"W
L36	47.31'	S75°29'00"W
L37	47.31'	S79°17'28"W
L38	47.31'	S83°05'56"W
L39	47.31'	S86°48'56"W
L40	28.55'	S00°21'26"E
L41	20.41'	S64°05'59"W
L42	25.22'	N20°20'53"W
L43	25.46'	N45°21'26"W
L44	25.46'	N44°38'34"E
L45	2.00'	S00°21'26"E
L46	40.00'	N88°35'12"E
L47	40.00'	N84°15'14"E
L48	40.00'	N79°41'14"E
L49	40.00'	N75°07'14"E
L50	40.00'	N70°33'15"E
L51	40.00'	N66°00'16"E
L52	40.00'	N64°05'59"E

LINE TABLE		
LINE	LENGTH	BEARING
L53	65.54'	N43°34'51"W
L54	40.00'	N49°23'53"W
L55	40.00'	N53°48'23"W
L56	40.00'	N58°03'09"W
L57	57.28'	S56°17'35"E
L58	74.65'	S41°08'49"E
L61	2.00'	S00°21'26"E
L62	9.06'	S20°20'53"E
L63	40.00'	S64°05'59"W
L64	3.25'	N25°54'01"W
L65	17.97'	S64°05'59"W
L66	20.07'	N59°13'22"W
L67	10.85'	N59°13'22"W
L68	3.94'	S75°33'01"E
L69	18.80'	S75°33'01"E
L70	9.06'	N20°20'53"W
L71	25.46'	S45°21'26"E
L72	25.46'	S44°38'34"W
L73	20.00'	N69°39'07"E
L74	19.56'	S00°21'26"E

Curve Table			
CURVE #	LENGTH	RADIUS	DELTA
C1	23.56'	15.00'	90°00'00"
C2	20.56'	55.00'	21°25'05"
C3	37.14'	55.00'	38°41'18"
C4	38.31'	55.00'	39°54'47"
C5	11.39'	55.00'	11°51'56"
C6	23.56'	15.00'	90°00'00"
C7	62.11'	178.00'	19°59'27"
C8	23.56'	15.00'	90°00'00"
C9	23.56'	15.00'	90°00'00"
C10	23.56'	15.00'	90°00'00"
C13	23.56'	15.00'	90°00'00"
C14	23.56'	15.00'	90°00'00"
C15	29.96'	397.00'	4°19'24"
C16	4.57'	177.00'	1°28'50"
C17	23.56'	15.00'	90°00'00"
C18	21.95'	15.00'	83°50'58"
C19	23.56'	15.00'	90°00'00"
C20	23.56'	15.00'	90°00'00"
C21	27.90'	123.00'	12°59'42"
C22	25.14'	123.00'	11°42'42"
C23	15.23'	377.00'	2°18'54"
C24	18.85'	377.00'	2°51'54"
C25	23.56'	15.00'	90°00'00"
C26	23.56'	15.00'	90°00'00"
C27	21.73'	15.00'	82°59'01"

Curve Table			
CURVE #	LENGTH	RADIUS	DELTA
C28	23.56'	15.00'	90°00'00"
C29	23.56'	15.00'	90°00'00"
C30	23.56'	15.00'	90°00'00"
C31	23.56'	15.00'	90°00'00"
C32	43.26'	124.00'	19°59'27"
C33	8.75'	602.00'	0°49'57"
C34	19.59'	602.00'	1°51'52"
C35	11.92'	123.00'	5°33'09"
C36	26.02'	127.00'	11°44'18"
C37	4.61'	45.00'	5°51'48"
C38	49.53'	73.00'	38°52'30"
C39	23.56'	15.00'	90°00'00"
C40	15.90'	548.00'	1°39'45"
C41	27.59'	548.00'	2°53'06"
C42	23.56'	15.00'	90°00'00"
C43	49.23'	45.00'	62°40'40"
C44	17.15'	177.00'	5°33'09"
C45	23.56'	15.00'	90°00'00"
C46	5.75'	99.00'	3°19'32"
C47	10.09'	99.00'	5°50'26"
C48	30.32'	55.00'	31°35'23"
C49	27.41'	55.00'	28°33'08"
C50	12.96'	99.00'	7°30'05"
C51	0.71'	99.00'	0°24'41"
C52	19.98'	127.00'	9°00'55"

Curve Table			
CURVE #	LENGTH	RADIUS	DELTA
C53	23.56'	15.00'	90°00'00"
C54	23.56'	15.00'	90°00'00"
C55	15.84'	99.00'	9°09'59"
C56	98.67'	55.00'	102°47'22"
C57	53.83'	45.00'	68°32'28"
C58	86.17'	127.00'	38°52'30"
C59	14.54'	150.00'	5°33'09"

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REVISIONS

SHEET
8
OF 8

FILE NO. 19002860_FINAL PLAT
DATE 07/19/2020
DRAWN BY TWK
CHECK BY MLP
JOB NO. 19002860

LEGATO FILING NO. 1
A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO
SHEET 1 OF 8

LEGAL DESCRIPTION AND DEDICATION:

KNOW ALL MEN BY THESE PRESENTS THAT COHEN DENVER AIRPORT LLC, A NEVADA LIMITED LIABILITY COMPANY, BEING THE OWNER OF THAT PART OF SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST, CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS; TO WIT:

TRACT D2, LEGATO WEST, RECORDED UNDER RECEPTION NO. _____ ADAMS COUNTY, COLORADO RECORDS, BEING A PART OT SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF ADAMS, STATE OF COLORADO;

CONTAINING 1,475,365 SQUARE FEET, OR 33.87 ACRES, MORE OR LESS.

HAVE BY THESE PRESENTS LAID OUT, PLATTED AND SUBDIVIDED THE SAME INTO LOTS AND TRACTS AS SHOWN ON THIS PLAT UNDER THE NAME AND STYLE OF LEGATO FILING NO. 1 AND DO HEREBY GRANT TO THE CITY OF COMMERCE CITY COUNTY OF ADAMS, STATE OF COLORADO, FOR THE USE OF THE PUBLIC, THE STREETS AND OTHER PUBLIC WAYS AND EASEMENTS HEREON SHOWN, FOR PUBLIC UTILITY, TELECOM, AND DRAINAGE AND OTHER PUBLIC PURPOSES AS DETERMINED BY COMMERCE CITY.

EXECUTED THIS _____ DAY OF _____, A.D. 20____

COHEN DENVER AIRPORT LLC, A NEVADA LIMITED LIABILITY COMPANY

BY: _____

AS: _____

STATE OF COLORADO)
COUNTY OF ADAMS)SS
STATE OF COLORADO)

THE FOREGOING DEDICATION WAS ACKNOWLEDGED BEFORE ME

THIS _____ DAY OF _____, A.D. 20____

BY: _____

MY COMMISSION EXPIRES: _____

NOTARY PUBLIC: _____

NOTES:

- NOTICE: ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.
- ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUTE 18-4-508, C.R.S.
- BASIS OF BEARINGS: BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEING MONUMENTED AT THE WEST END BY A FOUND 2-1/2" ALUMINUM CAP IN RANGE BOX STAMPED "ISI 2018 PLS 29425" AND AT THE EAST END BY A FOUND 2" ALUMINUM CAP STAMPED "WESTERN STATES SURVEYING INC. 1994 PLS 24960". SAID NORTH LINE BEARS N89°35'58" EAST, WITH ALL BEARINGS CONTAINED HEREIN RELATIVE THERETO.
- THE SUBJECT PROPERTY LIES WITHIN ZONE X, AREAS DETERMINED TO BE OUTSIDE OF THE ANNUAL 0.2% CHANCE FLOODPLAIN, PER FEMA FLOOD INSURANCE RATE MAP FOR ADAMS COUNTY, COLORADO, MAP NO. 08001C0635H, REVISED DATE MARCH 05, 2007.
- THE SUBJECT PROPERTY IS THE SAME AS THE PROPERTY DESCRIBED IN THAT CERTAIN TITLE COMMITMENT NO. NCS-911124-CO ISSUED BY FIRST AMERICAN TITLE INSURANCE COMPANY, WITH AN EFFECTIVE DATE OF JUNE 13, 2018 AND THAT ALL EASEMENTS, COVENANTS AND RESTRICTIONS REFERENCED IN SAID TITLE COMMITMENT OR APPARENT FROM A PHYSICAL INSPECTION OF THE SUBJECT PROPERTY OR OTHERWISE KNOWN TO ATWELL, LLC HAVE BEEN PLOTTED HEREON OR OTHERWISE NOTED AS TO THEIR EFFECT OF THE SUBJECT PROPERTY.



VICINITY MAP
SCALE: 1"=2000'

NOTES:

- DISTANCES SHOWN HEREON ARE EXPRESSED IN U.S. SURVEY FEET AND DECIMALS THEREOF. ONE U.S. SURVEY FOOT EQUALS EXACTLY 1200/3937 METER.
- THIS PLAT IS THE SAME AS THAT PROPERTY SHOWN ON THE HIGHTOWER RANCH PUD ZONE DOCUMENT RECORDED AT RECEPTION NO. _____ ADAMS COUNTY RECORDS.
- REFER TO THE CITY OF COMMERCE CITY DESIGN GUIDELINES FOR ADDITIONAL INFORMATION.
- NOTICE IS HEREBY GIVEN:
 - ANY CONSTRUCTION ACROSS ANY EXISTING SUBDIVISION LOT LINE IS IN VIOLATION OF THE SUBDIVISION REGULATION OF THE CITY, EXCEPT AS HEREIN AUTHORIZED.
 - ANY DIVISION OF AN EXISTING LOT, OR CONVEYANCE OF PART OF AN EXISTING SUBDIVISION LOT, IS IN VIOLATION OF THIS ARTICLE UNLESS (1) APPROVED BY THE CITY OF COMMERCE CITY; OR (2) IS EXCEPTED FROM THE DEFINITION OF "SUBDIVISION" AS PROVIDED BY THE SUBDIVISION REGULATIONS.
 - THIS PLAT DOES NOT ESTABLISH WATER AVAILABILITY FOR THE SUBJECT PROPERTY. WATER AND WASTEWATER SERVICE IS PROVIDED BY THE SOUTH ADAMS COUNTY WATER AND SANITATION DISTRICT. INVESTIGATION OF THE CURRENT WATER AVAILABILITY FOR THE PROPERTY AND ACQUISITION OF ANY ADDITIONAL WATER REQUIRED FOR DEVELOPMENT OF THE PROPERTY SHALL BE THE SOLE RESPONSIBILITY OF THE DEVELOPER, ITS SUCCESSORS AND ASSIGNS. DEVELOPMENT APPROVALS WILL NOT BE GRANTED WITHOUT PROOF OF WATER AVAILABILITY.

add chord bearings
and distances all
curves

SURVEYOR'S CERTIFICATE:

I, MICHAEL LLOYD POOL, A REGISTERED LAND SURVEYOR, REGISTERED IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THERE ARE NO ROADS, PIPELINES, IRRIGATION DITCHES, OR OTHER EASEMENTS IN EVIDENCE OR KNOWN BY ME TO EXIST ON OR ACROSS THE HEREIN BEFORE DESCRIBED PROPERTY EXCEPT AS SHOWN ON THIS PLAT. I FURTHER CERTIFY THAT I HAVE PERFORMED THE SURVEY SHOWN HEREON, OR SUCH SURVEY WAS PREPARED UNDER MY DIRECT RESPONSIBILITY AND SUPERVISION, THAT THIS PLAT ACCURATELY REPRESENTS SAID SURVEY, AND THAT ALL MONUMENTS EXIST AS SHOWN HEREON.



MICHAEL LLOYD POOL, PLS
COLORADO REG. NO. 38304
FOR AND ON BEHALF OF ATWELL, LLC

NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATE SHOWN HEREON.

CITY STAFF CERTIFICATE:

APPROVED BY THE CITY ENGINEER OF THE CITY OF COMMERCE CITY

THIS _____ DAY OF _____, A.D. 20____

CITY ENGINEER

APPROVED BY THE DIRECTOR, DEPARTMENT OF COMMUNITY DEVELOPMENT OF THE CITY OF COMMERCE CITY

THIS _____ DAY OF _____, A.D. 20____

DIRECTOR, COMMUNITY DEVELOPMENT

CITY COUNCIL CERTIFICATE:

APPROVED BY CITY OF COMMERCE CITY, CITY COUNCIL

THIS _____ DAY OF _____, A.D. 20____

ATTEST: _____
CITY CLERK MAYOR

ADAMS COUNTY CLERK AND RECORDER'S CERTIFICATE:

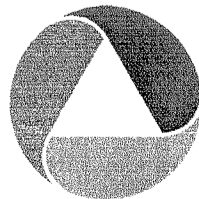
THIS PLAT WAS FILED FOR RECORD IN THE OFFICE OF ADAMS COUNTY CLERK AND RECORDER, IN THE STATE OF COLORADO, AT _____ M., ON THE

_____ DAY OF _____, A.D. 20____

COUNTY CLERK AND RECORDER

BY: _____
DEPUTY

RECEPTION NO. _____



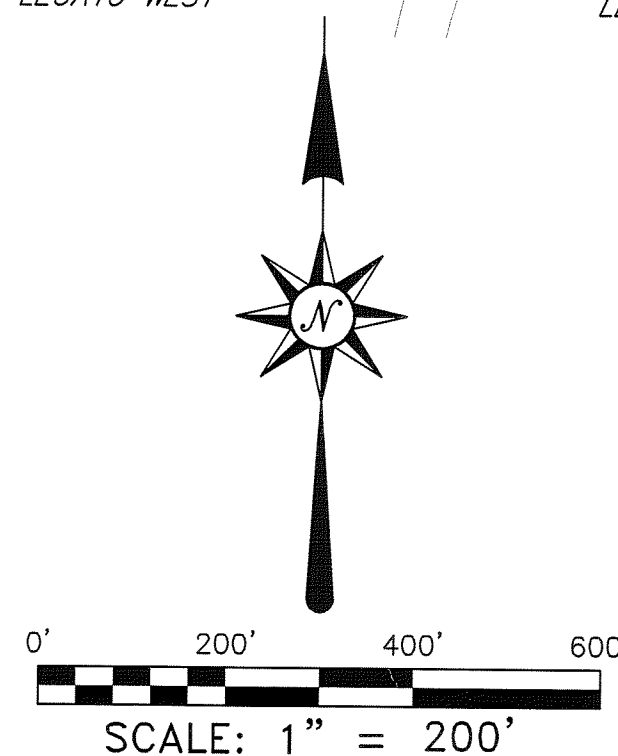
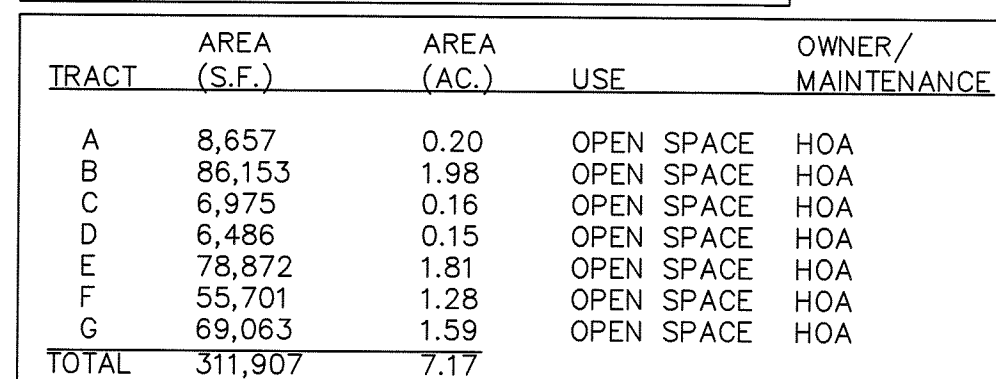
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LAKEWOOD, CO 80228
303.462.1100

REVISIONS

SHEET
1
OF 8

FILE NO. 19002860_FINAL PLAT
DATE 07/19/2020
DRAWN BY TWK
CHECK BY MLP
JOB NO. 19002860

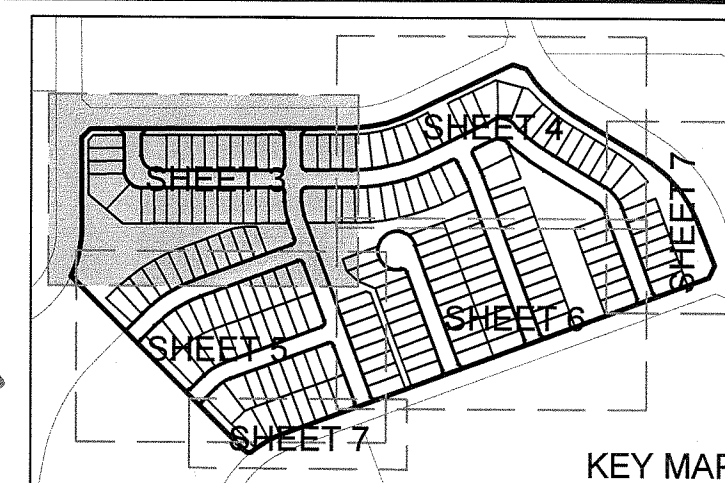
A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO
SHEET 2 OF 8



REVISIONS		SHEET 2 OF 8
	FILE NO.19002860_FINAL PL	
	DATE 07/19/20	
	DRAWN BY TW	
	CHECK BY ML	
	JOB NO.	
	1900286	

LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF ADAMS,
CITY OF COMMERCE CITY, STATE OF COLORADO
SHEET 3 OF 8



0' 50' 100' 150'
SCALE: 1" = 50'

LEGEND
--- SUBJECT PARCEL BOUNDARY LINE
--- CENTERLINE
--- LOT/TRACT LINE
--- ADJACENT PROPERTY LINE
--- PROPOSED EASEMENT LINE
--- EXISTING EASEMENT LINE
--- U.E. = UTILITY EASEMENT
--- U.T.E. = UTILITY & TRANSPORTATION EASEMENT
--- SET #4 REBAR WITH BLUE PLASTIC CAP "ATWELL PLS 38304"
--- BLOCK NUMBER

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LAKEWOOD, CO 80228
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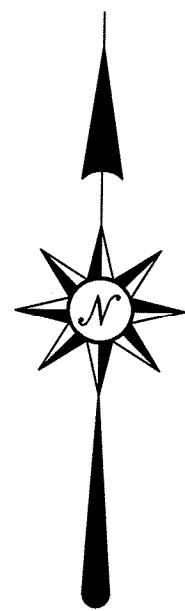
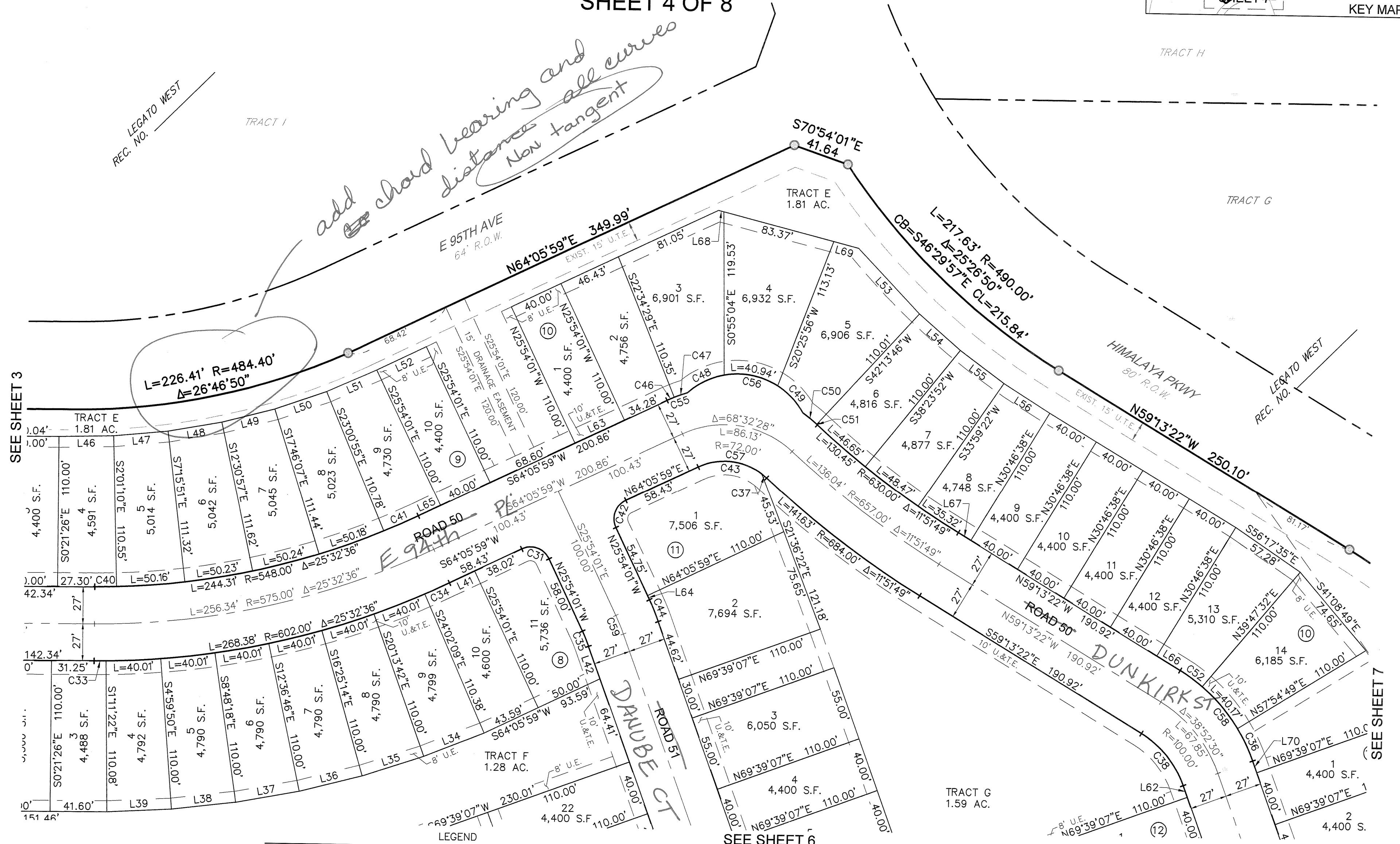
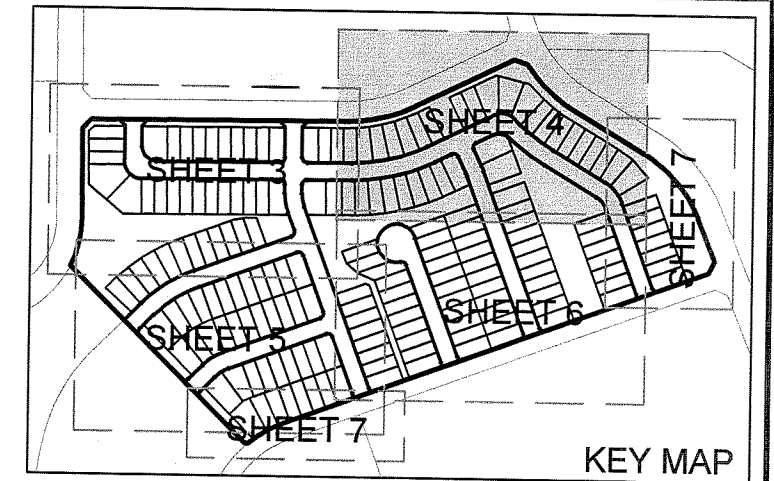
REVISIONS		SHEET 3 OF 8
NO.	DESCRIPTION	
1	FILE NO. 19002860_FINAL PLAT	DATE 07/19/2020 DRAWN BY TWK CHECK BY MLP JOB NO. 19002860
2		
3		
4		

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LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF ADAMS,
CITY OF COMMERCE CITY, STATE OF COLORADO

SHEET 4 OF 8



0' 50' 100' 150'
SCALE: 1" = 50'

LEGEND	
	SUBJECT PARCEL BOUNDARY LINE
	CENTERLINE
	LOT/TRACT LINE
	ADJACENT PROPERTY LINE
	PROPOSED EASEMENT LINE
	EXISTING EASEMENT LINE
U.E. = UTILITY EASEMENT	
U.T.E. = UTILITY & TRANSPORTATION EASEMENT	
SET #4 REBAR WITH BLUE PLASTIC CAP "ATWELL PLS 38304"	
(11) BLOCK NUMBER	



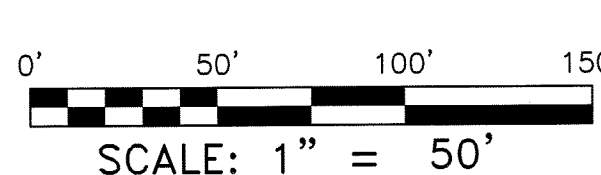
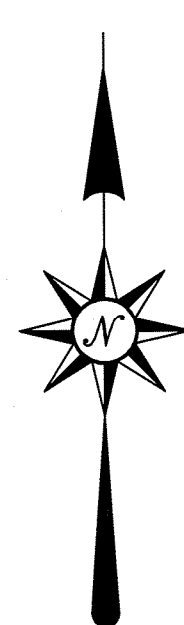
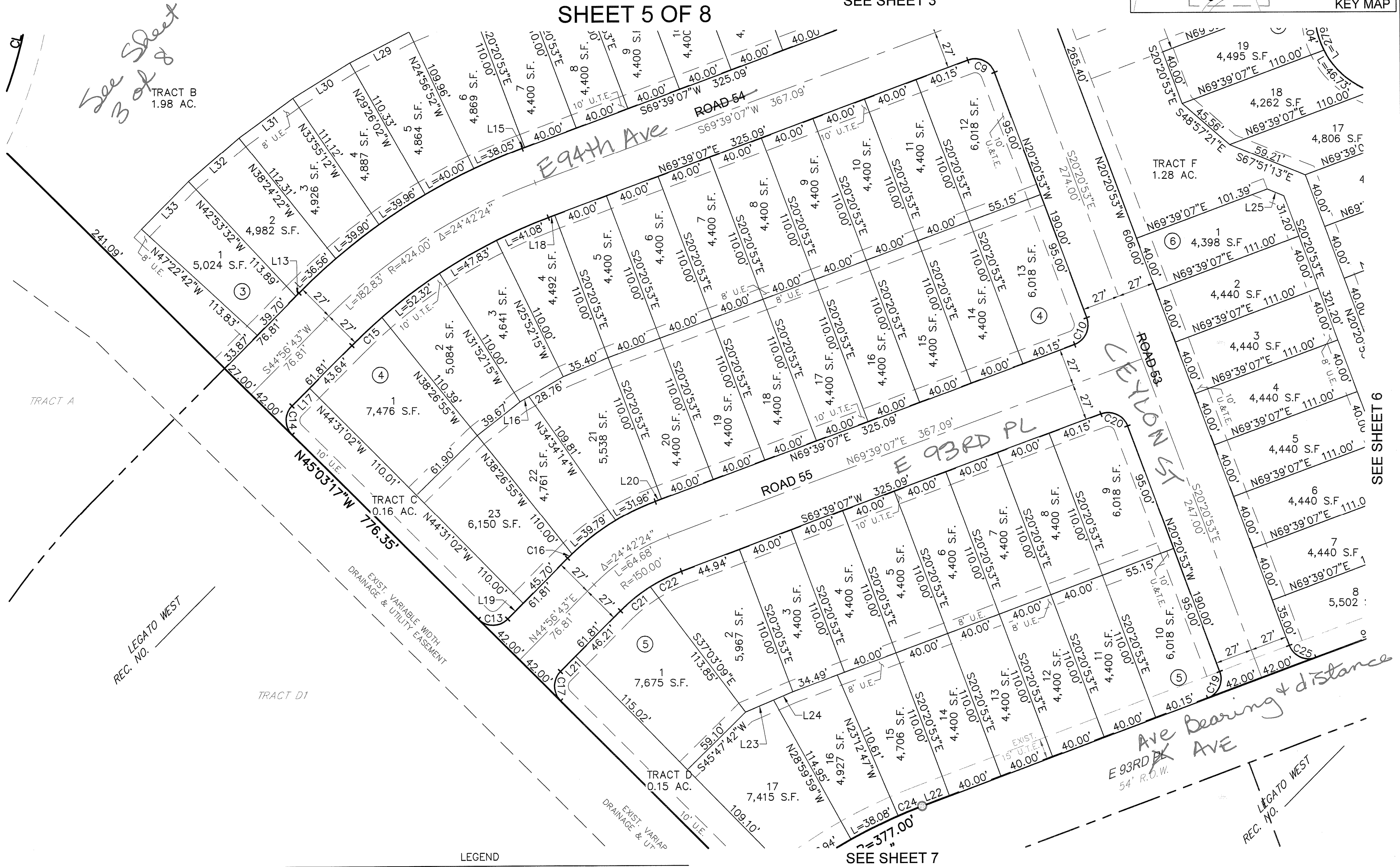
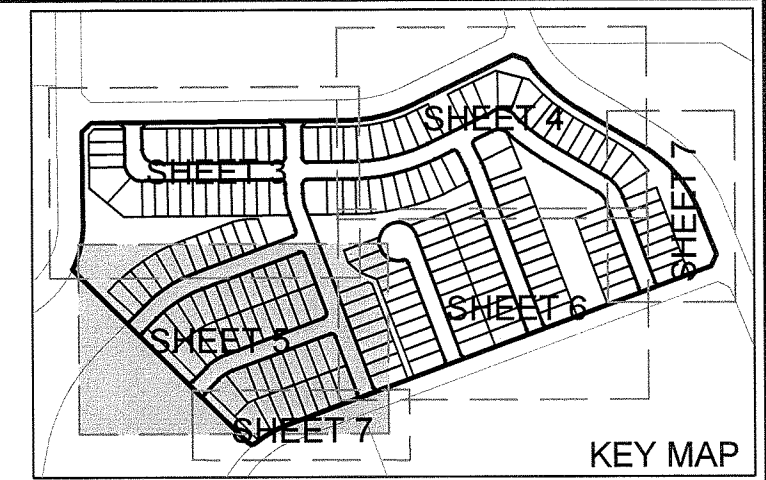
REVISIONS		SHEET 4 OF 8
FILE NO. 19002860 FINAL PLAT		DATE 07/19/2020
DRAWN BY TWK		CHECK BY MLP
JOB NO. 19002860		

LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF ADAMS,
CITY OF COMMERCE CITY, STATE OF COLORADO

SHEET 5 OF 8

SEE SHEET 3



LEGEND	
	SUBJECT PARCEL BOUNDARY LINE
	CENTERLINE
	LOT/TRACT LINE
	ADJACENT PROPERTY LINE
	PROPOSED EASEMENT LINE
	EXISTING EASEMENT LINE
	SET #4 REBAR WITH BLUE PLASTIC CAP "ATWELL PLS 38304"
	BLOCK NUMBER
	U.E. = UTILITY EASEMENT
	U.T.E. = UTILITY & TRANSPORTATION EASEMENT

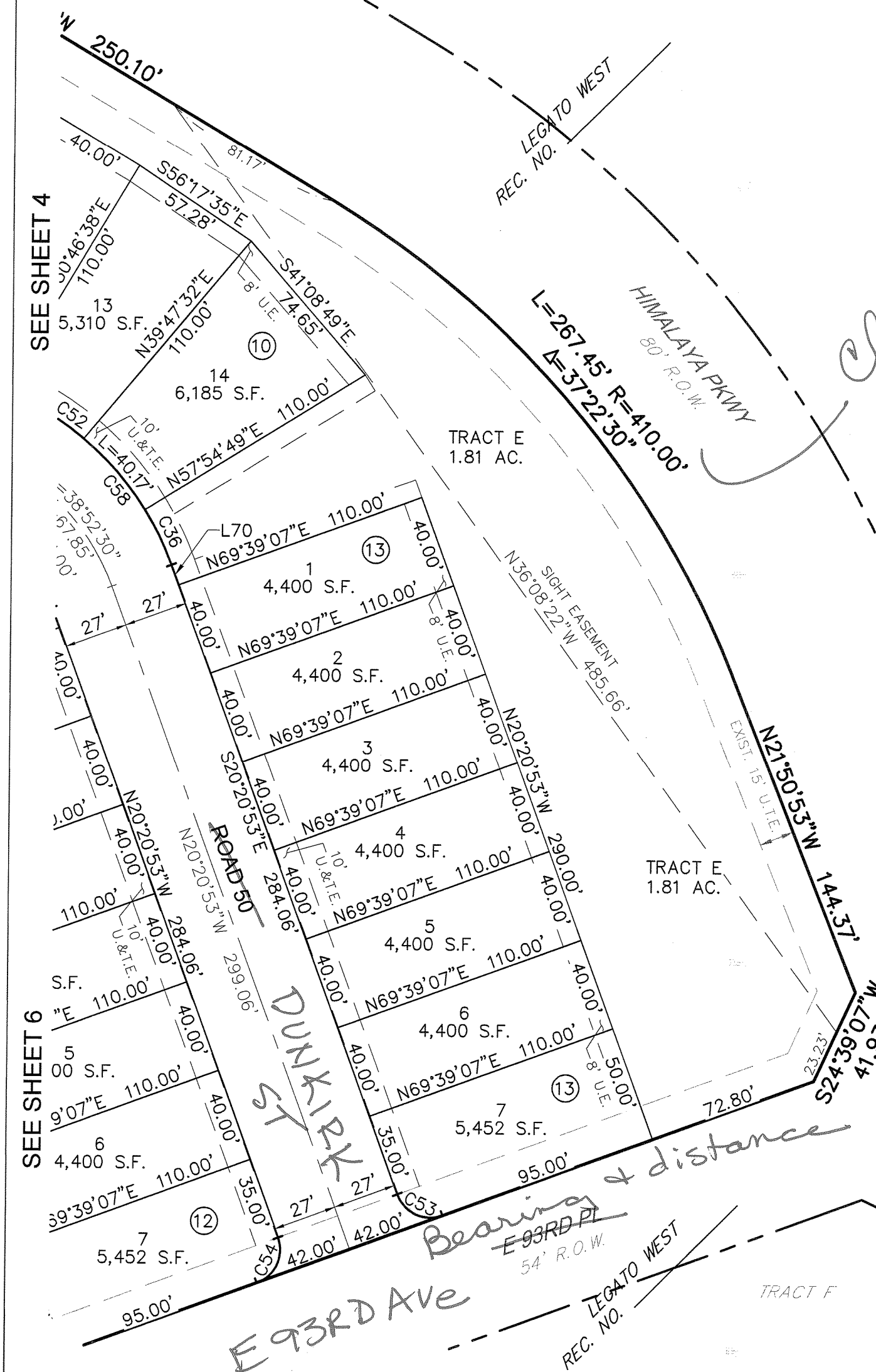
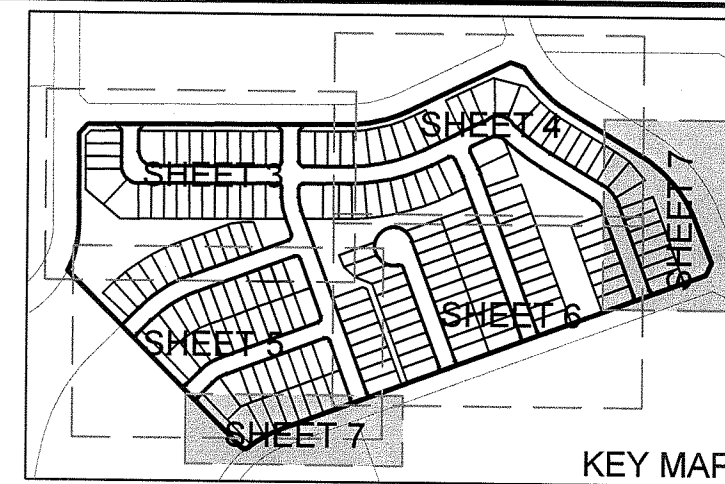
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303.462.1100

REVISIONS		SHEET 5 OF 8
		FILE NO. 19002860_FINAL PLAT
		DATE 07/19/2020
		DRAWN BY TWK
		CHECK BY MLP
		JOB NO. 19002860

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LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF ADAMS,
CITY OF COMMERCE CITY, STATE OF COLORADO
SHEET 7 OF 8



0' 50' 100' 150'
SCALE: 1" = 50'

LEGEND

	SUBJECT PARCEL BOUNDARY LINE
	CENTERLINE
	LOT/TRACT LINE
	ADJACENT PROPERTY LINE
	PROPOSED EASEMENT LINE
	EXISTING EASEMENT LINE
	SET #4 REBAR WITH BLUE PLASTIC CAP "ATWELL PLS 38304"
	U.E. = UTILITY EASEMENT
	U.T.E. = UTILITY & TRANSPORTATION EASEMENT
	(11) BLOCK NUMBER



REVISIONS

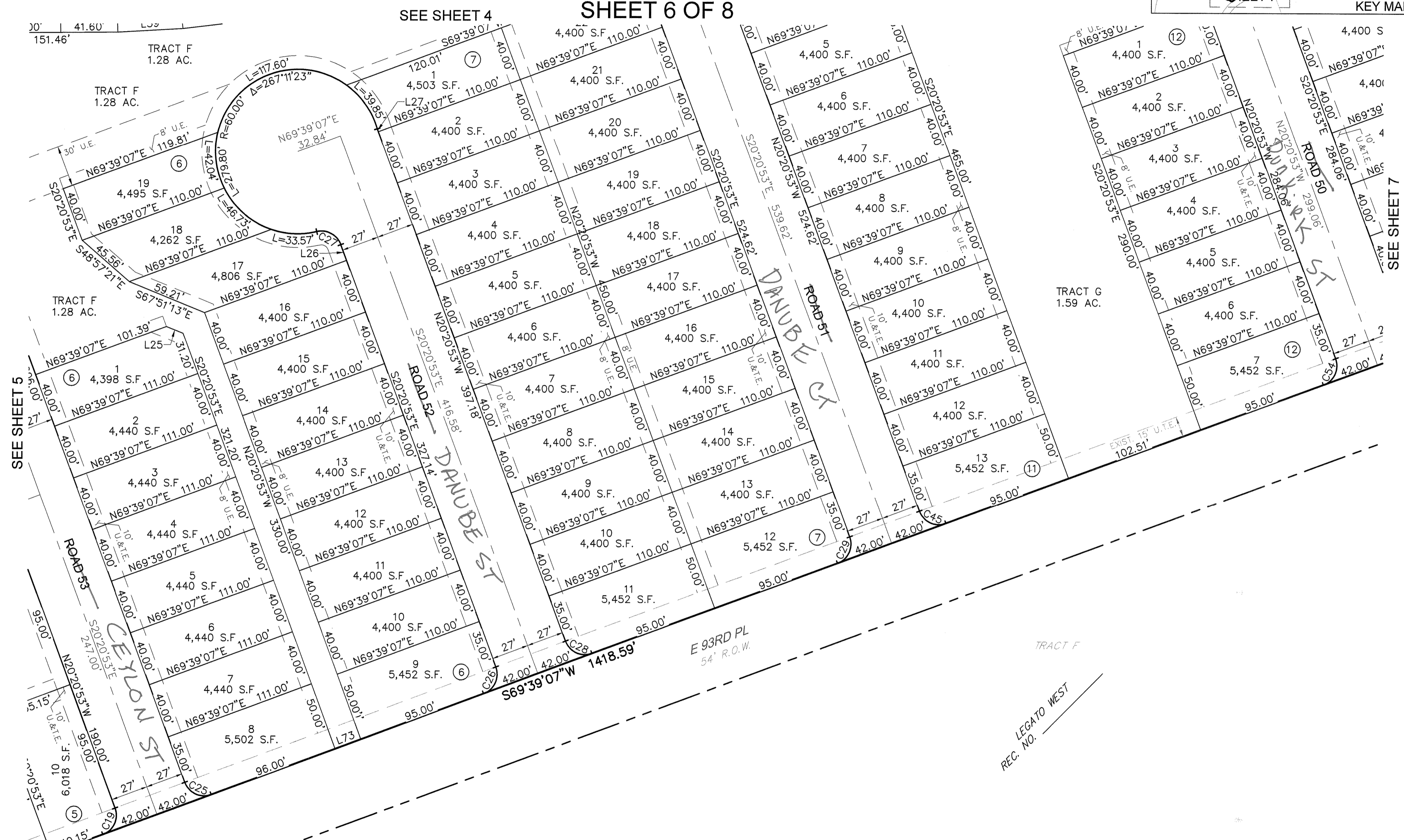
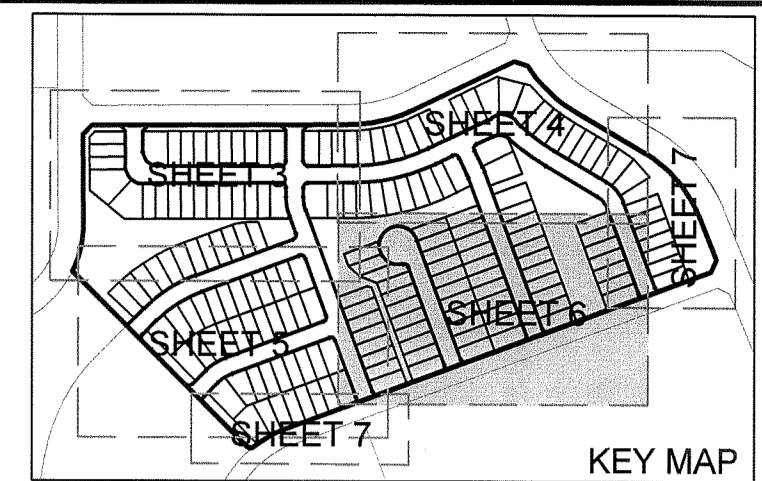
SHEET
7
OF 8

FILE NO. 19002860_FINAL PLAT
DATE 07/19/2020
DRAWN BY TWK
CHECK BY MLP
JOB NO. 19002860

LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF ADAMS,
CITY OF COMMERCE CITY, STATE OF COLORADO

SHEET 6 OF 8



SCALE: 1" = 50'

LEGEND	
	SUBJECT PARCEL BOUNDARY LINE
	CENTERLINE
	LOT/TRACT LINE
	ADJACENT PROPERTY LINE
	PROPOSED EASEMENT LINE
	EXISTING EASEMENT LINE
	SET #4 REBAR WITH BLUE PLASTIC CAP "ATWELL PLS 38304"
	U.E. = UTILITY EASEMENT
	U.T.E. = UTILITY & TRANSPORTATION EASEMENT
	⑪ BLOCK NUMBER

REVISIONS		SHEET 6 OF 8
		FILE NO. 19002860_FINAL PLAT
		DATE 07/19/2020
		DRAWN BY TWK
		CHECK BY MLP
		JOB NO. 19002860

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LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO
SHEET 8 OF 8

*add chord
bearings and
distances all
curves*

LINE TABLE		
LINE	LENGTH	BEARING
L1	2.00'	S00°21'26"E
L2	2.00'	S00°21'26"E
L3	40.00'	S00°21'26"E
L4	22.89'	N44°38'34"E
L5	23.82'	N00°21'26"W
L6	28.55'	S00°21'26"E
L7	7.02'	S20°20'53"E
L8	32.59'	N89°38'34"E
L9	9.55'	N80°42'54"E
L10	31.21'	N80°42'54"E
L13	3.24'	S44°56'43"W
L14	9.37'	N69°39'07"E
L15	1.96'	S69°39'07"W
L16	7.53'	N59°59'47"E
L17	18.17'	S44°56'43"W
L18	4.94'	S69°39'07"W
L19	16.11'	N44°56'43"E
L20	4.94'	N69°39'07"E
L21	15.60'	S44°56'43"W
L22	21.13'	N69°39'07"E
L23	22.07'	S67°10'58"W
L24	15.15'	S67°10'58"W
L25	13.03'	S67°51'13"E
L26	12.14'	N20°20'53"W
L27	2.18'	S20°20'53"E

LINE TABLE		
LINE	LENGTH	BEARING
L28	48.83'	S67°18'16"W
L29	48.61'	S62°48'33"W
L30	48.61'	S58°19'23"W
L31	48.61'	S53°50'13"W
L32	48.61'	S49°21'03"W
L33	48.61'	S44°51'53"W
L34	47.32'	S68°19'28"W
L35	47.31'	S71°40'32"W
L36	47.31'	S75°29'00"W
L37	47.31'	S79°17'28"W
L38	47.31'	S83°05'56"W
L39	47.31'	S86°48'56"W
L40	28.55'	S00°21'26"E
L41	20.41'	S64°05'59"W
L42	25.22'	N20°20'53"W
L43	25.46'	N45°21'26"W
L44	25.46'	N44°38'34"E
L45	2.00'	S00°21'26"E
L46	40.00'	N88°35'12"E
L47	40.00'	N84°15'14"E
L48	40.00'	N79°41'14"E
L49	40.00'	N75°07'14"E
L50	40.00'	N70°33'15"E
L51	40.00'	N66°00'16"E
L52	40.00'	N64°05'59"E

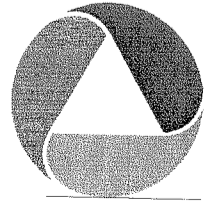
LINE TABLE		
LINE	LENGTH	BEARING
L53	65.54'	N43°34'51"W
L54	40.00'	N49°23'53"W
L55	40.00'	N53°48'23"W
L56	40.00'	N58°03'09"W
L57	57.28'	S56°17'35"E
L58	74.65'	S41°08'49"E
L61	2.00'	S00°21'26"E
L62	9.06'	S20°20'53"E
L63	40.00'	S64°05'59"W
L64	3.25'	N25°54'01"W
L65	17.97'	S64°05'59"W
L66	20.07'	N59°13'22"W
L67	10.85'	N59°13'22"W
L68	3.94'	S75°33'01"E
L69	18.80'	S75°33'01"E
L70	9.06'	N20°20'53"W
L71	25.46'	S45°21'26"E
L72	25.46'	S44°38'34"W
L73	20.00'	N69°39'07"E
L74	19.56'	S00°21'26"E

Curve Table			
CURVE #	LENGTH	RADIUS	DELTA
C1	23.56'	15.00'	90°00'00"
C2	20.56'	55.00'	21°25'05"
C3	37.14'	55.00'	38°41'18"
C4	38.31'	55.00'	39°54'47"
C5	11.39'	55.00'	11°51'56"
C6	23.56'	15.00'	90°00'00"
C7	62.11'	178.00'	19°59'27"
C8	23.56'	15.00'	90°00'00"
C9	23.56'	15.00'	90°00'00"
C10	23.56'	15.00'	90°00'00"
C13	23.56'	15.00'	90°00'00"
C14	23.56'	15.00'	90°00'00"
C15	29.96'	397.00'	4°19'24"
C16	4.57'	177.00'	1°28'50"
C17	23.56'	15.00'	90°00'00"
C18	21.95'	15.00'	83°50'58"
C19	23.56'	15.00'	90°00'00"
C20	23.56'	15.00'	90°00'00"
C21	27.90'	123.00'	12°59'42"
C22	25.14'	123.00'	11°42'42"
C23	15.23'	377.00'	2°18'54"
C24	18.85'	377.00'	2°51'54"
C25	23.56'	15.00'	90°00'00"
C26	23.56'	15.00'	90°00'00"
C27	21.73'	15.00'	82°59'01"

Curve Table			
CURVE #	LENGTH	RADIUS	DELTA
C28	23.56'	15.00'	90°00'00"
C29	23.56'	15.00'	90°00'00"
C30	23.56'	15.00'	90°00'00"
C31	23.56'	15.00'	90°00'00"
C32	43.26'	124.00'	19°59'27"
C33	8.75'	602.00'	0°49'57"
C34	19.59'	602.00'	1°51'52"
C35	11.92'	123.00'	5°33'09"
C36	26.02'	127.00'	11°44'18"
C37	4.61'	45.00'	5°51'48"
C38	49.53'	73.00'	38°52'30"
C39	23.56'	15.00'	90°00'00"
C40	15.90'	548.00'	1°39'45"
C41	27.59'	548.00'	2°53'06"
C42	23.56'	15.00'	90°00'00"
C43	49.23'	45.00'	62°40'40"
C44	17.15'	177.00'	5°33'09"
C45	23.56'	15.00'	90°00'00"
C46	5.75'	99.00'	3°19'32"
C47	10.09'	99.00'	5°50'26"
C48	30.32'	55.00'	31°35'23"
C49	27.41'	55.00'	28°33'08"
C50	12.96'	99.00'	7°30'05"
C51	0.71'	99.00'	0°24'41"
C52	19.98'	127.00'	9°00'55"

Curve Table			
CURVE #	LENGTH	RADIUS	DELTA
C53	23.56'	15.00'	90°00'00"
C54	23.56'	15.00'	90°00'00"
C55	15.84'	99.00'	9°09'59"
C56	98.67'	55.00'	102°47'22"
C57	53.83'	45.00'	68°32'28"
C58	86.17'	127.00'	38°52'30"
C59	14.54'	150.00'	5°33'09"

k:\19002860\dwg\survey\19002860_fig 1 final plat.dwg Savedate: 7/20/2020 7:18 AM Plotdate: 7/20/2020 10:05 AM

 ATWELL 866.850.4200 www.atwell-group.com 143 UNION BOULEVARD, SUITE 700 LAKEWOOD, CO 80228 303.462.1100	REVISIONS		SHEET 8 OF 8
	FILE NO.	19002860_FINAL PLAT	
	DATE	07/19/2020	
	DRAWN BY	TWK	
	CHECK BY	MLP	
	JOB NO.	19002860	



Stormwater Management Plan

for:

LEGATO FILING 1

SOUTHWEST CORNER OF E. 95TH AVE. AND HIMALAYA PKWY.
COMMERCE CITY, COLORADO

Prepared for:

**COHEN DENVER AIRPORT, LLC
2600 PASEO VERDE PARKWAY
SUITE 250
HENDERSON, NV 89074
ATTN: BRAD BURNS**

Submitted by: Atwell, LLC

DANIEL MADRUGA, P.E.
6200 SOUTH SYRACUSE WAY
GREENWOOD VILLAGE, CO 80111
303.825.7100

PROJECT NO. 19002860

SUBMITTAL DATE: 7/20/20

ENGINEER CERTIFICATION

This report and plan for the grading, erosion, and sediment control design for the Legato Filing 1 Subdivision was prepared by me or under my direct supervision in accordance with the provisions of City of Commerce City Grading, Erosion, and Sediment Control criteria. I understand that Commerce City does not and will not assume liability for grading, erosion, and sediment control facilities designed by others.

Daniel Madruga PE Registered Professional Engineer State of Colorado No. 36834

OWNER/DEVELOPER CERTIFICATION

This Grading, Erosion and Sediment Control Plan has been placed in the Commerce City file for this project and appears to fulfill the applicable City of Commerce City Grading, Erosion and Sediment Control criteria. Additional grading, erosion and sediment control measures may be required of the owner or his/her agents, due to unforeseen erosion problems or if the submitted plan does not function as intended. The requirements of this plan shall run with the land and be the obligation of the land owner, or his/her designated representative(s) until such time as the plan is properly completed, modified or voided.

Owner or Authorized Agent

Date

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APPENDICES

- A. VICINITY MAP
- B. FEMA FIRM MAP
- C. SOILS SURVEY
- D. INSPECTION REPORT FORM
- E. SPILL PREVENTION AND CONTROL PLAN

Verify street names per Plat comments.

1. SITE DESCRIPTION

Contractor shall comply with all City of Commerce City contractual requirements and all requirements associated with the Colorado Department of Public Health and Environment (CDPHE) on this project. The SWMP Administrator for Construction shall update to reflect current project site conditions, as applicable.

A. PROJECT SITE LOCATION:

This will change with Plat comments

The Project Site consists of approximately 33.9 acres located at the southwest corner of E. 95th Avenue and Himalaya Parkway in Commerce City, Colorado within Section 22, Township 2 South, Range 66 West of the 6th Principal Meridian, Adams County. The Site is located approximately 0.25 miles east of Tower Road and is bordered by E. 93rd Place to the south, E. 95th Avenue to the north, and Himalaya Pkwy. to the east. A Vicinity Map is provided in Appendix A.

B. PROJECT SITE DESCRIPTION:

This Project is part of the larger 598-acre mixed-use PUD (Legato Development) that includes commercial and medium-density residential construction, a 10-acre neighborhood park and a 25-acre school. This stormwater management plan is prepared for the first phase of residential development (Filing 1), consisting of 181 single-family residential units. Filing 1 residential construction will start following completion of the pertinent components of the Spine Infrastructure Project (under Case S-751-19) which includes miles of offsite roadway, water, sanitary and storm infrastructure and stormwater detention facilities serving the entire PUD development. The offsite infrastructure pertinent to this residential filing includes improvements along Himalaya Parkway, E. 95th Avenue and E. 93rd Place and associated on-site water, sanitary and storm sewer facility to serve the 181-lot residential development. This narrative is written to account for the onsite improvements specifically related to Filing 1 bordered by those offsite improvements.

Discuss removal of existing SB & DDs

C. PROPOSED SEQUENCING FOR MAJOR CONSTRUCTION ACTIVITIES:

Construction Sequence 1: The "preliminary" initial phase BMPs required for the Grading Permit Acceptance will be installed including construction fencing, silt fence, vehicle tracking control pad, stabilized staging area and exterior inlet protection. Following installation of these initial BMPs, clearing and grubbing operations will begin, along with grading activities, and subsurface utility installation. Designate as "interim" phase. Initial BMPs intended to protect the newly constructed improvements, should be installed as quickly as possible including rough cutting streets, diversion ditches, erosion control blankets (where applicable).

Discuss grading and utility installation.

Designate as "interim" phase.

Use RRB instead of curb socks in Commerce City.

Construction Sequence 2: The next phase of construction will consist of roadway construction activities such as subgrade preparation, base course applications, asphalt paving and concrete flatwork placement. The contractor shall also install "secondary" initial phase BMPs such as site inlet protections and curb socks where applicable.

Construction Sequence 3: The final phase of construction on this portion of the project will entail installation of the permanent site stabilization measures such as seeding and mulching, ~~removal of diversion ditches~~, removal of erosion control blankets once vegetation has been established and approved by the City, removal of

reinforced rock berms and reinforced rock culverts and inlet protection measures, removal of concrete washout area and the stabilized staging area and vehicle tracking control once construction activity for the spine infrastructure work associated with this project has been completed.

D. ACRES OF DISTURBANCE:

- 1. The total area of disturbance with this phase of the project is 37 acres. This includes clearing and grubbing, grading, installation of roads and associated utilities.
- 2. The total area of seeding is approximately 27.2 acres.
- 3. Total area of new impervious surface associated with building foot prints, roads, curb and gutters, sidewalks and ramps is approximately 21 acres.

E. EXISTING SOIL DATA:

NRCS Soils Survey results indicate that the existing soils are Planter loam with 0 to 3% slopes and Ascalon sandy loam with 0 to 35 slopes. These soils are identified as a Groups B & C having a slow to moderate infiltration rates when thoroughly wet. They consist of soils that have a layer that impedes downward movement of water or moderately fine texture. The existing vegetative cover is estimated at 90%. The NRCS Soils Survey for the site has been included as Appendix C.

The Site is not within any mapped floodplains. The FEMA FIRM map for this site is provided in Appendix B.

F. EXISTING VEGETATION, INCLUDING PERCENT COVER:

The project site is essentially undeveloped land consisting of natural vegetation, grasses and shrubs. Prior to construction start, the SWMP Administrator for Construction will conduct the Vegetation Transects as outlined in Chapter 4.11.2 of the CDOT’s Erosion Control and Stormwater Quality Guide. The observed pre-construction and post construction vegetation descriptions and percent densities shall be noted below.

Pre-Construction

Date of survey: _____ %Density: _____

Description of existing vegetation:

Post-Construction

Date of survey: _____ %Density: _____

Description of existing vegetation:

Date of CDPS-SCP Closure: _____

G. POTENTIAL POLLUTANTS SOURCES:

See First Construction Activities under Potential Pollutant Sources. The SWMP Administrator for Construction shall prepare a list of all potential pollutants and their locations in accordance with subsection 107.25. The potential pollution sources for this site that would most likely be candidates for contamination include sediment runoff, wood, solvents debris, concrete, concrete curing compound, form oil, asphalt, oil and gasoline for generators, fertilizers and herbicides from landscaping activities.

<i>Potential Pollutants</i>	<i>Source</i>
Antifreeze	Vehicle/Equipment
Diesel Fuel	Vehicle/Equipment
Gasoline	Vehicle/Equipment
Hydraulic oils/fuels	Vehicle/Equipment
Grease	Vehicle/Equipment
Paints	Contractor
Glue/Adhesive/Curing Compounds	Contractor
Sanitary Waste	Portable Toilets
Offsite Vehicle Tracking	Construction/transportation equipment
Construction Dust	Construction/transportation equipment
Soil Amendments	Contractor
Landscaping Materials Fertilizer	Contractor
Concrete Mortar	Mobile Mixer
Concrete	Trucks/Washout
Sediment	Exposed soils: Disturbed Areas

H. RECEIVING WATERS:

The majority of the stormwater runoff the Site is routed to detention Pond A for water quality and flood attenuation. Pond A is located northwest of the Site in the northwest corner of E. 94th Avenue and Biscay Street. Pond A discharges to a storm sewer pipe running parallel to Tower Road, to the south, which discharges to Gramma Gulch and ultimately Second Creek. Gramma Gulch continues to flow west, through a culvert beneath Tower Road discharging into Second Creek about 0.75 miles west of Tower Road.

I. NON-STORMWATER DISCHARGES:

SWMP Administrator for Construction shall describe any non-stormwater related discharges, per table below:

Discharge Description	Location	Method Statement (Location)
Dewatering*		
Uncontaminated Spring		
Concrete Wash Water (in-ground washout structure)		
Landscape Irrigation Return Flows		
Emergency Fire Fighting		
Concrete Saw Water		

*ALLOWABLE: Refer to CDPHE Low Risk Discharge Guidance Document of Uncontaminated Groundwater to Land. <https://www.colorado.gov/pacific/sites/default/files/WQ%20LOW%20RISK%20GW.pdf>

*If ground water does not meet water quality standards for receiving water, a separate CDPS Dewatering Permit shall be obtained by the Contractor from CDPHE in accordance with subsections 107.02 and 107.25.

2. SITE MAP COMPONENTS:

Please see the accompanying Erosion and Sediment Control Plans for Legato Filing 1, prepared by Atwell and dated July 20, 2020. These design drawings illustrate the associated stormwater management plan map components listed below:

- A. PROJECT CONSTRUCTION SITE BOUNDARIES
- B. ALL AREAS OF GROUND SURFACE DISTURBANCE
- C. EXISTING AND PROPOSED GRADING CONTOURS
- D. LOCATION OF ALL STRUCTURAL CONTROL MEASURES IDENTIFIED IN THE SWMP
- E. LOCATION OF NON-STRUCTURAL CONTROL MEASURES AS APPLICABLE
- F. STREAMS, SPRINGS, WETLANDS AND OTHER STATE WATERS, INCLUDING AREAS THAT REQUIRE PRE-EXISTING VEGETATION BE MAINTAINED WITHIN 50 FEET OF A RECEIVING WATER
- G. PROTECTION OF TREES, SHRUBS AND CULTURAL RESOURCES
- H. FLOW ARROWS THAT DEPICT STORMWATER FLOW DIRECTIONS ON-SITE AND RUNOFF DIRECTION
- I. AREAS USED FOR STORING AND STOCKPILING OF MATERIALS, STAGING AREAS (FIELD TRAILER, FUELING, ETC.)
- J. LOCATIONS OF ALL STREAM CROSSINGS LOCATED WITHIN THE CONSTRUCTION SITE BOUNDARY

3. QUALIFIED STORMWATER MANAGERS:

A. SWMP ADMINISTRATOR FOR DESIGN:

Name/Title	Contact Information
Daniel Madruga, P.E. Civil Engineer/Project Manager	Atwell, LLC 6200 S Syracuse Way, Suite 470 Greenwood Village, CO 80111 303-928-6757 dmadruga@atwell-group.com

- B. SWMP Administrator for Construction: (As defined in Subsection 208) The Contractor shall designate a SWMP Administrator for Construction upon co-permittee of the permit. The SWMP Administrator for Construction shall become the operator for the SWMP and assume responsibility for all design changes to the SWMP implementation and maintenance in accordance to 208.03. The SWMP shall remain the property of the City of Commerce City. The SWMP Administrator for Construction shall be responsible for implementing, maintaining and revising SWMP, including the title and contact information as necessary. The activities and responsibilities of the SWMP Administrator for Construction shall address all aspects of the project's SWMP. (Update the information below for each new SWMP Administrator for Construction as appropriate.

Name/Title	Contact Information (phone & email)	Certification #	Start Date	Completion Date
TBD				

C. EROSION CONTROL INSPECTOR: (for City of Commerce City)

Name/Title	Contact Information (phone & email)
TBD	

4. STORMWATER MANAGEMENT CONTROLS FIRST CONSTRUCTION ACTIVITIES

THE CONTRACTOR SHALL PERFORM THE FOLLOWING:

A. POTENTIAL POLLUTANT SOURCES

Evaluate, identify, locate and describe all potential sources of pollutants at the site in accordance with subsection 107.25, CDPS-SCP and place in the SWMP. All control measures related to potential pollutants shall be marked on the SWMP Site Map by the Contractor's SWMP Administrator for Construction.

B. OFFSITE DRAINAGE (RUN ON WATER)

Describe and record control measures on the SWMP Site Map (Erosion and Sediment Control Plans by Atwell, LLC) that have been prepared to address offsite run-on water in accordance with subsection 208.03. Silt fence shall be installed in along limits of construction upstream of disturbed areas.

C. VEHICLE TRACKING PAD/VEHICLE TRACKING CONTROL

Vehicle tracking control shall be used at all vehicle and equipment exit points from the site to prevent sediment exiting the Limits of Construction (LOC) of the project site. Access shall be provided only at locations approved by the Engineer. The SWMP Administrator shall record vehicle tracking control pad locations as shown in the accompanying Erosion and Sediment Control Plans prepared by Atwell, LLC and approved by the City of Commerce City.

Vehicle Tracking Pad (VTP). Vehicle tracking pads shall be constructed to the minimum dimensions shown in the Contract, unless otherwise directed by the Engineer. Construction of approved vehicle tracking pads shall be completed before any disturbance of the area.

The Contractor shall maintain each vehicle tracking pad during the entire time that it is in use for the project. The vehicle tracking pad shall be removed at the completion of the project unless otherwise directed by the Engineer.

D. PERIMETER CONTROL

Perimeter control shall be established as the first item on the SWMP to prevent the potential for pollutants leaving the construction site boundaries, entering the stormwater drainage system, or discharging to state waters. Perimeter control shall be in accordance with subsection 208.04 and as shown in the accompanying Erosion and Sediment Control Plans prepared by Atwell, LLC and approved by the City of Commerce City.

Perimeter control may consist of berms, silt fence, erosion logs, existing landforms, or other control measures as shown in the approved Erosion and Sediment Control Plans by Atwell, LLC.

5. DURING CONSTRUCTION

RESPONSIBILITIES OF THE SWMP Administrator for Construction

The SWMP is a living document “living document” that is continuously reviewed and modified throughout the construction phasing. During construction, the following items shall be added, updated, or amended as needed by the SWMP Administrator for Construction in accordance with subsection 208.03:

- A. STOCKPILE MANAGEMENT: Material stockpiles shall be located 50 horizontal feet away from State waters and shall be confined so that no potential pollutants will enter State waters and other sensitive areas as defined in the Contract. Locations shall be approved by the Engineer.

Erodible stockpiles (including topsoil) shall be contained with acceptable BMPs at the toe (or within 20 feet of the toe) throughout construction. BMPs shall be approved by the Engineer. The SWMP Administrator shall describe, detail, and record the sediment control devices on the SWMP.

- B. CONCRETE WASHOUT:

The concrete washout structure shall meet or exceed the dimensions shown on the plans or be used in accordance with manufacturer’s recommendations. Work on this structure shall not begin until written acceptance is provided by the Engineer.

Concrete washout structure shall conform to standard plan M-208-1 and shall meet the following requirements:

- 1) Structure shall contain all washout water.
- 2) Stormwater shall not carry wastes from washout and disposal locations.
- 3) The site shall be located a minimum of 50 horizontal feet from State waters and shall meet all requirements for containment and disposal as defined in subsection 107.25.
- 4) The site shall be signed as “Concrete Washout”.
- 5) The site shall be accessible to appropriate vehicles.
- 6) Freeboard capacity shall be included into structure design to reasonably ensure the structure will not overtop during or because of a precipitation events.
- 7) The Contractor shall prevent tracking of washout material out of the washout structure.
- 8) Solvents, flocculents, and acid shall not be added to wash water.
- 9) The structure shall be surrounded on three sides by a compacted berm.
- 10) The structure shall be fenced with orange plastic construction fencing to provide a barrier to construction equipment and to aid in identification of the concrete washout area.
- 11) Concrete waste, liquid and solid, shall not exceed 2/3 the storage capacity of the washout structure.

Pre-fabricated concrete washout structures shall meet the following requirements:

- 1) Structure shall contain all washout water.
- 2) Structure shall be located 50 horizontal feet away from State waters, and shall be confined so that no potential pollutants will enter State waters and other sensitive areas are as defined in the Contract. Locations shall be as approved by the Engineer. The site shall signed as “Concrete Washout”.
- 3) The site shall be accessible to appropriate vehicles.

- 4) Freeboard capacity shall be included into structure design to reasonably ensure the structure will not overtop during or because of a precipitation event.
- 5) Solvents, flocculants, and acid shall not be added to wash water.
- 6) Concrete waste, liquid and solid, shall not exceed 2/3 the storage capacity of the washout structure.
- 7) Prefabricated structures cannot be moved when they contain liquid, unless otherwise approved.
- 8) The concrete washout structure shall be completed and ready for use prior to concrete placement operations.
- 9) Washout areas shall be checked and maintained as required. On site permanent disposal of concrete washout waste is not allowed.
- 10) All liquid and solid wastes, including contaminated sediment and soils generated from concrete washout shall be hauled away from the site and disposed of properly at the Contractor's expense.

C. SAW CUTTING:

- 1) Material containment and removal will not be paid for separately, but shall be included in the work.
- 2) The Contractor shall protect storm drain facilities adjacent to locations where pavement cutting operations involving wheel cutting, saw cutting, sand blasting, or abrasive water jet blasting are to take place.
- 3) Material from pavement saw cutting operations shall be cleaned from the roadway surface during operations using a vacuum.

D. STREET SWEEPING:

Whenever sediment collects on the paved surface, the surface shall be cleaned. Street washing will not be allowed. Storm drain inlet protection shall be in place prior to shoveling, sweeping, or vacuuming. Sweeping shall be completed with a pickup broom or equipment capable of collecting sediment. Sweeping with a kick broom will not be allowed. During construction, indicate how items that have not been addressed during design are being handled in construction if applicable.

6. INSPECTIONS

Inspections shall be in accordance with subsection 208.03(c).

One Erosion Control Inspector (ECI) is required for every 40 acres of total disturbed area which is currently receiving temporary and interim stabilization measures as defined in subsection 208.04 (e). An ECI shall not be responsible for more than 40 acres in the project. Accepted permanent stabilization methods as defined in subsection 208.04 (e) will not be included in the 40 acres.

ECI duties shall be as follows:

- A. Coordinate with the SWMP Administrator on reporting the results of inspections.
- B. Review the construction site for compliance with the Stormwater Construction Permit.
- C. Inspect with the Superintendent and the Engineer (or their designated representatives) the stormwater management system at least every seven calendar days. Post storm event inspections shall be conducted within 24 hours after the end of any precipitation or snow melt event that may cause surface erosion. If no construction activities will occur following a storm event, post-storm event inspections shall be conducted prior to commencing construction activities, but no later than 72 hours following the storm event. The

occurrence of delay in inspections shall be documented in the inspection report. Form 1176 shall be used for all 7-day inspections and inspections following storm events. The Contractor shall notify the Erosion control inspector when a storm event occurs. Failure to perform inspections on time will result in liquidated damages in accordance with subsection 208.09.

Inspections are not required at sites when construction activities are temporarily halted, when snow cover exists over the entire site and melting conditions do not pose a risk of surface erosion. This exception shall be applicable only during the period where melting conditions do not exist, and applies to the routine 7 day, Headquarters and Region inspections, as well as the post-storm event inspections. The following information shall be documented on Form 1176 for use of this exclusion: dates when snow cover occurred, date when construction activities ceased, and date melting conditions began.

The order of precedence for required inspections shall be as follows:

- i. Headquarter water quality inspections
- ii. Region water quality inspections
- iii. Post-storm event inspections
- iv. 7-day inspections

When one of the listed inspections is performed, the inspections listed below it need not be performed on that day if the required Agency and Contractor personnel participated in the inspection.

For example: A 7-day inspection is not required on the same day a headquarters or Region inspection is conducted. A sheet shall be placed in the inspections area of the SWMP Notebook to refer to the date inspection performed.

- D. Follow all other agency Stormwater requirements and inspections unless a waiver or other agreement has been made.
- E. The ECI shall immediately report to the Contractor's Superintendent and the SWMP Administrator the following instances of noncompliance:
 - i. Noncompliance which may endanger health or the environment.
 - ii. Spills or discharge of hazardous substance or oil which may cause pollution of waters of the State.
 - iii. Discharge of stormwater which may cause an exceedance of a water quality standard.
 - iv. Upset conditions that occur on site.
- F. Spills, leaks, or overflows that result in the discharge of pollutants shall be documented on the Form 1176 by the ECI. The ECI shall record the time and date, weather conditions, reasons for spill, and how it was remediated.

7. CONTROL MEASURE MAINTENANCE

Erosion and sediment control practices and other protective measures identified in the SWMP as BMPs for stormwater pollution prevention shall be maintained in effective operating condition until the final stabilization of the site has been achieved.

- A. BMPs shall be continuously maintained in accordance with good engineering, hydrologic and pollution control practices, including removal of collected sediment when silt depth is 50 percent or more of the height of the erosion control device. When possible, the Contractor shall use equipment with an operator rather than labor alone to remove the sediment.
- B. Maintenance of erosion and sediment control devices shall include replacement of such devices upon the end of their useful service life as recommended by the Contractor and approved by the Engineer. Maintenance of rock check dams and vehicle tracking pads shall be limited to removal and disposal of sediment or addition of aggregate. Damages resulting from failure to maintain BMPs shall be paid at the contractors expense.
- C. Complete site assessment shall be performed as part of comprehensive inspection and maintenance procedures, to assess the adequacy of BMPs at the site and the necessity of changes to those BMPs to ensure continued effective performance. Where site assessment results in the determination that new or replacement BMPs are necessary, the BMPs shall be installed to ensure continuous effectiveness. When identified, BMPs shall be maintained, added, modified or replaced as soon as possible, immediately in most cases.
- D. From the time seeding and mulching work begins until the date the Contract work is accepted, the Contractor shall maintain all seeded areas. Damage to seeded areas or to mulch materials shall be immediately restored. Damage to seeded areas or to mulch materials due to Contractor negligence shall be immediately restored at the Contractor's expense. Restoration of other damaged areas will be measured and paid for under the appropriate bid item.
- E. Temporary BMPs may be removed upon completion of the project, as determined by the Water Quality Partial Acceptance walk-through. If removed, the area in which these BMPs were constructed shall be returned to a condition similar to that which existed prior to its disturbance. Removed BMPs shall become the property of the Contractor.
- F. If a project delay occurs, the Contractor shall be responsible to continue erosion and sediment control operations beyond the original contract time.
- G. Sediment removed during maintenance of BMPs and material from street sweeping may be used in or on embankment, provided it is distributed evenly across the embankment.
- H. Whenever sediment collects on the paved surface, the surface shall be cleaned. Street washing will not be allowed. Storm drain inlet protection shall be in place prior to shoveling, sweeping, or vacuuming. Sweeping shall be completed with a pickup broom or equipment capable of collecting sediment. Sweeping with a kick broom will not be allowed.
- I. Material from pavement saw cutting operations shall be cleaned from the roadway surface during operations using a vacuum. A BMP, such as a berm, shall be placed to contain slurry from joint flushing operations until the residue can be removed from the soil surface. Aggregate bags, erosion logs or other permeable BMPs shall not be used. Residue shall not flow into driving lanes. It shall be removed and disposed of in a manner that meets all state and local regulations. Material containment and removal will not be paid for separately, but shall be included in the work.

8. RECORD KEEPING

The Contractor will provide a SWMP Notebook at the Preconstruction Conference, The Contractor shall provide the contents required for items A through Q. The notebook shall be stored in the project trailer. The SWMP Administrator shall modify and update the notebook as needed to reflect actual site conditions, prior to or as soon as practicable but in no case more than 72 hours after the change. The following Contract documents and reports shall be kept, maintained, and updated in the notebook under the appropriate items by the SWMP Administrator:

- A. SWMP Plan Sheets – Notes, tabulation, sequence of major activities, area of disturbance, existing soil data, existing vegetation percent cover, potential pollutant sources, receiving water, non-stormwater discharges and environmental impacts.

- B. SWMP Site Maps and Plan Title Sheet – Construction site boundaries, ground surface disturbance, limits of cut and fill, flow arrows, structural BMPs, non-structural BMPs, Springs, Streams, Wetlands and surface water. Also included on the sheets is the protection of trees, shrubs and cultural resources.
- C. Standard Plans M-208-1, M-216-1 and M-615-1
- D. BMP Details not in Standard Plan M-208-1 – Non-standard details.
- E. Weekly meeting sign in sheet.
- F. Calendar of Inspections – Calendar of inspections marking when all inspections take place.
- G. Form 1176 – Weekly meeting notes and inspection report.
- H. Region and Headquarter Water Quality Reports and Form 105(s) relating to Water Quality.
- I. Description of Inspection and Maintenance Methods – Description of inspection and maintenance methods implemented at the site to maintain all BMPs identified in the SWMP and Items not addressed in the design.
- J. Spill Response Plan – Reports of reportable spills submitted to CDPHE.
- K. List and Evaluation of Potential Pollutants – List of potential pollutants as described in subsection 107.25 and approved Method Statement for Containing Pollutant Byproducts.
- L. Other Correspondence – e.g., agreements with other MS4s, approved deferral request, CDPHE audit documentation, Water Quality Permit Transfer to Maintenance Punch List and other miscellaneous documentation.
- M. TECS Certifications of the SWMP Administrator and all ECIs – Keep current through the life of the project.
- N. Environmental Pre-construction Conference – Conference agenda with a certification of understanding of the terms and conditions of the CDPS-SCP and SWMP. The certification shall be signed by all attendees. A certification shall also be signed by all attendees of meetings held for new subcontractors beginning work on the project that could adversely affect water quality after the Environmental Pre-construction Conference has been held.
- O. All Project Environmental Permits - All project environmental permits and associated applications and certifications, including, CDPS-SCP, Senate Bill 40, USACE 404, temporary stream crossings, dewatering, biological opinions and all other permits applicable to the project, including any separate CDPS-SCP obtained by the Contractor for staging area on private property, asphalt or concrete plant, etc.
- P. Photographs Documenting Existing Vegetation – Project photographs shall be time stamped on paper with a maximum of four colored images per 8 ½ inch by 11-inch sheet and/or a digital copy of all photographs on CD-ROM/Flash Drive in (JPG format), documenting existing vegetation prior to construction commencing. On the bottom of each photograph shall be a description using Station Number or Mile Post of where the photograph was taken.
- Q. Permanent Water Quality Plan Sheets - Plan sheets and specifications for permanent water quality structures, riprap.

The Engineer will incorporate the documents and reports available at the time of award. The Contractor shall provide and insert all other documents and reports as they become available during construction.

9. INTERIM, PERMANENT STABILIZATION AND LONG-TERM STORMWATER MANAGEMENT

Once earthwork has started, the Contractor shall continue erosion BMPs until permanent stabilization of the area has been completed and accepted. Clearing, grubbing and slope stabilization measures shall be performed regularly to ensure final stabilization. Failure to properly maintain erosion control and stabilization methods, either through improper phasing or sequencing will require the Contractor to repair or replace sections of earthwork at his expense. The Contractor shall schedule and implement the following stabilization measures during the course of the project:

- A. Temporary Stabilization – At the end of each day, the Contractor shall stabilize disturbed areas by surface roughening, vertical tracking, or a combination thereof. Disturbed areas are locations where

actions have been taken to alter the existing vegetation and/or underlying soil of a site, such as clearing, grading, road bed preparation, soil compaction, and movement and stockpiling of top soils. Other stabilization measures may be implemented, as approved. The maximum area of temporary stabilization shall not exceed 20 acres.

- B. Interim Stabilization – Stockpiles and disturbed areas, as soon as known with reasonable certainty that work will be temporarily halted for 14 days or more, shall be stabilized using one or more of the specified following methods:
- I. Application of 1.5 tons of mechanically crimped certified weed free hay or straw in combination with an approved organic mulch tackifier.
 - II. Placement of bonded fiber matrix in accordance with Section 213.
 - III. Placement of mulching (hydraulic) wood cellulose fiber mulch with tackifier, in accordance with Section 213.
 - IV. Application of spray-on mulch blanket in accordance with Section 213. Magnesium Chloride, Potassium Chloride and Sodium Chloride, or other salt products, will not be permitted as a stabilization method.
 - V. Protection of the interim stabilization method is required. Reapplication may be required as approved.
- C. Summer and Winter Stabilization – Summer and winter stabilization is defined as months when seeding will not be permitted. As soon as the Contractor knows shutdown is to occur, interim stabilization shall be applied to the disturbed area. Protection of the interim stabilization method is required. Reapplication of interim stabilization may be required as directed.
- D. Permanent Stabilization – Permanent stabilization is defined as the covering of disturbed areas with seeding, mulching with tackifier, soil retention coverings, and such non-erodible methods such riprap, road shouldering, etc., or a combination thereof as required by the Contract. Other permanent stabilization techniques may be proposed by the Contractor, in writing, and shall be used when approved in writing by the Engineer. Permanent stabilization shall begin within 48 hours after topsoil placement, soil conditioning, or combination thereof starts and shall be pursued to completion.
- E. Final Stabilization – Final stabilization is defined as when all ground disturbing activities at the site have been completed, and uniform vegetative cover has been established with an individual plant density of at least 70 percent of pre-disturbance levels, or equivalent permanent physical erosion reduction methods have been employed.

A. SEEDING PLAN

Seeding will be required for an estimated 27 acres of disturbed area within the limits which are not surfaced in accordance with the Grading and Erosion Control Plans by Atwell, LLC. The following types and rates shall be used:

COMMON NAME	BOTANICAL NAME	LBS. PLS PER ACRE
Low-growth Seed Mix (dry land mix) for upland areas	Buffalograss (20%), Blue Grama (20%), Western Wheatgrass (20%), Sideoats Grama (20%, Thickspike Wheatgrass(10%), Streambank Wheatgrass (10%)	Total 11.0
Permanent Seed Mix (for water quality/detention ponds	Big Bluestem (10%), Yellow Indiangrass (10%), Switchgrass (10%), Sideoats Grama (10%), Wester Wheatgrass (10%), Thickspike Wheatgrass (10%), Praire Sandreed (10%), Green Needlegrass (10%), Slender Wheatgrass (5%), Streambank Wheatgrass (5%)	Total 9.2
Note: See detail 800-10, sheet 48 in GESC plans for further instructions.		

B. SEEDING APPLICATION:

Drill seed 0.25 inch to 0.5 inch into the soil. In small areas not accessible to a drill, hand broadcast or hydroseed at double the rate and rake 0.25 inch to 0.5 inch into the soil per subsection 212. Soil compaction shall be minimized for areas where permanent stabilization will be achieved through vegetative cover.

C. MULCHING APPLICATION:

Apply a minimum of 2 tons of certified weed free hay or 2 1/2 tons of certified weed free straw per acre and in accordance with Section 213, and mechanically crimp it into the soil in combination with an organic mulch tackifier.

Prior to winter shutdown or the summer seeding window closure: Uncompleted slopes shall be mulched with 2 tons of mulching (weed free) per acre, mechanically crimped into the topsoil in combination with an organic mulch tackifier in accordance with subsections 208 and 213.

D. SPECIAL REQUIREMENTS:

Due to high failure rates, hydroseeding will not be allowed for permanent stabilization.

E. SOIL CONDITIONING AND FERTILIZER REQUIREMENTS:

Minimum amendment material requirements for all disturbances to receive seeding (native).

Soil conditioners paid for as Item 212- Soil Conditioning (Acre)		
Biological nutrient* organic based fertilizer (lbs./acre)	Humate (lbs./acre)	Compost (yd3/acre[**] All areas <2:1 [1/2-inch depth]
300	200	65

*Biological nutrient organic based fertilizer shall not exceed 8-8-8 (N-P-K).

**Compost shall be in accordance to 212.02.

*** Humate shall include the following:

- (a) A pH of 3 to 5
- (b) Maximum 20% inert ingredient
- (c) Minimum 80% organic matter with 40% minimum humic acid

F. SOIL RETENTION COVERING:

On slopes and ditches requiring a blanket or turf reinforcement mat (TRM), the blanket/TRM shall be placed in lieu of mulch and mulch tackifier and placed after seeding (native). See SWMP Site Map for blanket/TRM locations.

G. RESEEDING OPERATIONS/CORRECTIVE STABILIZATION:

Prior to partial acceptance.

1. All seeded areas shall be reviewed during the 7-day inspections by the SWMP Administrator for Construction and or Erosion Control Inspector for bare soils caused by surface or wind erosion. Bare areas caused by surface or gully erosion, blown away mulch, etc. shall be re-graded, seeded, and have the designated mulching applied as necessary, at no additional cost to the project.
2. The Contractor shall maintain seeding/mulch/tackifier/blanket/TRM, mow to control weeds or apply herbicide to control weeds in the seeded areas until Partial Acceptance of the stormwater construction work.

10. PRIOR TO PROJECT PARTIAL ACCEPTANCE

- A. Reclamation of Washout Areas. After concrete operations are complete, washout areas shall be reclaimed in accordance with subsection 208.05(n) at the Contractor's expense.
- B. Survey. When Permanent Water Quality BMPs (Permanent BMP) are required on the project, the Contractor shall survey the BMPs to confirm that they conform to the configuration and grade shown on the Plans. The results of the survey shall be submitted as AutoCad drawing files and PDF files, showing both designed and final elevations and configurations.

The Engineer and the City of Commerce City (COCC) Engineer will perform a walkthrough of the Permanent BMPs to confirm conformance to material requirements, locations and dimensions of the Permanent BMPs. Permanent BMPs not meeting the Contract requirements will be identified in writing by the Engineer and shall be repaired or replaced at the Contractor's expense. Correction surveys shall be performed at the Contractor's expense to confirm the locations and dimensions of each Permanent BMP. Final as-built plans of the Permanent BMPs shall be provided to the Engineer and the COCC for their records.

- C. Locations of Temporary BMPs. The Engineer will identify locations where modification, cleaning or removal of temporary BMPs are required, and will provide these in writing to the Contractor. Upon completion of work required, the SWMP Administrator shall modify the SWMP to provide an accurate depiction of BMPs to remain on the project site.

11. PRIOR TO PROJECT FINAL ACCEPTANCE

- A. At the Partial Acceptance of the project, it shall be determined by the SWMP Administrator for Construction and the Engineer which temporary control measures shall remain until 70% revegetation is established or which shall be removed.
- B. At the end of the project, all ditch checks shall either consist of temporary erosion logs (or equivalent) or permanent riprap.
- C. All storm drains shall be cleaned prior to the Final Acceptance of the project. Work shall be included in 202 Clean Culvert.

12. NARRATIVES

Control Measure Matrixes During Construction:

- A. Control measure narratives have been included for the COCC Standard Specifications and Plans, along with any non-standard control measures approved during the design process. If a Non-Standard Control Measure not included in the SWMP is proposed and approved by the Engineer the SWMP Administrator for Construction shall do the following: Place an "X" in the column for non-standard and complete a Non-Standard Control Measure Specification and Narrative covering the what, when, where and why the control measure is being used shall be add to the SWMP. The appropriate "X" shall also be added to the implementation phase(s).
- B. The SWMP Administrator for Construction shall place an "X" in the column In Use On-Site when the control measure has been installed.
- C. A "P" in the Initial Activities Column indicates that the control measure shall be installed before construction activity starts. Locations and quantities will be discussed during the Environmental Pre-construction Conference with the Regional Water Pollution Control Manager.

STRUCTURAL Control Measures that may be potentially used on the project for erosion and sediment control; practices may include, but are not limited to:

APPLICATION, BMP/CONTROL MEASURE	NARRATIVE	M-STANDARD or "X" for NON-STANDARD	IN USE ON SITE	BMP/CONTROL MEASURE TO BE LOCATED BY SWMP ADMINISTRATOR	BMP/CONTROL MEASURE IMPLEMENTATION PHASE		
					INITIAL CONSTRUCTION ACTIVITY (CONTROL MEASURE INSTALLED PRE-CONSTRUCTION)	INTERIM CONSTRUCTION ACTIVITIES	PERMANENT STABILIZATION
<i>PROTECTION OF EXISTING WETLANDS Fence (plastic) and erosion logs</i>	Fence (plastic) shall be placed in combination with erosion logs to prevent encroachment of construction traffic and sediment into state waters prior to start of construction disturbances. Fence (plastic) shall be placed adjacent to the wetlands; erosion logs shall be placed between the plastic fence and disturbance area. Logs shall be placed to direct flows away from or filter water running into wetlands from disturbance areas.						
<i>PROTECTION OF EXISTING TREES/LANDSCAPING Fence (plastic)</i>	Fence (plastic) shall be used in areas indicated in the plans to prevent encroachment of construction traffic and sediment for the protection of mature trees and/or existing landscaping prior to start of construction disturbances.						
<i>CHECK DAM/DITCH CHECK Erosion log, silt berm, silt dike, rock check dam</i>	Placed in ditches immediately upon completion of ditch grading to reduce velocity of runoff in ditch. For existing ditches, place prior to start of construction disturbances.	800-07					
<i>Storm Drain Inlet Protection In Paved Roadways (Type 1, 2 and 3 as shown on M-208-1, sheet 5 of 11)</i>	Manufactured storm drain inlet protection placed prior to construction disturbances as detailed in M-208-1, to protect existing inlets or immediately upon completion of new inlets to prevent sediment from entering the inlet throughout construction.	800-06					
<i>Storm Drain Inlet Protection In Native Seed Areas (M-604 Standard Inlets Type C and D)</i>	Erosion logs or aggregate bags placed around inlet grate to prevent sediment from entering inlet. Place prior to construction disturbances to protect existing inlets or immediately upon completion of new inlets.	800-06					
<i>Storm Drain Inlet Protection In Native Seed Areas (Nyoplast)</i>	Erosion logs or aggregate bags placed around inlet grate to prevent sediment from entering inlet. Place prior to construction disturbances to protect existing inlets or immediately upon completion of new inlets.	800-06					
<i>CULVERT INLET/OUTLET PROTECTION Erosion logs, aggregate bags</i>	Placed at mouth of culvert inlets and over top of culvert at inlet and outlet where disturbance may be occurring adjacent to pipe to prevent sediment laden water from entering pipe or drainage. Place prior to start of construction disturbances.	800-07					
<i>TYPE C, TYPE D AND TYPE 13 PROTECTION Erosion logs, aggregate bags, erosion bales</i>	Placed around inlet grate or slope and ditch paving to prevent sediment from entering inlet. Place prior to start of construction disturbances.	800-06					
<i>STOCKPILE PROTECTION Temporary berm, erosion logs, aggregate bags*</i>	Placed within specified distance, in accordance with subsection 208.06, from toe to contain sediment around stockpile. *Aggregate bags are easily moved and replaced for access during the work day. Place						

	prior to start of stockpile, increase control as stock pile increases size.						
<i>TOE OF FILL PROTECTION Erosion logs, temporary berm, silt fence, topsoil windrow*</i>	Place prior to slope/embankment work to capture sediment and protect and delineate undisturbed areas. *Can be used to stockpile topsoil for salvage.	M-208					
<i>PERIMETER CONTROL Erosion logs, silt fence, temporary berm, topsoil windrow*</i>	Placed prior to construction commencing to address potential run-on water from off site, and to divert around disturbed area. *Can be used to stockpile topsoil for salvage.	800-03					
<i>SEDIMENT CONTROL/ SLOPE CONTROL Silt fence, erosion logs</i>	Placed on the contour of a slope to contain and slow down construction runoff. Place prior to start of construction disturbances.	800-11					
<i>TEMPORARY SEDIMENT TRAP</i>	Used to capture sediment laden runoff from disturbed areas < 5 acres during construction. Place prior to start of construction disturbances.	M-208					
<i>EMBANKMENT PROTECTION OR TEMPORARY SLOPE DRAIN</i>	Placed as a conduit or chute to drain runoff down slope and to prevent erosion of slope.	M-208					
<i>CONCRETE WASHOUT In-ground or fabricated</i>	Construction control, used for waste management of concrete and concrete equipment cleaning. Place prior to start of concrete activities.	800-03					
<i>VEHICLE TRACKING PAD</i>	Source control, placed to prevent tracking of sediment from disturbed area to offsite surface. Place prior to start of construction disturbances.	800-13					
<i>SWEEPING</i>	Source control, used to remove sediment tracked onto paved surfaces and to prevent sediment from entering drainage system. Sweep daily and at the end of the construction shift as needed. Kick brooms shall not be permitted.						
<i>Engineered SEDIMENT BASIN</i>	Constructed early in project, prior to storm sewer/ditches and in accordance with 208.05(p) to capture storm flow. Outlet structure and/or outfall shall be modified for temporary sediment control using an approved non-standard detail.						
<i>DEWATERING (Contractor is responsible for obtaining a permit from Colorado Department of Health and Environment.)</i>	Shall be done in such a manner to prevent potential pollutants from entering state waters.						
<i>TEMPORARY STREAM CROSSING</i>	Constructed over stream or drainage to prevent discharge of pollutants from construction equipment into water.						
<i>CLEAN WATER DIVERSION</i>	Placed to divert clean surface or ground water around disturbance area to prevent it from mixing with construction runoff.						
<i>OTHER</i>							

NON-STRUCTURAL BMPs/Control Measures that may be potentially used on the project for erosion and sediment control; practices may include, but are not limited to:

Erosion control devices are used to limit the amount of soil loss on site. Sediment control devices are designed to capture sediment on the project site. Construction controls are BMPs/Control Measures related to construction access and staging. BMP/Control Measure locations are indicated on the SWMP Site Map (Erosion and Sediment Control Plans by Atwell, LLC.).

*** Use of vegetative buffer strip requirements.** The CDPHE Water Quality Control Division Technical Memorandum dated August 27, 2015 clarifies the requirements for utilization of existing vegetation as a buffer type of sediment control measure, while maintaining compliance with the CDPS permit for Stormwater Discharges Associated with Construction Activity – CDPS Permit No. COR0300000. In

general, the division does not recommend that vegetated buffers be implemented as a sediment removal control measure for runoff from disturbed areas at construction sites, unless implemented as a “finishing” component of a treatment train comprised of additional, adequate up-gradient control measures. The entire memorandum can be found at:

<https://www.colorado.gov/pacific/sites/default/files/Vegetative%20Buffer%20Memo.pdf>

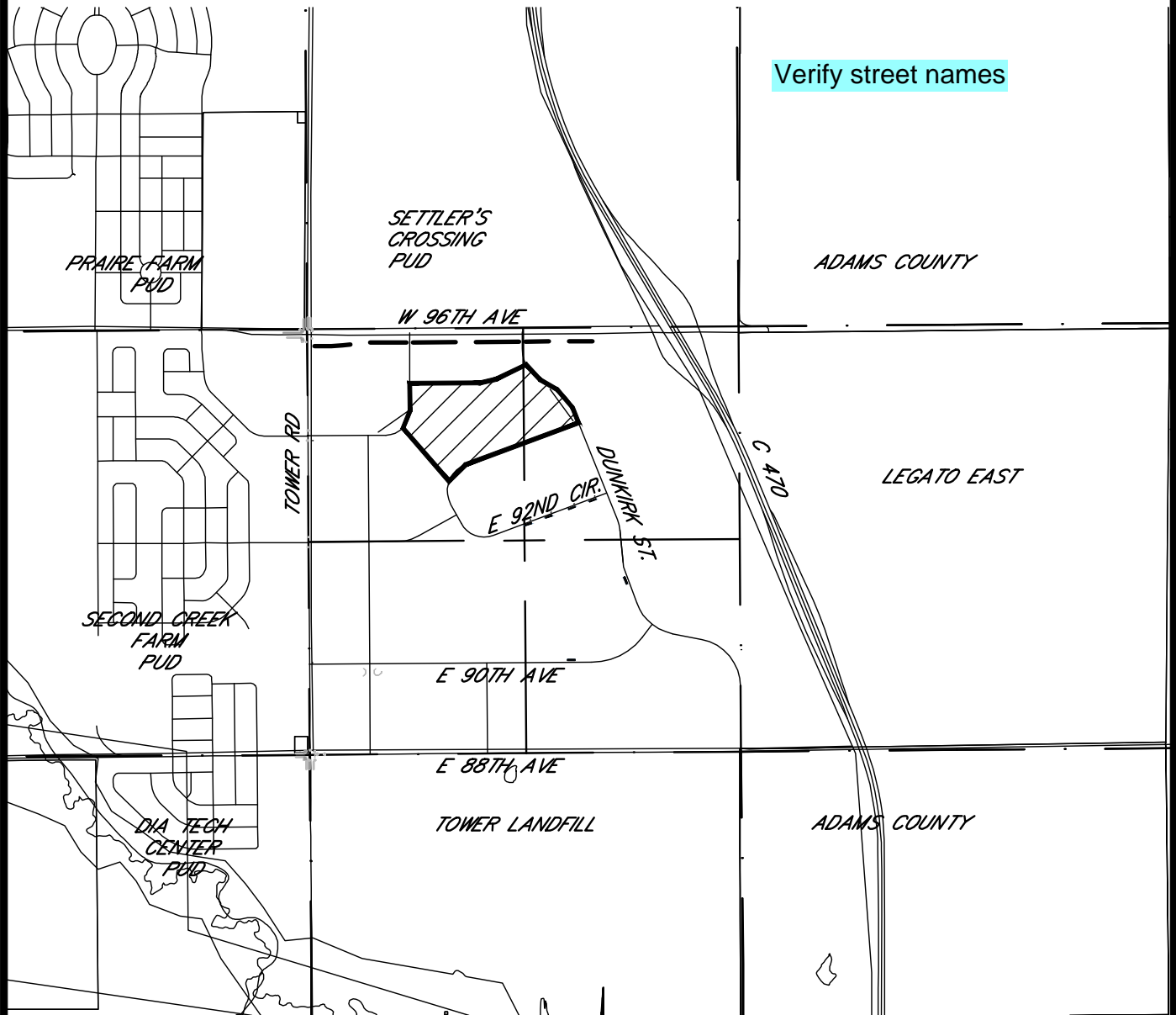
APPLICATION, BMP/CONTROL MEASURE	NARRATIVE	M-STANDARD or “X” for NON-STANDARD	IN USE ON SITE	BMP/CONTROL MEASURE TO BE LOCATED BY SWMP ADMINISTRATOR	BMP/CONTROL MEASURE IMPLEMENTATION PHASE		
					INITIAL CONSTRUCTION ACTIVITY (CONTROL MEASURE INSTALLED PRE-CONSTRUCTION)	INTERIM CONSTRUCTION ACTIVITIES	PERMANENT STABILIZATION
* <i>VEGETATIVE BUFFER STRIP</i> <i>Fence (plastic)</i>	Filter sediment laden runoff from disturbance area. Area to be identified on SWMP prior to construction starting.						
<i>GRADING APPLICATIONS (LANDFORM)</i>	Existing or created landforms may be used as a BMP/Control Measure if they prevent sediment from entering or leaving the disturbance area. If a landform directs flow of water to a concentrated outfall point, the outfall point shall be protected to prevent erosion. Area to be identified on SWMP prior to construction starting.						
<i>TOPSOIL MANAGEMENT STOCKPILE/SALVAGE</i> <i>Windrow or stockpile</i>	Prior to any site disturbance work commencing, existing topsoil shall be scraped to a depth of 4 inches, and placed in stockpiles or windrows. Upon completion of slope work/final grading (less 4 inches), topsoil shall be evenly distributed over embankment to a depth of 4 inches.						
<i>SURFACE ROUGHENING / GRADING TECHNIQUES</i>	Temporary stabilization of disturbance and to minimize wind and erosion.						
<i>SEEDING (TEMPORARY)</i>	Temporary stabilization used for over wintering of disturbance or used to control erosion for areas scheduled for future construction.						
<i>BONDED FIBER MATRIX and Spray-on Mulch Blanket (hydraulic applied mulch)</i>	Not to be used in areas of concentrated flows, i.e. ditch lines. To be for either Interim or Permanent Stabilization placed as a surface cover for erosion control. May be used as surface cover when work is temporarily halted and as approved by the Engineer for stockpiles.						
<i>Straw or Hay MULCH/MULCH TACKIFIER</i>	Interim or Permanent Stabilization placed as a surface cover for erosion control and or seeding establishment. To be installed						

	as Interim Stabilization as a surface cover when work is temporarily halted and as approved by the Engineer						
<i>SPRAY-ON MULCH BLANKET (Not to be used in areas of concentrated flows, i.e. ditch lines.)</i>	Temporary or Final Stabilization placed as a surface cover for erosion control and or seeding establishment. To be installed as temporary surface cover when work is temporarily halted and as approved by the Engineer						
<i>SEEDING PERMANENT (NATIVE)</i>	Final Stabilization of disturbance and to reduce runoff and control erosion on disturbed areas.						
<i>SOIL RETENTION BLANKET (SRB)</i>	Final Stabilization of disturbance and to reduce runoff and control erosion on disturbed areas.						
<i>TURF REINFORCEMENT MAT (TRM)</i>	Final Stabilization of disturbance and to reduce runoff and control erosion on disturbed areas. Placed in channels or on slopes for erosion control, channel liner and seeding establishment.						
<i>OTHER</i>							

APPENDIX A
VICINITY MAP

Legato - Filing No. 1

A PART OF SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST
OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF ADAMS, CITY OF COMMERCE CITY,
STATE OF COLORADO



PROJECT NO.: 19002860
DATE: 7/20/20



ATWELL

866.850.4200 www.atwell-group.com

6200 S. SYRACUSE WAY, SUITE 470
GREENWOOD VILLAGE, CO 80111
303.825.7100

CONTACT: DANIEL MADRUGA
DMADRUGA@ATWELL-GROUP.COM

SCALE: 1" = 2,000'

APPENDIX B
FEMA FIRM MAP

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the **Flood Profiles and Floodway Data** and/or **Summary of Stillwater Elevations** tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only to landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the **Summary of Stillwater Elevations** table in the **Flood Insurance Study** report for this jurisdiction. Elevations shown in the **Summary of Stillwater Elevations** table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRM for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NNGS12
National Geodetic Survey
SSM-C-3, #6202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov/>.

Base map information shown on this FIRM was provided by the Adams County and Commerce City GIS departments. The coordinate system used for the production of the digital FIRM is Universal Transverse Mercator, Zone 13N, referenced to North American Datum of 1983 and the GRS 80 spheroid, Western Hemisphere.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the **Flood Profiles and Floodway Data** tables in the **Flood Insurance Study report** (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

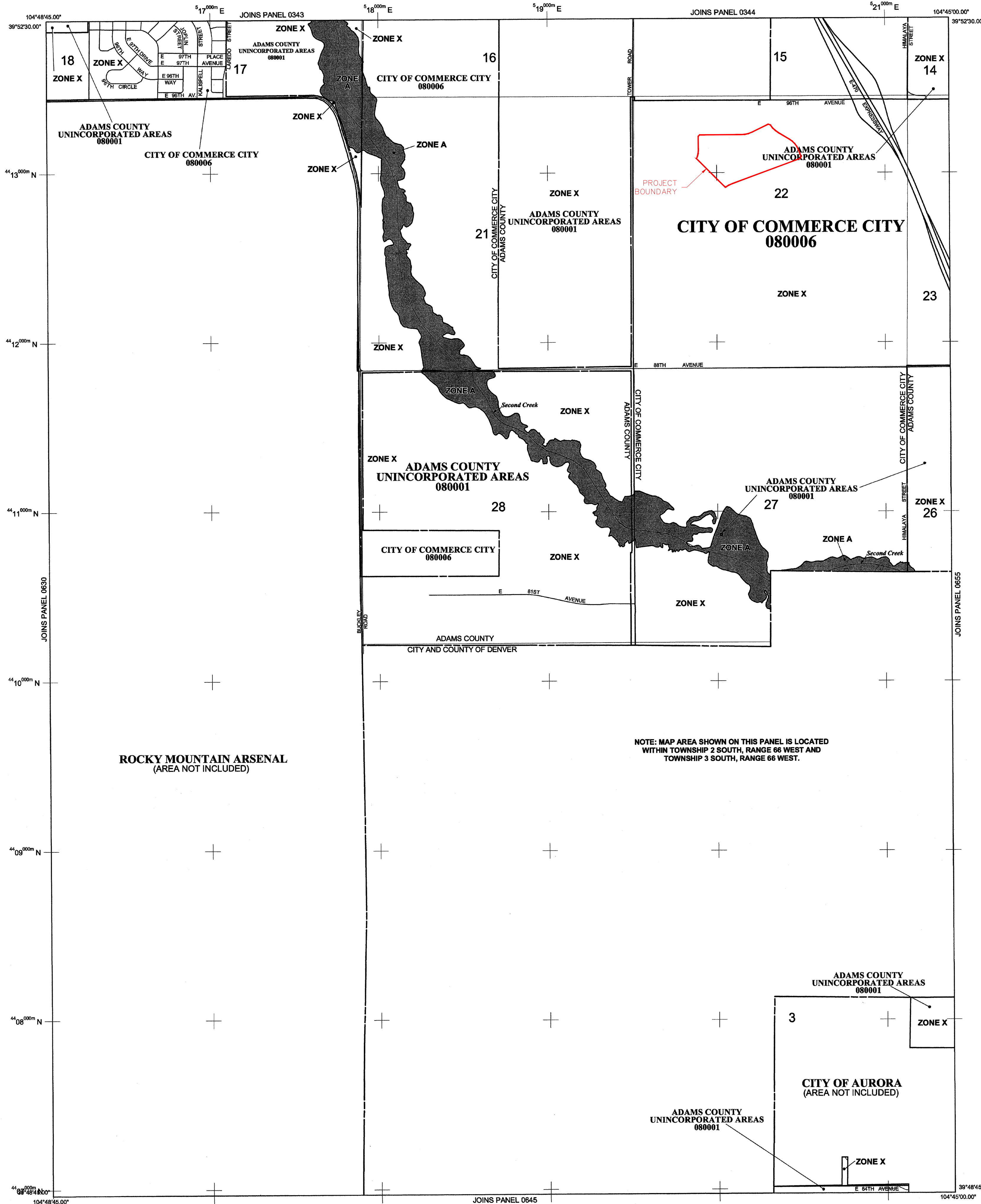
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a **Flood Insurance Study report**, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://www.msc.fema.gov/>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/>.

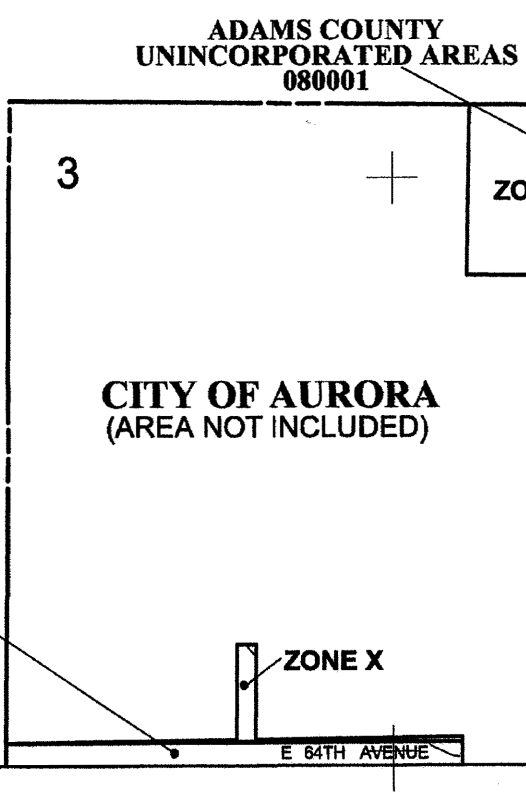
This digital Flood Insurance Rate Map (FIRM) was produced through a cooperative partnership between the State of Colorado Water Conservation Board, the Urban Drainage and Flood Control District, and the Federal Emergency Management Agency (FEMA). The State of Colorado Water Conservation Board and the Urban Drainage and Flood Control District have implemented a long-term approach of floodplain management to reduce the costs associated with flooding. As part of this effort, both the State of Colorado and the Urban Drainage and Flood Control District have joined in Cooperating Technical Partner agreements with FEMA to produce this digital FIRM.

Additional flood hazard information and resources are available from local communities, the Colorado Water Conservation Board, and the Urban Drainage and Flood Control District.



ROCKY MOUNTAIN ARSENAL
(AREA NOT INCLUDED)

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED
WITHIN TOWNSHIP 2 SOUTH, RANGE 66 WEST AND
TOWNSHIP 3 SOUTH, RANGE 66 WEST.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

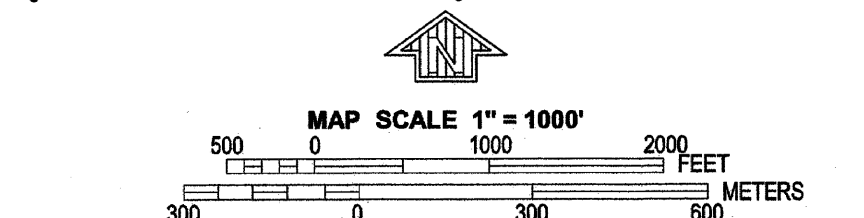
- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- Cross section line
- Transect line
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 1000-meter Universal Transverse Mercator grid ticks, zone 13
- 5000-foot grid ticks: Alabama State Plane coordinate system, east zone (FIPSZONE 0101), Transverse Mercator
- Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile
- MAP REPOSITORIES
Refer to Map Repositories list on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 16, 1998
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
March 5, 2007 - to update map format.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0635H

FIRM

FLOOD INSURANCE RATE MAP

ADAMS COUNTY, COLORADO

AND INCORPORATED AREAS

PANEL 635 OF 1150
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ADAMS COUNTY	080001	0635	H
COMMERCE CITY, CITY OF	080006	0635	

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

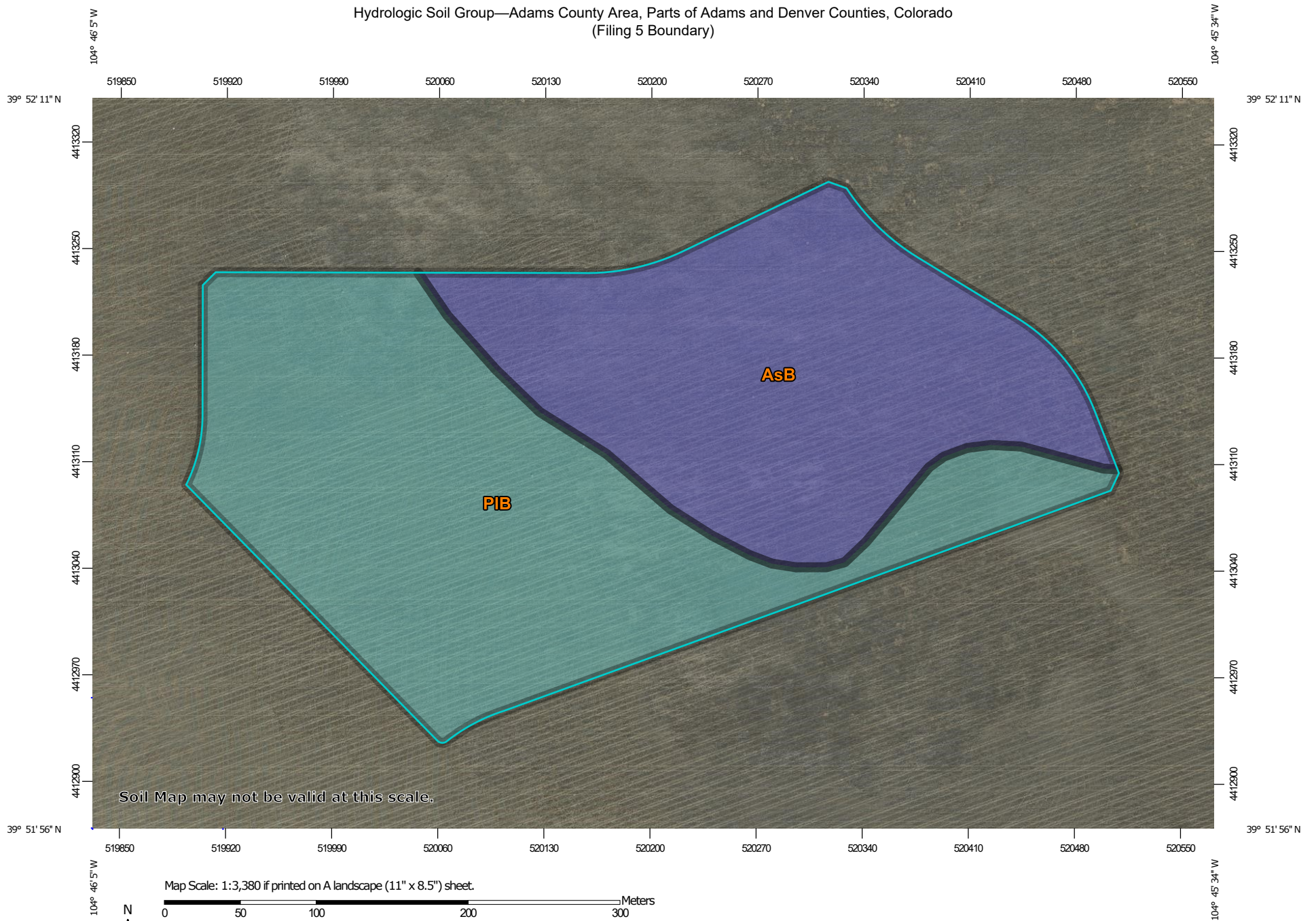
MAP NUMBER
08001C0635H

MAP REVISED
MARCH 5, 2007

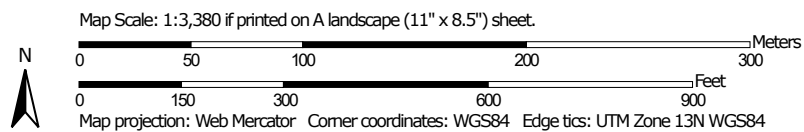
Federal Emergency Management Agency

APPENDIX C
SOILS SURVEY

Hydrologic Soil Group—Adams County Area, Parts of Adams and Denver Counties, Colorado (Filing 5 Boundary)




Soil Map may not be valid at this scale.




MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines


 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points






 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Adams County Area, Parts of Adams and Denver Counties, Colorado
 Survey Area Data: Version 16, Sep 12, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 3, 2018—Dec 4, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AsB	Ascalon sandy loam, 0 to 3 percent slopes	B	14.9	44.0%
PIB	Platner loam, 0 to 3 percent slopes	C	19.0	56.0%
Totals for Area of Interest			33.9	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX D
INSPECTION REPORT



City of Commerce City – Public Works

STORMWATER-Construction Site Inspection Report

(1) Project Name:	(2) Project Location:	(3) Date:
(4) SWMP Current:	(5) Inspection Type:	(6) Inspected By:

(7) BMPs ON SITE AT TIME OF INSPECTION

	In SWMP	Used	Not Needed at this time		In SWMP	Used	Not Needed at this time
(a) EROSION CONTROL BMPs ON SITE				(b) SEDIMENT CONTROL BMPs ON SITE			
Seeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Vehicle Tracking Pad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mulching/Mulch Tackifier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sediment Trap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soil Binder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Inlet Protection*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Erosion Control Blankets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sediment Basin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Embankment Protector*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Perimeter Control*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grading Techniques*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Berm/Diversion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(d) MATERIALS HANDLING, SPILL PREVENTION, WASTE MANAGEMENT AND GENERAL POLLUTION PREVENTION			
Check Dams*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stockpile Management*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outlet Protection*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Materials Management*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Concrete Waste Management*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) BMPs FOR SPECIAL CONDITIONS				Saw Water Management*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dewatering Structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Solid Waste/Trash Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temp. Stream Crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Street Sweeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clear Water Diversion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sanitary Facility*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Contaminated Area Fencing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Vehicle and Equip. Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(8) CONSTRUCTION SITE ASSESSMENT: **Off site Pollutant Discharges are a Violation of the Permit and may result in Formal Enforcement**

- (a) Is there evidence of discharge of sediment or other pollutants from the site? ☐ Yes ☐ No
 *If yes, explain the discharge and the corrective actions in section 16 (Construction Site Assessment & Corrective Actions) or section 18 (General Notes).
- (b) Has sediment or other pollutants discharged from the site reached state waters? ☐ Yes ☐ No
 *If yes, see subsection 208.03(c) and Part II A.2 and 3 of the State permit for reporting requirements.

(9) GENERAL NOTES

(10) INSPECTION CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Contractor's Erosion Control Supervisor/SWMP Administrator (Signature Required)	Date:
---	-------

(11) COMPLIANCE CERTIFICATION

Corrective action(s) has been taken, or where a report does not identify any incidents requiring corrective action, the report shall contain a signed statement indicating the site is in compliance with the permit to the best of the signer's knowledge and belief.

Contractor's Erosion Control Supervisor/SWMP Administrator (Signature Required)	Date:
---	-------

(12) CONSTRUCTION SITE ASSESSMENT & CORRECTIVE ACTIONS ****Off site Pollutant Discharges are a Violation of the Permit and may result in Formal Enforcement****

The construction site perimeter, all disturbed areas, material and/or waste storage areas that are exposed to precipitation, discharge locations, and locations where vehicles access the site shall be inspected for evidence of, or the **potential** for, pollutants leaving the construction site boundaries, entering the stormwater drainage system, or discharging to state waters. If there is evidence of sediment or other pollutants discharging from the site, see section 17 (Construction Site Assessment).

All erosion and sediment control practices identified in the SWMP shall be evaluated to ensure that they are maintained and operating correctly. Identify the condition of the BMP, using more than one letter if necessary: **(I)** Incorrect Installation; **(M)** Maintenance is needed; **(F)** BMP failed to operate; **(A)** Additional BMP is needed; **(R)** Remove BMP. Keep copies of this blank page for additional room if needed.

Continuous maintenance is required on all BMPs. **BMPs that are not operating effectively, have proven to be inadequate, or have failed must be addressed as soon as possible, immediately in most cases.**

Location	BMP	Condition	Comments:	Date Completed & Initials
			Description of Corrective Action and Preventative Measure Taken	

APPENDIX E
SPILL PREVENTION AND CONTROL PLAN

SPILL PREVENTION, CONTROL and COUNTERMEASURE PLAN (SPCC)

Whenever significant quantities of fuels, materials, vehicle fluids, or other pollutants are to be used on site, specific procedures for material containment and spill prevention shall be developed and implemented.

Introduction

The following spill Prevention and response Plan shall be implemented during the construction of Lincoln Creek Village Lots 4-6. This plan will be implemented to meet the requirements of Douglas County.

Materials On-Site

Spill control procedures will be implemented when materials are stockpiled or when chemicals and/or fluids are used in the construction area.

Stockpiles of Dry Materials

The following spill prevention procedures shall be implemented:

All materials shall be stockpiled in designated areas, with BMPs used to prevent the runoff of contaminants. BMPs such as silt fence and sediment control logs will be installed according to City and UDFCD criteria using the details shown in the Stormwater Management Plans. Loading and unloading operations shall be performed in a manner to prevent or limit materials from being spilled. Any spilled materials shall be swept up immediately after the operations are performed.

Vehicle Fueling

The following spill prevention procedures shall be implemented:

All vehicle fueling will be done off-site as much as possible. All on-site fueling operations will be performed in designated areas. Measures will be taken where necessary to prevent spills during vehicle fueling operations. These measures may include the placement of a temporary berm around the fueling area, covering the fueling area under a temporary portable structure, and/or the placement of drip pans under valves and tank openings. Berms will be constructed around all fueling areas. An adequate supply of absorbents will also be stockpiled at each fueling area.

Routine Vehicle and Equipment Maintenance

The following spill prevention procedures shall be implemented:

All vehicle maintenance will be performed off-site when possible. However, there may be occasions where construction equipment and vehicles may break down at the site and on-site repairs are more feasible. On-site vehicle and equipment maintenance, if needed, will be performed in designated areas, where practical, and enclosed by earthen berms. All maintenance areas will maintain an adequate supply of drip pans. These pans will be placed underneath vehicles as needed and absorbents will be used in the event of a minor spill or leak.

SPILL RESPONSE

NOTE: IN CASE OF FIRE, EVACUATE ALL PERSONNEL FROM THE IMMEDIATE AREA, RENDER FIRST AID TO ANYONE WHO IS INJURED, AND DIAL 911 IMMEDIATELY. TAKE APPROPRIATE STEPS TO PROTECT HUMAN LIFE AND TO CONTROL FIRES FIRST. SPILL CONTROL IS A SECONDARY CONCERN.

Cleanup and Removal Procedures

- Upon detection of any spill, the first action to be taken is to ensure personal and public safety. All possible ignition sources, including running engines, electrical equipment (including cellular telephones, etc.), or other hazards will be immediately turned off or removed from the area. The extent of the spill and the nature of the spilled material will be evaluated to determine if remedial actions could result in any health hazards, escalation of the spill, or further damage that would intensify the problem. If such conditions exist, a designated employee will oversee the area of the spill and the construction supervisor will be notified immediately.
- The source of the spill will be identified and if possible the flow of pollutants stopped if it can be done safely. However, no employee will attend to the source or begin cleanup of the spill until **ALL** emergency priorities (fire, injuries, etc.) have been addressed.

Small Spills

Small spills (usually <5 gallons) consist of minor quantities of gasoline, oil, anti-freeze, or other materials that can be cleaned up by a single employee using readily available materials.

The following procedures shall be used for clean up of small spills:

1. Ensure personal safety, evaluate the spill, and if possible, stop the flow of pollutants.
2. Contain the spread of the spill using absorbents, portable berms, sandbags, or other available measures.
3. Spread absorbent materials on the area to soak up as much of the liquid as possible and to prevent infiltration into the soil.
4. Once the liquids have been absorbed, remove all absorbents from the spill and place the materials in a suitable storage container. On paved areas, wipe any remaining liquids from the surface and place the materials in a storage container. Do not spray or wash down the area using water. For open soil areas, excavate any contaminated soil as soon as possible and place the soil in a suitable storage container. All materials will then be transported off-site for disposal.
5. If immediate transfer and storage of the contaminated soil is not practical, excavate and place the contaminated soil on a double thickness sheet of 3-mil or higher polyethylene film. In addition, a small berm should be formed around the outer edges of the soil

stockpile, underneath the polyethylene film, to ensure that contaminants are not washed from the site during precipitation events and those materials do not seep through the berm.

6. Record all significant facts and information about the spill, including the following:
 - Type of pollutant
 - Location
 - Apparent source
 - Estimated volume
 - Time of discovery
 - Actions taken to clean up spill
7. Notify the supervisor of the spill and provide the information from Item #6. The supervisor will then contact the City of Westminster and Adams County.

Medium to Large Spills

Medium to large spills consist of larger quantities of materials (usually >5 – 25 gallons) that are used on site that cannot be controlled by a single employee. Generally, a number of facility personnel will be needed to control the spill and a response may require the suspension of other facility activities.

The following procedure shall be used for the cleanup of medium to large spills:

1. Ensure personal and public safety, evaluate the spill, and if possible, stop the flow of pollutants.
2. Immediately dispatch a front-end loader or similar equipment to the spill and construct a berm or berms down gradient of the spill to minimize the spread of potential pollutants. On paved surfaces, portable berms, sandbags, booms, or other measures will be used to control the lateral spread of the pollutants.
3. When the spread of the spill has been laterally contained, contact the supervisor or designated facility employee and provide them information on the location, type, and amount of spilled material, and a briefing on the extent of the spread and measures undertaken to contain the contaminants.
4. Depending on the nature of the spill, mobilize additional resources as needed to contain the contaminants.
5. Cleanup will commence when the lateral spread has been contained and the notification to the supervisor has been made.
6. Freestanding liquid will be bailed or pumped into 55-gallon storage drums, steel tanks, or other suitable storage containers. When all the liquid has been removed from the pavement or soil layer, absorbents will be applied to the surface and transferred to the storage containers when they have soaked up as much of the spill as possible.

7. On paved surfaces, the remaining contaminants will be removed to the extent possible, with rags, sweeping, or similar measures. The area of the spill will not be sprayed or washed down using water. Any contaminant soaked materials will be placed into the storage containers with the other absorbents.
8. The remaining contaminated soils will be excavated and loaded into a dump truck(s) for disposal off-site at a designated facility. If transport off-site is not immediately available, the remaining soils will be stockpiled on a double thickness sheet of 3-mil or higher polyethylene film. In addition, a small berm will be formed around the outer edges of the soil stockpile, underneath the polyethylene film, to ensure that contaminants are not washed from the site during precipitation and do not seep through the berm.
9. Record all significant facts and information about the spill, including the following:
 - Type of pollutant
 - Location
 - Apparent source
 - Estimated volume
 - Time of discovery
 - Actions taken to clean up spill
10. Provide the SWMP Administrator (or designated employee) with the information from Item #9. The SWMP Administrator will then contact the City of Commerce City, and the Colorado Department of Public Health & Environment.

NOTIFICATION

Notification to the Colorado Department of Public Health & Environment (CDPHE) is required if there is any release or suspected release of any substance, including oil or other substances that spill into or threaten State waters. Unless otherwise noted, notifications are to be made by the supervisor and only after emergency responses related to the release have been implemented. This will prevent misinformation and assures that notifications are properly conducted.

The notification requirements are as follows:

1. **Spills into/or Threatens State Waters:** Immediate notification is required for releases that occur beneath the surface of the land or impact or threaten waters of the State or threaten the public health and welfare. Notifications that will be made are:
 - a. For any substance, regardless of quantity, contact CDPHE (24-hour spill reporting line) at 1-877-518-5608. State as follows:
 - a) Give your name.
 - b) Give location of spill (name of city).
 - c) Describe the nature of the spill, type of products, and estimate size of spill.
 - d) Describe type of action taken thus far, type of assistance or equipment needed.
 - b. For any quantity of oil or other fluids, call the National Response Center at 1-800-424-8802. State as follows:
 - a) Give your name.
 - b) Give location of spill (name of city and state).
 - c) Describe the nature of the spill, type of product, and estimate size of

spill.

- d) Describe type of action taken thus far, type of assistance or equipment needed.

2. **Reportable Quantity Spill on Land Surface:** Immediate notification is required of a release upon the land surface of an oil in quantity that exceeds 25 gallons, or of a hazardous substance that equals or exceeds 10 pounds or its reportable quantity under Section 101(14) of the Comprehensive Environmental Response, Compensation Liability Act (CERCLA) of 1980 as amended (40 CFR Part 302) and Section 329 (3) of the Emergency Planning and Community Right to Know Act of 1986 (40 CFR Part 355) whichever is less. This requirement does apply at a minimum to the substances listed in Table 1.

TABLE 1
Substances Requiring Notification

SUBSTANCE	REPORTABLE QUANTITY
Motor Oil	25 Gallons
Hydraulic Oil	25 Gallons
Gasoline/Diesel Fuel	25 Gallons

The notification procedures to be followed are:

- Give your name.
 - Give location of spill (name of city and state).
 - Describe nature of the spill, type of product, and estimate size of spill.
 - Describe type of action taken thus far, type of assistance or equipment needed.
3. Notification is not required for release of oil upon the land surface of 25 gallons or less that will not constitute a threat to public health and welfare, the environmental or a threat of entering the waters of the State.
4. Notification, as required in paragraphs 1 and 2 above, will be made to the CDPHE using the 24-hour telephone number to report environmental spills. All information known about the release at the time of discovery is to be included, such as the time of occurrence, quantity and type of material, location and any corrective or clean-up actions presently being taken. Table 2 lists these phone numbers.

SPILL RESPONSE CONTACTS

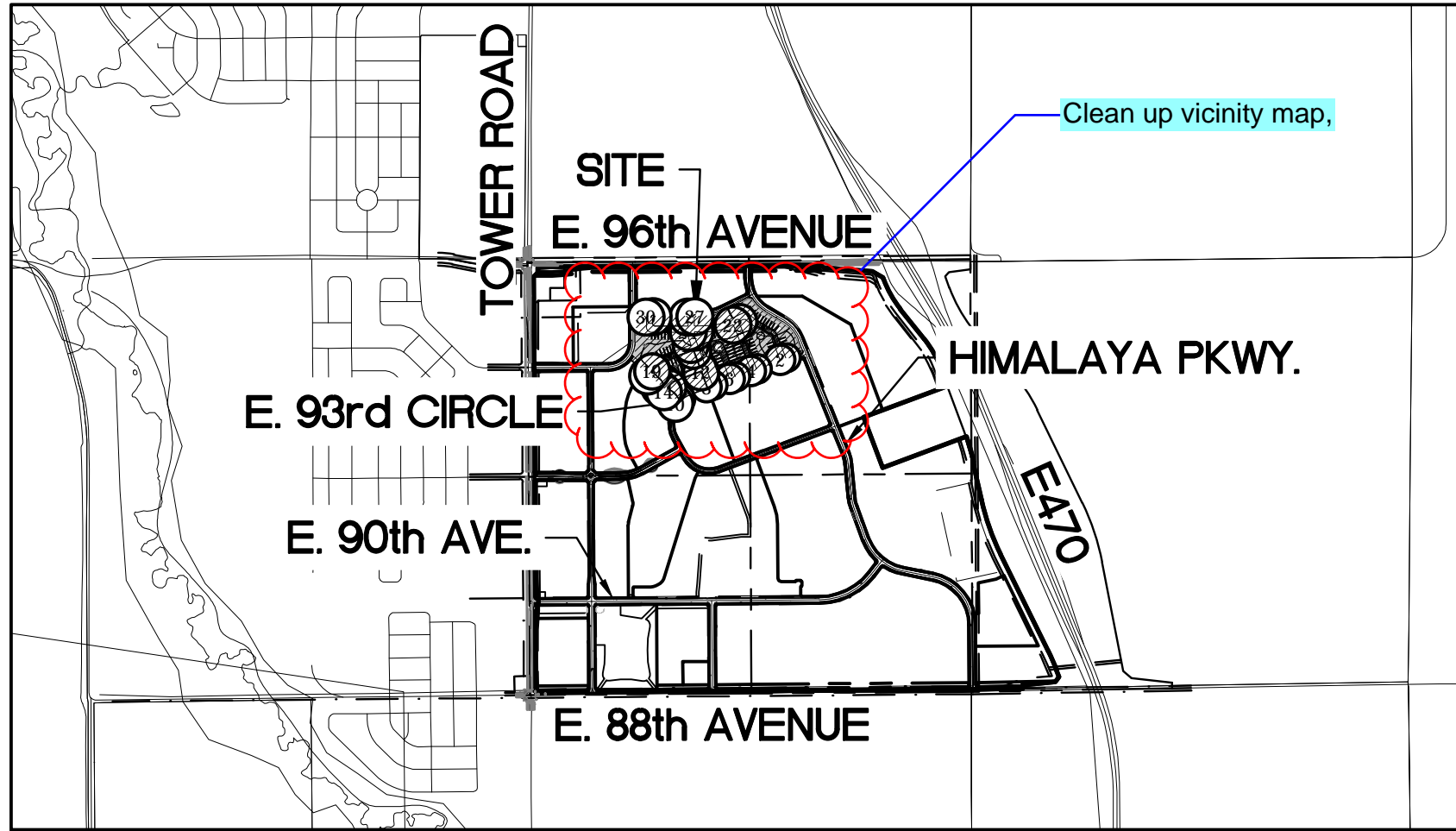
TABLE 2
Emergency Notification Contacts

Name/Agency	Number
Fire Department	911
Police Department	911
Ambulance	911
Hospital	911
National Response Center	1-800-424-8802
CDPHE – Report Environmental Spills (24 hrs/day)	1-877-518-5608
Colorado Emergency Planning Committee	303-273-1622

It is the responsibility of the SWMP Administrator for Construction to contact the City of Commerce City SWMP Administrator, CDPHE, and/or the National Response Center.

- **The National Response Center** is to be contacted when a release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR 110, 4- DFR 117, or 40 CFR 302 occurs during a 24-hour period.
- Notification to the **CDPHE** is required if there is any release or suspected release of any material, including oil or hazardous substances that spill into or threaten state waters.

LEGATO FILING NO. 1
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH,
RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO
GRADING, EROSION, & SEDIMENT CONTROL PLANS



VICINITY MAP
SCALE 1"=2000'

See comments on infrastructure GESC.
Address them and incorporate into
these plans per comments.

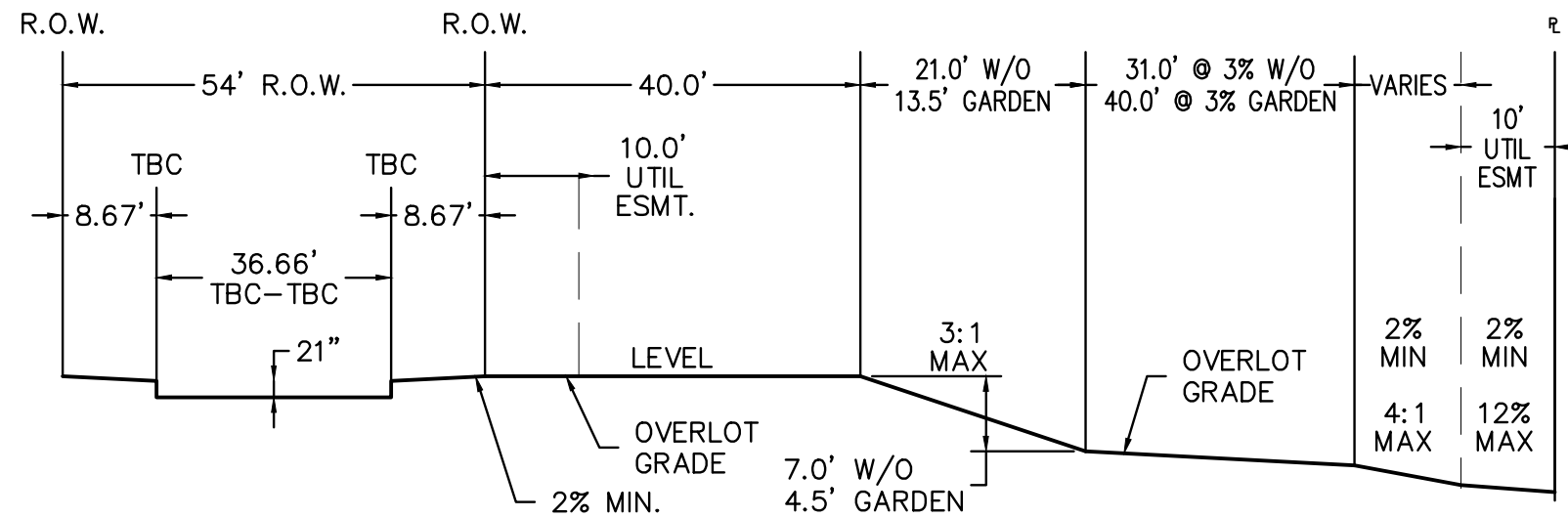
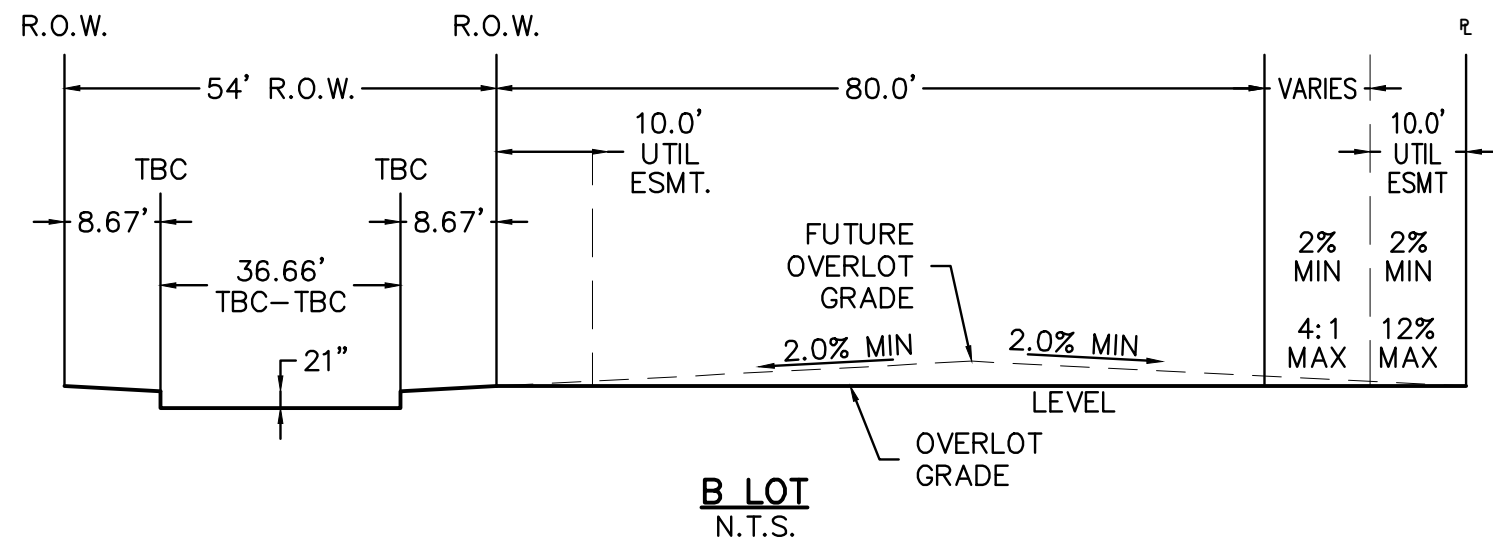
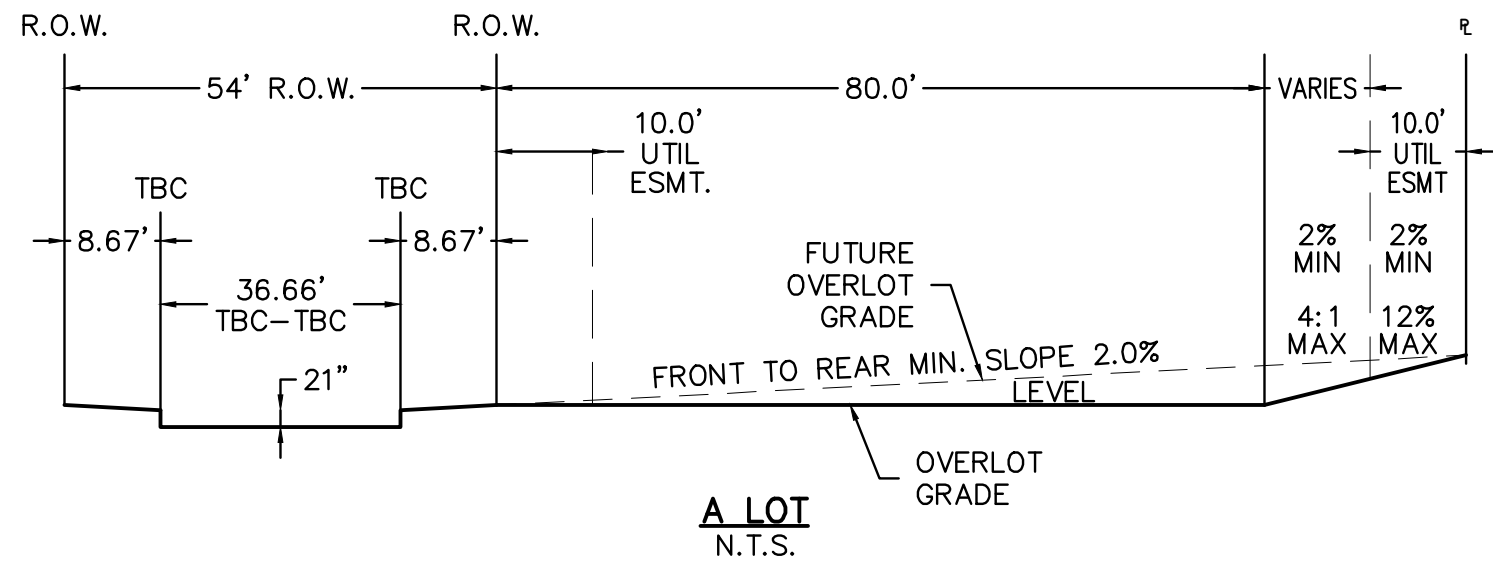
LEGEND

- PROPERTY BOUNDARY LINE
- PROPOSED FIRE HYDRANT
- PROPOSED STORM SEWER AND INLET
- PROPOSED PEDESTRIAN RAMP
- PROPOSED SIDEWALK
- PROPOSED CURB & GUTTER
- PROPOSED RIGHT OF WAY
- PROPOSED 8' CROSSPAN
- EXISTING CONTOURS
- PROPOSED 1' OVERLOT CONTOUR
- PROPOSED 5' OVERLOT CONTOUR
- PROP. FINISH GRADE SPOT ELEV. (x40.15)
- PROPOSED FLOW DIRECTION

GRADING AND EROSION CONTROL LEGEND

- CWA CONCRETE WASHOUT AREA
- CF CONSTRUCTION FENCE
- DD DIVERSION DITCH
- ECB EROSION CONTROL BLANKET
- IP INLET PROTECTION
- RRB REINFORCED ROCK BERM
- RRC RRB FOR CULVERT PROTECTION
- SB SEDIMENT BASIN
- SM SEEDING AND MULCHING
- SF SILT FENCE
- SSA STABILIZED STAGING AREA
- VTC VEHICLE TRACKING CONTROL
- LOC LIMITS OF CONSTRUCTION

Missing linework in legend (typ.).



GARDEN & W/O LOT
N.T.S.

Sheet Index	
SHEET NUMBER	SHEET TITLE
1	COVER SHEET
2	NOTES
3	OVERALL SITE PLAN
4	GESC INITIAL PLAN 01
5	GESC INITIAL PLAN 02
6	GESC INTERIM PLAN 01
7	GESC INTERIM PLAN 02
8	GESC FINAL PLAN 01
9	GESC FINAL PLAN 02
10	GESC DETAILS 01
11	GESC DETAILS 02
12	GESC DETAILS 03

Ensure the benchmark
and basis of bearing
are correct (typ.).

BENCHMARK:
#5 REBAR WITH 2" ALUMINUM CAP.
N=1,194,345.18 E=3,208,552.02 ELEV=5295.09 (NAVD 88)

BASIS OF BEARING:
ARE BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER OF
SECTION 22, TOWNSHIP SOUTH, RANGE 66 WEST OF THE 6TH P.P.
AS MONUMENTED AT THE NORTHWEST CORNER BY A FOUND
2-1/2" ALUMINUM CAP IN RANGE BOX STAMPED "ISI 2018 LS
29425" AND AT THE NORTH QUARTER CORNER BY A FOUND 2"
ALUMINUM CAP STAMPED WESTERN STATES SURVEYING INC. 1994
LS 24960". SAID LINE BEARS N89°38'58"E.

ENGINEER'S STATEMENT

THE EROSION AND SEDIMENT CONTROL PLAN INCLUDED HEREIN HAS
BEEN PREPARED UNDER MY DIRECT SUPERVISION IN ACCORDANCE
WITH THE REQUIREMENTS OF CHAPTER 8 OF THE CITY OF COMMERCE
CITY ENGINEERING CONSTRUCTION STANDARDS AND SPECIFICATIONS
MANUAL.

PLANS UNDER
REVIEW
NOT FOR
CONSTRUCTION

DANIEL J. MADRUGA, P.E.
COLORADO NO. 36834
FOR AND ON BEHALF OF ATWELL, LLC.

OWNER:
COHEN DENVER AIRPORT, LLC.
2600 PASEO VERDE PARKWAY.
SUITE 250.
HENDERSON, NV 89074
(720) 355-1400
CONTACT: BRAD BURNS

CITY OF COMMERCE CITY:
8602 ROSEMARY ST.
COMMERCE CITY, CO 80228
(303) 227-8782
CONTACT: CAITLIN
HASENBALG-LONG

CIVIL ENGINEER:
ATWELL, LLC.
6200 SOUTH SYRACUSE WAY.
SUITE 470.
GREENWOOD VILLAGE, CO 80111.
(303) 928-6757
CONTACT: DANIEL MADRUGA

SOUTH ADAMS COUNTY WATER & SANITATION DISTRICT (SACWSD):
6595 E. 70TH AVE.
COMMERCE CITY, CO 80022
(720) 206-0593
CONTACT: JEFF NELSON

UNITED POWER (ELEC):
500 COOPERATIVE WAY.
BRIGHTON, CO 80603
(303) 637-1300

XCEL ENERGY (GAS):
1800 LARIMER ST.
DENVER, CO 80202
(303) 571-7511

LANDSCAPE ARCHITECT/PLANNER:
HENRY DESIGN GROUP
1501 WAZEE STREET.
SUITE 1-C.
DENVER, CO 80202
(303) 446-2368
CONTACT: KAREN HENRY

811
Know what's below.
Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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ATWELL
866.850.4200 www.atwell-group.com
6200 SOUTH SYRACUSE WAY, SUITE 470
GREENWOOD VILLAGE, CO 80111
303.625.7100

COHEN DENVER AIRPORT, LLC
2600 PASEO VERDE PARKWAY
SUITE 250
HENDERSON, NV 89074
(720) 355-1400
BRAD BURNS

DENVER COHEN AIRPORT, LLC
LEGATO FILING NO. 1
COMMERCE CITY, COLORADO
GRADING, EROSION, & SED. CONTROL PLANS
COVER SHEET

DATE 7/20/2020

1st SUBMITTAL TO COMMERCE CITY 07/20/2020 - D.J.M.

REVISIONS

DR. JRB CH. DJM

P.M. DJM

JOB 19002860

SHEET NO. 1

RECEIVING WATER NOTE:

1. RECEIVING WATERS OF STATE ARE SECOND CREEK.

SWMP PERMIT COVERAGE NOTES:

1. THE OWNER/CONTRACTOR IS RESPONSIBLE FOR OBTAINING A PERMIT FROM CDPHE AT LEAST 10 CALENDAR DAYS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES FOR ANY EARTH DISTURBANCE OF ONE (1) OR GREATER THAN ONE (1) ACRE. THE OWNER/CONTRACTOR SHALL PROVIDE THE CITY WITH A COPY OF PERMIT PRIOR TO RECEIVING A GRADING/CONSTRUCTION PERMIT. THE OWNER/CONTRACTOR IS RESPONSIBLE FOR ALL FEES ASSOCIATED WITH THE PERMIT.
2. IF THE OWNER/CONTRACTOR TRANSFERS RESPONSIBILITY FOR STORMWATER DISCHARGES TO ANOTHER ENTITY, A NOTICE OF TRANSFER AND ACCEPTANCE OF TERMS FORM SHALL BE SUBMITTED TO CDPHE AND A COPY TO THE CITY.
3. IF THE OWNER/CONTRACTOR NO LONGER HAS CONTROL OF A SPECIFIC PORTION OF A PERMITTED SITE AND WISHES TO TRANSFER COVERAGE OF THAT PORTION OF SITE TO ANOTHER, THE OWNER/CONTRACTOR SHALL SUBMIT A NOTICE OF REASSIGNMENT OF PERMIT COVERAGE FORM TO THE CDPHE AND A COPY TO THE CITY.
4. THE OWNER/CONTRACTOR IS RESPONSIBLE FOR SUBMITTING AN INACTIVATION NOTICE FORM TO CDPHE WHEN THE SITE HAS BEEN FINALLY STABILIZED IN ACCORDANCE WITH THE A COPY OF THE INACTIVATION NOTICE SHALL ALSO BE SUBMITTED TO THE CITY.

SWMP GENERAL NOTES:

1. BMP'S SHALL BE INSTALLED BEFORE ANY EARTH DISTURBING ACTIVITIES COMMENCE.
2. STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES SHALL NOT CAUSE, HAVE THE REASONABLE POTENTIAL TO CAUSE, OR MEASURABLY CONTRIBUTE TO AN EXCEEDANCE OF ANY WATER QUALITY STANDARD.
3. CONSTRUCTION SHALL BE PHASED IN A MANNER TO LIMIT EARTH DISTURBING ACTIVITIES (I.E. THE ENTIRE PROJECT SITE SHOULD NOT BE DISTURBED IF CONSTRUCTION WILL ONLY BE OCCURRING IN ONE PARTICULAR SECTION).
4. SEDIMENT CAUSED BY ACCELERATED SOIL EROSION SHALL BE REMOVED FROM RUNOFF WATER BEFORE IT LEAVES THE CONSTRUCTION SITE.
5. BULK STORAGE STRUCTURES FOR PETROLEUM PRODUCTS AND ANY OTHER CHEMICALS SHALL HAVE SECONDARY CONTAINMENT OR EQUIVALENT PROTECTION TO CONTAIN ALL SPILLS AND PREVENT ANY SPILLED MATERIAL FROM ENTERING STATE WATERS.
6. A COPY OF THE SWMP AND SITE MAPS MUST BE AVAILABLE AT ALL TIMES ON THE CONSTRUCTION SITE UNLESS OTHERWISE APPROVED BY CDPHE OR THE CITY.
7. THE SWMP AND SITE MAPS SHALL BE CONTINUOUSLY UPDATED TO REFLECT NEW OR REVISED BEST MANAGEMENT PRACTICES (BMP'S) DUE TO CHANGES IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE OF THE CONSTRUCTION SITE. UPDATES MUST BE MADE WITHIN 72 HOURS FOLLOWING THE CHANGE IN BMP'S.
8. THE OWNER/CONTRACTOR SHALL INSPECT THE CONSTRUCTION SITE (INCLUDING ALL BMP'S, STORAGE CONTAINERS, AND CONSTRUCTION EQUIPMENT) A MINIMUM OF EVERY 14 CALENDAR DAYS AND WITHIN 24 HOURS AFTER A PRECIPITATION EVENT OR SNOW MELT THAT CAUSE SURFACE EROSION. INSPECTIONS SHALL CONTINUE UNTIL AN INACTIVATION NOTICE IS FILED WITH CDPHE.
9. THE OWNER/CONTRACTOR SHALL KEEP A RECORD OF ALL INSPECTIONS ON SITE AND AVAILABLE FOR REVIEW BY CDPHE OR CITY STAFF. INSPECTION REPORTS MUST IDENTIFY ANY INCIDENTS OF NON-COMPLIANCE WITH THE TERMS AND CONDITIONS OF THE PERMIT. BMP'S REQUIRING MAINTENANCE OR ADJUSTMENT SHALL BE REPAIRED IMMEDIATELY AFTER OBSERVATION OF THE FAILING BMP.
10. FOR ALL INSTANCES OF NONCOMPLIANCE BASED ON ENVIRONMENTAL HAZARDS AND CHEMICAL SPILLS AND RELEASES, ALL NEEDED INFORMATION MUST BE PROVIDED ORALLY TO CDPHE SPILL REPORTING LINE (24-HOUR NUMBER FOR ENVIRONMENTAL HAZARDS AND CHEMICAL SPILLS AND RELEASES: 1-877-518-5608) WITHIN 24 HOURS FROM THE TIME THE OWNER/CONTRACTOR COMES AWARE OF THE CIRCUMSTANCES.
11. STRAW BALES SHALL NOT BE USED FOR PRIMARY EROSION OR SEDIMENT CONTROL (I.E. STRAW BALES MAY BE USED FOR REINFORCEMENT BEHIND ANOTHER BMP SUCH AS SILT FENCE).
12. BMP'S INTENDED FOR SHEET FLOW SEDIMENT RUNOFF SHALL BE PLACED PARALLEL TO THE SLOPE.
13. ALL BMP'S SHALL BE CLEANED WHEN SEDIMENT LEVELS ACCUMULATE TO HALF THE DESIGN OF THE BMP UNLESS OTHERWISE SPECIFIED.
14. A VEHICLE TRACKING PAD (VTP) SHALL BE PLACED AT ALL EXITS FROM THE SITE TO PREVENT TRACK-OUT ONTO CITY STREETS. IF TRACK-OUT DOES OCCUR, THE OWNER/CONTRACTOR SHALL IMMEDIATELY SWEEP THE STREET OF DEBRIS. RECYCLED CRUSHED CONCRETE OR ASPHALT SHALL NOT BE USED FOR VEHICLE TRACKING PADS.
16. ALL SEDIMENT COLLECTED IN BMP'S SHALL BE REMOVED UPON INITIAL ACCEPTANCE.
15. PERMANENT EROSION CONTROL MEASURES FOR SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 14 CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH DISTURBANCE HAS BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH DISTURBANCE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH DISTURBANCE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED WITHIN 14 CALENDAR DAYS. TEMPORARY EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION MEASURES ARE IMPLEMENTED.
16. FINAL STABILIZATION HAS BEEN ACHIEVED WHEN ALL EARTH DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED, AND UNIFORM VEGETATIVE COVER HAS BEEN ESTABLISHED WITH AN INDIVIDUAL PLANT DENSITY OF AT LEAST 70 PERCENT OF PRE-DISTURBANCE LEVELS, OR EQUIVALENT PERMANENT, PHYSICAL EROSION REDUCTION METHODS HAVE BEEN EMPLOYED.
17. ALL TEMPORARY BMP'S SHALL BE REMOVED FROM THE SITE UPON SUBMITTING THE INACTIVATION NOTICE.
18. ALL SITE WASTES (INCLUDING TRASH AND BUILDING MATERIALS) MUST BE PROPERLY MANAGED TO PREVENT POTENTIAL POLLUTION OF STATE WATERS.
19. STREET REPAIR OPERATIONS SUCH AS ROTOR MILLING, SLURRY SEAL AND CHIP SEAL. THE MINIMUM BMP'S REQUIRED ARE: INLET PROTECTION, CURB SOCKS AND STREET SWEEPING.

GENERAL NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF THE APPROPRIATE GOVERNING AGENCY. THE CONTRACTOR SHALL HAVE IN HIS POSSESSION AT THE JOB SITE AT ALL TIMES ONE (1) SIGNED COPY OF THE PLANS, STANDARDS, AND SPECIFICATIONS AS APPROVED BY THE APPROPRIATE GOVERNING AGENCY. THE CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FOR ANY VARIANCE TO THE ABOVE DOCUMENTS.
2. CONTRACTOR SHALL OBTAIN, AT HIS OWN EXPENSE, ALL APPLICABLE CODES, LICENSES, STANDARDS, SPECIFICATIONS, PERMITS, BONDS, ETC., WHICH ARE NECESSARY TO PERFORM THE PROPOSED WORK.
3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNER/DEVELOPER AND ENGINEER OF ANY PROBLEM IN CONFORMING TO THE APPROVED PLANS FOR ANY ELEMENT OF THE PROPOSED IMPROVEMENTS PRIOR TO ITS CONSTRUCTION.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE APPROPRIATE GOVERNING AGENCIES AT LEAST 48 HOURS PRIOR TO START OF ANY CONSTRUCTION. IF WORK IS SUSPENDED FOR ANY PERIOD OF TIME AFTER INITIAL START-UP, THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE GOVERNMENT AGENCIES 48 HOURS PRIOR TO RESTART.
5. ALL KNOWN EXISTING UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ON THE PLANS. THE ACTUAL LOCATION MAY VARY FROM THE PLANS, ESPECIALLY IN THE CASE OF UNDERGROUND UTILITIES. WHENEVER THE CONTRACTOR DISCOVERS A DISCREPANCY IN LOCATIONS, HE SHALL CONTACT THE ENGINEER IMMEDIATELY.
6. THE CONTRACTOR SHALL REPAIR ANY EXCAVATIONS OR PAVEMENT FAILURES CAUSED BY HIS CONSTRUCTION.
7. PRIOR TO BEGINNING THE WORK, THE CONTRACTOR SHALL OBTAIN ANY WRITTEN AGREEMENTS FOR INGRESS AND EGRESS TO THE WORK FROM ADJACENT PRIVATE PROPERTY OWNERS. ACCESS TO ANY ADJACENT PRIVATE PROPERTY SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF ALL MATERIALS WITHIN DEDICATED RIGHT-OF-WAYS AND ALL MATERIALS AND WORKMANSHIP SHALL MEET THE ROADWAY DESIGN AND CONSTRUCTION STANDARDS OF THE APPROPRIATE GOVERNING AGENCY.

GRADING GENERAL NOTES:

1. GRADING PLAN IS FOR ROUGH GRADING ONLY. CHANGES MAY BE NECESSARY TO BRING PLANS INTO CONFORMANCE WITH APPROVED DRAINAGE AND SITE PLAN.
2. A WATER TRUCK SHALL BE KEPT ON-SITE TO CONTROL WIND EROSION AND DUST.
3. ANY SETTLEMENT OR SOIL ACCUMULATIONS BEYOND THE PROPERTY LIMITS DUE TO GRADING OR EROSION SHALL BE REPAIRED IMMEDIATELY BY THE CONTRACTOR.
4. NO GRADING SHALL TAKE PLACE IN ANY DELINEATED FLOOD HAZARD AREA UNTIL THE FINAL DRAINAGE PLAN HAS BEEN APPROVED AND ALL APPROPRIATE PERMITS HAVE BEEN OBTAINED.
5. ANY CONSTRUCTION DEBRIS OR MUD TRACKING IN THE PUBLIC RIGHT-OF-WAY RESULTING FROM THIS DEVELOPMENT WILL BE REMOVED IMMEDIATELY BY THE CONTRACTOR. UPON WRITTEN NOTICE BY THE CITY, FAILURE TO REMOVE THE MUD OR DEBRIS BY THE CONTRACTOR WITHIN 24 HOURS SHALL CAUSE THE CITY TO STOP ALL WORK UNTIL THE SITUATION IS RESOLVED.
6. WHEN REQUIRED, A COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE), WATER QUALITY DIVISION, STORMWATER DISCHARGE PERMIT SHALL BE OBTAINED AND A COPY SHALL BE SUBMITTED TO THE CITY OF COMMERCE CITY DEPARTMENT OF PUBLIC WORKS.
7. AREAS DISTURBED BY GRADING SHALL BE MULCHED AND RESEEDDED WITH NATIVE VEGETATION OR AS APPROVED ON THE PLAN.
8. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR SAFETY CONDITIONS ON AND ADJACENT TO THE SITE 24 HOURS A DAY, SEVEN DAYS A WEEK.
9. CONTRACTOR SHALL CONTACT UTILITY NOTIFICATION CENTER FOR THE LOCATION OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION. (811 or 1-800-922-1987)
10. THE CITY ENGINEER'S SIGNATURE AFFIXED TO THIS DOCUMENT INDICATES THE CITY OF COMMERCE CITY PUBLIC WORKS DEPARTMENT, ENGINEERING DIVISION, HAS REVIEWED THE DOCUMENT AND FOUND IT IN GENERAL COMPLIANCE WITH THE CITY'S STORMWATER QUALITY CONTROL CRITERIA. THE CITY ENGINEER, THROUGH ACCEPTANCE OF THIS DOCUMENT, ASSUMES NO RESPONSIBILITY (OTHER THAN AS STATED ABOVE) FOR THE COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS.
11. THE ADEQUACY OF THIS ESC PLAN LIES WITH THE ORIGINAL DESIGN ENGINEER.
12. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE COMMERCE CITY RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO THE APPROVED PLANS.
13. THE PLACEMENT OF EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMP'S) SHALL BE IN ACCORDANCE WITH THE CITY APPROVED PLANS.
14. ANY VARIATION IN MATERIAL, TYPE OR LOCATION OF EROSION AND SEDIMENT CONTROL BMP'S FROM THE CITY APPROVED PLANS WILL REQUIRE APPROVAL FROM AN ACCOUNTABLE REPRESENTATIVE OF THE CITY OF COMMERCE CITY ENGINEERING DIVISION.
15. AFTER THE ESC PLAN HAS BEEN APPROVED, THE CONTRACTOR MAY INSTALL THE INITIAL-STAGE EROSION AND SEDIMENT CONTROL BMP'S INDICATED ON THE ACCEPTED ESC PLAN.
16. THE FIRST BMP TO BE INSTALLED ON THE SITE SHALL BE CONSTRUCTION FENCE, MARKERS, OR OTHER APPROVED MEANS OF DEFINING THE LIMITS OF CONSTRUCTION, INCLUDING CONSTRUCTION LIMITS ADJACENT TO STREAM CORRIDORS AND OTHER AREAS TO BE PRESERVED.
17. AFTER INSTALLATION OF THE INITIAL-STAGE EROSION AND SEDIMENT CONTROL BMP'S, THE PERMITTEE SHALL CALL THE PUBLIC WORKS AT 303-289-8150 TO SCHEDULE A PRECONSTRUCTION MEETING AT THE PROJECT SITE. THE REQUEST SHALL BE MADE A MINIMUM OF THREE BUSINESS DAYS PRIOR TO THE REQUESTED MEETING TIME. NO CONSTRUCTION ACTIVITIES SHALL BE PLANNED WITHIN 24 HOURS AFTER THE PRECONSTRUCTION MEETING.
18. THE ESC MANAGER SHALL BE CERTIFIED IN STORMWATER MANAGEMENT AND EROSION CONTROL AND DOCUMENTATION SHALL BE PROVIDED TO THE CITY.
19. THE OWNER OR OWNER'S REPRESENTATIVE, THE ESC MANAGER, THE GENERAL CONTRACTOR, AND THE GRADING SUBCONTRACTOR, IF DIFFERENT FROM THE GENERAL CONTRACTOR, MUST ATTEND THE PRECONSTRUCTION MEETING. IF ANY OF THE REQUIRED PARTICIPANTS FAIL TO ATTEND THE PRECONSTRUCTION MEETING, OR IF THE INSTALLATION OF THE INITIAL BMP'S ARE NOT APPROVED BY THE CITY ESC INSPECTOR, THE APPLICANT WILL HAVE TO PAY A REINSPECTION FEE, ADDRESS ANY PROBLEMS WITH BMP INSTALLATION, AND CALL TO RESCHEDULE THE MEETING, WITH A CORRESPONDING DELAY IN THE START OF CONSTRUCTION. THE CITY STRONGLY ENCOURAGES THE APPLICANT TO HAVE THE ENGINEER OF RECORD AT THE PRECONSTRUCTION MEETING.

GRADING GENERAL NOTES:

20. CONSTRUCTION SHALL NOT BEGIN UNTIL THE CITY ESC INSPECTOR APPROVES THE INSTALLATION OF THE INITIAL BMP'S AND THE GRADING PERMIT IS OBTAINED FROM PUBLIC WORKS.
21. THE ESC MANAGER SHALL STRICTLY ADHERE TO THE APPROVED LIMITS OF CONSTRUCTION AT ALL TIMES. THE CITY OF COMMERCE CITY ENGINEERING DIVISION MUST APPROVE ANY CHANGES TO THE LIMITS OF CONSTRUCTION AND, AT THE DISCRETION OF THE ENGINEERING DIVISION, ADDITIONAL EROSION/SEDIMENT CONTROLS MAY BE REQUIRED IN ANY ADDITIONAL AREAS OF CONSTRUCTION.
22. NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHEREVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATIONS.
23. A COPY OF THE GRADING PERMIT AND APPROVED PLANS SHALL BE ON SITE AT ALL TIMES.
24. THE ESC MANAGER SHALL BE RESPONSIBLE FOR ENSURING THAT THE SITE REMAINS IN COMPLIANCE AND SHALL BE THE PERMITTEE'S CONTACT PERSON WITH THE CITY FOR ALL MATTERS PERTAINING TO THE GRADING PERMIT. THE ESC MANAGER SHALL BE PRESENT AT THE SITE THE MAJORITY OF THE TIME AND SHALL BE AVAILABLE THROUGH A 24-HOUR CONTACT NUMBER.
25. THE ESC MANAGER IS RESPONSIBLE FOR CLEANUP OF SEDIMENT OR CONSTRUCTION DEBRIS TRACKED ONTO ADJACENT PAVED AREAS. PAVED AREAS, INCLUDING STREETS, ARE TO BE KEPT CLEAN THROUGHOUT BUILD-OUT AND SHALL BE CLEANED WITH A STREET SWEEPER OR SIMILAR DEVICE AT FIRST NOTICE OF ACCIDENTAL TRACKING OR AT THE DISCRETION OF THE CITY'S ESC INSPECTOR. STREET WASHING IS NOT ALLOWED. THE CITY RESERVES THE RIGHT TO REQUIRE ADDITIONAL MEASURES TO ENSURE AREA STREETS ARE KEPT FREE OF SEDIMENT AND/OR CONSTRUCTION DEBRIS.
26. THE APPROVED PLANS MAY REQUIRE CHANGES OR ALTERATIONS AFTER APPROVAL TO MEET CHANGING SITE OR PROJECT CONDITIONS OR TO ADDRESS INEFFICIENCIES IN DESIGN OR INSTALLATION. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE THROUGH THE CITY APPROVED ACCESS POINTS. A VEHICLE TRACKING CONTROL PAD IS REQUIRED AT ALL ACCESS POINTS ON THE ADDITIONAL STABILIZED CONSTRUCTION ENTRANCES MAY BE ADDED WITH AUTHORIZATION FROM THE COMMERCE CITY ENGINEERING DIVISION.
27. THE ESC MANAGER SHALL OBTAIN PRIOR APPROVAL FROM THE DESIGN ENGINEER AND COMMERCE CITY ENGINEERING DIVISION FOR ANY PROPOSED CHANGES.
28. NO PERMANENT EARTH SLOPES GREATER THAN 3:1 SHALL BE ALLOWED.
29. ANY SETTLEMENT OR SOIL ACCUMULATIONS BEYOND THE LIMITS OF CONSTRUCTION DUE TO GRADING OR EROSION SHALL BE REPAIRED IMMEDIATELY BY THE ESC MANAGER. THE ESC MANAGER SHALL BE HELD RESPONSIBLE FOR OBTAINING ACCESS RIGHTS TO ADJACENT PROPERTY, IF NEEDED, AND REMEDIATING ANY ADVERSE IMPACTS TO ADJACENT WATERWAYS, WETLANDS, PROPERTIES, ETC. RESULTING FROM WORK DONE AS PART OF THIS PROJECT.
30. SOILS THAT WILL BE STOCKPILED FOR MORE THAN THIRTY (30) DAYS SHALL BE SEEDED AND MULCHED WITHIN FOURTEEN (14) DAYS OF STOCKPILE CONSTRUCTION. NO STOCKPILES SHALL BE PLACED WITHIN ONE HUNDRED (100) FEET OF A DRAINAGE WAY UNLESS APPROVED BY THE COMMERCE CITY ENGINEERING DIVISION.
31. ALL CHEMICAL OR HAZARDOUS MATERIAL SPILLS WHICH MAY ENTER WATERS OF THE STATE OF COLORADO, WHICH INCLUDE BUT ARE NOT LIMITED TO, SURFACE WATER, GROUND WATER AND DRY GULLIES OR STORM SEWER LEADING TO SURFACE WATER, SHALL BE IMMEDIATELY REPORTED TO THE CDPHE PER CRS 25-8-601, AND COMMERCE CITY. RELEASES OF PETROLEUM PRODUCTS AND CERTAIN HAZARDOUS SUBSTANCES LISTED UNDER THE FEDERAL CLEAN WATER ACT (40 CFR PART 116) MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER, SOUTH ADAMS COUNTY WATER AND SANITATION DISTRICT AS WELL AS THE CDPHE. SPILLS THAT POSE AN IMMEDIATE RISK TO HUMAN LIFE SHALL BE REPORTED TO 911. FAILURE TO REPORT AND CLEAN UP ANY SPILL SHALL RESULT IN ISSUANCE OF A STOP WORK ORDER.
32. THE CLEANING OF CONCRETE DELIVERY TRUCK CHUTES IS RESTRICTED TO APPROVED CONCRETE WASH OUT LOCATIONS ON THE JOB SITE. THE DISCHARGE OF WATER CONTAINING WASTE CONCRETE TO THE STORM SEWER SYSTEM IS PROHIBITED. ALL CONCRETE WASTE SHALL BE PROPERLY CLEANED UP AND DISPOSED AT AN APPROPRIATE LOCATION.
33. COMMERCE CITY DOES NOT ALLOW HAY BALES AS A FORM OF EROSION AND SEDIMENT CONTROL.
34. ONCE THE SITE HAS REACHED FINAL STABILIZATION, A FINAL INSPECTION SHALL BE SCHEDULED WITH THE CITY'S ESC INSPECTOR. A CERTIFICATE OF OCCUPANCY WILL NOT BE ISSUED AND/OR THE GRADING BOND WILL NOT BE RELEASED UNTIL THE CITY'S ESC INSPECTOR APPROVES FINAL STABILIZATION
35. AREA OF DISTURBANCE: 52 ACRES



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THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
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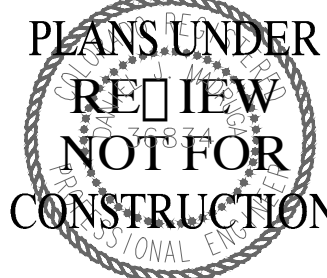
COHEN DENVER AIRPORT, LLC	2800 PASEO VERDE PARKWAY SUITE 250 HENDERSON, NV 89074	(720) 355-1400	BRAD BURNS
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CLIENT	DENVER COHEN AIRPORT, LLC	LEGATO FILING NO. 1 COMMERCE CITY, COLORADO	GRADING, CONSTRUCTION, EROSION CONTROL PLANS NOTES
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DATE 7/20/2020

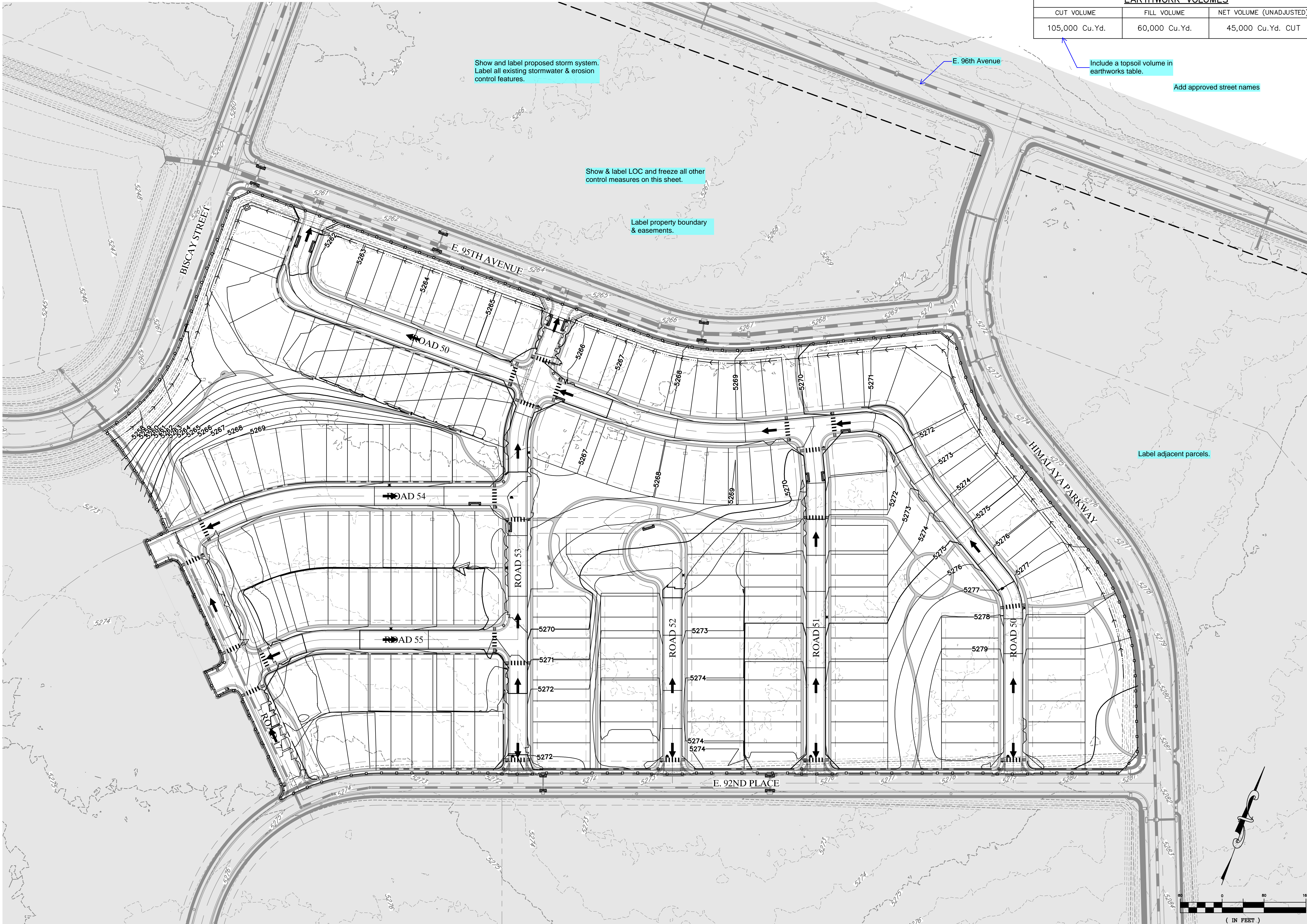
A CITY	1st SUBMITTAL TO COMMERCE CITY	07/20/2020 - 10:41

REVISIONS



DR. JRB	CH. DJM
P.M. DJM	
JOB	19002860
SHEET NO.	2

CAD FILE: 19002860-SESS-COVER.DWG



EARTHWORK VOLUMES		
CUT VOLUME	FILL VOLUME	NET VOLUME (UNADJUSTED)
105,000 Cu.Yd.	60,000 Cu.Yd.	45,000 Cu.Yd. CUT

Show and label proposed storm system.
Label all existing stormwater & erosion
control features.

Include a topsoil volume in
earthworks table.

Add approved street names

Show & label LOC and freeze all other
control measures on this sheet.

Label property boundary
& easements.

Label adjacent parcels.

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2600 PASEO VERDE PARKWAY
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HENDERSON, NV 89074
(720) 355-1400
BRAD BURNS

CLIENT: DENVER COHEN AIRPORT, LLC
DATE: 7/20/2020

LEGATO FILING NO. 1
COMMERCE CITY, COLORADO
GRADING, EROSION, & SED. CONTROL PLANS
OVERALL SITE PLAN

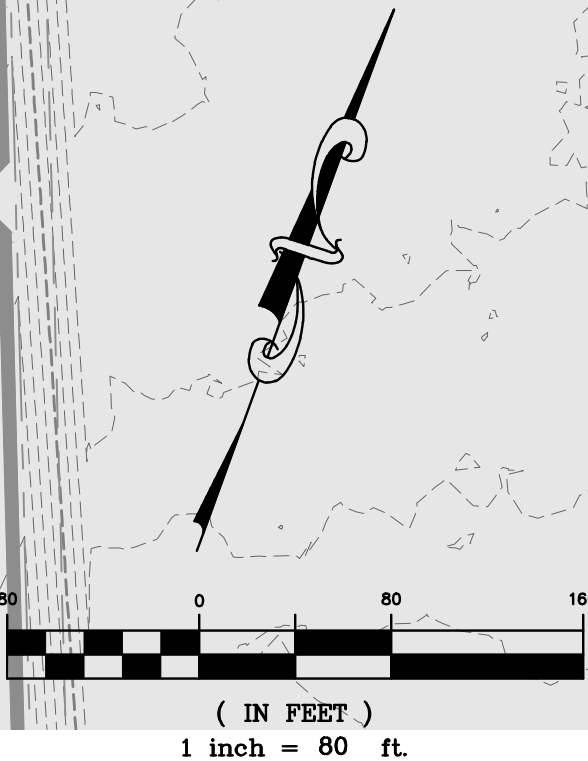
1st SUBMITTAL TO COMMERCE CITY: 07/20/2020 - D.M.

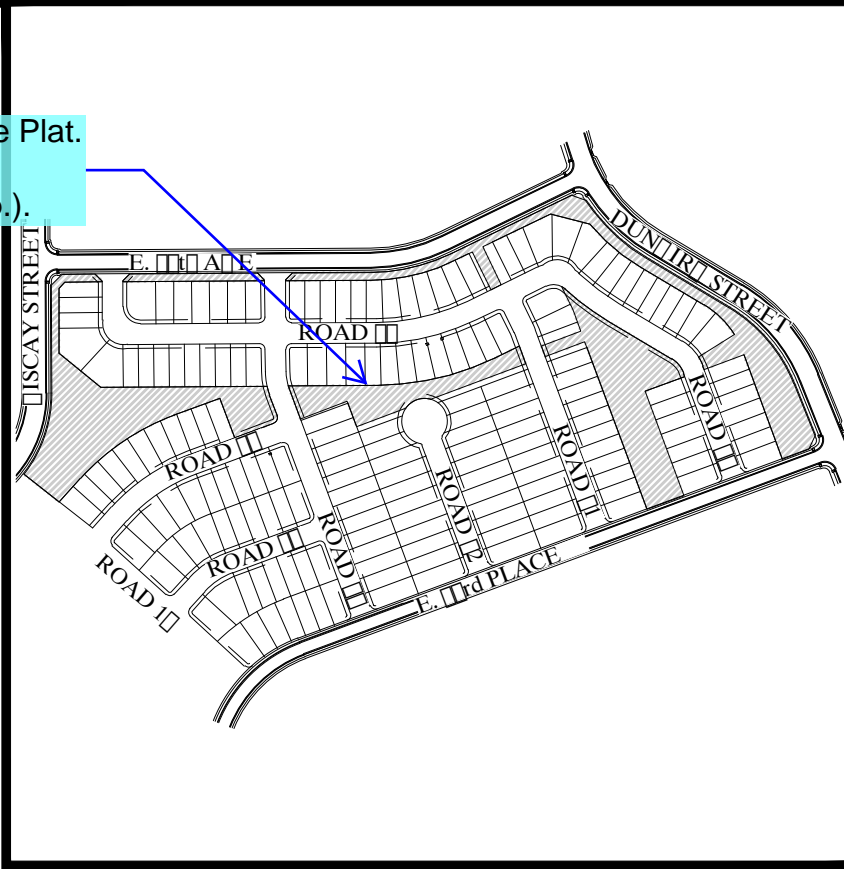
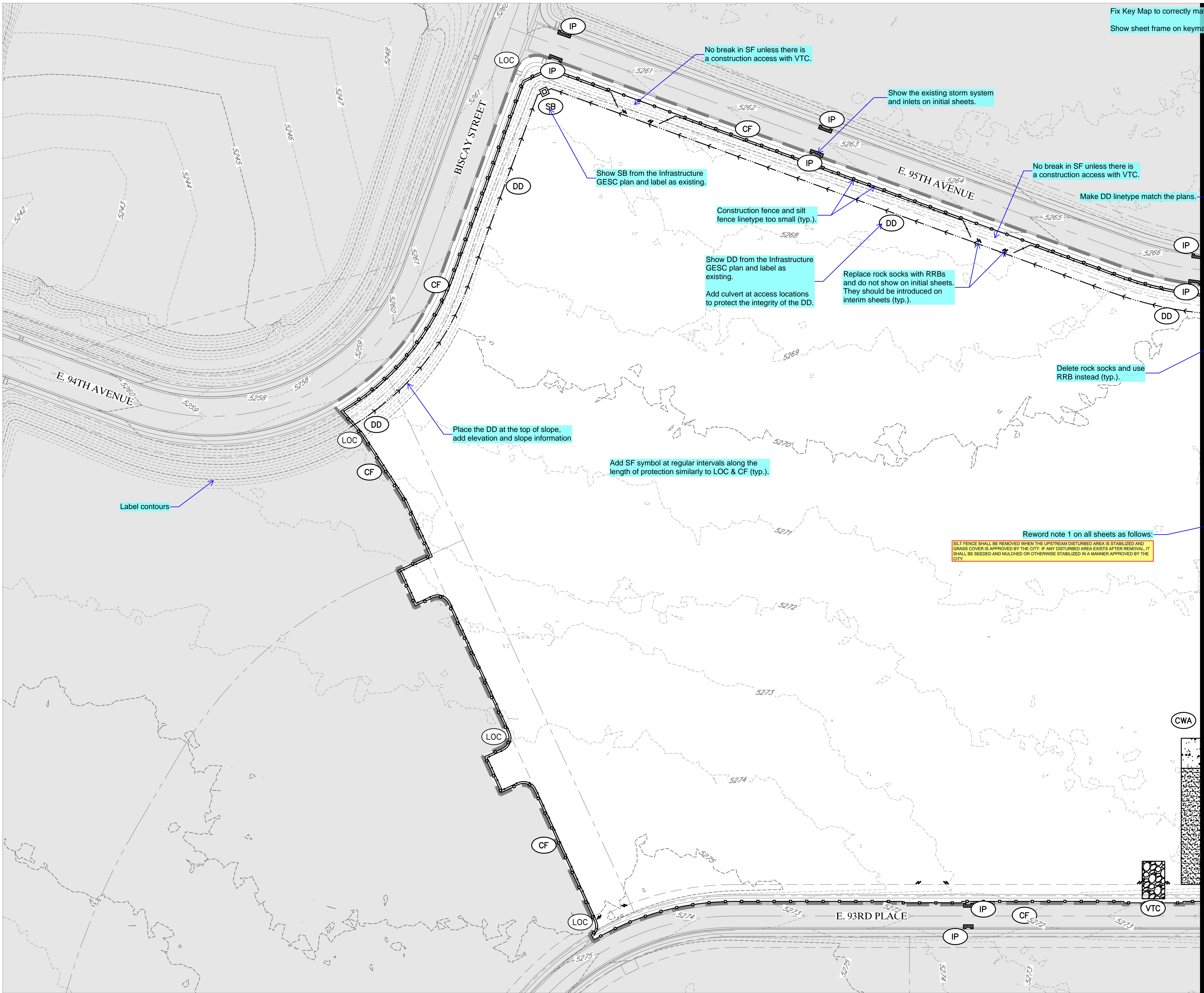
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JOB: 19002860
SHEET NO.: 3

CAD FILE: 19002860-VESS-OVERALL.DWG





KEY MAP	
SCALE: 1"=500'	
	(CWA) CONCRETE WASHOUT AREA
	(CF) CONSTRUCTION FENCE
	(DD) DIVERSION DITCH
	(ECB) EROSION CONTROL BLANKET
	(IP) INLET PROTECTION
	(RRB) REINFORCED ROCK BERM
	(RRC) RRB FOR CULVERT PROTECTION
	(RS) ROCK SOCK
	(SB) SEDIMENT BASIN
	(SM) SEEDING AND MULCHING
	(SF) SILTY FENCE
	(SSA) STABILIZED STAGING AREA
	(VTC) VEHICLE TRACKING CONTROL
	(LOC) LIMITS OF CONSTRUCTION
	(SCL) SEDIMENT CONTROL LOG

LEGEND	
	EXISTING GROUND CONTOURS

- GRADING AND EROSION CONTROL NOTES:**
1. SILTY FENCE TO BE REMOVED AFTER PLACEMENT OF ECB OR SEEDING & MULCHING.
 2. INLET PROTECTION TO BE REMOVED AFTER DEVELOPMENT AND STABILIZATION OF LOTS.
 3. VTC TO BE REMOVED UPON COMPLETION OF PAVING OPERATIONS.
 4. SEE COVER SHEET FOR COMMERCE CITY STANDARD GRADING NOTES.
 5. SHADED BMP'S WERE INSTALLED IN INITIAL OR INTERIM STAGES AND SHALL BE LEFT IN PLACE UNTIL REVEGETATION ESTABLISHMENT IS APPROVED BY THE CITY.
 6. SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, WATER QUALITIES, CULVERTS, STORM DRAINS, AND OUTLET PROTECTION.
 7. A RELEASE OF ANY CHEMICAL, OIL, PETROLEUM PRODUCT, SEWAGE, ETC. WHICH MAY ENTER STATE WATERS (WHICH INCLUDE SURFACE WATER, GROUNDWATER AND DRY GULLIES OR STORM SEWERS LEADING TO SURFACE WATER) MUST BE REPORTED TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) IMMEDIATELY. WRITTEN NOTIFICATION TO CDPHE MUST FOLLOW WITHIN FIVE DAYS. THE CDPHE TOLL-FREE 24-HOUR ENVIRONMENTAL EMERGENCY SPILL REPORTING LINE IS 1-877-518-5608. ANY ACCIDENTAL DISCHARGE TO THE SANITARY SEWER SYSTEM MUST BE REPORTED TO SOUTH ADAMS COUNTY WATER AND SANITATION DISTRICT AT 303-288-2646.
 8. ALL TREE LAWNS SHALL BE SEEDED AND MULCHED.
 9. ALL STREETS NEED TO BE CLEANED DAILY.

REVISIONS

PLANS UNDER REVIEW NOT FOR CONSTRUCTION

DR. JRB CH. DJM

P.M. DJM

JOB 19002860

SHEET NO. 4

1" = 60' ft.

811

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COHEN DENVER AIRPORT, LLC

2600 PASEO VERDE PARKWAY SUITE 250 HENDERSON, NV 89074

(720) 355-1400

BRAD BURNS

CLIENT: DENVER COHEN AIRPORT, LLC

DATE: 7/20/2020

LEGATO FILING NO. 1

COMMERCE CITY, COLORADO

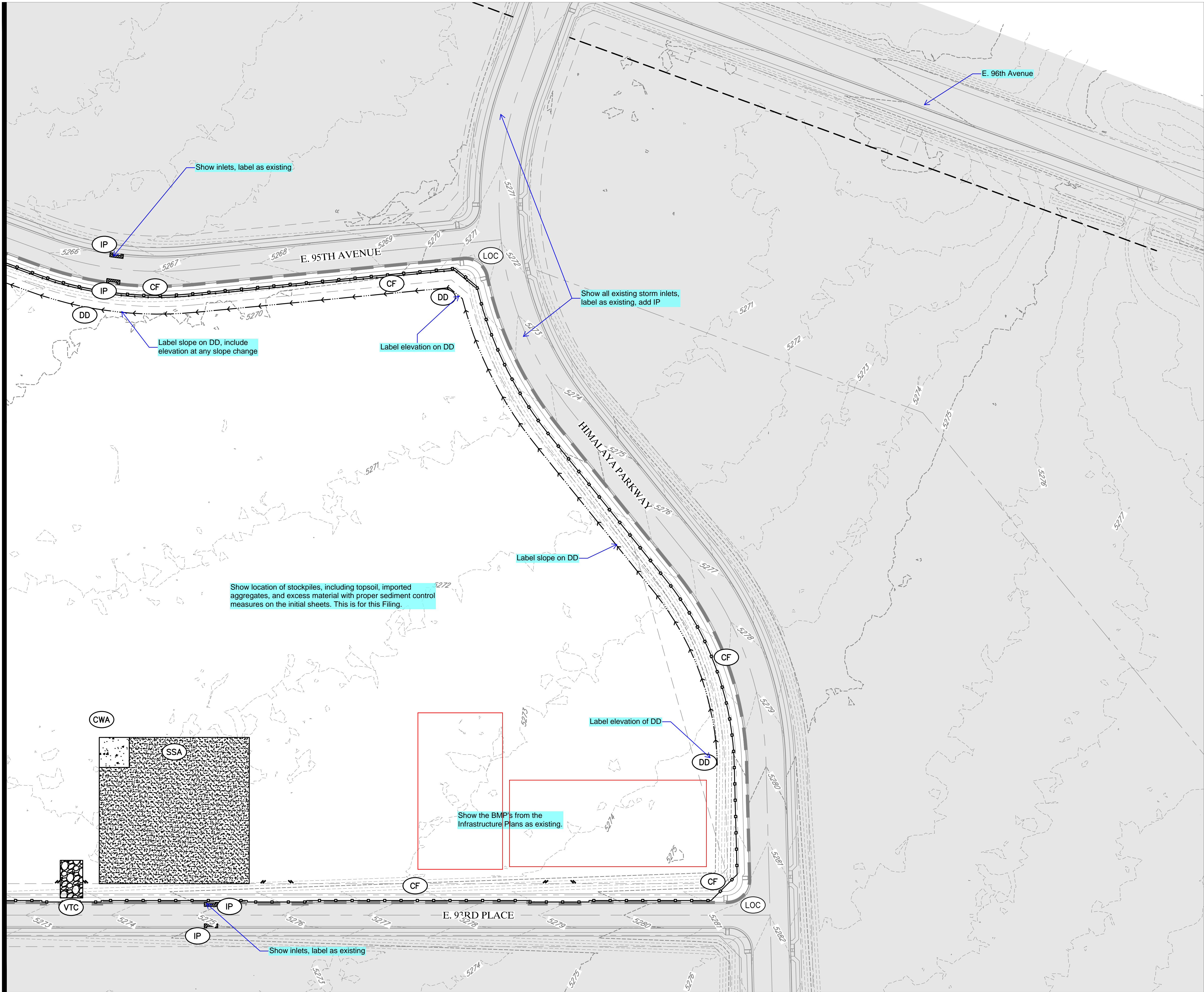
GRADING, EROSION, & SED. CONTROL PLANS

GESC INITIAL PLAN 01

1st SUBMITTAL TO COMMERCE CITY: 07/20/2020 - D.M.

CAD FILE: 19002860-GESC-INITIAL-PLAN.DWG

SEE SHEET 4



KEY MAP	
SCALE: 1"=500'	
	(CWA) CONCRETE WASHOUT AREA
	(CF) CONSTRUCTION FENCE
	(DD) DIVERSION DITCH
	(ECB) EROSION CONTROL BLANKET
	(IP) INLET PROTECTION
	(RRB) REINFORCED ROCK BERM
	(RRC) RRB FOR CULVERT PROTECTION
	(RS) ROCK SOCK
	(SB) SEDIMENT BASIN
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	(SSA) STABILIZED STAGING AREA
	(VTC) VEHICLE TRACKING CONTROL
	(LOC) LIMITS OF CONSTRUCTION
	(SCL) SEDIMENT CONTROL LOG

LEGEND	
	EXISTING GROUND CONTOURS

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 8. ALL TREE LAWNS SHALL BE SEEDED AND MULCHED.
 9. ALL STREETS NEED TO BE CLEANED DAILY.

(IN FEET)
1 inch = 60 ft.

REVISIONS

PLANS UNDER REVIEW NOT FOR CONSTRUCTION

DR. JRB CH. DJM

P.M. DJM

JOB 19002860

SHEET NO. 5

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303.625.7100

CLIENT
COHEN DENVER AIRPORT, LLC

DATE
7/20/2020

PROJECT
LEGATO FILING NO. 1
COMMERCE CITY, COLORADO
GRADING, EROSION, & SED. CONTROL PLANS
GESC INITIAL PLAN 02

1st SUBMITTAL TO COMMERCE CITY
07/20/2020 - DJM

80

LEGEND

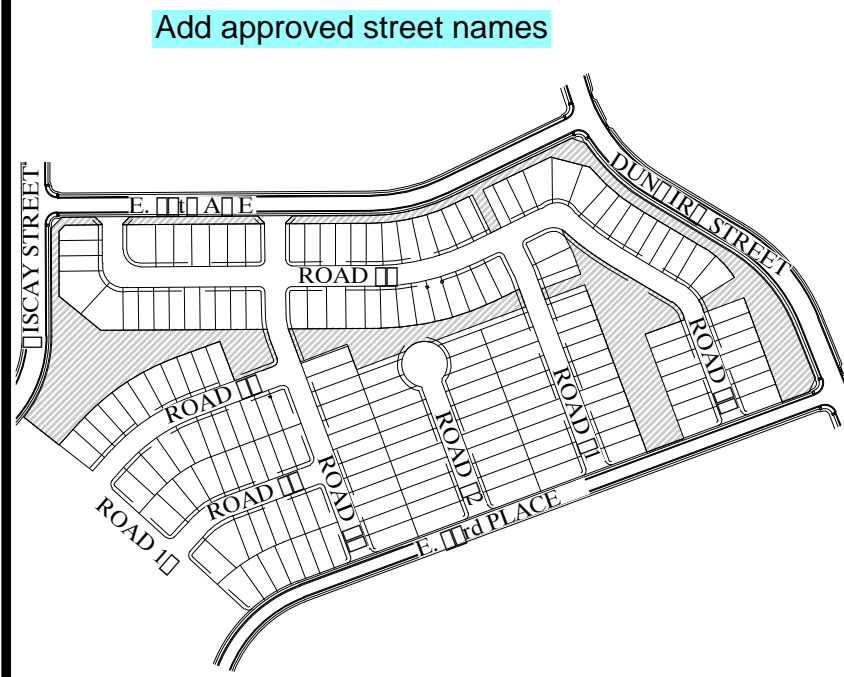
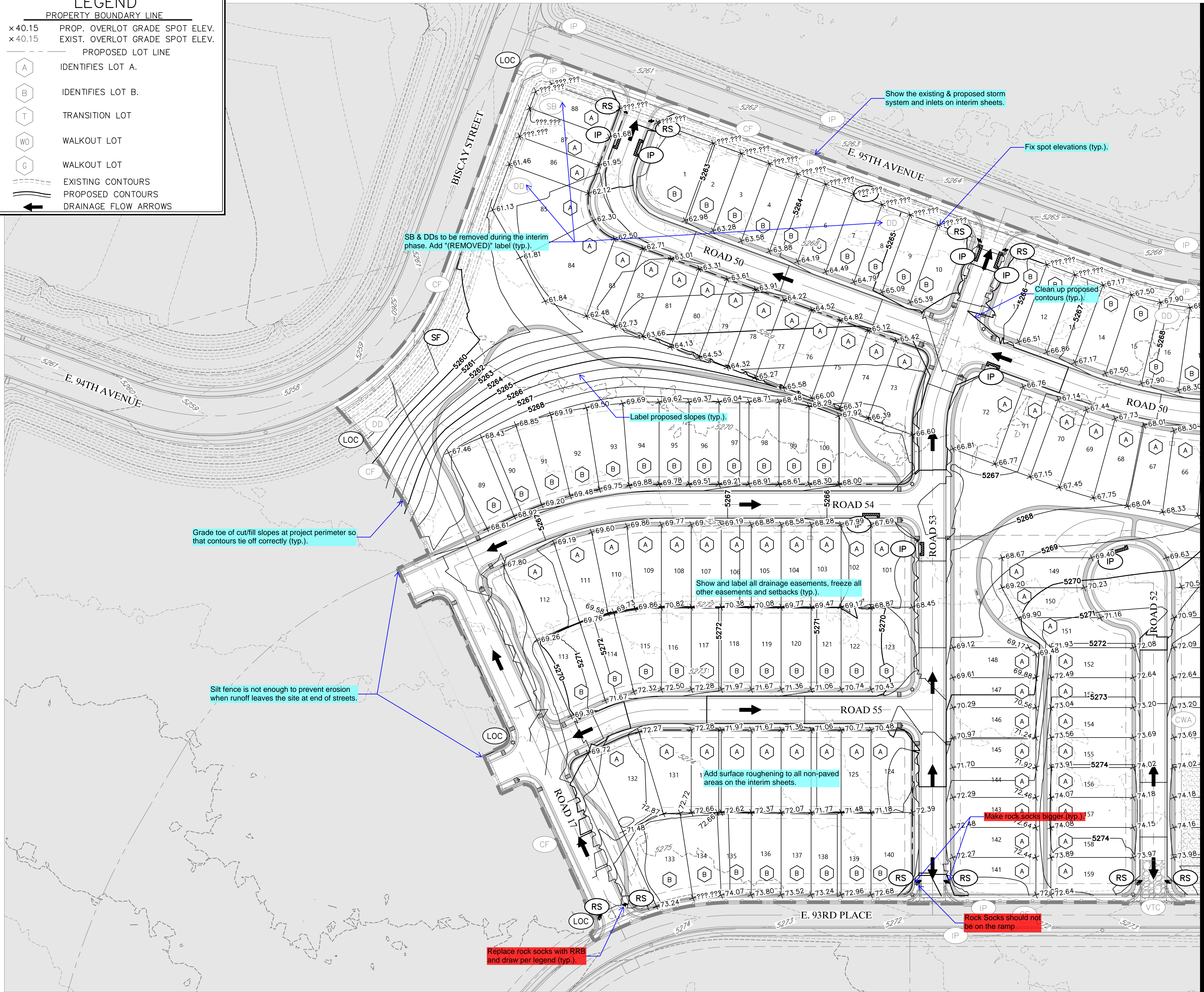
PROPERTY BOUNDARY LINE

×40.15 PROP. OVERLOT GRADE SPOT ELEV.
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--- PROPOSED LOT LINE

A IDENTIFIES LOT A.
B IDENTIFIES LOT B.
T TRANSITION LOT
WO WALKOUT LOT
G WALKOUT LOT

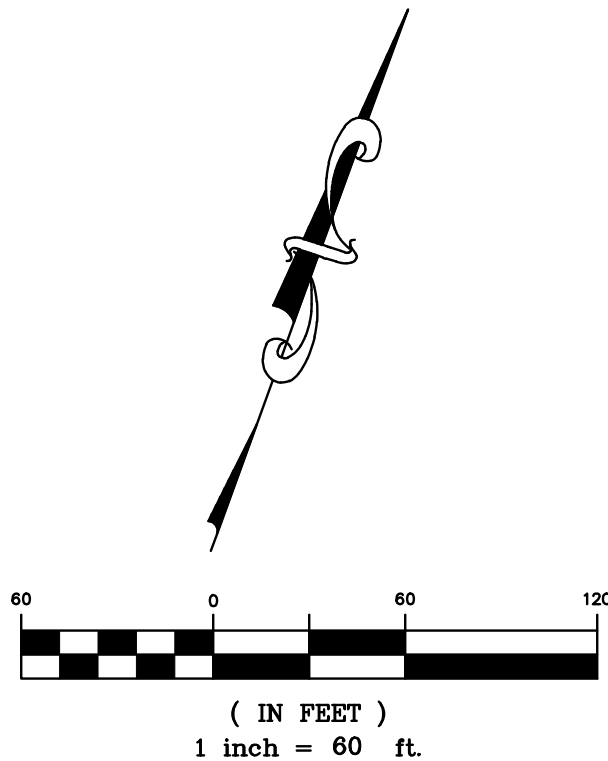
--- EXISTING CONTOURS
--- PROPOSED CONTOURS
--- DRAINAGE FLOW ARROWS



KEY MAP
SCALE: 1"=500'

[Symbol]	(CWA) CONCRETE WASHOUT AREA
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2600 PASEO VERDE PARKWAY
SUITE 250
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(720) 355-1400
BRAD BURNS

CLIENT
DENVER COHEN AIRPORT, LLC
LEGATO FILING NO. 1
COMMERCE CITY, COLORADO
GRADING, EROSION, & SED. CONTROL PLANS
GESC INTERIM PLAN 01

DATE
7/20/2020

REVISIONS
PLANS UNDER REVIEW NOT FOR CONSTRUCTION

DR. JRB **CH.** DJM
P.M. DJM
JOB 19002860
SHEET NO. 6

CAD FILE: 19002860-GESC-INTERIM-PLAN.DWG

LEGEND

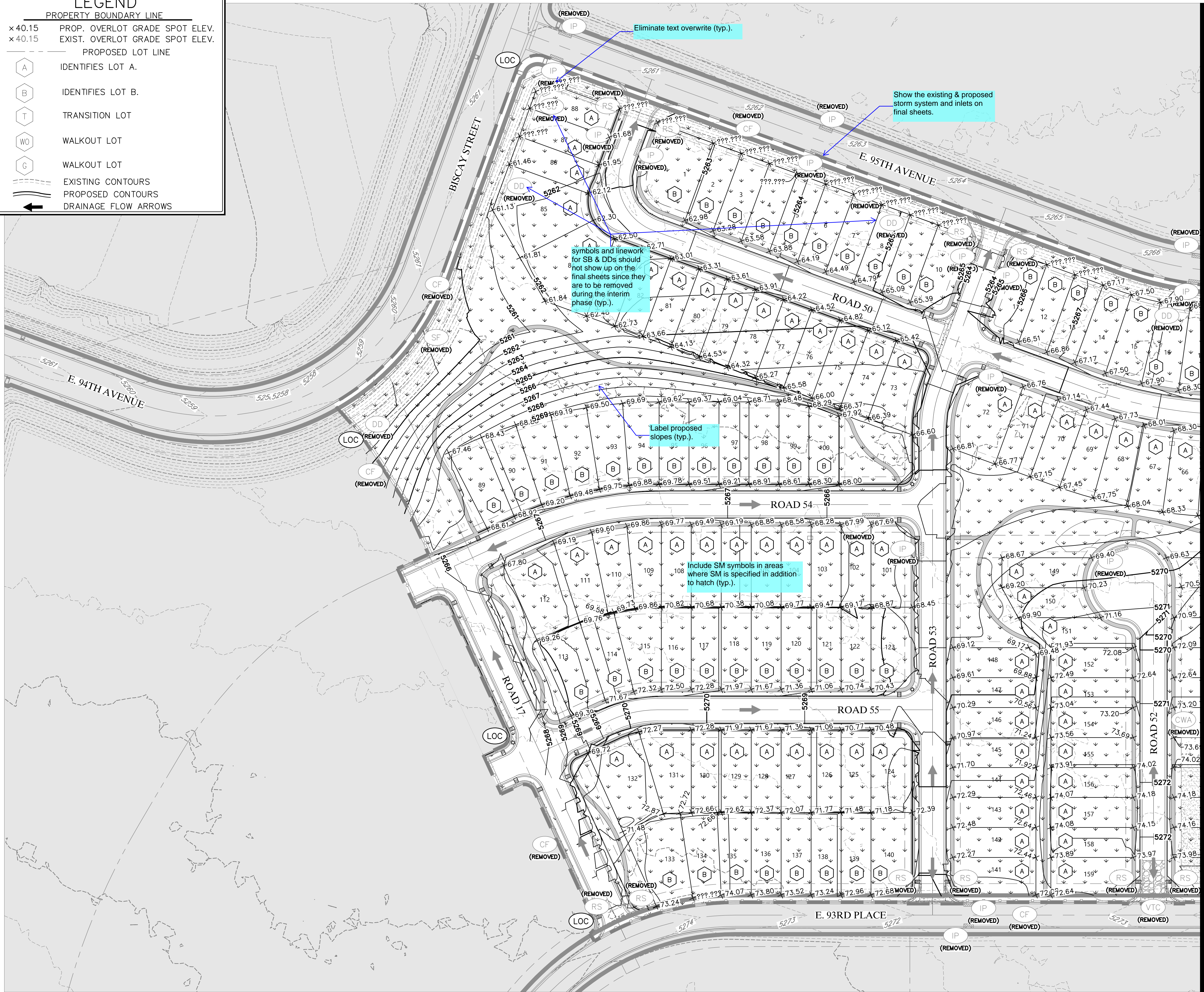
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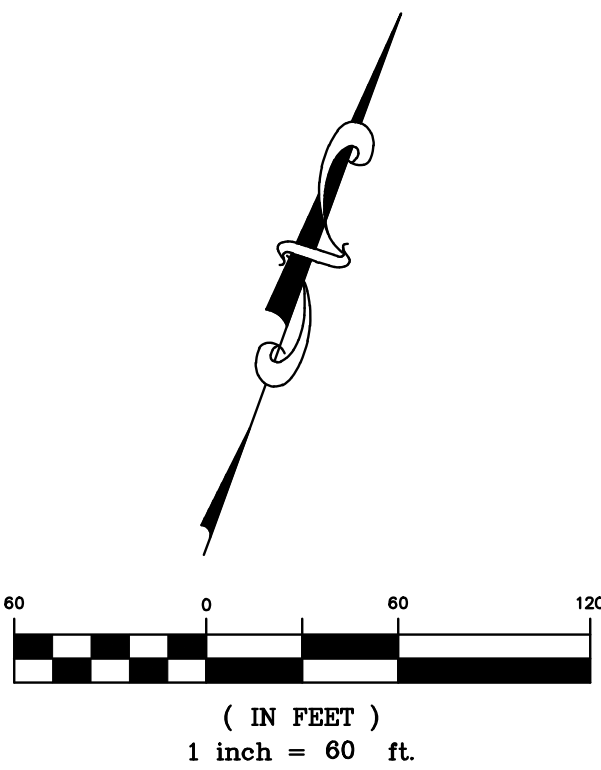
--- EXISTING CONTOURS
--- PROPOSED CONTOURS
← DRAINAGE FLOW ARROWS



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CLIENT: DENVER COHEN AIRPORT, LLC
LECATO FILING NO. 1
COMMERCE CITY, COLORADO
GRADING, EROSION, & SED. CONTROL PLANS
GESC FINAL PLAN 01

DATE: 7/20/2020

REVISIONS
PLANS UNDER REVIEW
NOT FOR CONSTRUCTION

DR. JRB CH. DJM
P.M. DJM
JOB: 19002860
SHEET NO.: 8

CAD FILE: 19002860-GESC-FINAL-PLANS.DWG



LEGEND

PROPERTY BOUNDARY LINE

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× 40.15 EXIST. OVERLOT GRADE SPOT ELEV.

PROPOSED LOT LINE

IDENTIFIES LOT A.

IDENTIFIES LOT B.

TRANSITION LOT

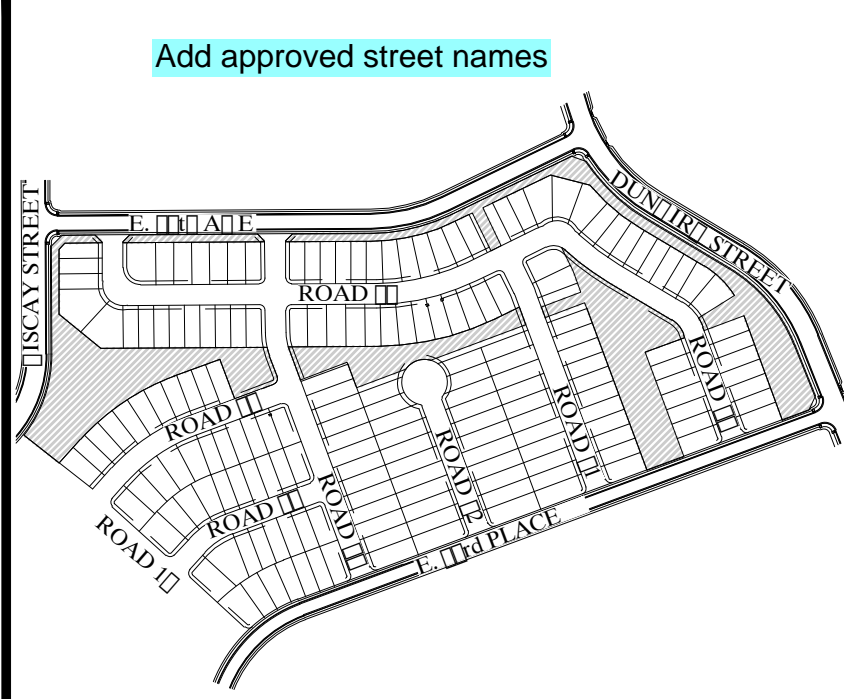
WALKOUT LOT

WALKOUT LOT

EXISTING CONTOURS

PROPOSED CONTOURS

DRAINAGE FLOW ARROWS



KEY MAP

SCALE: 1"=500'

CONCRETE WASHOUT AREA (CWA)

CONSTRUCTION FENCE (CF)

DIVERSION DITCH (DD)

EROSION CONTROL BLANKET (ECB)

INLET PROTECTION (IP)

REINFORCED ROCK BERM (RRB)

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SEDIMENT BASIN (SB)

SEEDING AND MULCHING (SM)

SILT FENCE (SF)

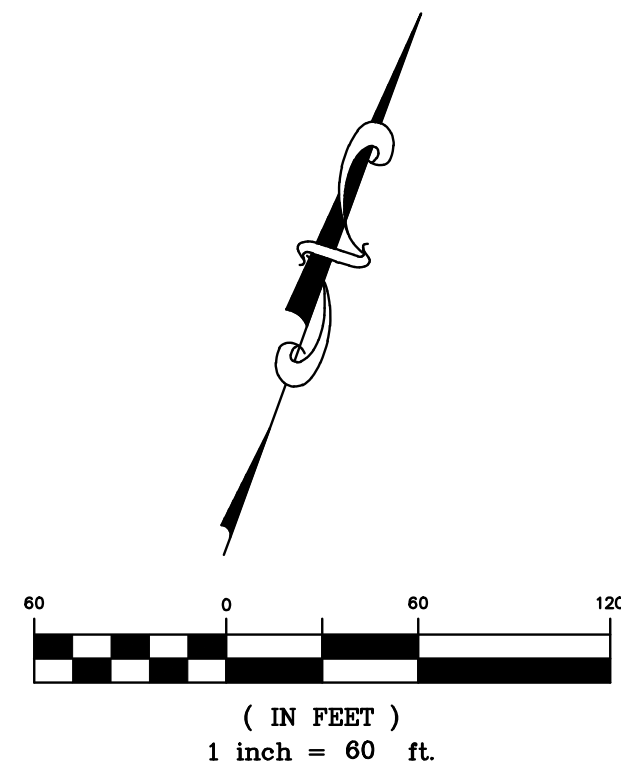
STABILIZED STAGING AREA (SSA)

VEHICLE TRACKING CONTROL (VTC)

LIMITS OF CONSTRUCTION (LOC)

SEDIMENT CONTROL LOG (SCL)

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303.825.7100

CLIENT: **COHEN DENVER AIRPORT, LLC**

DATE: 7/20/2020

PROJECT: **LEGATO FILING NO. 1**

CITY: **COMMERCE CITY, COLORADO**

GRADING, EROSION, & SED. CONTROL PLANS

REVISIONS

PLANS UNDER REVIEW NOT FOR CONSTRUCTION

DR. JRB CH. DJM

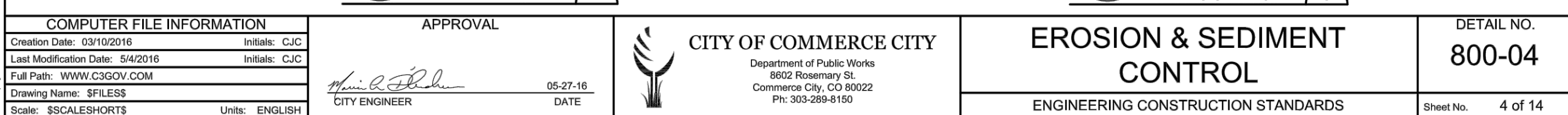
P.M. DJM

JOB: 19002860

SHEET NO. 9

CAD FILE: 19002860-GEESC-FINAL-PLANS.DWG

1. GRADING PLAN IS FOR ROUGH GRADING ONLY. CHANGES MAY BE NECESSARY TO BRING PLANS INTO CONFORMANCE WITH APPROVED DRAINAGE AND SITE PLAN.		DETAIL NO.	SHEET NO.	BMP LEGEND	
2.	A WATER TRUCK SHALL BE KEPT ON SITE TO CONTROL WIND EROSION DUST.	1	2		CD CHECK DAM
3.	ANY SETTLEMENT OR SOIL ACCUMULATIONS BEYOND THE PROPERTY LIMITS DUE TO GRADING OR EROSION SHALL BE REPAIRED IMMEDIATELY BY THE CONTRACTOR.	2	2		CFB COMPOST FILTER BERM
4.	NO GRADING SHALL TAKE PLACE IN ANY DELINEATED FLOOD HAZARD AREA UNTIL THE FINAL DRAINAGE PLAN HAS BEEN APPROVED AND ALL NECESSARY PERMITS HAVE BEEN OBTAINED.	3	2		CWA CONCRETE WASHOUT AREA
5.	ANY CONSTRUCTION DEBRIS OR MUD TRACKING IN THE PUBLIC RIGHT-OF-WAY RESULTING FROM THIS DEVELOPMENT WILL BE REMOVED IMMEDIATELY BY THE CONTRACTOR. UPON WRITTEN NOTICE BY THE CITY, FAILURE TO REMOVE THE MUD OR DEBRIS BY THE CONTRACTOR WITHIN 24 HOURS SHALL CAUSE THE CITY TO STOP ALL WORK UNTIL THE SITUATION IS RESOLVED.	4	3		CF CONSTRUCTION FENCE
6.	WHEN REQUIRED, A COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) WATER QUALITY DIVISION, STORMWATER DISCHARGE PERMIT SHALL BE OBTAINED AND A COPY SHALL BE SUBMITTED TO THE CITY OF COMMERCE CITY DEPARTMENT OF PUBLIC WORKS.	5	4		CM CONSTRUCTION MARKERS
7.	AREAS DISTURBED BY GRADING SHALL BE MULCHED AND RESEEDED WITH NATIVE VEGETATION OR AS APPROVED BY THE CITY OF COMMERCE CITY ENGINEERING DIVISION.	6	4		DW DEWATERING
8.	THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR SAFETY CONDITIONS ON AND ADJACENT TO THE SITE 24 HOURS A DAY, SEVEN DAYS A WEEK.	7	4		DD DIVERSION DITCH
9.	CONTRACTOR SHALL CONTACT UTILITY NOTIFICATION CENTER FOR THE LOCATION OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION. (811 or 1-800-822-9887)	8	4		ECB EROSION CONTROL BLANKET
10.	THE CITY ENGINEER'S SIGNATURE AFFIXED TO THIS DOCUMENT INDICATES THE CITY OF COMMERCE CITY ENGINEERING DIVISION HAS REVIEWED THE GRADING AND DRAINAGE PLANS AND FOUND IT IN GENERAL COMPLIANCE WITH THE CITY'S STORMWATER QUALITY CONTROL CRITERIA. THE CITY ENGINEER, THROUGH ACCEPTANCE OF THIS DOCUMENT, ASSUMES NO RESPONSIBILITY OTHER THAN THAT STATED ABOVE FOR THE ACCURACY OF THESE DOCUMENTS.	9	4		IP INLET PROTECTION
11.	THE ADEQUACY OF THIS ESC PLAN LIES WITH THE ORIGINAL DESIGN ENGINEER.	10	4		RCD REINFORCED CHECK DAM
12.	ALL MATERIALS AND WORKSMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE CITY. COMMERCE CITY RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKSMANSHIP THAT DOES NOT CONFORM TO THE APPROVED PLANS.	11	4		RRB REINFORCED ROCK BERM
13.	ANY VARIATION IN MATERIAL, TYPE OR LOCATION OF EROSION AND SEDIMENT CONTROL (BMPs) FROM THE CITY APPROVED PLANS WILL REQUIRE APPROVAL FROM AN ACCOUNTABLE REPRESENTATIVE OF THE CITY OF COMMERCE CITY ENGINEERING DIVISION.	12	4		RRS RBS FOR CULVERT PROTECTION
14.	AFTER THE ESC PLAN HAS BEEN APPROVED, THE CONTRACTOR MAY INSTALL THE INITIAL-STAGE EROSION AND SEDIMENT CONTROL BMPs INDICATED ON THE ACCEPTED ESC PLAN.	13	4		SB SEDIMENT BASIN
15.	THE FIRST BMP TO BE INSTALLED ON THE SITE SHALL BE CONSTRUCTION FENCE, MARKERS, OR OTHER APPROPRIATE BARS OF OBSTRUCTION TO PREVENT EXCESSIVE CONSTRUCTION LIMITS ADJACENT TO STREAM CORRIDORS AND OTHER AREAS TO BE PRESERVED.	14	4		SCL SEDIMENT CONTROL LOG
16.	AFTER INSTALLATION OF THE INITIAL-STAGE EROSION AND SEDIMENT CONTROL BMP, THE PERMITTEE SHALL BE REQUIRED TO RETURN TO THE REGIONAL PLANNING AND CONSTRUCTION MEETING AT THE PROJECT SITE. THE REQUEST SHALL BE MADE A MINIMUM OF THREE BUSINESS DAYS PRIOR TO THE REQUESTED MEETING TIME. NO CONSTRUCTION ACTIVITIES SHALL BE PLANNED WITHIN 24 HOURS OF THE INITIAL CONSTRUCTION MEETING.	15	4		ST SEDIMENT TRAP
17.	THE EROSION CONTROL BMP SHALL BE CERTIFIED IN STORMWATER MANAGEMENT AND EROSION CONTROL AND DOCUMENTATION SHALL BE PROVIDED TO THE CITY.	16	4		SM SEEDING AND MULCHING
18.	THE OWNER OR OWNER'S REPRESENTATIVE, THE EROSION MANAGER, THE GENERAL CONTRACTOR, AND THE GRADING SUBCONTRACTOR, IF DIFFERENT FROM THE GENERAL CONTRACTOR, ARE NOT ATTENDING THE PRECONSTRUCTION MEETING. IF ANY OF THE REQUIRED PARTICIPANTS FAIL TO ATTEND THE PRECONSTRUCTION MEETING, OR IF THE INSTALLATION OF THE INITIAL BMPs ARE MUST APPROVED BY THE CITY INSPECTOR, THE APPLICANT WILL HAVE TO PAY A RESCHEDULING FEE TO ADDRESS ANY PROBLEMS WITH BMP INSTALLATION, AND CALL TO RESCHEDULE THE MEETING, WITH A CORRESPONDING DELAY IN THE START OF CONSTRUCTION. THE CITY STRONGLY ENCOURAGES THE APPLICANT TO HAVE THE ENGINEER AVAILABLE AT THE PRECONSTRUCTION MEETING.	17	4		SF STABIL FENCE
19.	CONSTRUCTION SHALL NOT BEGIN UNTIL THE CITY ESC INSPECTOR APPROVES THE INSTALLATION OF THE INITIAL BMPs AND THE GRADING PERMIT IS OBTAINED FROM PUBLIC WORKS.	18	4		SSA STABILIZED STAGING AREA
20.	THE EROSION MANAGER SHALL STRICTLY ADHERE TO THE APPROVED LIMITS OF CONSTRUCTION AT ALL TIMES. THE CITY OF COMMERCE CITY ENGINEERING DIVISION MUST APPROVE ANY CHANGES TO THE LIMITS OF CONSTRUCTION AND, AT THE DISCRETION OF THE ENGINEERING DIVISION, ADDITIONAL EROSION/SEDIMENT CONTROLS MAY BE REQUIRED IN ANY ADDITIONAL AREAS OF CONSTRUCTION.	19	4		SR SURFACE ROUGHENING
21.	NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHEREVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATIONS.	20	4		TSD TEMPORARY SLOPE DRAIN
22.	A COPY OF THE GRADING PERMIT AND APPROVED PLANS SHALL BE ON SITE AT ALL TIMES.	21	4		TSC TEMPORARY STREAM CROSSING
23.	THE EROSION MANAGER SHALL BE RESPONSIBLE FOR ENSURING THAT THE SITE REMAINS IN COMPLIANCE AND THAT THE PERMITTEE'S CONTACT INFORMATION FOR THE CITY FOR ALL MATTERS PERTAINING TO THE GRADING PERMIT. THE EROSION MANAGER SHALL BE PRESENT AT THE SITE THE MAJORITY OF THE TIME AND SHALL BE AVAILABLE THROUGH A 24-HOUR CONTACT NUMBER.	22	4		TER TERRACING
24.	THE EROSION MANAGER IS RESPONSIBLE FOR CLEANUP OF SEDIMENT OR CONSTRUCTION DEBRIS TRACKED AND ON PAVED AREAS, INCLUDING DRIVEWAYS. DRIVEWAYS SHOULD BE KEPT CLEAN THROUGHOUT BUILD-OUT AND SHALL BE CLEANED WITH A STREET SWEEPER OR SIMILAR EQUIPMENT AT FIRST NOTICE OF ACCIDENTAL TRACKING OR ON THE REQUEST OF THE CITY'S ESC INSPECTOR. STREET WASHING IS NOT ALLOWED. THE CITY RESERVES THE RIGHT TO REQUIRE ADDITIONAL MEASURES TO ENSURE AREA STREETS ARE KEPT FREE OF SEDIMENT AND/OR CONSTRUCTION DEBRIS.	23	4		VTC VEHICLE TRACKING CONTROL
25.	THE APPROVED PLANS MAY REQUIRE CHANGES OR ALTERATIONS AFTER APPROVAL TO MEET CHANGING SITE OR PROJECT CONDITIONS OR TO ADDRESS INEFFICIENCIES IN DESIGN OR CONSTRUCTION. THE CITY ENGINEER'S SIGNATURE AFFIXED TO THIS DOCUMENT INDICATES THE CITY OF COMMERCE CITY ENGINEERING DIVISION HAS REVIEWED THE GRADING AND DRAINAGE PLANS AND FOUND IT IN GENERAL COMPLIANCE WITH THE CITY'S STORMWATER QUALITY CONTROL CRITERIA. THE CITY ENGINEER, THROUGH ACCEPTANCE OF THIS DOCUMENT, ASSUMES NO RESPONSIBILITY OTHER THAN THAT STATED ABOVE FOR THE ACCURACY OF THESE DOCUMENTS.	24	4		WV VTC WITH WHEEL WASH
26.	THE EROSION MANAGER SHALL OBTAIN PRIOR APPROVAL FROM THE DESIGN ENGINEER AND COMMERCE CITY ENGINEERING DIVISION FOR ANY PROPOSED CHANGES.	25	4		Loc ROCK AND RIPRAP GRADATIONS
27.	NO SETTLEMENT OR SOIL SLOPES GREATER THAN 3:1 SHALL BE ALLOWED.	26	4		Loc LIMITS OF CONSTRUCTION
28.	ANY PERMITTEE OR SOIL ACCUMULATIONS BEYOND THE LIMITS OF CONSTRUCTION DUE TO GRADING OR EROSION SHALL BE REPAIRED IMMEDIATELY BY THE EROSION MANAGER. THE EROSION MANAGER SHALL BE RESPONSIBLE FOR OBTAINING ACCESS TO THE PROPERTY AND THE PROPERTY, IF NEEDED, AND REMEDIATING ANY ADVERSE IMPACTS TO ADJACENT WETLANDS, WETLANDS, PROPERTIES, ETC. RESULTING FROM WORK DONE AS PART OF THIS PROJECT.	27	4		





FINAL DRAINAGE STUDY

For:

LEGATO – Filing No. 1
COMMERCE CITY, COLORADO

Prepared for

COHEN DENVER AIRPORT, LLC
9875 W. LA MANCHA AVE.
LAS VEGAS, NV 89149
ATTN: BRAD BURNS

Submitted by: Atwell, LLC

DANIEL MADRUGA, P.E.
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PROJECT NO. 19002860

SUBMITTAL DATE: 7/20/20

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GENERAL LOCATION AND DESCRIPTION

Legato Filing No. 1 (herein after referred to as “Site”) is located within the City of Commerce City in Section 22, Township 2 South, Range 66 West of the 6th Meridian. The Site is a proposed single-family development on approximately 34 acres located in the center portion of the Legato Planned Unit Development (PUD), just west of Himalaya Parkway and south of E. 95th Avenue. The Adams County Parcel Number for the Property is 0172323100002.

This Site is at the southwest corner of East 95th Avenue and Himalaya Parkway and lies within Tract D2, as identified in the sketch plat submitted in September 2019. The Site is bordered by Himalaya Parkway to the east, East 95th Avenue to the north, and E. 93rd Place to the south. The proposed residential development is designated as Medium-density Residential with 181 single-family detached residential units. Another medium-density residential development, within Tract D1 of the Legato West plat, will be located southwest of the Site. Just south of this Site is a 25.0-acre school site and a 10-acre neighborhood park is proposed just west of the school site.

Discuss adjacent filings
& spine infrastructure.

Soil Conditions

NRCS Soils Survey results indicate that the existing soils are Planter loam with 0 to 3% slopes and Ascalon sandy loam with 0 to 35 slopes. These soils are identified as a Groups B & C having a slow to moderate infiltration rates when thoroughly wet. They consist of soils that have a layer that impedes downward movement of water or moderately fine texture. The Site is not within any mapped floodplains. The NRCS Soils Survey for the site has been included as Appendix A.

DRAINAGE BASINS AND SUB-BASINS

Major Drainage Basins

The Site falls within T-88 drainage basin which is tributary to Gramma Gulch via the Tower Road storm run, constructed with the Tower Road Improvements. The Legato Property has been included within a number of drainage studies, the most recent of which is the Hightower Ranch Master Drainage Study, prepared by Atwell, LLC, December 2019 and the Legato Spine Infrastructure Final Drainage Study, prepared by Atwell, LLC, December 2019.

The property does not include any mapped floodplain. The National Wetland Inventory maps do not indicate any wetlands on site. A FEMA FIRM Map and the National Wetland Inventory map have been included in Appendix C.

Historical Drainage Basins

The project site is located within Basin A, as outlined in the Final Drainage Study for Legato West. Legato West - Basin A generally represents the northern half of the Legato Property, bisected from the northwest corner to the southeast corner and includes commercial and residential areas. Slopes generally range from 1-6%. Runoff sheet flows northwest, to be collected in the proposed storm sewer from Legato West and routed to Pond A.

Pond A outfalls to the Tower Road storm infrastructure improvements and then flows are conveyed to Gramma Gulch, discharging at the existing box culvert beneath Tower Road, just south of E. 90th Avenue.

PROPOSED DRAINAGE

Discuss conformance to the spine infrastructure report regarding impervious %.

Onsite Major Drainage Basins

Two basins are defined within the Filing No. 1 project boundary (Major Basin A and Major Basin B) both tributary to Pond A. Runoff will be collected in on-site inlets and conveyed through proposed storm sewer infrastructure and routed to the proposed regional water quality and detention pond (Pond A) located north of E. 94th Avenue and west of Biscay Street.

See the Proposed Drainage Map for basin boundaries associated with this filing. (Appendix D)

Major Basin A

Major Basin A consists of approximately 28.1 acres of the single-family residential area in the eastern portion of the site. Runoff is expected to be collected in on-site inlets and conveyed through storm sewer infrastructure and routed to the northeast corner of the regional water quality and detention pond (Pond A) via the storm sewer within E. 95th Avenue.

Seventeen sub-basins have been delineated within Major Basin A.

Sub-Basin A-1 (1.04 acres) is located along the northwestern edge of this filing, along E. 95th Avenue. The basin consists of a landscape tract and the rear side of lots along E. 95th Avenue just east of Biscay Street. The basin has a composite imperviousness of 55%. Runoff will sheet flow north to the street curb and gutter and be conveyed west to a 10-foot, Type-R, on-grade inlet (Inlet 701R, Design Point A1) within E. 95th Avenue. There, it will enter the off-site storm sewer and be routed west to detention Pond A. (Q5=1.35 CFS, Q100=4.15 CFS).

Sub-Basin A-2 (1.33 acres) is located along the northern edge of this filing, along E. 95th Avenue. The basin consists of a landscape tract and the rear side of lots along E. 95th Avenue. The basin has a composite imperviousness of 56%. Runoff will sheet flow north to the street curb and gutter and be conveyed west to a 10-foot, Type-R, on-grade inlet (Inlet 703R, Design Point A2) within E. 95th Avenue. There, it will enter the off-site storm sewer and be routed west to detention Pond A. (Q5=1.66 CFS, Q100=5.11 CFS)

Sub-Basin A-3 (1.44 acres) is located along the northeastern edge of this filing, along E. 95th Avenue. The basin consists of a landscape tract and the rear side of lots along E. 95th Avenue just west of Himalaya Parkway. The basin has a composite imperviousness of 50%. Runoff will sheet flow north to the street curb and gutter and be conveyed west to a 15-foot, Type-R, on-grade inlet (Inlet 706R, Design Point A3) within E. 95th Avenue. There, it will enter the off-site storm sewer and be routed west to detention Pond A. (Q5=1.59 CFS, Q100=5.16 CFS)

Sub-Basin A-4 (1.94 acres) is located along the eastern edge of this filing. This basin is made up of a landscape tract along the western side of Himalaya Parkway. The basin has a composite imperviousness of 44%. Runoff

will be directed north and east to the street curb and gutter and be conveyed north to a 10-foot, Type-R, on-grade inlet (Inlet 1118L, Design Point A4) within Himalaya Parkway. There, it will enter the storm sewer and be routed west to detention Pond A. (Q5=1.46 CFS, Q100=5.10 CFS)

Sub-Basin A-5 (2.15 acres) is located the south side of Road 50 in the northwestern portion of Site. The basin is primarily made of single-family residential lots along with portion of local road 50. This basin has a composite imperviousness of 55%. Runoff will flow north to the street curb and gutter and be conveyed west to a 15-foot, Type-R, on-grade inlet (Inlet 583, Design Point A5) within Road 50. There, it will enter the storm sewer and be routed north to E. 95th Avenue and west to detention Pond A. (Q5=2.44 CFS, Q100=7.64 CFS)

Sub-Basin A-6 (0.81 acres) is located the north side of Road 50 in the northwestern portion of Site. The basin is primarily made of single-family residential lots along with portion of local road 50. This basin has a composite imperviousness of 67%. Runoff will flow south to the street curb and gutter and be conveyed west to a 10-foot, Type-R, on-grade inlet (Inlet 580, Design Point A6) within Road 50. There, it will enter the storm sewer and be routed north to the storm sewer in E. 95th Avenue and to detention Pond A. (Q5=1.32 CFS, Q100=3.66 CFS)

Sub-Basin A-7 (1.39 acres) is located the north and central portion of the site along Road 50 and Road 53. The basin consists of single-family residential lots along the north portion of local road 50 and. The basin also includes portions of Roads 50 and 53 as well as greenspace along Road 53. This basin has a composite imperviousness of 61%. Runoff will flow south to the street curb and gutter and be conveyed west and north to a 10-foot, Type-R, on-grade inlet (Inlet 578, Design Point A7) at the north end of Road 53. There, it will enter the storm sewer and be routed north to the storm sewer in E. 95th Avenue and to detention Pond A. (Q5=1.72 CFS, Q100=5.02 CFS)

Sub-Basin A-8 (1.94 acres) is located the south side of Road 50 in the northwestern portion of Site. The basin is primarily made of single-family residential lots along with portion of local road 50. This basin has a composite imperviousness of 58%. Runoff will flow north to the street curb and gutter and be west conveyed to a 10-foot, Type-R, on-grade inlet (Inlet 577, Design Point A8) within Road 50. There, it will enter the storm sewer and be routed north to the storm sewer in E. 95th Avenue and to detention Pond A. (Q5=2.35 CFS, Q100=7.04 CFS)

Sub-Basin A-9 (1.39 acres) is located within the eastern portion of the Site, along the west side of Road 50. The basin is made up of single-family residential units, greenspace and the western half of Road 50. This basin has a composite imperviousness of 46%. Runoff will flow north and east to the street curb and gutter and be conveyed north to a 10-foot, Type-R, on-grade inlet (Inlet 585, Design Point A9) within Road 50. There, it will enter the storm sewer and be routed north to the storm sewer in E. 95th Avenue and to detention Pond A. (Q5=1.33 CFS, Q100=4.61 CFS)

Sub-Basin A-10 (2.47 acres) is located within the eastern portion of the Site, along the east side of Road 50, adjacent to Himalaya Parkway. The basin is made up of single-family residential units, a small greenspace and the eastern half of Road 50. This basin has a composite imperviousness of 53%. Runoff will flow to the street curb and gutter and be conveyed to a 15-foot, Type-R, on-grade inlet (Inlet 587, Design Point A10) within Road

50. There, it will enter the storm sewer and be routed north to the storm sewer in E. 95th Avenue and to detention Pond A. (Q5=2.73CFS, Q100=8.62 CFS)

Sub-Basin A-11 (0.90 acres) is located in the western portion of the site, along the north side of Road 54 and includes portions of the right-of-way section of Roads 53 and 54, several single-family lots and a portion of green space. The composite imperviousness is 69%. Runoff will flow south to the street curb and gutter and be conveyed east and north to a 10-foot, Type-R, on-grade inlet (Inlet 579, Design Point A11) at the north end of Road 53. There, it will enter the storm sewer and be routed north to the storm sewer in E. 95th Avenue and to detention Pond A. (Q5=1.29 CFS, Q100=3.47 CFS)

Sub-Basin A-12 (1.63 acres) is centrally located onsite, along the south side of Road 54 and is made up of portions of the right-of-way section of Roads 53 and 54 along with several single-family lots. The composite imperviousness is 55%. Runoff will flow north to the street curb and gutter and be conveyed east to a 10-foot, Type-R, on-grade inlet (Inlet 573, Design Point A12) within Road 54. There, it will enter the storm sewer and be routed north to the storm sewer in E. 95th Avenue and to detention Pond A. (Q5=1.93 CFS, Q100=6.06 CFS)

Sub-Basin A-13 (2.36 acres) is centrally located onsite, along the south side of Road 55 and is made up of portions of the right-of-way section of Roads 53 and 55 along with the adjacent, single-family lots. The composite imperviousness is 61%. Runoff will flow north to the street curb and gutter and be conveyed east and north to a 15-foot, Type-R, on-grade inlet (Inlet 561, Design Point A13) within Road 53. There, it will enter the storm sewer and be routed south to detention Pond A. (Q5=2.98 CFS, Q100=8.71 CFS)

Sub-Basin A-14 (1.21 acres) is centrally located onsite, along the east side of Road 53 and is made up of portions of the right-of-way section of Roads 53, the adjacent, single-family lots and greenspace. The composite imperviousness is 39%. Runoff will flow west to the street curb and gutter and be conveyed north to a 10-foot, Type-R, on-grade inlet (Inlet 551, Design Point A14) within Road 53. There, it will enter the storm sewer and be routed northwest to detention Pond A. (Q5=1.01 CFS, Q100=3.93 CFS)

Sub-Basin A-15 (3.33 acres) is centrally located onsite, just south of Basin A-8, and includes most of Road 52 and the adjacent, single-family lots. The composite imperviousness is 47%. Runoff will flow to the street curb and gutter and be conveyed north to a 5-foot, Type-R, sump inlet (Inlet 550, Design Point A15) at the north end of Road 52. There, it will enter the storm sewer and be routed north to the storm sewer in E. 95th Avenue and to detention Pond A. (Q5=3.26 CFS, Q100=11.19 CFS)

Sub-Basin A-16 (0.66 acres) is located within the eastern portion of the Site, along the west side of Road 51. The basin is made up primarily of single-family residential lots and the western half section of Road 51. This basin has a composite imperviousness of 66%. Runoff will flow east to the street curb and gutter and be conveyed north to a 5-foot, Type-R, on-grade inlet (Inlet 590, Design Point A16) within Road 51. There, it will enter the storm sewer and be routed south to detention Pond A. (Q5=1.09 CFS, Q100=2.99 CFS)

Sub-Basin A-17 (2.15 acres) is located within the eastern portion of the Site, along the east side of Road 51. The basin is made up primarily of single-family residential lots and the eastern half section of Road 51. This basin has a composite imperviousness of 36%. Runoff will flow west to the street curb and gutter and be

conveyed north to a 10-foot, Type-R, on-grade inlet (Inlet 592, Design Point A17) within Road 51. There, it will enter the storm sewer and be routed south to detention Pond A. (Q5=1.59 CFS, Q100=6.43 CFS)

Major Basin B

Adjust as needed - see comment on drainage sheet regarding basins

Major Basin B consists of approximately 9.1 acres of single-family residential area within the western portion of the Filing No. 1 site. Runoff is expected to be collected in on-site inlets and conveyed through storm sewer infrastructure and routed to the southeast corner of the regional water quality and detention pond (Pond A) via the storm sewer within Road 17.

Five sub-basins have been delineated within onsite Major Basin B.

Sub-Basin B-1 (2.46 acres) is located northwestern portion of this filing and is essentially a landscaped tract with open space and the rear of lots along the north side of Road 54. The basin has an estimated composite imperviousness of 14%. Runoff will sheet flow to the north and then directed to a Type-D storm inlet (inlet 1206 at Design Point B1). There, it will enter the storm sewer and be routed west to detention Pond A. (Q5=0.96 CFS, Q100=7.34 CFS)

Sub-Basin B-2 (0.43 acres) is located within the western portion of Site at the west end of Road 54. The basin is made up of a portion of single-family lots and a portion of Road 54. This basin has an estimated composite imperviousness of 63%. Runoff will flow south to the street curb and gutter and be conveyed west to a 5-foot, Type-R, sump inlet (Inlet 1204L, Design Point B2) within Road 54. There, it will enter the storm sewer and be routed north to detention Pond A. (Q5=0.69 CFS, Q100=3.17 CFS)

Add verbiage regarding emergency overflow path on ALL sump inlets

Sub-Basin B-3 (2.06 acres) is located to the western portion of the Site, along Road 17. This basin is made up of the east half Road 17, portions of Roads 54 and 55 and adjacent, single-family lots. This basin has an estimated composite imperviousness of 61%. Runoff will flow to the street curb and gutter and be conveyed north to a 5-foot, Type-R, sump inlet (Inlet 1203.1R, Design Point B3) and the north end of Road 17. There, it will enter the storm sewer and be routed north to detention Pond A via the storm sewer constructed as part of Legato West – Spine Infrastructure. (Q5=2.68 CFS, Q100=7.81 CFS)

Sub-Basin B-4 (2.21 acres) is located in the southwestern portion of the Site just north of E. 93rd Place. The basin is made up of several single-family lots, portions of Road 52, Road 53 and E. 93rd Place. This basin has an estimated composite imperviousness of 65%. Runoff will flow to the street curb and gutter and be conveyed south and west to a 5-foot, Type-R, sump inlet (Inlet 502L, Design Point B4) within E. 93rd Place. There, it will enter the storm sewer and be routed west and north to detention Pond A via the storm sewer constructed as part of Legato West – Spine Infrastructure. (Q5=3.17 CFS, Q100=9.00 CFS)

Sub-Basin B-5 (1.94 acres) is located in the southeastern portion of the Site just north of E. 93rd Place. The basin is made up of several single-family lots, portions of Road 50, Road 51 and E. 93rd Place. This basin has an estimated composite imperviousness of 65%. Runoff will flow to the street curb and gutter and be conveyed south and west to a 10-foot, Type-R, on-grade inlet (Inlet 503R, Design Point B5) within E. 93rd Place. There, it will enter the storm sewer and be routed west and north to detention Pond A via the storm sewer constructed as part of Legato West. (Q5=3.14 CFS, Q100=8.76 CFS)

Offsite Basin O

Four offsite basins have been identified that are not part of this filing but will be tributary to infrastructure constructed in this phase. They consist of the proposed residential roadways and adjacent lots within the Legato development, just west and adjacent to Filing No. 1. Runoff is expected to be collected in on-site inlets, and conveyed through storm sewer infrastructure and routed to the southeast corner of the regional water quality and detention pond (Pond A) via the storm sewer within Road 17 and a storm easement north of Road 17 the pond.

Sub-Basin O-1 (1.47 acres) is located within Legato West Tract D1 along northwest side of E. 93rd Place and Road 17. The basin is made up of the west half of Road 17, a portion of E. 93rd Place and the adjacent, single family lots. This basin has a composite imperviousness of 71%. Runoff will flow east-southeast to the street curb and gutter and be conveyed northwest to a 5-foot, Type-R, sump inlet (Inlet 1203.1L, Design Point O1) at the north end of Road 17. There, it will enter the storm sewer and be routed north to detention Pond A. (Q5=2.76 CFS, Q100=7.25 CFS)

Sub-Basin O-2 (1.95 acres) is located within Legato West, Tract D1 along southeast side of Road 54. The basin is made up of a portion of the Road 54 right of way and the adjacent single family lots. This basin has a composite imperviousness of 54%. Runoff will flow north/west to the street curb and gutter and be conveyed northeast to a 5-foot, Type-R, sump inlet (Inlet 1204R, Design Point O2) within Road 54. There, it will enter the storm sewer and be routed north to detention Pond A. (Q5=2.27 CFS, Q100=7.12 CFS)

Sub-Basin O-3 (0.86 acres) is located within Legato West, Tract D1 along northwest side of Road 54. The basin is made up of a small portion of the future, single-family attached filing within Tract A and a portion of Road 54. This basin has a composite imperviousness of 85%. Runoff will flow southeast to the street curb and gutter and be conveyed northeast to a 5-foot, Type-R, sump inlet (Inlet 1204L, Design Point B2) within Road 54. There, it will enter the storm sewer and be routed north to detention Pond A. (Q5=1.99 CFS, Q100=4.79 CFS)

Sub-Basin O-4 (4.25 acres) is located within Legato West, Tract D1 west of Road 17. The basin is made up of a portion of Road 55 and adjacent, single-family lots. This basin has a composite imperviousness of 55%. Runoff will sheet flow to the street curb and gutter and be conveyed northeast to inlets within Road 55. There, it will enter the storm sewer and be routed to Storm Run 12 (at MH-1202), within Road 17, en route to detention Pond A. These inlets, and this basin, are not part of this filing, however these flows have been accounted for to verify the hydraulic analysis for Storm Run 12(Q5=4.88 CFS, Q100=15.30 CFS)

DRAINAGE DESIGN CRITERIA

Regulations

This drainage report was prepared in accordance with the Commerce City Storm Drainage Design Manual as well as the Mile High Flood District Urban Storm Drainage Criteria Manual.

Drainage Studies, Outfall Systems Plans, Site Constraints

The following studies/reports have been prepared for areas that include the subject property.

- Master Drainage Study for Hightower Ranch, prepared by Atwell, December 2019
- Final Drainage Study for Legato West, prepared by Atwell, December 2019

The reports were referenced for historic drainage flows and conveyance structure characteristics/sizing. Relevant portions of these reports have been included in Appendix F.

Hydrologic Criteria

The rational method was used to determine peak runoff rates from the site. The return periods analyzed are the 5-year and 100-year for storm sewer, inlets, and street capacity as prescribed by Section 2.4.2. of the Commerce City Storm Drainage Criteria Manual (CCSDCM).

Rainfall data was obtained from NOAA Atlas 14, Volume 8, Version 2. One-hour point rainfalls for the 5-year and 100-year return periods are 1.37 and 2.58 inches respectively. Imperviousness percentages for the various land uses were taken from Table 501 of the CCSDCM. Where a basin was composed of multiple land uses, a composite imperviousness was calculated.

Runoff coefficients were based on soil type and calculated using Table 6-4 of the Urban Storm Drainage Criteria Manual (USDCM) Volume 1. Soil types were derived using the National Resources Conservation Service (NRCS) Web Soil Survey and found to include a mix of type A, B, and C soils; however, the majority of the site is type C soils.

Hydraulic Criteria

All hydraulic criteria set forth by the CCSDCM will be observed for street, curb and gutter, open channel, storm sewer, and storm inlet capacities. Allowable capacities for the minor and major storms in street sections and curb and gutter are defined section 2.4.4. in the CCSDCM.

Street capacities and inlet sizes and locations were determined based on calculations noted within the MHFD Peak Runoff Prediction by the Rational Method spreadsheets (UD Rational 2.00). Where street capacities would be exceeded, or a sump location occurs, inlets have been proposed. Inlets have been sized using MHFD spreadsheets (UD-Inlet v4.05) to collect and convey the surface flows to the storm sewer system. A computer simulation, utilizing Bentley StormCAD V8i, was then developed for the storm sewer routing and conduit sizing. The software allows the user to set coefficients and choose calculation methods that are consistent with Commerce City requirements. Loss coefficients derived from Tables 704 and 705 of the CCSDCM were utilized. From the simulation, flow properties such as velocities and hydraulic grade lines are estimated.

DRAINAGE FACILITY DESIGN

General Concept

The proposed drainage plan for this project was developed to maintain flow patterns similar to historic flows. Flows from the developed portion of the site will be collected and conveyed through proposed storm sewer infrastructure and routed to regional detention facilities for water quality and flood attenuation. The proposed storm sewer network for this filing will tie into the storm sewer proposed for the Legato West –

Spine Infrastructure. Downstream infrastructure design capacities have been accounted for and will not be exceeded by design flows from the proposed development of this filing. Details included in the following section.

Specific Details

The land will be developed with urban infrastructure typical for a residential development, including gutter, grass-lined swales, inlets and storm sewers and detention basins. The development is designed as part of the Spine Infrastructure project and provides full-spectrum extended detention to provide water quality and flood attenuation for the development goal of zero impact.

Stormwater Conveyance Facilities

Within the road network, stormwater runoff from the developed site will be conveyed overland via surface flow within streets until street capacities have been exceeded or when inlets have been designed. At sump locations, inlets will be sized to collect 100-year flows. Otherwise, the 5-year runoff is collected while a portion of the 100-year runoff will overtop and be conveyed in the street to the next downstream inlet. Runoff entering the inlets will be conveyed within the storm sewer system to detention Pond A.

Stormwater Storage

Extended detention basins will feature one, full spectrum pond consisting of three stages, designed in accordance with *Commerce City Storm Drainage Criteria Manual* and the *MHFD Urban Storm Drainage Criteria Manual Volumes 1, 2, & 3*. The water quality control volume (WQCV) is contained within Stage 1, the excess urban runoff volume (EURV) is contained within Stage 2, and the 100-year storage volume is contained within Stage 3. The WQCV and EURV release rates are controlled by a combination of an overflow gate and outlet structures. Outlet structures will be designed to release the WQCV over a period of no less than 40 hours while the EURV will be released over a period of 72 hours. The ponds outlet pipe systems convey the controlled releases to Gamma Gulch.

Detention/Water Quality Pond A

The Legato Filing No. 1 development is tributary to Pond A, which will provide full spectrum detention and water quality treatment. Pond A is located in Tract J of the overall Legato PUD, at the north end of Argonne Street, northwest of this filing. Pond A is to be constructed as part of the Legato Spine Infrastructure construction drawings.

Water Quality Enhancement Best Management Practices

The pond has been designed in accordance with the *Commerce City Drainage Design and Technical Criteria Manual* and the *UDFCD Urban Storm Drainage Criteria Manual Volumes 1, 2 and 3*. The ponds are designed to detain the Excess Urban Runoff Volume and the 100-year Detention Volume. Excess runoff from the upstream tributary area is conveyed to the pond via storm sewer sized to convey the 100-year storm event. The storm

If the street is to be used for major flow conveyance, how are the calcs set up to reflect this?

Discuss under drain system.

What happens when street capacity gets exceeded?

Overtop what?

Discuss connection with spine infrastructure and Filing 2 storm systems.

Discuss conformance to the spine infrastructure report regarding storm connections.

Discuss conformance to the spine infrastructure report regarding water quality and storage.

sewer terminates in concrete forebays. The forebay is sized per Table EDB-4, EDB Component Criteria, of the Urban Storm Drainage Criteria Manual Volume 3. Detailed sizing calculations are located in the Forebay Design Worksheet within Appendix C. Pretreated runoff is released at a controlled rate from a notch in the forebay wall into a concrete trickle channel sized to convey at a minimum the maximum release from the notch, and terminates at the outlet structure.

CONCLUSIONS

Compliance with Standards

This Final Drainage Study presents the concepts for the drainage analysis and the proposed improvements for the Legato Filing No. 1 development and complies with the criteria and standards of the Commerce City Storm Drainage Design Manual criteria and the Urban Storm Drainage Criteria Manual.

This report has been prepared in accordance with the Commerce City Storm Drainage Design Manual criteria and the Urban Storm Drainage Criteria Manual and the Urban Drainage and Flood Control District’s Urban Storm Drainage Criteria Manual.

Drainage Concept

This drainage concept was developed to address the proposed development and mitigate potential impacts for the existing, downstream infrastructure. The drainage report has addressed the storm runoff patterns for the Legato Filing No. 1 project and the proposed mitigation measures for the increased runoff associated with this development. Historic drainage patterns and allowable release rates, both on site and downstream, are maintained while conveying developed flow to Gramma Gulch and, eventually, Second Creek. The proposed project includes conservative assumptions in hydrologic design and potential negative downstream impacts have been mitigated.

Summarize conformance to the spine infrastructure report.

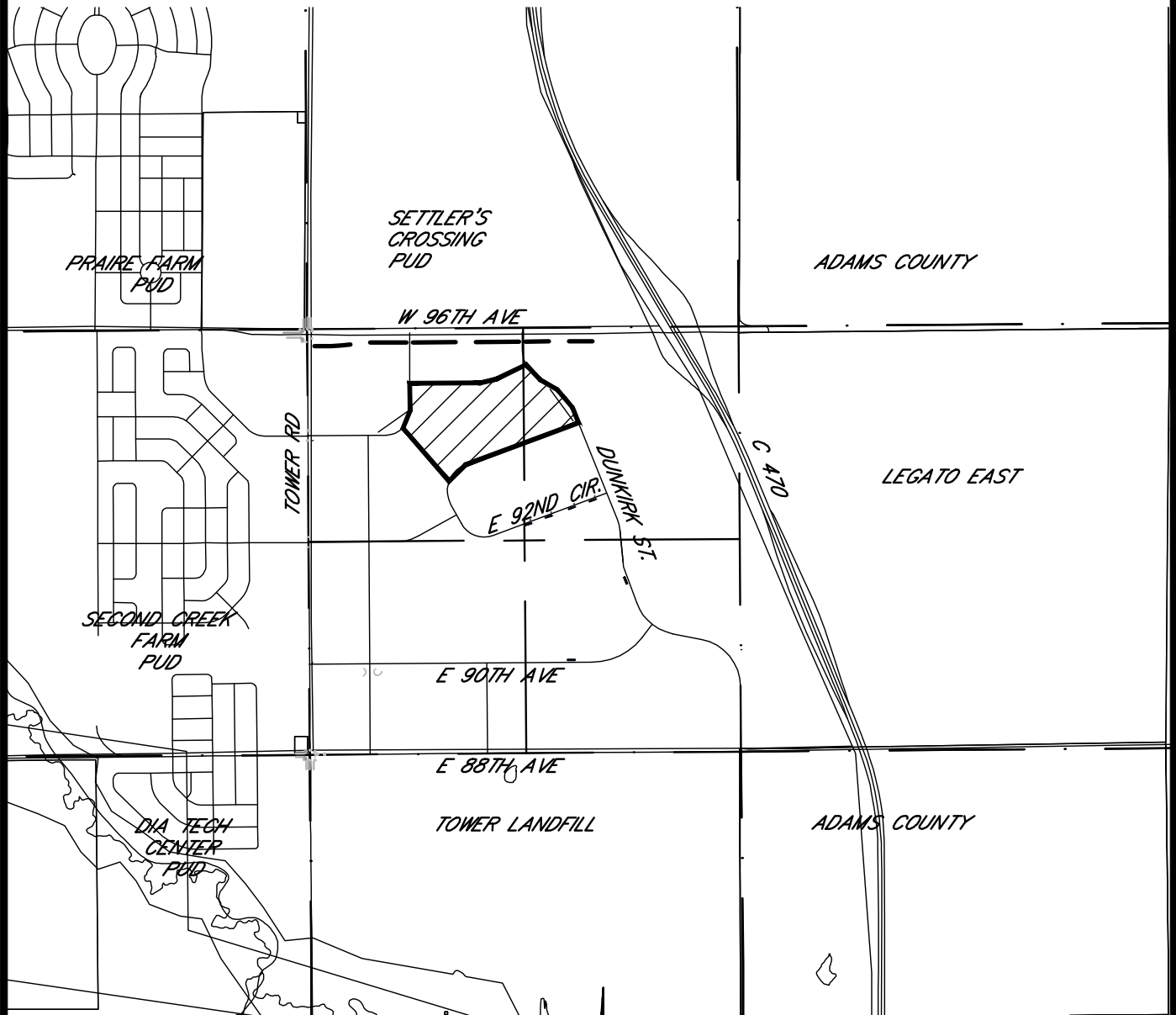
REFERENCES

1. *Urban Storm Drainage Criteria Manual*; Mile High Flood District; latest edition.
2. *Commerce City Storm Drainage Criteria Manual*, 1989 Edition
3. Flood Insurance Rate Map; Federal Emergency Management Agency: December 2006.
4. Final Drainage Study for Hightower Ranch PUD, prepared by Atwell, December 2019
5. Final Drainage Study for Legato West – Spine Infrastructure, prepared by Atwell, December 2019

APPENDIX A
VICINITY MAP

Legato - Filing No. 1

A PART OF SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST
OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF ADAMS, CITY OF COMMERCE CITY,
STATE OF COLORADO



PROJECT NO.: 19002860
DATE: 7/20/20

SCALE: 1" = 2,000'



ATWELL

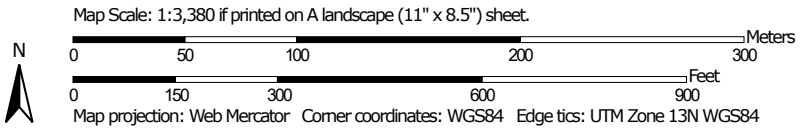
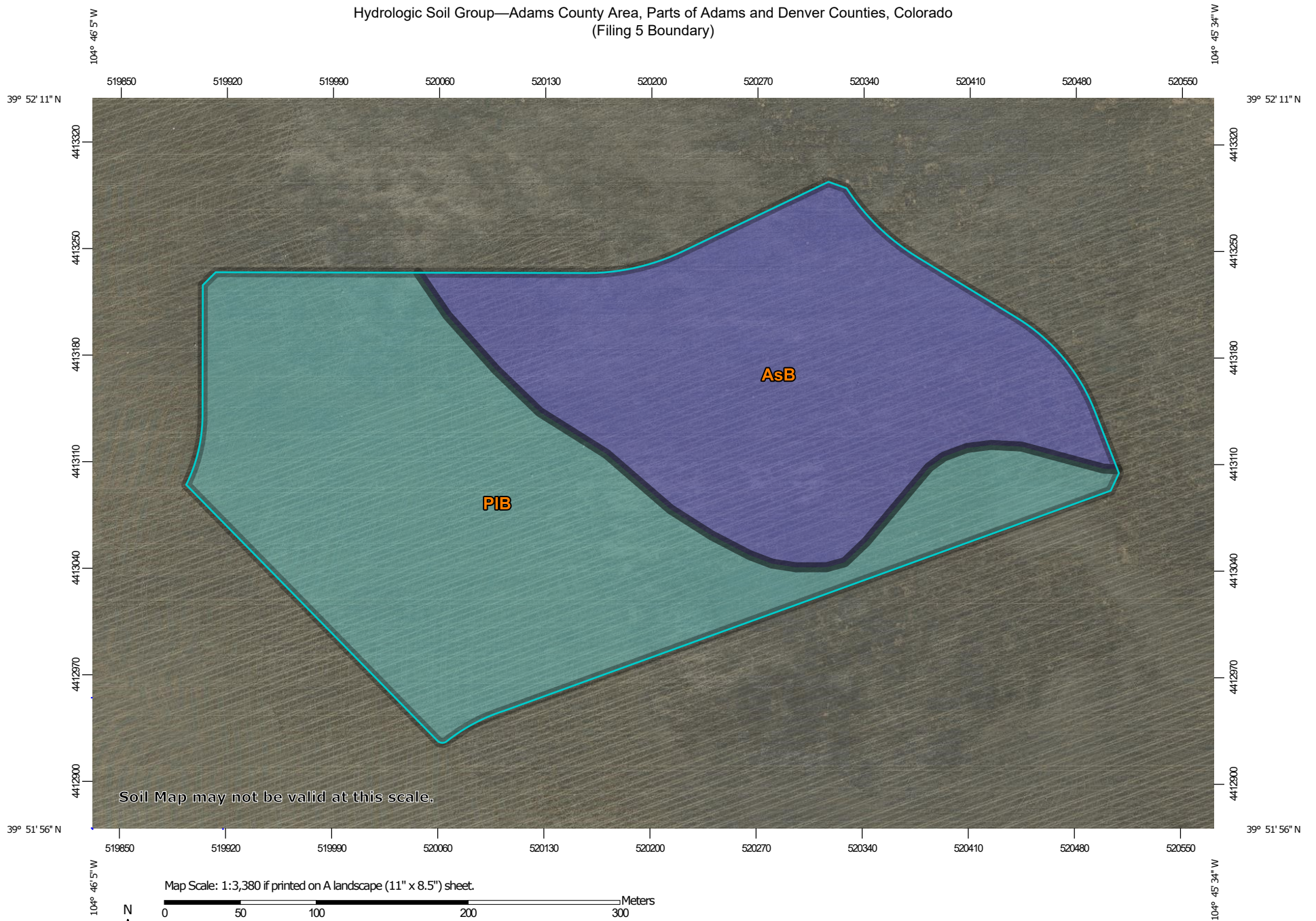
866.850.4200 www.atwell-group.com

6200 S. SYRACUSE WAY, SUITE 470
GREENWOOD VILLAGE, CO 80111
303.825.7100

CONTACT: DANIEL MADRUGA
DMADRUGA@ATWELL-GROUP.COM


APPENDIX B
SOILS SURVEY

Hydrologic Soil Group—Adams County Area, Parts of Adams and Denver Counties, Colorado (Filing 5 Boundary)



MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines


 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points






 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Adams County Area, Parts of Adams and Denver Counties, Colorado
 Survey Area Data: Version 16, Sep 12, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 3, 2018—Dec 4, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AsB	Ascalon sandy loam, 0 to 3 percent slopes	B	14.9	44.0%
PIB	Platner loam, 0 to 3 percent slopes	C	19.0	56.0%
Totals for Area of Interest			33.9	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX C
FIRMette AND WETLANDS MAP

Wetlands map not included.

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the **Flood Profiles and Floodway Data** and/or **Summary of Stillwater Elevations** tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the **Summary of Stillwater Elevations** table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the **Summary of Stillwater Elevations** table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRM for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NNGS12
National Geodetic Survey
SSM-C-3, #6202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov/>.

Base map information shown on this FIRM was provided by the Adams County and Commerce City GIS departments. The coordinate system used for the production of the digital FIRM is Universal Transverse Mercator, Zone 13N, referenced to North American Datum of 1983 and the GRS 80 spheroid, Western Hemisphere.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the **Flood Profiles and Floodway Data** tables in the **Flood Insurance Study report** (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

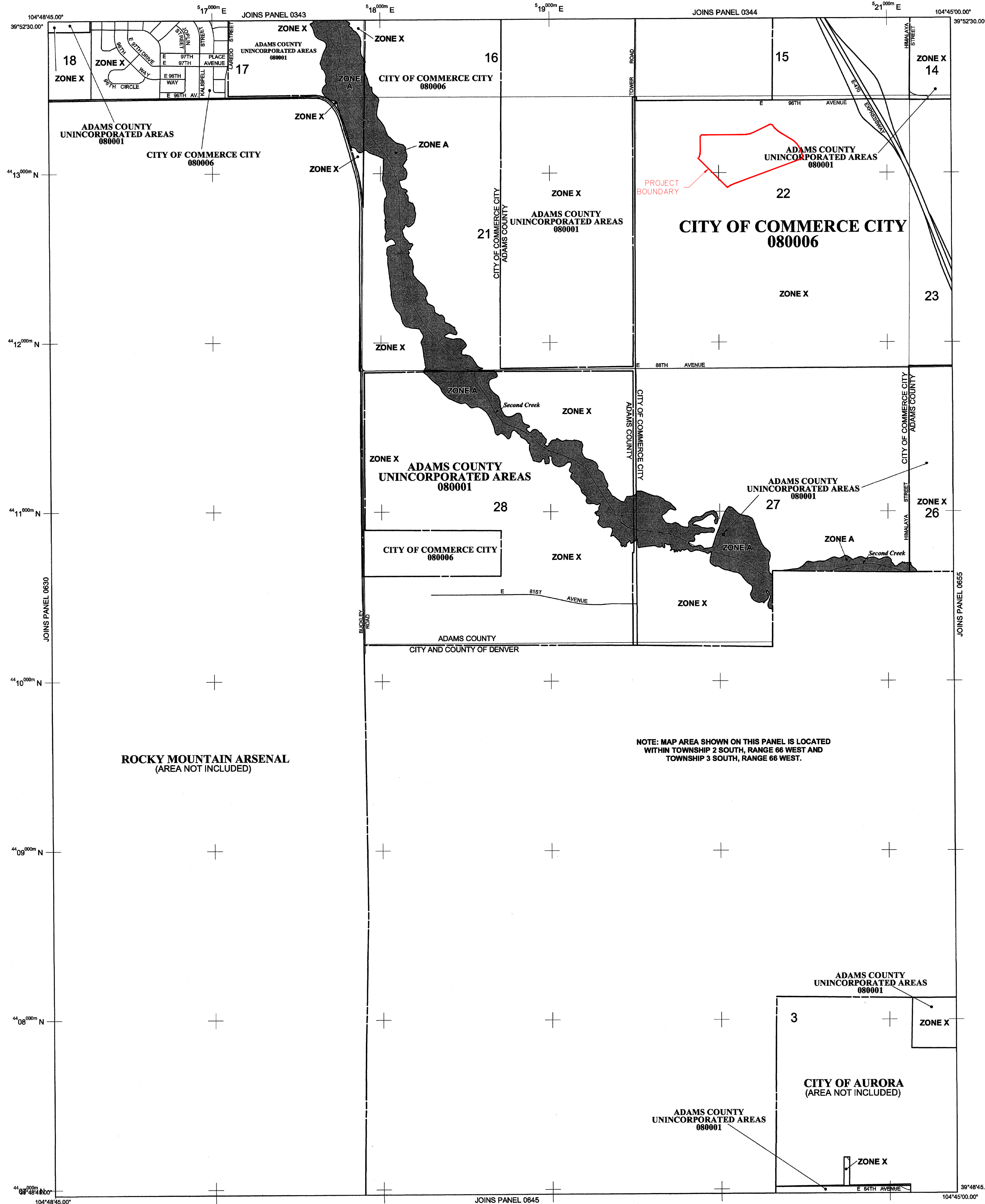
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a **Flood Insurance Study report**, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://www.msc.fema.gov/>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/>.

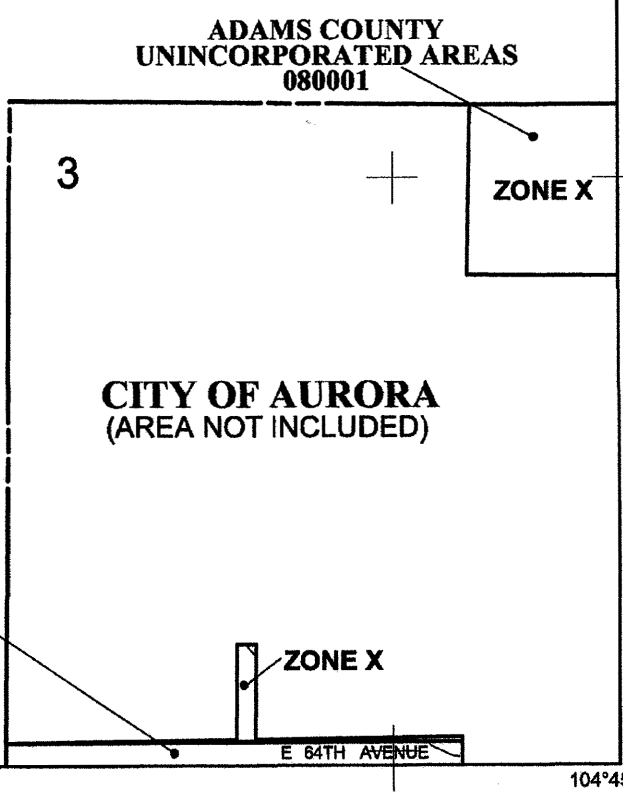
This digital Flood Insurance Rate Map (FIRM) was produced through a cooperative partnership between the State of Colorado Water Conservation Board, the Urban Drainage and Flood Control District, and the Federal Emergency Management Agency (FEMA). The State of Colorado Water Conservation Board and the Urban Drainage and Flood Control District have implemented a long-term approach of floodplain management to reduce the costs associated with flooding. As part of this effort, both the State of Colorado and the Urban Drainage and Flood Control District have joined in Cooperating Technical Partner agreements with FEMA to produce this digital FIRM.

Additional flood hazard information and resources are available from local communities, the Colorado Water Conservation Board, and the Urban Drainage and Flood Control District.



ROCKY MOUNTAIN ARSENAL
(AREA NOT INCLUDED)

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED
WITHIN TOWNSHIP 2 SOUTH, RANGE 66 WEST AND
TOWNSHIP 3 SOUTH, RANGE 66 WEST.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- Cross section line
- Transect line
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 1000-meter Universal Transverse Mercator grid ticks, zone 13
- 5000-foot grid ticks: Alabama State Plane coordinate system, east zone (FIPSZONE 0101), Transverse Mercator

- Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile

MAP REPOSITORIES

Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

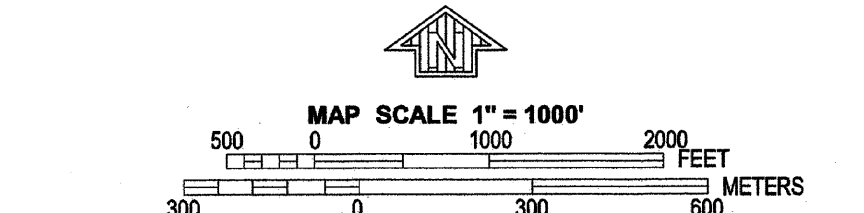
August 16, 1998

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

March 5, 2007 - to update map format.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



PANEL 0635H

FIRM
FLOOD INSURANCE RATE MAP
ADAMS COUNTY,
COLORADO
AND INCORPORATED AREAS

PANEL 635 OF 1150
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ADAMS COUNTY	080001	0635	H
COMMERCE CITY, CITY OF	080006	0635	

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER

08001C0635H

MAP REVISED

MARCH 5, 2007

Federal Emergency Management Agency

APPENDIX D

HYDROLOGICAL CALCULATION

Please show that you are using the one-hour point rainfall depths found in section 4.3 of the Commerce City drainage manual in the calcs.

COMPOSITE C CALCULATION

PROJECT NAME: Legato Filing No. 1

PROJECT NO: 19002860

LOCATION: Commerce City, CO



*Calculations on this sheet come from UDFCD: Urban Storm Drainage Criteria Manual (Vol.1, 2017) (Ch6, 2018)

NRCS Hydrologic Soil Group: C

Greenbelts, agricultural				2% Impervious			
2 yr = 0.01	5 yr = 0.05	10 yr = 0.15	100 yr = 0.49				
0.25 acres or less				45% Impervious			
2 yr = 0.34	5 yr = 0.40	10 yr = 0.47	100 yr = 0.67				
Paved				100% Impervious			
2 yr = 0.83	5 yr = 0.86	10 yr = 0.87	100 yr = 0.89				
Parks, cemeteries				10% Impervious			
2 yr = 0.06	5 yr = 0.12	10 yr = 0.21	100 yr = 0.53				
Apartments				75% Impervious			
2 yr = 0.60	5 yr = 0.65	10 yr = 0.69	100 yr = 0.79				

PROPOSED DRAINAGE AREA

BASIN ID	A _{total} (ft ²)	Greenbelts, agricultural (ft ²)	0.25 acres or less (ft ²)	Paved (ft ²)	Parks, cemeteries (ft ²)	Apartments (ft ²)	A _{total} (Ac)	COMPOSITE C				Percent Impervious
								2 yr	5 yr	10 yr	100 yr	
A-1	45214	10555	18266	16393			1.04	0.44	0.49	0.54	0.71	55%
A-2	57990	9490	29948	18552			1.33	0.44	0.49	0.55	0.71	56%
A-3	62826	17795	25146	19885			1.44	0.40	0.45	0.51	0.69	50%
A-4	84369	47893		36476			1.94	0.36	0.40	0.46	0.66	44%
A-5	93492		76655	16837			2.15	0.43	0.48	0.54	0.71	55%
A-6	35275		21161	14114			0.81	0.54	0.58	0.63	0.76	67%
A-7	60339		43171	17168			1.39	0.48	0.53	0.58	0.73	61%
A-8	84364		64572	19792			1.94	0.45	0.51	0.56	0.72	58%
A-9	60754	22509	19729	18516			1.39	0.37	0.41	0.47	0.67	46%
A-10	107453	5036	82138	20279			2.47	0.42	0.47	0.53	0.70	53%
A-11	39408	4563	14175	20670			0.90	0.56	0.60	0.64	0.76	69%
A-12	70914		58481	12433			1.63	0.43	0.48	0.54	0.71	55%
A-13	102659		72929	29730			2.36	0.48	0.53	0.59	0.73	61%
A-14	52717	15942	29923	6852			1.21	0.30	0.35	0.43	0.64	39%
A-15	145075	23690	97025	24360			3.33	0.37	0.42	0.48	0.68	47%
A-16	28874	1343	15411	12120			0.66	0.53	0.58	0.62	0.75	66%
A-17	93748	35141	46836	11771			2.15	0.28	0.33	0.40	0.63	36%
B-1	107207	77050	30157				2.46	0.10	0.15	0.24	0.54	14%
B-2	18715		12669	6046			0.43	0.50	0.55	0.60	0.74	63%
B-3	89672		63710	25962			2.06	0.48	0.53	0.59	0.73	61%
B-4	96285	3029	56447	36809			2.21	0.52	0.56	0.61	0.75	65%
B-5	84313		52940	31373			1.94	0.52	0.57	0.62	0.75	65%
O-1	64119		33878	30241			1.47	0.57	0.62	0.66	0.77	71%
O-2	84885		71044	13841			1.95	0.42	0.48	0.54	0.71	54%
O-3	37404			14749		22655	0.86	0.69	0.73	0.76	0.83	85%
O-4	184973	14463	127000	43510			4.25	0.43	0.48	0.54	0.71	55%
Subtotals (AC)		6.6	26.7	11.9	0.0	0.5						

Drainage Area= 45.77

Show site total imperviousness and discuss conformance with spine infrastructure report in text.

TIME OF CONCENTRATION *(Rational Method)*

PROJECT NAME: Legato Filing No. 1
PROJECT NO: 19002860
LOCATION: Commerce City, CO



*Calculations on this sheet come from UDFCD: Urban Storm Drainage Criteria Manual (Vol.1, 2017) (Ch6, 2018)

SUB-BASIN DATA				INITIAL TIME (t_i)			TRAVEL TIME (t_t)					t_c CHECK (URBANIZED BASINS)		FINAL	REMARKS
BASIN ID	DESIGN POINT	C_s	AREA (ac)	LENGTH (ft)	SLOPE (ft/ft)	t_i (min)	LENGTH (ft)	SLOPE (ft/ft)	C_v	Vel (ft/s)	t_t (min)	TRAVEL LENGTH (ft)	$T_{c \text{ Reg}}$ (min)	t_c (min)	
A-1	A-1	0.49	1.04	113	0.017	9.83	310	0.007	20	1.67	3.09	310.00	20.37	12.91	
A-2	A-2	0.49	1.33	108	0.029	8.05	600	0.007	20	1.67	5.98	600.00	23.68	14.03	
A-3	A-3	0.45	1.44	104	0.013	10.98	451	0.008	20	1.73	4.34	451.00	22.88	15.32	
A-4	A-4	0.40	1.94	269	0.006	24.53	617	0.009	20	1.93	5.33	617.00	25.47	25.47	Urbanized T_c
A-5	A-5	0.48	2.15	187	0.018	12.61	387	0.007	20	1.64	3.94	387.00	21.39	16.55	
A-6	A-6	0.58	0.81	106	0.019	7.82	375	0.008	20	1.79	3.49	375.00	18.41	11.31	
A-7	A-7	0.53	1.39	255	0.027	11.84	533	0.008	20	1.75	5.06	533.00	21.48	16.90	
A-8	A-8	0.51	1.94	222	0.017	13.32	278	0.006	20	1.55	2.99	278.00	19.65	16.31	
A-9	A-9	0.41	1.39	215	0.024	13.68	470	0.015	20	2.45	3.20	470.00	22.36	16.88	
A-10	A-10	0.47	2.47	217	0.024	12.55	542	0.012	20	2.19	4.12	542.00	21.93	16.67	
A-11	A-11	0.60	0.90	178	0.018	9.92	600	0.007	20	1.62	6.15	600.00	20.90	16.08	
A-12	A-12	0.48	1.63	251	0.023	13.47	161	0.008	20	1.73	1.55	161.00	18.57	15.02	
A-13	A-13	0.53	2.36	212	0.018	12.34	412	0.008	20	1.79	3.84	412.00	20.02	16.18	
A-14	A-14	0.35	1.21	143	0.020	12.88	365	0.009	20	1.90	3.21	365.00	23.77	16.09	
A-15	A-15	0.42	3.33	247	0.021	15.11	244	0.012	20	2.19	1.86	244.00	20.35	16.96	
A-16	A-16	0.58	0.66	124	0.018	8.61	308	0.013	20	2.28	2.25	308.00	17.23	10.86	
A-17	A-17	0.33	2.15	270	0.027	16.46	265	0.013	20	2.28	1.94	265.00	22.68	18.40	
B-1	B-1	0.15	2.46	28	0.045	5.53	709	0.010	15	1.50	7.88	709.00	34.37	13.40	
B-2	B-2	0.55	0.43	138	0.019	9.44	128	0.015	20	2.45	0.87	128.00	16.31	10.31	
B-3	B-3	0.53	2.06	199	0.012	13.67	269	0.019	20	2.76	1.63	269.00	17.50	15.30	
B-4	B-4	0.56	2.21	199	0.019	11.13	281	0.007	20	1.67	2.80	281.00	18.11	13.93	
B-5	B-5	0.57	1.94	192	0.028	9.44	174	0.009	20	1.90	1.53	174.00	16.55	10.97	
O-1	O-1	0.62	1.47	50	0.020	4.88	540	0.010	20	2.00	4.50	540.00	18.69	9.38	
O-2	O-2	0.48	1.95	67	0.020	7.29	1000	0.010	20	2.00	8.33	1000.00	26.89	15.62	
O-3	O-3	0.73	0.86	50	0.020	3.76	540	0.010	20	2.00	4.50	540.00	15.88	8.26	

Show what rainfall depths are used in these calculations.

RUNOFF COMPUTATIONS

(RATIONAL METHOD)

PROJECT NAME: Legato Filing No. 1

PROJECT NO: 19002860

LOCATION: Commerce City, CO



*Calculations on this sheet come from UDFCD: Urban Storm Drainage Criteria Manual (Vol.1, 2017) (Ch6, 2018)

BASIN ID	DESIGN POINT	AREA Ac	COMPOSITE C				C*A				t _c (min)	INTENSITY (in/hr)				Q (cfs)			
			2 yr	5 yr	10 yr	100 yr	2 yr	5 yr	10 yr	100 yr		2 yr	5 yr	10 yr	100 yr	2 yr	5 yr	10 yr	100 yr
A-1	A-1	1.04	0.44	0.49	0.54	0.71	0.46	0.51	0.56	0.74	12.91	2.02	2.65	3.23	5.62	0.92	1.35	1.82	4.15
A-2	A-2	1.33	0.44	0.49	0.55	0.71	0.59	0.65	0.73	0.94	14.03	1.94	2.55	3.11	5.41	1.14	1.66	2.28	5.11
A-3	A-3	1.44	0.40	0.45	0.51	0.69	0.58	0.65	0.73	0.99	15.32	1.87	2.45	2.99	5.19	1.07	1.59	2.20	5.16
A-4	A-4	1.94	0.36	0.40	0.46	0.66	0.70	0.78	0.89	1.28	25.47	1.43	1.88	2.29	3.98	1.00	1.46	2.05	5.10
A-5	A-5	2.15	0.43	0.48	0.54	0.71	0.92	1.03	1.16	1.53	16.55	1.80	2.36	2.88	5.00	1.66	2.44	3.34	7.64
A-6	A-6	0.81	0.54	0.58	0.63	0.76	0.44	0.47	0.51	0.62	11.31	2.14	2.80	3.42	5.94	0.93	1.32	1.75	3.66
A-7	A-7	1.39	0.48	0.53	0.58	0.73	0.67	0.74	0.81	1.01	16.90	1.78	2.34	2.85	4.95	1.19	1.72	2.30	5.02
A-8	A-8	1.94	0.45	0.51	0.56	0.72	0.87	0.99	1.09	1.40	16.31	1.81	2.38	2.90	5.04	1.58	2.35	3.15	7.04
A-9	A-9	1.39	0.37	0.41	0.47	0.67	0.51	0.57	0.65	0.93	16.88	1.78	2.34	2.85	4.95	0.92	1.33	1.86	4.61
A-10	A-10	2.47	0.42	0.47	0.53	0.70	1.04	1.16	1.31	1.73	16.67	1.79	2.35	2.87	4.98	1.86	2.73	3.76	8.62
A-11	A-11	0.90	0.56	0.60	0.64	0.76	0.50	0.54	0.58	0.68	16.08	1.82	2.39	2.92	5.07	0.92	1.29	1.68	3.47
A-12	A-12	1.63	0.43	0.48	0.54	0.71	0.70	0.78	0.88	1.16	15.02	1.88	2.47	3.02	5.24	1.32	1.93	2.66	6.06
A-13	A-13	2.36	0.48	0.53	0.59	0.73	1.13	1.25	1.39	1.72	16.18	1.82	2.39	2.91	5.06	2.06	2.98	4.05	8.71
A-14	A-14	1.21	0.30	0.35	0.43	0.64	0.36	0.42	0.52	0.77	16.09	1.82	2.39	2.92	5.07	0.66	1.01	1.52	3.93
A-15	A-15	3.33	0.37	0.42	0.48	0.68	1.23	1.40	1.60	2.26	16.96	1.78	2.33	2.85	4.94	2.19	3.26	4.55	11.19
A-16	A-16	0.66	0.53	0.58	0.62	0.75	0.35	0.38	0.41	0.50	10.86	2.17	2.85	3.48	6.05	0.76	1.09	1.42	2.99
A-17	A-17	2.15	0.28	0.33	0.40	0.63	0.60	0.71	0.86	1.35	18.40	1.70	2.24	2.73	4.74	1.03	1.59	2.35	6.43
B-1	B-1	2.46	0.10	0.15	0.24	0.54	0.25	0.37	0.59	1.33	13.40	1.98	2.61	3.18	5.52	0.49	0.96	1.88	7.34
B-2	B-2	0.43	0.50	0.55	0.60	0.74	0.22	0.24	0.26	0.32	10.31	2.22	2.91	3.56	6.17	0.48	0.69	0.92	1.96
B-3	B-3	2.06	0.48	0.53	0.59	0.73	0.99	1.09	1.22	1.50	15.30	1.87	2.45	2.99	5.20	1.85	2.68	3.64	7.81
B-4	B-4	2.21	0.52	0.56	0.61	0.75	1.15	1.24	1.35	1.66	13.93	1.95	2.56	3.13	5.43	2.24	3.17	4.21	9.00
B-5	B-5	1.94	0.52	0.57	0.62	0.75	1.01	1.11	1.20	1.46	10.97	2.16	2.84	3.47	6.02	2.18	3.14	4.17	8.76
O-1	O-1	1.47	0.57	0.62	0.66	0.77	0.84	0.91	0.97	1.13	9.38	2.30	3.02	3.69	6.41	1.93	2.76	3.58	7.25
O-2	O-2	1.95	0.42	0.48	0.54	0.71	0.82	0.94	1.05	1.38	15.62	1.85	2.43	2.96	5.14	1.51	2.27	3.12	7.12
O-3	O-3	0.86	0.69	0.73	0.76	0.83	0.59	0.63	0.65	0.71	8.26	2.41	3.17	3.87	6.71	1.43	1.99	2.53	4.79
O-4	O-4	4.25	0.43	0.48	0.54	0.71	1.83	2.04	2.30	3.02	16.08	1.82	2.39	2.92	5.07	3.33	4.88	6.70	15.30

5 yr Capacity Calculations (Rational Method)

PROJECT NAME: Legato Filing No. 1
 PROJECT NO: 19002860
 LOCATION: Commerce City, CO



Street Capacity and Inlet Capacity Calculations come from UD-Inlet workbook by Urban Drainage

FLOWS					STREET CAPACITY			INLET CAPACITY AND CARRY-OVER						
Basin ID Number	Design Point	Direct Flow Qd (cfs)	Carry-over flow Qco (cfs)	Total Flow Qt (cfs)	Street Slope (%)	Street Capacity (cfs)	Capacity Check	Inlet ID	Type	Condition	Inlet Capacity (cfs)	Intercepted Flow (cfs)	Carry-Over Flow (cfs)	Carry-Over to Design Point
A-1	A-1	1.35	0.06	1.41	0.7	5.9	OK	INL 701R	10' Type R	On Grade	1.30	1.30	0.11	
A-2	A-2	1.66	0.00	1.66	0.7	5.7	OK	INL 702R	10' Type R	On Grade	1.70	1.66	-	A-1
A-3	A-3	1.59	0.00	1.59	0.8	6.1	OK	INL 706R	15' Type R	On Grade	1.60	1.59	-	A-2
A-4	A-4	1.46	0.00	1.46	0.9	6.8	OK	INL 1118L	10' Type R	On Grade	1.50	1.46	-	A-3
A-5	A-5	2.44	0.00	2.44	0.7	7.7	OK	INL 583	15' Type R	On Grade	2.40	2.40	0.04	A-1
A-6	A-6	1.32	0.00	1.32	0.8	10.9	OK	INL 580	10' Type R	On Grade	1.30	1.30	0.02	A-1
A-7	A-7	1.72	0.21	1.93	0.8	10.4	OK	INL 587	15' Type R	On Grade	2.80	1.93	-	A-2
A-8	A-8	2.35	0.03	2.38	0.6	9.7	OK	INL 577	15' Type R	On Grade	2.30	2.30	0.08	A-7
A-9	A-9	1.33	0.00	1.33	1.5	8.4	OK	INL 585	10' Type R	On Grade	1.30	1.30	0.03	A-8
A-10	A-10	2.73	0.00	2.73	1.2	9.4	OK	INL 587	15' Type R	On Grade	2.60	2.60	0.13	A-7
A-11	A-11	1.29	0.00	1.29	0.7	9.7	OK	INL 579	10' Type R	On Grade	1.30	1.29	-	A-2
A-12	A-12	1.93	0.00	1.93	0.8	7.7	OK	INL 573	15' Type R	On Grade	2.00	1.93	-	A-11
A-13	A-13	2.98	0.00	2.98	0.8	9.7	OK	INL 561	15' Type R	On Grade	3.25	2.98	-	A-11
A-15	A-15	3.26	0.00	3.26	1.2	12.4	OK	INL 550	5' Type R	Sump	4.60	3.26	-	
A-16	A-16	1.09	0.00	1.09	1.3	13.3	OK	INL 592	10' Type R	On Grade	1.10	1.09	-	A-8
A-17	A-17	1.59	0.00	1.59	1.3	13.3	OK	INL 592	10' Type R	On Grade	1.60	1.59	-	A-8
B-1	B-1	0.96	0.00	0.96	NA	NA	NA	INL1206	Type C	Sump	11.00	0.96	-	
B-2	B-2	0.69	0.00	0.69	1.5	9.7	OK	INL1204L	5' Type R	Sump	4.60	0.69	-	
B-3	B-3	2.68	0.00	2.68	1.9	9.7	OK	INL1203.1R	5' Type R	Sump	4.60	2.68	-	B-2
B-4	B-4	3.17	0.00	3.17	0.7	9.5	OK	INL 502L	5' Type R	Sump	4.60	3.17	-	
B-5	B-5	3.14	0.00	3.14	0.9	10.9	OK	INL 503R	10' Type R	On Grade	3.10	3.10	0.04	B-4
O-1	O-1	2.76	0.00	2.76	1.0	9.7	OK	INL1203.1L	5' Type R	Sump	4.60	2.76	-	
O-2	O-2	2.27	0.00	2.27	1.0	9.7	OK	INL1204R	5' Type R	Sump	4.60	2.27	-	
O-3	O-3	1.99	0.00	1.99	1.0	9.7	OK	INL1204L	5' Type R	Sump	4.60	1.99	-	

100 yr Capacity Calculations (Rational Method)

PROJECT NAME: Legato Filing No. 1
 PROJECT NO: 19002860
 LOCATION: Commerce City, CO



Street Capacity and Inlet Capacity Calculations come from UD-Inlet workbook by Urban Drainage

FLOWS					STREET CAPACITY			INLET CAPACITY AND CARRY-OVER						
Basin ID Number	Design Point	Direct Flow Qd (cfs)	Carry-over flow Qco (cfs)	Total Flow Qt (cfs)	Street Slope (%)	Street Capacity (cfs)	Capacity Check	Inlet ID	Type	Condition	Inlet Capacity (cfs)	Intercepted Flow (cfs)	Carry-Over Flow (cfs)	Carry-Over to Design Point
A-1	A-1	4.15	0.45	4.60	0.7	6.1	OK	INL 701R	10' Type R	On Grade	4.10	4.10	0.50	0
A-2	A-2	5.11	0.00	5.11	0.7	6.1	OK	INL 702R	10' Type R	On Grade	4.80	4.80	0.31	A-1
A-3	A-3	5.16	0.30	5.46	0.8	6.1	OK	INL 706R	15' Type R	On Grade	5.50	5.46	-	A-2
A-4	A-4	5.10	0.00	5.10	0.9	6.8	OK	INL 1118L	10' Type R	On Grade	4.80	4.80	0.30	A-3
A-5	A-5	7.64	0.00	7.64	0.7	7.7	OK	INL 583	15' Type R	On Grade	7.50	7.50	0.14	A-1
A-6	A-6	3.66	0.00	3.66	0.8	10.9	OK	INL 580	10' Type R	On Grade	3.70	3.66	-	A-1
A-7	A-7	5.02	0.80	5.82	0.8	10.4	OK	INL 587	15' Type R	On Grade	8.70	5.82	-	A-2
A-8	A-8	7.04	1.04	8.08	0.6	9.7	OK	INL 577	15' Type R	On Grade	7.90	7.90	0.18	A-7
A-9	A-9	4.61	0.00	4.61	1.5	8.4	OK	INL 585	10' Type R	On Grade	4.40	4.40	0.21	A-8
A-10	A-10	8.62	0.00	8.62	1.2	9.4	OK	INL 587	15' Type R	On Grade	8.00	8.00	0.62	A-7
A-11	A-11	3.47	0.00	3.47	0.7	9.7	OK	INL 579	10' Type R	On Grade	4.00	3.47	-	A-2
A-12	A-12	6.06	0.00	6.06	0.8	7.7	OK	INL 573	15' Type R	On Grade	7.00	6.06	-	A-11
A-13	A-13	8.71	0.00	8.71	0.8	9.7	OK	INL 561	15' Type R	On Grade	8.80	8.71	-	A-11
A-15	A-15	11.19	0.00	11.19	1.2	12.4	OK	INL 550	5' Type R	Sump	12.30	11.19	-	0
A-16	A-16	2.99	0.00	2.99	1.3	13.3	OK	INL 592	10' Type R	On Grade	3.00	2.99	-	A-8
A-17	A-17	6.43	0.00	6.43	1.0	13.3	OK	INL 592	10' Type R	On Grade	5.60	5.60	0.83	A-8
B-1	B-1	7.34	0.00	7.34	NA	NA	NA	INL1206	Type C	Sump	11.00	7.34	-	0
B-2	B-2	1.96	0.00	1.96	1.5	9.7	OK	INL1204L	5' Type R	Sump	12.30	1.96	-	0
B-3	B-3	7.81	0.00	7.81	1.9	9.7	OK	INL1203.1R	5' Type R	Sump	12.30	7.81	-	B-2
B-4	B-4	9.00	0.00	9.00	0.7	9.5	OK	INL 502L	5' Type R	Sump	12.30	9.00	-	0
B-5	B-5	8.76	0.00	8.76	0.9	10.9	OK	INL 503R	10' Type R	On Grade	6.70	6.70	2.06	B-4
O-1	O-1	7.25	0.00	7.25	1.0	9.7	OK	INL1203.1L	5' Type R	Sump	12.30	7.25	-	0
O-2	O-2	7.12	0.00	7.12	1.0	9.7	OK	INL1204R	5' Type R	Sump	12.30	7.12	-	0
O-3	O-3	4.79	0.00	4.79	1.0	9.7	OK	INL1204L	5' Type R	Sump	12.3	4.79	-	0

APPENDIX E
HYDRAULIC CALCULATIONS

INLET MANAGEMENT

Worksheet Protected

INLET NAME	INL 583 - A5	INL 585 - A9	INL 587 - A10	INL 550 - A14	INL 578 - A7	INL 580 - A6
Site Type (Urban or Rural)						
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade	In Sump	On Grade	On Grade
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening

USER-DEFINED INPUT**User-Defined Design Flows**

Minor Q_{known} (cfs)	2.4	1.3	2.6	3.1	2.0	1.3
Major Q_{known} (cfs)	7.6	4.6	8.2	10.8	6.0	3.7

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	No Bypass Flow Received	No Bypass Flow Received	INL 577 - A8	No Bypass Flow Received
Minor Bypass Flow Received, Q_b (cfs)	0.0	0.0	0.0	0.0	0.0	0.0
Major Bypass Flow Received, Q_b (cfs)	0.0	0.0	0.0	0.0	1.5	0.0

Watershed Characteristics

Subcatchment Area (acres)						
Percent Impervious						
NRCS Soil Type						

Watershed Profile

Overland Slope (ft/ft)						
Overland Length (ft)						
Channel Slope (ft/ft)						
Channel Length (ft)						

Minor Storm Rainfall Input

Design Storm Return Period, T_r (years)						
One-Hour Precipitation, P_1 (inches)						

Major Storm Rainfall Input

Design Storm Return Period, T_r (years)						
One-Hour Precipitation, P_1 (inches)						

Connect all inlets with upstream on-grade inlets using the drop down menu in the spreadsheet. If there are more than one upstream on-grade inlet, use the user-defined input and add the appropriate cells up with a formula.

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	2.4	1.3	2.6	3.1	2.0	1.3
Major Total Design Peak Flow, Q (cfs)	7.6	4.6	8.2	10.8	7.4	3.7
Minor Flow Bypassed Downstream, Q_b (cfs)	0.0	0.0	0.0	N/A	0.0	0.0
Major Flow Bypassed Downstream, Q_b (cfs)	1.3	0.1	0.1	N/A	0.0	0.0

Minor Storm (Calculated) Analysis of Flow Time

C	N/A	N/A	N/A	N/A	N/A	N/A
C_s	N/A	N/A	N/A	N/A	N/A	N/A
Overland Flow Velocity, V_i	N/A	N/A	N/A	N/A	N/A	N/A
Channel Flow Velocity, V_t	N/A	N/A	N/A	N/A	N/A	N/A
Overland Flow Time, T_i	N/A	N/A	N/A	N/A	N/A	N/A
Channel Travel Time, T_t	N/A	N/A	N/A	N/A	N/A	N/A
Calculated Time of Concentration, T_c	N/A	N/A	N/A	N/A	N/A	N/A
Regional T_c	N/A	N/A	N/A	N/A	N/A	N/A
Recommended T_c	N/A	N/A	N/A	N/A	N/A	N/A
T_c selected by User	N/A	N/A	N/A	N/A	N/A	N/A
Design Rainfall Intensity, I	N/A	N/A	N/A	N/A	N/A	N/A
Calculated Local Peak Flow, Q_p	N/A	N/A	N/A	N/A	N/A	N/A

Major Storm (Calculated) Analysis of Flow Time

C	N/A	N/A	N/A	N/A	N/A	N/A
C_s	N/A	N/A	N/A	N/A	N/A	N/A
Overland Flow Velocity, V_i	N/A	N/A	N/A	N/A	N/A	N/A
Channel Flow Velocity, V_t	N/A	N/A	N/A	N/A	N/A	N/A
Overland Flow Time, T_i	N/A	N/A	N/A	N/A	N/A	N/A
Channel Travel Time, T_t	N/A	N/A	N/A	N/A	N/A	N/A
Calculated Time of Concentration, T_c	N/A	N/A	N/A	N/A	N/A	N/A
Regional T_c	N/A	N/A	N/A	N/A	N/A	N/A
Recommended T_c	N/A	N/A	N/A	N/A	N/A	N/A
T_c selected by User	N/A	N/A	N/A	N/A	N/A	N/A
Design Rainfall Intensity, I	N/A	N/A	N/A	N/A	N/A	N/A
Calculated Local Peak Flow, Q_p	N/A	N/A	N/A	N/A	N/A	N/A

INLET MANAGEMENT

Worksheet Protected

INLET NAME	INL 592 - A15	INL 590 - A16	INL 577 - A8	INL 561 - A13	INL 573 - A12	INL 579 - A11
Site Type (Urban or Rural)						
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade	On Grade	On Grade	On Grade
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening

USER-DEFINED INPUT**User-Defined Design Flows**

Minor Q_{known} (cfs)	1.1	1.6	2.4	3.2	2.0	1.3
Major Q_{known} (cfs)	3.0	6.4	7.0	9.3	6.5	3.6

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	User-Defined	No Bypass Flow Received	No Bypass Flow Received	INL 561 - A13
Minor Bypass Flow Received, Q_b (cfs)	0.0	0.0	0.0	0.0	0.0	0.0
Major Bypass Flow Received, Q_b (cfs)	0.0	0.0	1.0	0.0	0.0	0.4

Watershed Characteristics

Subcatchment Area (acres)						
Percent Impervious						
NRCS Soil Type						

Watershed Profile

Overland Slope (ft/ft)						
Overland Length (ft)						
Channel Slope (ft/ft)						
Channel Length (ft)						

Minor Storm Rainfall Input

Design Storm Return Period, T_r (years)						
One-Hour Precipitation, P_1 (inches)						

Major Storm Rainfall Input

Design Storm Return Period, T_r (years)						
One-Hour Precipitation, P_1 (inches)						

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	1.1	1.6	2.4	3.2	2.0	1.3
Major Total Design Peak Flow, Q (cfs)	3.0	6.4	8.1	9.3	6.5	4.0
Minor Flow Bypassed Downstream, Q_b (cfs)	0.0	0.0	0.0	0.0	0.0	0.0
Major Flow Bypassed Downstream, Q_b (cfs)	0.7	0.6	1.5	0.4	0.7	0.0

Minor Storm (Calculated) Analysis of Flow T

C	N/A	N/A	N/A	N/A	N/A	N/A
C_s	N/A	N/A	N/A	N/A	N/A	N/A
Overland Flow Velocity, V_i	N/A	N/A	N/A	N/A	N/A	N/A
Channel Flow Velocity, V_t	N/A	N/A	N/A	N/A	N/A	N/A
Overland Flow Time, T_i	N/A	N/A	N/A	N/A	N/A	N/A
Channel Travel Time, T_t	N/A	N/A	N/A	N/A	N/A	N/A
Calculated Time of Concentration, T_c	N/A	N/A	N/A	N/A	N/A	N/A
Regional T_c	N/A	N/A	N/A	N/A	N/A	N/A
Recommended T_c	N/A	N/A	N/A	N/A	N/A	N/A
T_c selected by User	N/A	N/A	N/A	N/A	N/A	N/A
Design Rainfall Intensity, I	N/A	N/A	N/A	N/A	N/A	N/A
Calculated Local Peak Flow, Q_p	N/A	N/A	N/A	N/A	N/A	N/A

Major Storm (Calculated) Analysis of Flow T

C	N/A	N/A	N/A	N/A	N/A	N/A
C_s	N/A	N/A	N/A	N/A	N/A	N/A
Overland Flow Velocity, V_i	N/A	N/A	N/A	N/A	N/A	N/A
Channel Flow Velocity, V_t	N/A	N/A	N/A	N/A	N/A	N/A
Overland Flow Time, T_i	N/A	N/A	N/A	N/A	N/A	N/A
Channel Travel Time, T_t	N/A	N/A	N/A	N/A	N/A	N/A
Calculated Time of Concentration, T_c	N/A	N/A	N/A	N/A	N/A	N/A
Regional T_c	N/A	N/A	N/A	N/A	N/A	N/A
Recommended T_c	N/A	N/A	N/A	N/A	N/A	N/A
T_c selected by User	N/A	N/A	N/A	N/A	N/A	N/A
Design Rainfall Intensity, I	N/A	N/A	N/A	N/A	N/A	N/A
Calculated Local Peak Flow, Q_p	N/A	N/A	N/A	N/A	N/A	N/A

INLET MANAGEMENT

Worksheet Protected

INLET NAME	EX INL - 701R - A1	EX INL 1118R - A4	EX INL 706 R - A3	EX INL 703R - A2	EX INL 503 R - B5	EX INL 502 L - B4
Site Type (Urban or Rural)						
Inlet Application (Street or Area)	STREET	STREET	STREET	STREET	STREET	STREET
Hydraulic Condition	On Grade	On Grade	On Grade	On Grade	On Grade	In Sump
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening

USER-DEFINED INPUT**User-Defined Design Flows**

Minor Q_{known} (cfs)	1.4	1.5	1.6	1.7	3.1	3.3
Major Q_{known} (cfs)	4.2	5.1	5.2	5.1	8.8	9.5

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	EX INL 1118R - A4	User-Defined	No Bypass Flow Received	EX INL 503 R - B5
Minor Bypass Flow Received, Q_b (cfs)	0.0	0.0	0.0	0.1	0.0	0.0
Major Bypass Flow Received, Q_b (cfs)	0.0	0.0	0.3	1.2	0.0	2.1

Watershed Characteristics

Subcatchment Area (acres)						
Percent Impervious						
NRCS Soil Type						

Watershed Profile

Overland Slope (ft/ft)						
Overland Length (ft)						
Channel Slope (ft/ft)						
Channel Length (ft)						

Minor Storm Rainfall Input

Design Storm Return Period, T_r (years)						
One-Hour Precipitation, P_1 (inches)						

Major Storm Rainfall Input

Design Storm Return Period, T_r (years)						
One-Hour Precipitation, P_1 (inches)						

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	1.4	1.5	1.6	1.7	3.1	3.3
Major Total Design Peak Flow, Q (cfs)	4.2	5.1	5.5	6.3	8.8	11.6
Minor Flow Bypassed Downstream, Q_b (cfs)	0.0	0.0	0.0	0.0	0.0	N/A
Major Flow Bypassed Downstream, Q_b (cfs)	0.1	0.3	0.0	0.8	2.1	N/A

Minor Storm (Calculated) Analysis of Flow T

C	N/A	N/A	N/A	N/A	N/A	N/A
C_s	N/A	N/A	N/A	N/A	N/A	N/A
Overland Flow Velocity, V_i	N/A	N/A	N/A	N/A	N/A	N/A
Channel Flow Velocity, V_t	N/A	N/A	N/A	N/A	N/A	N/A
Overland Flow Time, T_i	N/A	N/A	N/A	N/A	N/A	N/A
Channel Travel Time, T_t	N/A	N/A	N/A	N/A	N/A	N/A
Calculated Time of Concentration, T_c	N/A	N/A	N/A	N/A	N/A	N/A
Regional T_c	N/A	N/A	N/A	N/A	N/A	N/A
Recommended T_c	N/A	N/A	N/A	N/A	N/A	N/A
T_c selected by User	N/A	N/A	N/A	N/A	N/A	N/A
Design Rainfall Intensity, I	N/A	N/A	N/A	N/A	N/A	N/A
Calculated Local Peak Flow, Q_p	N/A	N/A	N/A	N/A	N/A	N/A

Major Storm (Calculated) Analysis of Flow T

C	N/A	N/A	N/A	N/A	N/A	N/A
C_s	N/A	N/A	N/A	N/A	N/A	N/A
Overland Flow Velocity, V_i	N/A	N/A	N/A	N/A	N/A	N/A
Channel Flow Velocity, V_t	N/A	N/A	N/A	N/A	N/A	N/A
Overland Flow Time, T_i	N/A	N/A	N/A	N/A	N/A	N/A
Channel Travel Time, T_t	N/A	N/A	N/A	N/A	N/A	N/A
Calculated Time of Concentration, T_c	N/A	N/A	N/A	N/A	N/A	N/A
Regional T_c	N/A	N/A	N/A	N/A	N/A	N/A
Recommended T_c	N/A	N/A	N/A	N/A	N/A	N/A
T_c selected by User	N/A	N/A	N/A	N/A	N/A	N/A
Design Rainfall Intensity, I	N/A	N/A	N/A	N/A	N/A	N/A
Calculated Local Peak Flow, Q_p	N/A	N/A	N/A	N/A	N/A	N/A

INLET MANAGEMENT

Worksheet Protected

Add inlet # (typ.)

INLET NAME	INL xxL - B2.Q3	INL XX - B3	INL xxx - B1	INL XX - A13.1
Site Type (Urban or Rural)	URBAN	URBAN	URBAN	URBAN
Inlet Application (Street or Area)	STREET	STREET	AREA	STREET
Hydraulic Condition	In Sump	In Sump	Swale	On Grade
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type D (In Series)	CDOT Type R Curb Opening

USER-DEFINED INPUT**User-Defined Design Flows**

Minor Q_{known} (cfs)	0.6	2.4	1.0	1.1
Major Q_{known} (cfs)	1.7	7.0	7.3	4.0

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	User-Defined	No Bypass Flow Received	No Bypass Flow Received	No Bypass Flow Received
Minor Bypass Flow Received, Q_b (cfs)	2.3	0.0	0.0	0.0
Major Bypass Flow Received, Q_b (cfs)	5.5	0.0	0.0	0.0

Watershed Characteristics

Subcatchment Area (acres)				
Percent Impervious				
NRCS Soil Type				

Watershed Profile

Overland Slope (ft/ft)				
Overland Length (ft)				
Channel Slope (ft/ft)				
Channel Length (ft)				

Minor Storm Rainfall Input

Design Storm Return Period, T_r (years)				
One-Hour Precipitation, P_1 (inches)				

Major Storm Rainfall Input

Design Storm Return Period, T_r (years)				
One-Hour Precipitation, P_1 (inches)				

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	2.9	2.4	1.0	1.1
Major Total Design Peak Flow, Q (cfs)	7.2	7.0	7.3	4.0
Minor Flow Bypassed Downstream, Q_b (cfs)	N/A	N/A	0.0	0.0
Major Flow Bypassed Downstream, Q_b (cfs)	N/A	N/A	0.0	0.0

Minor Storm (Calculated) Analysis of Flow T

C	N/A	N/A	N/A	N/A
C_s	N/A	N/A	N/A	N/A
Overland Flow Velocity, V_i	N/A	N/A	N/A	N/A
Channel Flow Velocity, V_t	N/A	N/A	N/A	N/A
Overland Flow Time, T_i	N/A	N/A	N/A	N/A
Channel Travel Time, T_t	N/A	N/A	N/A	N/A
Calculated Time of Concentration, T_c	N/A	N/A	N/A	N/A
Regional T_c	N/A	N/A	N/A	N/A
Recommended T_c	N/A	N/A	N/A	N/A
T_c selected by User	N/A	N/A	N/A	N/A
Design Rainfall Intensity, I	N/A	N/A	N/A	N/A
Calculated Local Peak Flow, Q_p	N/A	N/A	N/A	N/A

Major Storm (Calculated) Analysis of Flow T

C	N/A	N/A	N/A	N/A
C_s	N/A	N/A	N/A	N/A
Overland Flow Velocity, V_i	N/A	N/A	N/A	N/A
Channel Flow Velocity, V_t	N/A	N/A	N/A	N/A
Overland Flow Time, T_i	N/A	N/A	N/A	N/A
Channel Travel Time, T_t	N/A	N/A	N/A	N/A
Calculated Time of Concentration, T_c	N/A	N/A	N/A	N/A
Regional T_c	N/A	N/A	N/A	N/A
Recommended T_c	N/A	N/A	N/A	N/A
T_c selected by User	N/A	N/A	N/A	N/A
Design Rainfall Intensity, I	N/A	N/A	N/A	N/A
Calculated Local Peak Flow, Q_p	N/A	N/A	N/A	N/A

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

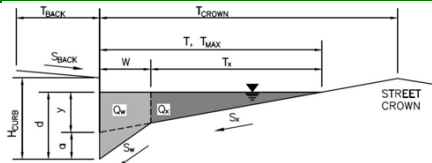
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

INL 583 - A5

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 10.0$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Warning 01

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 4.50$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 17.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_X = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_W = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_O = 0.005$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	4.5	12.0	inches

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

	Minor Storm	Major Storm	
$d_{MAX} =$	4.5	12.0	inches

Allow Flow Depth at Street Crown (leave blank for no)

☐ ☐ check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	3.6	7.8	cfs

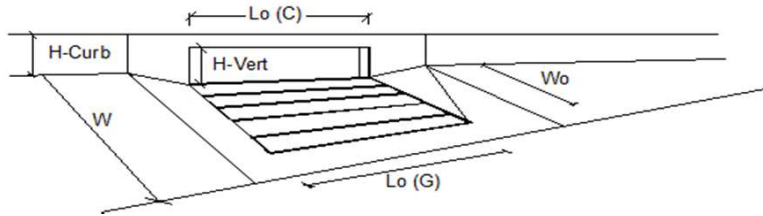
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017

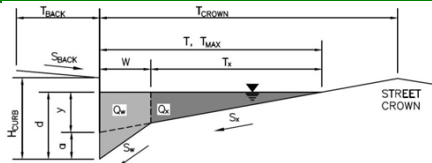


Design Information (Input)	MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	4.0	4.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity			
Total Inlet Interception Capacity	2.4	6.3	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.0	1.3	cfs
Capture Percentage = Q_i/Q_o =	100	83	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: _____
 Inlet ID: _____
 Legato Filing No. 5
 INL 585 - A9

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb
 Side Slope Behind Curb (leave blank for no conveyance credit behind curb)
 Manning's Roughness Behind Curb (typically between 0.012 and 0.020)
 Height of Curb at Gutter Flow Line
 Distance from Curb Face to Street Crown
 Gutter Width
 Street Transverse Slope
 Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)
 Street Longitudinal Slope - Enter 0 for sump condition
 Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} = 10.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.025$
 $H_{CURB} = 4.50$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_X = 0.020$ ft/ft
 $S_W = 0.083$ ft/ft
 $S_O = 0.006$ ft/ft
 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm
 Max. Allowable Depth at Gutter Flowline for Minor & Major Storm
 Allow Flow Depth at Street Crown (leave blank for no)

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	4.5	12.0	inches
	<input type="checkbox"/>	<input type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion
MAJOR STORM Allowable Capacity is based on Spread Criterion

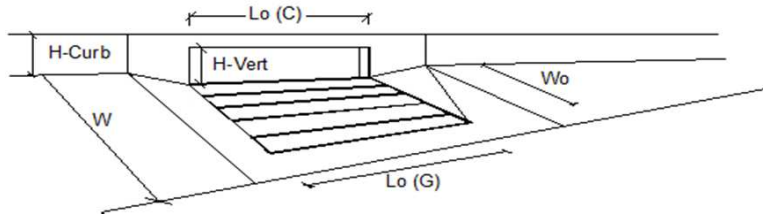
	Minor Storm	Major Storm	
$Q_{allow} =$	4.0	8.6	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'
 Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017

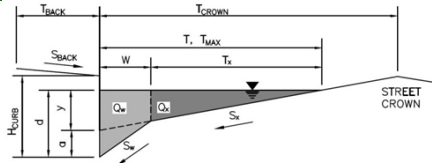


Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	4.0	4.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		N_o =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_{r-G} =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_{r-C} =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity					
Total Inlet Interception Capacity		Q =	1.3	4.5	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)		Q_b =	0.0	0.1	cfs
Capture Percentage = Q_i/Q_o =		C% =	100	98	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: _____
 Inlet ID: _____
 Legato Filing No. 5
 INL 587 - A10

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb
 Side Slope Behind Curb (leave blank for no conveyance credit behind curb)
 Manning's Roughness Behind Curb (typically between 0.012 and 0.020)
 Height of Curb at Gutter Flow Line
 Distance from Curb Face to Street Crown
 Gutter Width
 Street Transverse Slope
 Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)
 Street Longitudinal Slope - Enter 0 for sump condition
 Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} = 10.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.025$

$H_{CURB} = 4.50$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.008$ ft/ft
 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm
 Max. Allowable Depth at Gutter Flowline for Minor & Major Storm
 Allow Flow Depth at Street Crown (leave blank for no)

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	4.5	12.0	inches
	<input type="checkbox"/>	<input type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion
MAJOR STORM Allowable Capacity is based on Spread Criterion

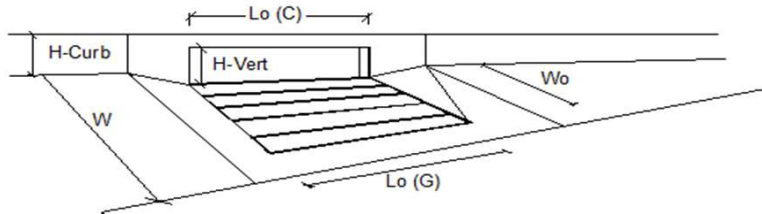
	Minor Storm	Major Storm	
$Q_{allow} =$	4.4	9.6	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'
 Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)	MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	4.0	4.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity			
Total Inlet Interception Capacity	2.6	8.1	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.0	0.1	cfs
Capture Percentage = Q_i/Q_o =	100	98	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

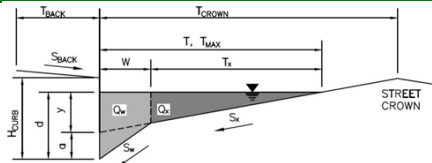
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

INL 550 - A14

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 10.0$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft**Warning 01** Manning's Roughness Behind Curb (typically between 0.012 and 0.020) $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 4.50$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 17.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_X = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_W = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_O = 0.000$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	4.5	12.0	inches

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Check boxes are not applicable in SUMP conditions

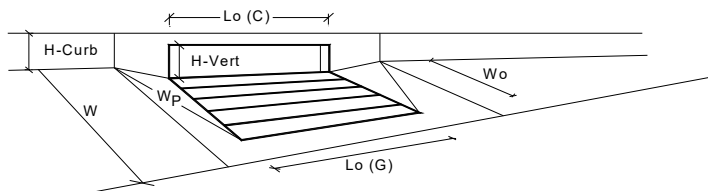
☐☐**MINOR STORM** Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	SUMP	SUMP	cfs

MAJOR STORM Allowable Capacity is based on Depth Criterion**Warning 01:** Manning's n-value does not meet the USDCM recommended design range.

INLET IN A SUMP OR SAG LOCATION

Version 4.05 Released March 2017



Warning 1

Design Information (Input)		CDOT Type R Curb Opening	
Type of Inlet		CDOT Type R Curb Opening	
Local Depression (additional to continuous gutter depression 'a' from above)			
Number of Unit Inlets (Grate or Curb Opening)			
Water Depth at Flowline (outside of local depression)			
Grate Information			
Length of a Unit Grate			
Width of a Unit Grate			
Area Opening Ratio for a Grate (typical values 0.15-0.90)			
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)			
Grate Weir Coefficient (typical value 2.15 - 3.60)			
Grate Orifice Coefficient (typical value 0.60 - 0.80)			
Curb Opening Information			
Length of a Unit Curb Opening			
Height of Vertical Curb Opening in Inches			
Height of Curb Orifice Throat in Inches			
Angle of Throat (see USDCM Figure ST-5)			
Side Width for Depression Pan (typically the gutter width of 2 feet)			
Clogging Factor for a Single Curb Opening (typical value 0.10)			
Curb Opening Weir Coefficient (typical value 2.3-3.7)			
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)			
Low Head Performance Reduction (Calculated)			
Depth for Grate Midwidth			
Depth for Curb Opening Weir Equation			
Combination Inlet Performance Reduction Factor for Long Inlets			
Curb Opening Performance Reduction Factor for Long Inlets			
Grated Inlet Performance Reduction Factor for Long Inlets			
Total Inlet Interception Capacity (assumes clogged condition)			
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)			
Warning 1: Dimension entered is not a typical dimension for inlet type specified.			

	MINOR	MAJOR	
Type =	CDOT Type R Curb Opening		
a _{local} =	3.00	3.00	inches
No =	1	1	
Ponding Depth =	5.6	12.0	inches
	MINOR	MAJOR	<input checked="" type="checkbox"/> Override Depths
L _o (G) =	N/A	N/A	feet
W _o =	N/A	N/A	feet
A _{ratio} =	N/A	N/A	
C _r (G) =	N/A	N/A	
C _w (G) =	N/A	N/A	
C _o (G) =	N/A	N/A	
	MINOR	MAJOR	
L _o (C) =	5.00	5.00	feet
H _{vert} =	6.00	6.00	inches
H _{throat} =	6.00	6.00	inches
Theta =	63.40	63.40	degrees
W _p =	2.00	2.00	feet
C _r (C) =	0.10	0.10	
C _w (C) =	3.60	3.60	
C _o (C) =	0.67	0.67	
	MINOR	MAJOR	
d _{Grate} =	N/A	N/A	ft
d _{Curb} =	0.30	0.83	ft
RF _{Combination} =	0.72	1.00	
RF _{Curb} =	1.00	1.00	
RF _{Grate} =	N/A	N/A	
	MINOR	MAJOR	
Q _a =	4.6	12.3	cfs
Q _{PEAK REQUIRED} =	3.1	10.8	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

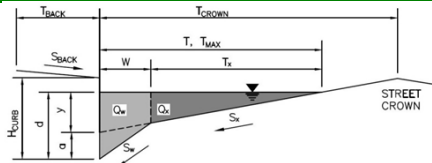
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

INL 578 - A7

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 10.0$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Warning 01

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 4.50$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 17.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_X = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_W = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_O = 0.008$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.015$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	4.5	12.0	inches

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

☐ ☐ check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	4.9	10.5	cfs

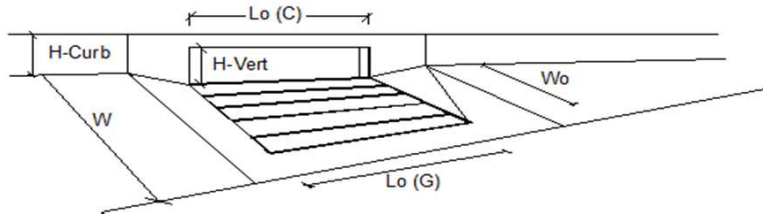
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)	MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	4.0	4.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity			
Total Inlet Interception Capacity	2.0	7.4	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.0	0.0	cfs
Capture Percentage = Q_i/Q_o =	100	100	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

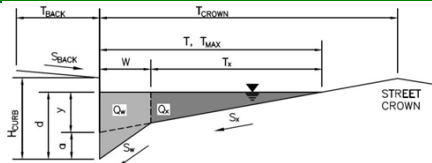
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

INL 580 - A6

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 10.0$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Warning 01

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 4.50$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 17.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_X = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_W = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_O = 0.010$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	4.5	12.0	inches

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

	Minor Storm	Major Storm	
$d_{MAX} =$	4.5	12.0	inches

Allow Flow Depth at Street Crown (leave blank for no)

☐ ☐ check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	5.1	11.0	cfs

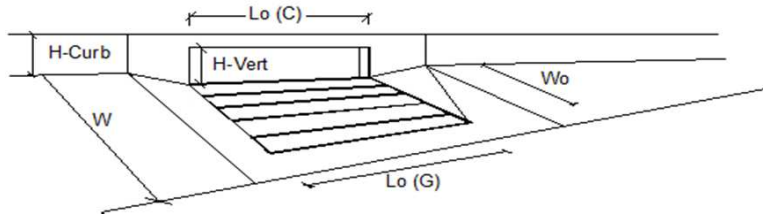
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	4.0	4.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		N_o =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_{r-G} =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_{r-C} =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity					
Total Inlet Interception Capacity		Q =	1.3	3.7	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)		Q_b =	0.0	0.0	cfs
Capture Percentage = Q_i/Q_o =		C% =	100	100	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

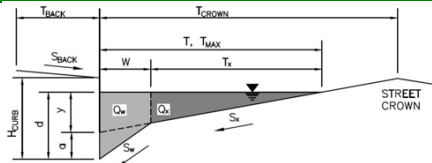
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

INL 592 - A15

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 10.0$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Warning 01

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 4.50$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 17.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_X = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_W = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_O = 0.015$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	4.5	12.0	inches

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

☐ ☐ check = yes
MINOR STORM Allowable Capacity is based on Depth Criterion**MAJOR STORM Allowable Capacity is based on Spread Criterion**

	Minor Storm	Major Storm	
$Q_{allow} =$	6.3	13.5	cfs

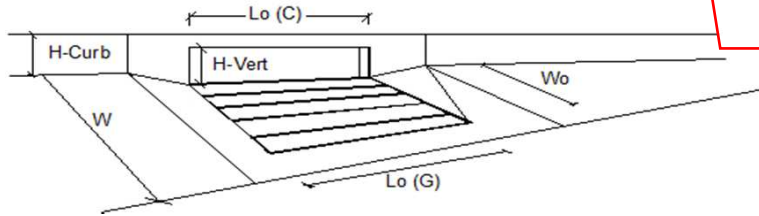
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



This appears to be in sump. Ensure calculations reflect proper sump or on-grade condition for all inlets.

Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	4.0	4.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		N_o =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_{r-G} =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_{r-C} =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity		MINOR		MAJOR	
Total Inlet Interception Capacity		Q =	1.1	2.3	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)		Q_b =	0.0	0.7	cfs
Capture Percentage = Q_i/Q_o =		C% =	100	78	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

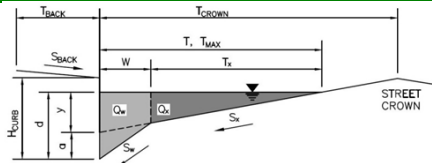
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

INL 590 - A16

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 10.0$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Warning 01

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 4.50$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 17.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_X = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_W = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_O = 0.015$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	4.5	12.0	inches

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

☐ ☐ check = yes
MINOR STORM Allowable Capacity is based on Depth Criterion**MAJOR STORM Allowable Capacity is based on Spread Criterion**

	Minor Storm	Major Storm	
$Q_{allow} =$	6.3	13.5	cfs

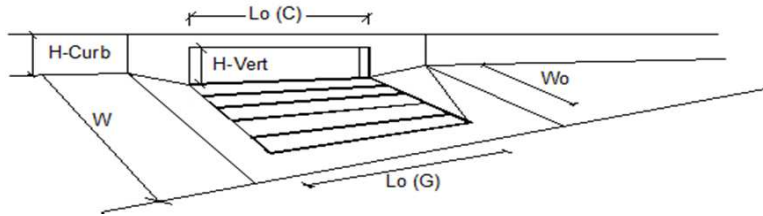
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)	MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	4.0	4.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity			
Total Inlet Interception Capacity	1.6	5.8	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.0	0.6	cfs
Capture Percentage = Q_i/Q_o =	100	91	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

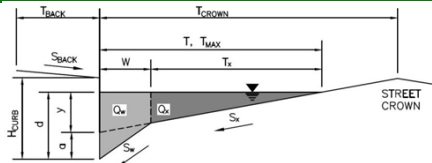
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

INL 577 - A8

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 10.0$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Warning 01

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 4.50$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 17.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_X = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_W = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_O = 0.008$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

	Minor Storm	Major Storm	
$d_{MAX} =$	4.5	12.0	inches

Allow Flow Depth at Street Crown (leave blank for no)

☐ ☐ check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	4.6	9.9	cfs

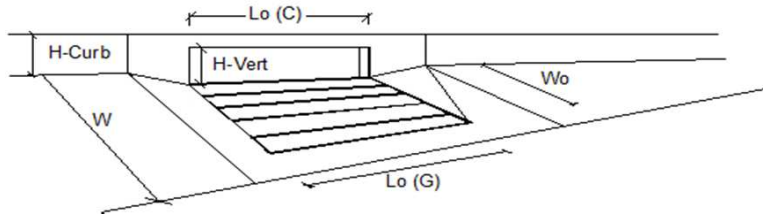
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	4.0	4.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		N_o =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_{r-G} =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_{r-C} =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity					
Total Inlet Interception Capacity		Q =	2.4	6.6	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)		Q_b =	0.0	1.5	cfs
Capture Percentage = Q_i/Q_o =		C% =	100	82	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

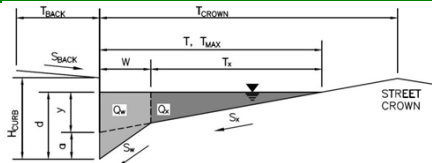
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

INL 561 - A13

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

T_{BACK} = 10.0 ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

S_{BACK} = 0.020 ft/ft

Warning 01

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

n_{BACK} = 0.025

Height of Curb at Gutter Flow Line

H_{CURB} = 4.50 inches

Distance from Curb Face to Street Crown

T_{CROWN} = 17.0 ft

Gutter Width

W = 2.00 ft

Street Transverse Slope

S_X = 0.020 ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

S_W = 0.083 ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

S_O = 0.008 ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

n_{STREET} = 0.016

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
T _{MAX}	17.0	17.0	ft
d _{MAX}	4.5	12.0	inches

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

	Minor Storm	Major Storm	
d _{MAX}	4.5	12.0	inches

Allow Flow Depth at Street Crown (leave blank for no)

☐ ☐ check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
Q _{allow}	4.6	9.9	cfs

MAJOR STORM Allowable Capacity is based on Spread Criterion

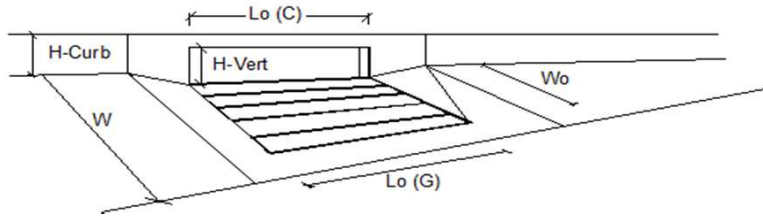
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	4.0	4.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		N_o =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_{r-G} =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_{r-C} =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity					
Total Inlet Interception Capacity		Q =	3.2	8.9	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)		Q_b =	0.0	0.4	cfs
Capture Percentage = Q_i/Q_o =		C% =	100	96	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

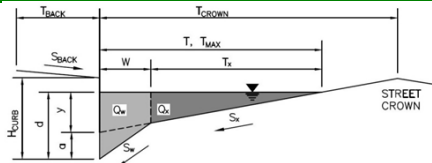
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

INL 573 - A12

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 10.0$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Warning 01

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 4.50$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 17.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_X = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_W = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_O = 0.005$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

	Minor Storm	Major Storm	
$d_{MAX} =$	4.5	12.0	inches

Allow Flow Depth at Street Crown (leave blank for no)

☐ ☐ check = yes
MINOR STORM Allowable Capacity is based on Depth Criterion**MAJOR STORM Allowable Capacity is based on Spread Criterion**

	Minor Storm	Major Storm	
$Q_{allow} =$	3.6	7.8	cfs

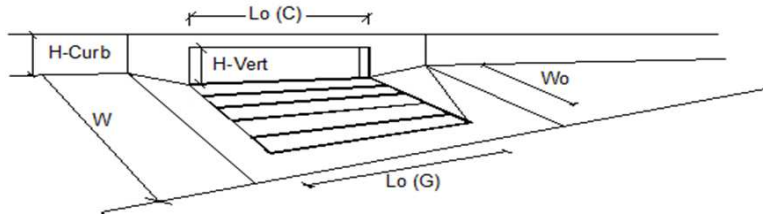
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	4.0	4.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		N_o =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_{r-G} =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_{r-C} =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity					
Total Inlet Interception Capacity		Q =	2.0	5.8	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)		Q_b =	0.0	0.7	cfs
Capture Percentage = Q_i/Q_o =		C% =	100	89	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

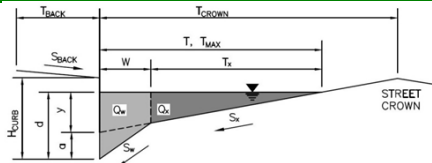
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

INL 579 - A11

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 10.0$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Warning 01

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 4.50$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 17.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_X = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_W = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_O = 0.008$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	4.5	12.0	inches

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

	Minor Storm	Major Storm	
$d_{MAX} =$	4.5	12.0	inches

Allow Flow Depth at Street Crown (leave blank for no)

☐ ☐ check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	4.6	9.9	cfs

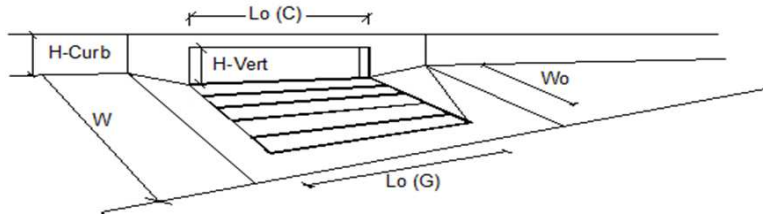
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)	MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	4.0	4.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity			
Total Inlet Interception Capacity	1.3	4.0	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.0	0.0	cfs
Capture Percentage = Q_i/Q_o =	100	100	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

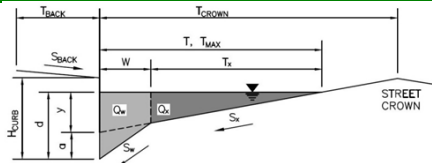
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

EX INL - 701R - A1

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 21.5$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 6.00$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 20.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_x = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_w = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_o = 0.008$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	14.0	14.0	ft
$d_{MAX} =$	6.0	12.0	inches

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

☐ check = yes**MINOR STORM Allowable Capacity is based on Spread Criterion****MAJOR STORM Allowable Capacity is based on Spread Criterion**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

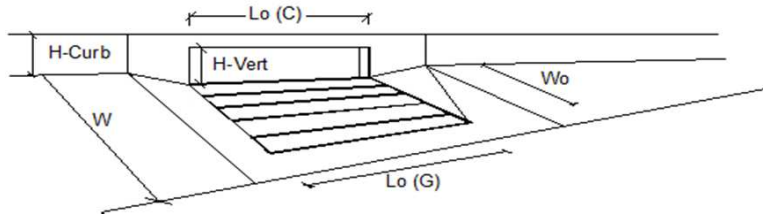
Warning 01: Manning's n-value does not meet the USDCM recommended design range.

	Minor Storm	Major Storm	
$Q_{allow} =$	5.9	5.9	cfs

Use 5.8" (0.48') per Section 9.3 for inlets in E 95 Ave.

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)	MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity			
Total Inlet Interception Capacity	1.3	4.1	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.0	0.1	cfs
Capture Percentage = Q_i/Q_o =	100	98	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

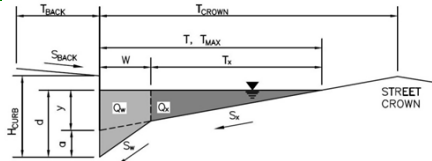
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

EX INL 1118R - A4

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 23.5$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Warning 01

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 6.00$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 26.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_x = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_w = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_o = 0.010$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	14.0	14.0	ft
$d_{MAX} =$	6.0	12.0	inches

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

☐ ☐ check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	6.8	6.8	cfs

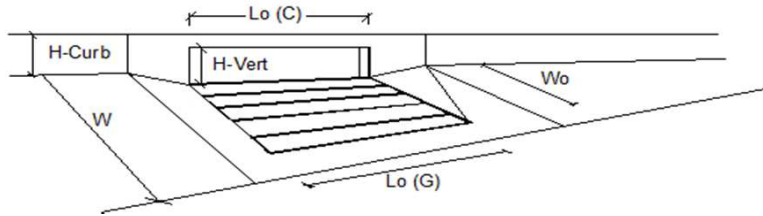
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		N_o =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_{r-G} =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_{r-C} =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity					
Total Inlet Interception Capacity		Q =	1.5	4.8	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)		Q_b =	0.0	0.3	cfs
Capture Percentage = Q_i/Q_o =		C% =	100	94	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

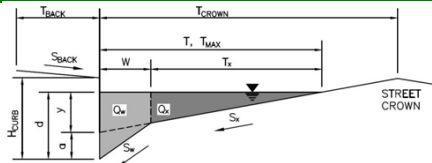
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

EX INL 706 R - A3

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 21.5$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Warning 01

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 6.00$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 20.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_x = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_w = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_o = 0.008$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	14.0	14.0	ft

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

	Minor Storm	Major Storm	
$d_{MAX} =$	6.0	12.0	inches

Allow Flow Depth at Street Crown (leave blank for no)

☐ ☐ check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	6.1	6.1	cfs

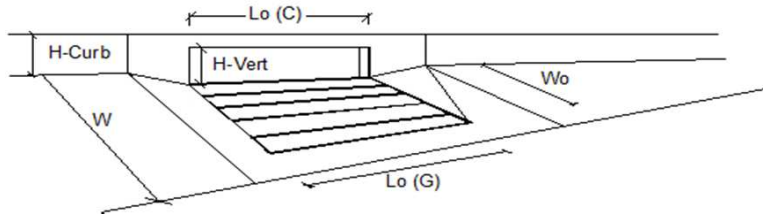
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)	MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity			
Total Inlet Interception Capacity	1.6	5.5	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.0	0.0	cfs
Capture Percentage = Q_i/Q_o =	100	100	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

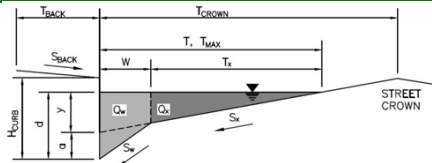
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

EX INL 702R - A2

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 21.5$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 6.00$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 20.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_x = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_w = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_o = 0.008$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	14.0	14.0	ft
$d_{MAX} =$	6.0	12.0	inches

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

☐ ☐ check = yes
MINOR STORM Allowable Capacity is based on Spread Criterion**MAJOR STORM Allowable Capacity is based on Spread Criterion**

	Minor Storm	Major Storm	
$Q_{allow} =$	6.1	6.1	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

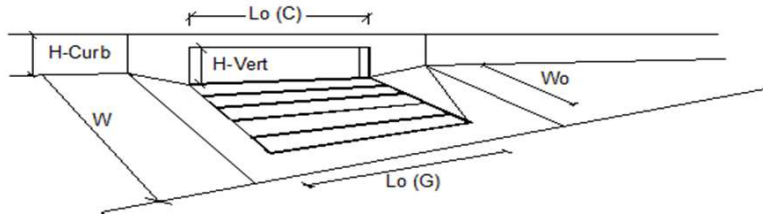
WARNING: MAJOR STORM max. allowable capacity is less than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

Ensure street capacity
is not exceeded (typ.).

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		N_o =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_{r-G} =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_{r-C} =	0.10	0.10	
Street Hydraulics: WARNING: Q > ALLOWABLE Q FOR MAJOR STORM					
Total Inlet Interception Capacity		Q =	1.7	5.5	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)		Q_b =	0.0	0.8	cfs
Capture Percentage = Q_i/Q_o =		C% =	100	87	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

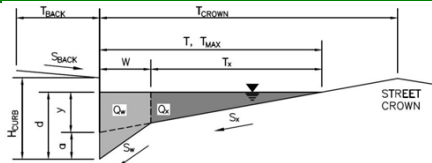
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

EX INL 503 R - B5

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 10.0$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Warning 01

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 6.00$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 17.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_x = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_w = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_o = 0.010$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	5.6	12.0	inches

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

☐ ☐ check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	10.9	10.9	cfs

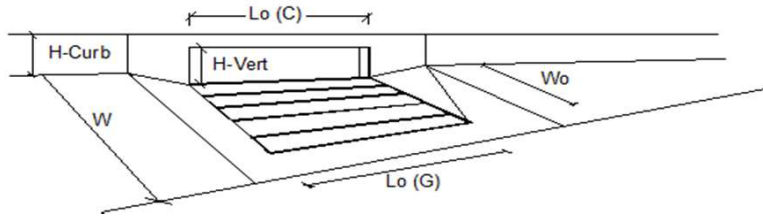
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)	MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity			
Total Inlet Interception Capacity	3.1	6.7	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.0	2.1	cfs
Capture Percentage = Q_i/Q_o =	100	76	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

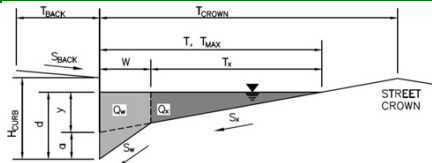
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

EX INL 502 L - B4

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 10.0$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Warning 01

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 6.00$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 17.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_X = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_W = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_O = 0.000$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

	Minor Storm	Major Storm	
$d_{MAX} =$	5.8	12.0	inches

Check boxes are not applicable in SUMP conditions

☐
☐

MINOR STORM Allowable Capacity is based on Depth Criterion

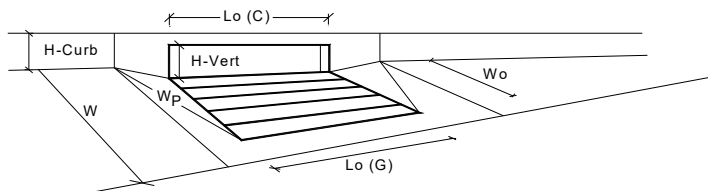
	Minor Storm	Major Storm	
$Q_{allow} =$	SUMP	SUMP	cfs

MAJOR STORM Allowable Capacity is based on Depth Criterion

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET IN A SUMP OR SAG LOCATION

Version 4.05 Released March 2017



Design Information (Input)

Type of Inlet
Local Depression (additional to continuous gutter depression 'a' from above)
Number of Unit Inlets (Grate or Curb Opening)
Water Depth at Flowline (outside of local depression)

Grate Information

Length of a Unit Grate
Width of a Unit Grate
Area Opening Ratio for a Grate (typical values 0.15-0.90)
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)
Grate Weir Coefficient (typical value 2.15 - 3.60)
Grate Orifice Coefficient (typical value 0.60 - 0.80)

Curb Opening Information

Length of a Unit Curb Opening
Height of Vertical Curb Opening in Inches
Height of Curb Orifice Throat in Inches
Angle of Throat (see USDCM Figure ST-5)
Side Width for Depression Pan (typically the gutter width of 2 feet)
Clogging Factor for a Single Curb Opening (typical value 0.10)
Curb Opening Weir Coefficient (typical value 2.3-3.7)
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)

Low Head Performance Reduction (Calculated)

Depth for Grate Midwidth
Depth for Curb Opening Weir Equation
Combination Inlet Performance Reduction Factor for Long Inlets
Curb Opening Performance Reduction Factor for Long Inlets
Grated Inlet Performance Reduction Factor for Long Inlets

Total Inlet Interception Capacity (assumes clogged condition)

Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)

	MINOR	MAJOR	
Type =	CDOT Type R Curb Opening		
a_{local} =	3.00	3.00	inches
No =	1	1	
Ponding Depth =	5.6	12.0	inches
	MINOR	MAJOR	<input checked="" type="checkbox"/> Override Depths
$L_o (G)$ =	N/A	N/A	feet
W_o =	N/A	N/A	feet
A_{ratio} =	N/A	N/A	
$C_r (G)$ =	N/A	N/A	
$C_w (G)$ =	N/A	N/A	
$C_o (G)$ =	N/A	N/A	
	MINOR	MAJOR	
$L_o (C)$ =	5.00	5.00	feet
H_{vert} =	6.00	6.00	inches
H_{throat} =	6.00	6.00	inches
Theta =	63.40	63.40	degrees
W_p =	2.00	2.00	feet
$C_r (C)$ =	0.10	0.10	
$C_w (C)$ =	3.60	3.60	
$C_o (C)$ =	0.67	0.67	
	MINOR	MAJOR	
d_{Grate} =	N/A	N/A	ft
d_{Curb} =	0.30	0.83	ft
$RF_{Combination}$ =	0.72	1.00	
RF_{Curb} =	1.00	1.00	
RF_{Grate} =	N/A	N/A	
	MINOR	MAJOR	
Q_a =	4.6	12.3	cfs
$Q_{PEAK REQUIRED}$ =	3.3	11.6	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

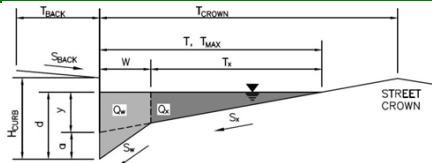
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

INL xxL - B2,O3

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 10.0$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Warning 01

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 4.50$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 17.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_X = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_W = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_O = 0.000$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

	Minor Storm	Major Storm	
$d_{MAX} =$	4.5	12.0	inches

Check boxes are not applicable in SUMP conditions

☐☐

MINOR STORM Allowable Capacity is based on Depth Criterion

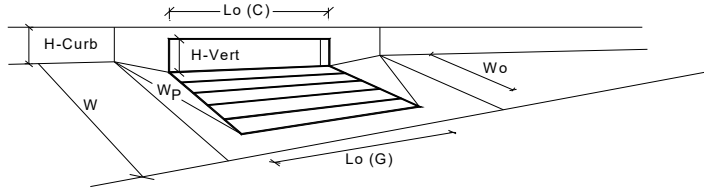
	Minor Storm	Major Storm	
$Q_{allow} =$	SUMP	SUMP	cfs

MAJOR STORM Allowable Capacity is based on Depth Criterion

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET IN A SUMP OR SAG LOCATION

Version 4.05 Released March 2017



Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a _{local} =	4.50	4.50	inches
Number of Unit Inlets (Grate or Curb Opening)		No =	1	1	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	4.5	12.0	inches
Grate Information		MINOR		MAJOR	
Length of a Unit Grate		L _o (G) =	N/A	N/A	feet
Width of a Unit Grate		W _o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A _{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C _r (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		C _w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C _o (G) =	N/A	N/A	
Curb Opening Information		MINOR		MAJOR	
Length of a Unit Curb Opening		L _o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches		H _{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H _{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W _p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		C _r (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C _w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C _o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR		MAJOR	
Depth for Grate Midwidth		d _{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d _{Curb} =	0.21	0.83	ft
Combination Inlet Performance Reduction Factor for Long Inlets		RF _{Combination} =	0.58	1.00	
Curb Opening Performance Reduction Factor for Long Inlets		RF _{Curb} =	1.00	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets		RF _{Grate} =	N/A	N/A	
Total Inlet Interception Capacity (assumes clogged condition)		MINOR		MAJOR	
		Q _a =	2.7	13.0	cfs
WARNING: Inlet Capacity less than Q Peak for Minor Storm		Q _{PEAK REQUIRED} =	2.9	7.2	cfs

Ensure inlet capacity is not exceeded (typ.).

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

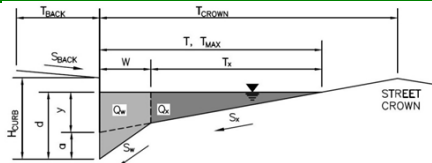
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Legato Filing No. 5

Inlet ID:

INL XX - B3

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

 $T_{BACK} = 10.0$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

 $S_{BACK} = 0.020$ ft/ft

Warning 01

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

 $n_{BACK} = 0.025$

Height of Curb at Gutter Flow Line

 $H_{CURB} = 4.50$ inches

Distance from Curb Face to Street Crown

 $T_{CROWN} = 17.0$ ft

Gutter Width

 $W = 2.00$ ft

Street Transverse Slope

 $S_X = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

 $S_W = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

 $S_O = 0.000$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

	Minor Storm	Major Storm	
$d_{MAX} =$	4.5	12.0	inches

Check boxes are not applicable in SUMP conditions

☐☐

MINOR STORM Allowable Capacity is based on Depth Criterion

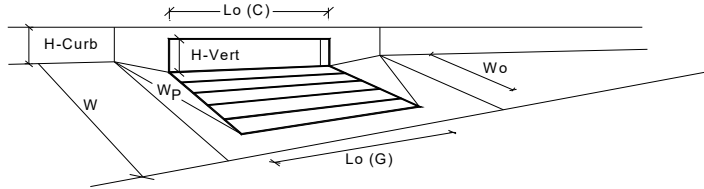
	Minor Storm	Major Storm	
$Q_{allow} =$	SUMP	SUMP	cfs

MAJOR STORM Allowable Capacity is based on Depth Criterion

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET IN A SUMP OR SAG LOCATION

Version 4.05 Released March 2017



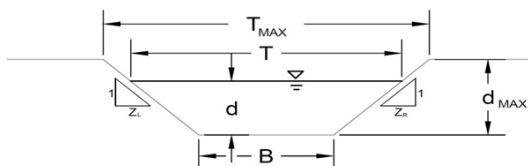
Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	CDOT Type R Curb Opening			
Local Depression (additional to continuous gutter depression 'a' from above)		a _{local} = 4.50	4.50	inches	
Number of Unit Inlets (Grate or Curb Opening)		No = 1	1		
Water Depth at Flowline (outside of local depression)		Ponding Depth = 4.5	12.0	inches	
Grate Information		MINOR		MAJOR	
Length of a Unit Grate		L _g (G) = N/A	N/A	<input checked="" type="checkbox"/> Override Depths	
Width of a Unit Grate		W _o = N/A	N/A	feet	
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A _{ratio} = N/A	N/A	feet	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C _r (G) = N/A	N/A		
Grate Weir Coefficient (typical value 2.15 - 3.60)		C _w (G) = N/A	N/A		
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C _o (G) = N/A	N/A		
Curb Opening Information		MINOR		MAJOR	
Length of a Unit Curb Opening		L _o (C) = 5.00	5.00	feet	
Height of Vertical Curb Opening in Inches		H _{vert} = 6.00	6.00	inches	
Height of Curb Orifice Throat in Inches		H _{throat} = 6.00	6.00	inches	
Angle of Throat (see USDCM Figure ST-5)		Theta = 63.40	63.40	degrees	
Side Width for Depression Pan (typically the gutter width of 2 feet)		W _p = 2.00	2.00	feet	
Clogging Factor for a Single Curb Opening (typical value 0.10)		C _r (C) = 0.10	0.10		
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C _w (C) = 3.60	3.60		
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C _o (C) = 0.67	0.67		
Low Head Performance Reduction (Calculated)		MINOR		MAJOR	
Depth for Grate Midwidth		d _{grate} = N/A	N/A	ft	
Depth for Curb Opening Weir Equation		d _{curb} = 0.21	0.83	ft	
Combination Inlet Performance Reduction Factor for Long Inlets		RF _{Combination} = 0.58	1.00		
Curb Opening Performance Reduction Factor for Long Inlets		RF _{Curb} = 1.00	1.00		
Grated Inlet Performance Reduction Factor for Long Inlets		RF _{Grate} = N/A	N/A		
Total Inlet Interception Capacity (assumes clogged condition)		MINOR		MAJOR	
		Q _a = 2.7	13.0	cfs	
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)		Q _{PEAK REQUIRED} = 2.4	7.0	cfs	

Do not override depths.

AREA INLET IN A SWALE

Legato Filing No. 5

INL 1206 - B1



This worksheet uses the NRCS
vegetal retardance method to
determine Manning's n.

For more information see
Section 7.2.3 of the USDCM.

Analysis of Trapezoidal Grass-Lined Channel Using SCS Method

NRCS Vegetal Retardance (A, B, C, D, or E)

Manning's n (Leave cell D16 blank to manually enter an n value)

Channel Invert Slope

Bottom Width

Left Side Slope

Right Side Slope

Check one of the following soil types:

Soil Type:	Max. Velocity (V_{MAX})	Max Froude No. (F_{MAX})
Non-Cohesive	5.0 fps	0.60
Cohesive	7.0 fps	0.80
Paved	N/A	N/A

A, B, C, D or E

C
see details below
$n =$ 0.0200 ft/ft
$B =$ 2.00 ft
$Z1 =$ 4.00 ft/ft
$Z2 =$ 4.00 ft/ft

Choose One:

- ☐ Non-Cohesive
☒ Cohesive
☐ Paved

Max. Allowable Top Width of Channel for Minor & Major Storm

Max. Allowable Water Depth in Channel for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	10.00	10.00	feet
$d_{MAX} =$	1.00	1.00	feet

Allowable Channel Capacity Based On Channel Geometry

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	11.0	11.0	cfs
$d_{allow} =$	1.00	1.00	ft

Water Depth in Channel Based On Design Peak Flow

Design Peak Flow

Water Depth

$Q_o =$	1.0	7.3	cfs
$d =$	0.67	0.91	feet

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

AREA INLET IN A SWALE

Legato Filing No. 5

INL 1206 - B1

Inlet Design Information (Input)

Type of Inlet

CDOT Type D (In Series)

Inlet Type =

CDOT Type D (In Series)

Angle of Inclined Grate (must be ≤ 30 degrees)

Width of Grate

Length of Grate

Open Area Ratio

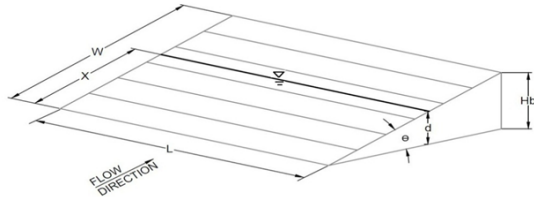
Height of Inclined Grate

Clogging Factor

Grate Discharge Coefficient

Orifice Coefficient

Weir Coefficient

 $\theta =$ 0.00 degrees

W = 3.00 feet

L = 6.00 feet

 $A_{\text{RATIO}} =$ 0.70 $H_B =$ 0.00 feet $C_f =$ 0.38 $C_d =$ 0.78 $C_o =$ 0.52 $C_w =$ 1.67

Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)

d =

MINOR

MAJOR

 $Q_a =$ 16.2 25.9 cfsBypassed Flow, $Q_b =$ 0.0 0.0 cfsCapture Percentage = $Q_a/Q_o =$ C% 100 100 %

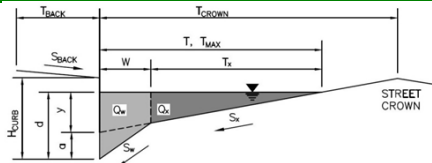
Total Inlet Interception Capacity (assumes clogged condition)

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: _____
 Inlet ID: _____

Legato Filing No. 5
 INL 551 - A13.1

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb
 Side Slope Behind Curb (leave blank for no conveyance credit behind curb)
 Manning's Roughness Behind Curb (typically between 0.012 and 0.020)
 Height of Curb at Gutter Flow Line
 Distance from Curb Face to Street Crown
 Gutter Width
 Street Transverse Slope
 Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)
 Street Longitudinal Slope - Enter 0 for sump condition
 Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} = 10.0$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.025$

$H_{CURB} = 4.50$ inches
 $T_{CROWN} = 17.0$ ft
 $W = 2.00$ ft
 $S_X = 0.020$ ft/ft
 $S_W = 0.083$ ft/ft
 $S_O = 0.009$ ft/ft
 $n_{STREET} = 0.016$

Max. Allowable Spread for Minor & Major Storm
 Max. Allowable Depth at Gutter Flowline for Minor & Major Storm
 Allow Flow Depth at Street Crown (leave blank for no)

	Minor Storm	Major Storm	
$T_{MAX} =$	17.0	17.0	ft
$d_{MAX} =$	4.5	12.0	inches
	<input type="checkbox"/>	<input type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion
 MAJOR STORM Allowable Capacity is based on Spread Criterion

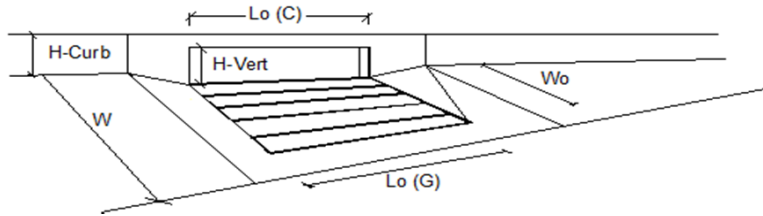
	Minor Storm	Major Storm	
$Q_{allow} =$	4.9	10.5	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'
 Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Warning 01: Manning's n-value does not meet the USDCM recommended design range.

INLET ON A CONTINUOUS GRADE

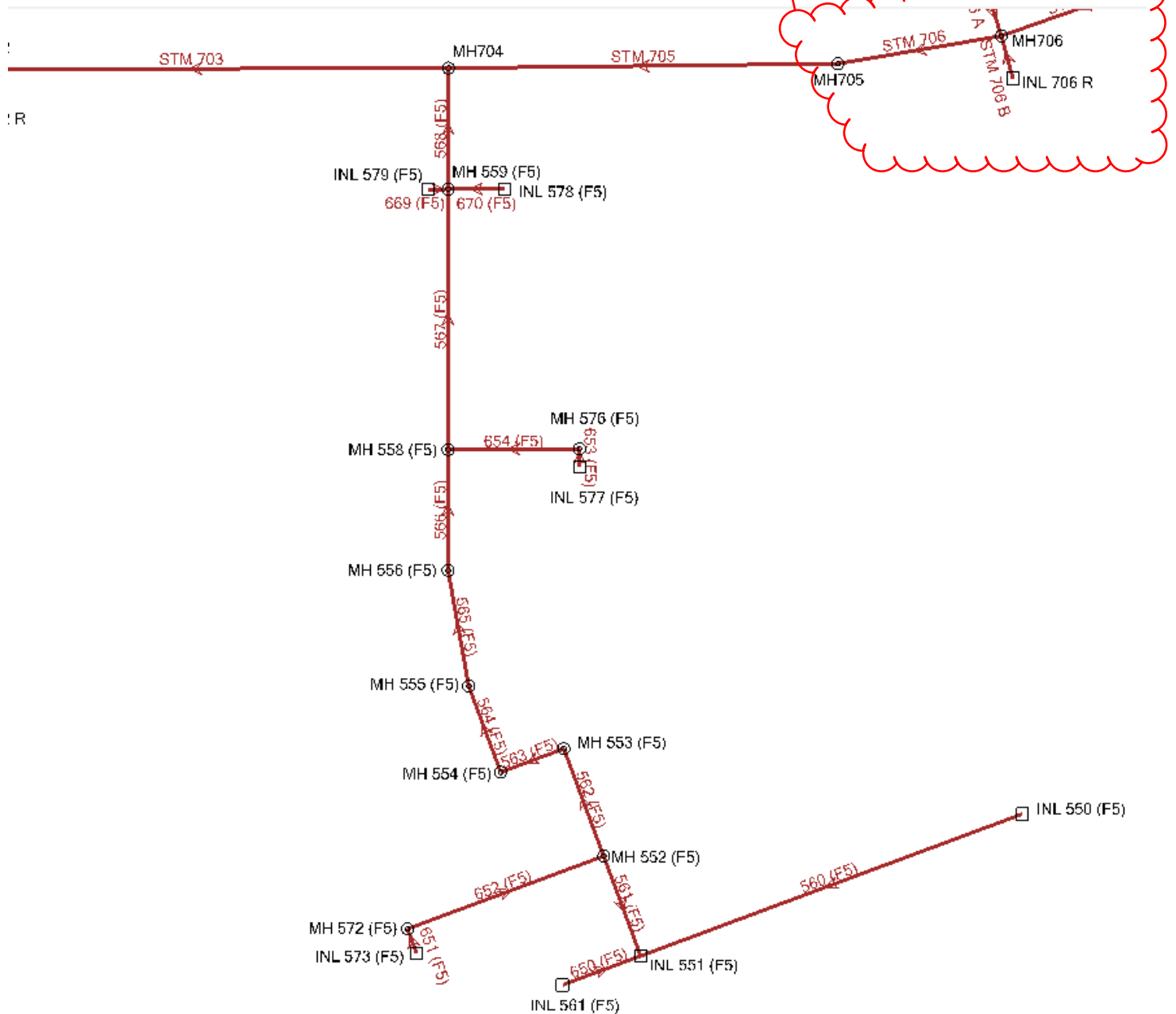
Version 4.05 Released March 2017



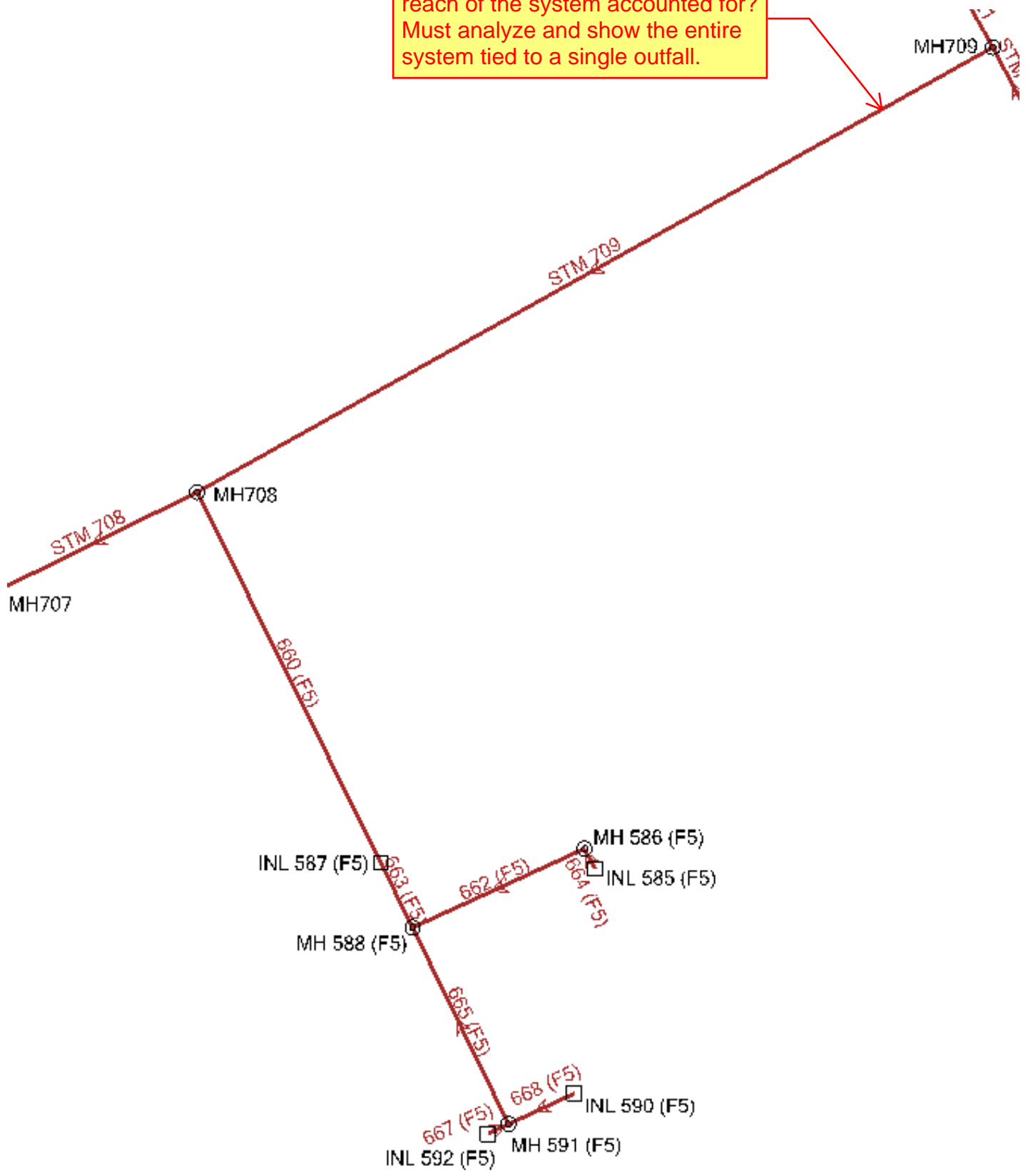
Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	4.0	4.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		N_o =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_{r-G} =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_{r-C} =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity					
Total Inlet Interception Capacity		Q =	1.1	4.0	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)		Q_b =	0.0	0.0	cfs
Capture Percentage = Q_i/Q_o =		C% =	100	100	%

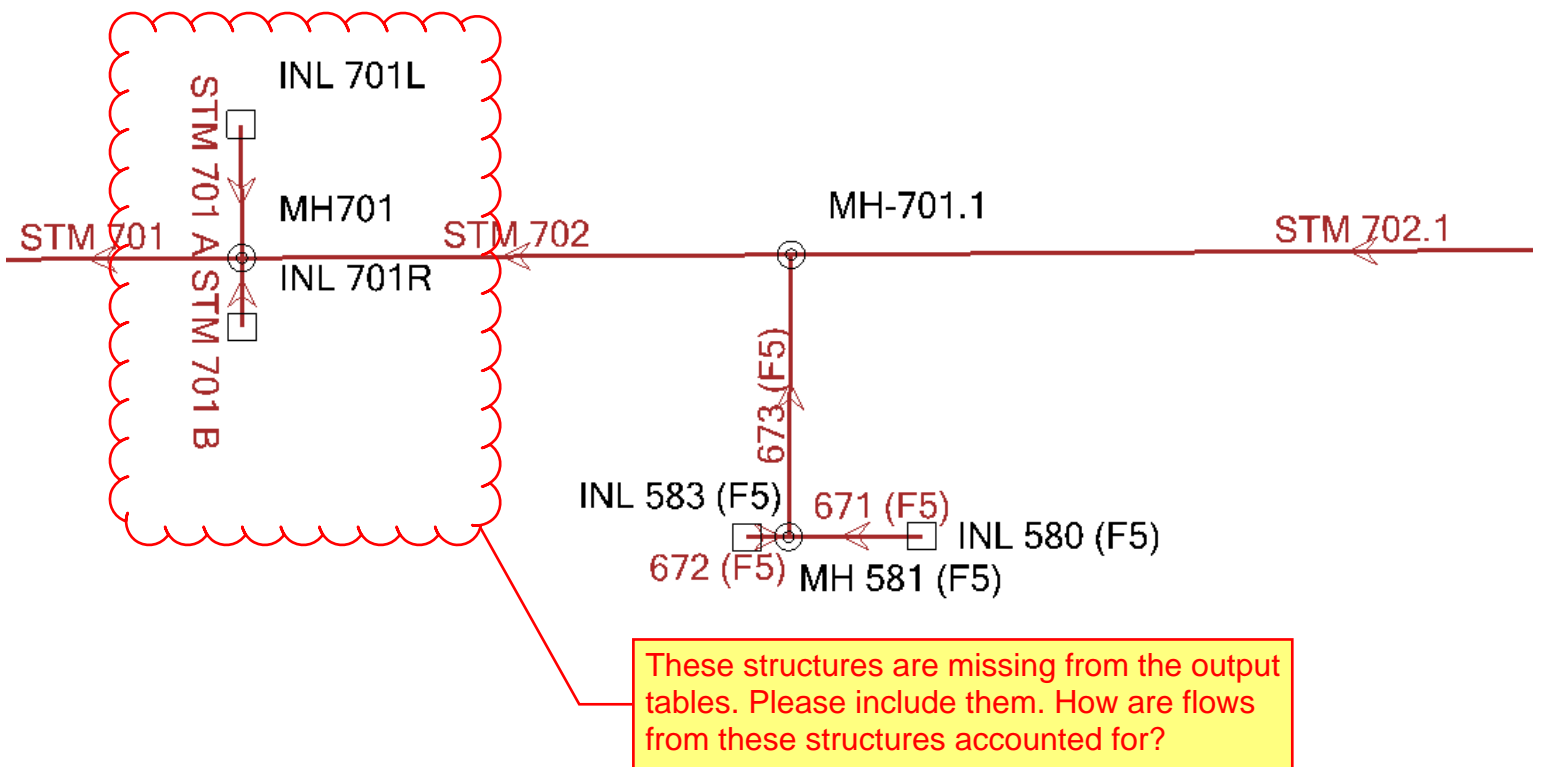
Please include an overall pipe plan with sheet frames. Add numbers to the blow-up sheets.

These structures are missing from the output tables. Please include them. How are flows from these structures accounted for?



How are flows from the upstream reach of the system accounted for?
Must analyze and show the entire system tied to a single outfall.





INLETS - 5yr						
Label	Structure Type	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Flow (Total Out) (cfs)	Headloss Method	Headloss Coefficient (Standard)
INL 503L	Box Structure	5,274.80	5,267.00	3.14	Standard	1.32
INL 502 L	Box Structure	5,271.80	5,263.00	3.33	Standard	0.05
INL 578 (F5)	Box Structure	5,264.67	5,255.80	1.99	Standard	0.05
INL 579 (F5)	Box Structure	5,264.67	5,255.80	1.32	Standard	0.05
INL 583 (F5)	Box Structure	5,261.20	5,256.50	2.44	Standard	0.05
INL 580 (F5)	Box Structure	5,261.20	5,256.70	1.32	Standard	0.05
INL 577 (F5)	Box Structure	5,266.08	5,260.20	2.35	Standard	0.05
INL 573 (F5)	Box Structure	5,267.35	5,260.88	2.03	Standard	0.05
INL 561 (F5)	Box Structure	5,267.65	5,261.22	3.17	Standard	0.05
INL 550 (F5)	Box Structure	5,269.19	5,263.07	3.14	Standard	0.05
INL 592 (F5)	Box Structure	5,270.61	5,261.70	1.09	Standard	0.05
INL 590 (F5)	Box Structure	5,270.62	5,261.90	1.59	Standard	0.05
INL 585 (F5)	Box Structure	5,270.23	5,262.96	1.33	Standard	0.05
INL 1203.1 L	Box Structure	5,268.40	5,255.50	2.76	Standard	0.05
INL 1203.1 R	Box Structure	5,268.40	5,255.50	2.44	Standard	0.05
INL 597	Box Structure	5,267.80	5,253.80	3.75	Standard	0.05
INL 607B	Box Structure	5,267.80	5,253.80	1.93	Standard	0.05
INL 1206	Box Structure	5,262.16	5,247.74	61.76	Standard	0.05
INL 587 (F5)	Box Structure	5,269.31	5,258.78	6.61	Standard	0.05
INL 551 (F5)	Box Structure	5,267.64	5,260.60	7.4	Standard	1.52

INLETS - 100yr

Label	Structure Type	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Flow (Total Out) (cfs)	Headloss Method	Headloss Coefficient (Standard)
INL 503L	Box Structure	5,274.80	5,267.00	8.76	Standard	1.32
INL 502 L	Box Structure	5,271.80	5,263.00	9.5	Standard	0.05
INL 578 (F5)	Box Structure	5,264.67	5,255.80	5.98	Standard	0.05
INL 579 (F5)	Box Structure	5,264.67	5,255.80	3.6	Standard	0.05
INL 583 (F5)	Box Structure	5,261.20	5,256.50	7.64	Standard	0.05
INL 580 (F5)	Box Structure	5,261.20	5,256.70	3.66	Standard	0.05
INL 577 (F5)	Box Structure	5,266.08	5,260.20	7.04	Standard	0.05
INL 573 (F5)	Box Structure	5,267.35	5,260.88	6.5	Standard	0.05
INL 561 (F5)	Box Structure	5,267.65	5,261.22	9.27	Standard	0.05
INL 550 (F5)	Box Structure	5,269.19	5,263.07	10.79	Standard	0.05
INL 592 (F5)	Box Structure	5,270.61	5,261.70	2.99	Standard	0.05
INL 590 (F5)	Box Structure	5,270.62	5,261.90	6.43	Standard	0.05
INL 585 (F5)	Box Structure	5,270.23	5,262.96	4.61	Standard	0.05
INL 1203.1 L	Box Structure	5,268.40	5,255.50	7.75	Standard	0.05
INL 1203.1 R	Box Structure	5,268.40	5,255.50	6.95	Standard	0.05
INL 597	Box Structure	5,267.80	5,253.80	8.57	Standard	0.05
INL 607B	Box Structure	5,267.80	5,253.80	5.8	Standard	0.05
INL 1206	Box Structure	5,262.16	5,247.74	153.88	Standard	0.05
INL 587 (F5)	Box Structure	5,269.31	5,258.78	22.23	Standard	0.05
INL 551 (F5)	Box Structure	5,267.64	5,260.60	24.05	Standard	1.52

Manholes (5-yr)						
Label	Structure Type	Elevation (Rim) (ft)	Elevation (Invert in 1) (ft)	Flow (Total Out) (cfs)	Headloss Method	Headloss Coefficient (Standard)
MH 502	Circular Structure	5,271.80	5,262.82	28.19	Standard	1.52
MH 500	Circular Structure	5,274.53	5,258.49	29.3	Standard	1.52
MH708	Box Structure	5,267.85	5,256.66	97.45	Standard	1.77
MH704	Box Structure	5,264.72	5,254.74	115.03	Standard	1.77
MH 608	Box Structure	5,258.29	5,249.72	66.04	Standard	1.52
MH-501	Circular Structure	5,274.10	5,259.30	27.74	Standard	0.1
MH-1203	Circular Structure	5,267.75	5,251.30	58.73	Standard	1.32
MH 595	Circular Structure	5,268.00	5,253.84	5.68	Standard	1.52
MH-1202	Circular Structure	5,272.52	5,254.40	34.04	Standard	0.05
MH 1203.1	Circular Structure	5,268.28	5,252.09	39.12	Standard	1.52
MH 1208	Circular Structure	5,267.16	5,250.09	58.67	Standard	0.01
MH 503	Circular Structure	5,274.80	5,267.56	4.5	Standard	1.52
MH 501.1	Circular Structure	5,273.67	5,259.79	27.8	Standard	0.1
MH 591 (F5)	Circular Structure	5,270.48	5,261.62	2.68	Standard	1.52
MH 586 (F5)	Circular Structure	5,270.10	5,262.87	1.33	Standard	1.52
MH 588 (F5)	Circular Structure	5,269.41	5,260.47	4.01	Standard	1.77
MH 572 (F5)	Circular Structure	5,267.30	5,261.01	2.03	Standard	1.52
MH 552 (F5)	Circular Structure	5,267.26	5,260.53	9.43	Standard	1.77
MH 553 (F5)	Circular Structure	5,266.77	5,258.64	9.43	Standard	1.32
MH 554 (F5)	Circular Structure	5,266.55	5,258.37	9.43	Standard	1.32
MH 555 (F5)	Circular Structure	5,266.16	5,257.94	9.43	Standard	0.1
MH 576 (F5)	Circular Structure	5,265.95	5,260.28	2.35	Standard	1.52
MH 556 (F5)	Circular Structure	5,265.70	5,257.54	9.43	Standard	0.1
MH 558 (F5)	Circular Structure	5,265.46	5,258.45	11.78	Standard	1.52
MH 559 (F5)	Circular Structure	5,264.56	5,255.79	15.09	Standard	1.52
MH 581 (F5)	Circular Structure	5,261.08	5,256.40	3.76	Standard	1.52
MH-701.1	Box Structure	5,262.20	5,250.60	120.49	Standard	1.77

Manholes (100-yr)

Label	Structure Type	Elevation (Rim) (ft)	Elevation (Invert in 1) (ft)	Flow (Total Out) (cfs)	Headloss Method	Headloss Coefficient (Standard)
MH 502	Circular Structure	5,271.80	5,262.82	79.62	Standard	1.52
MH 500	Circular Structure	5,274.53	5,258.49	102.58	Standard	1.52
MH708	Box Structure	5,267.85	5,256.66	227.99	Standard	1.77
MH704	Box Structure	5,264.72	5,254.74	282.11	Standard	1.77
MH 608	Box Structure	5,258.29	5,249.72	165.91	Standard	1.52
MH-501	Circular Structure	5,274.10	5,259.30	79.62	Standard	0.1
MH-1203	Circular Structure	5,267.75	5,251.30	146.64	Standard	1.32
MH 595	Circular Structure	5,268.00	5,253.84	14.37	Standard	1.52
MH-1202	Circular Structure	5,272.52	5,254.40	117.71	Standard	0.05
MH 1203.1	Circular Structure	5,268.28	5,252.09	132.29	Standard	1.52
MH 1208	Circular Structure	5,267.16	5,250.09	146.59	Standard	0.01
MH 503	Circular Structure	5,274.80	5,267.56	11.94	Standard	1.52
MH 501.1	Circular Structure	5,273.67	5,259.79	79.62	Standard	0.1
MH 591 (F5)	Circular Structure	5,270.48	5,261.62	9.42	Standard	1.52
MH 586 (F5)	Circular Structure	5,270.10	5,262.87	4.61	Standard	1.52
MH 588 (F5)	Circular Structure	5,269.41	5,260.47	14.03	Standard	1.77
MH 572 (F5)	Circular Structure	5,267.30	5,261.01	6.5	Standard	1.52
MH 552 (F5)	Circular Structure	5,267.26	5,260.53	30.55	Standard	1.77
MH 553 (F5)	Circular Structure	5,266.77	5,258.64	30.55	Standard	1.32
MH 554 (F5)	Circular Structure	5,266.55	5,258.37	30.55	Standard	1.32
MH 555 (F5)	Circular Structure	5,266.16	5,257.94	30.55	Standard	0.1
MH 576 (F5)	Circular Structure	5,265.95	5,260.28	7.04	Standard	1.52
MH 556 (F5)	Circular Structure	5,265.70	5,257.54	30.55	Standard	0.1
MH 558 (F5)	Circular Structure	5,265.46	5,258.45	37.59	Standard	1.52
MH 559 (F5)	Circular Structure	5,264.56	5,255.79	47.17	Standard	1.52
MH 581 (F5)	Circular Structure	5,261.08	5,256.40	11.3	Standard	1.52
MH-701.1	Box Structure	5,262.20	5,250.60	298.47	Standard	1.77

Pipes - 5 yr																		
Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Section Type	Manning's n	Flow (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Velocity (ft/s)	Froude Number (Normal)	Capacity (Full Flow) (cfs)	Material
560 (F5)	INL 550 (F5)	INL 551 (F5)	5,263.27	5,261.00	204	0.011	24	Circle	0.013	3.14	5,263.88	5,262.34	5,264.11	5,262.37	5.26	1.573	23.83	Concrete
561 (F5)	INL 551 (F5)	MH 552 (F5)	5,260.80	5,260.53	53.3	0.005	24	Circle	0.013	7.4	5,261.77	5,261.49	5,262.14	5,261.88	4.99	1.022	16	Concrete
562 (F5)	MH 552 (F5)	MH 553 (F5)	5,258.93	5,258.64	57.3	0.005	42	Circle	0.013	9.43	5,259.86	5,259.90	5,260.19	5,260.05	5.15	1.165	71.54	Concrete
563 (F5)	MH 553 (F5)	MH 554 (F5)	5,258.54	5,258.37	33.8	0.005	42	Circle	0.013	9.43	5,259.47	5,259.53	5,259.80	5,259.71	5.14	1.163	71.38	Concrete
564 (F5)	MH 554 (F5)	MH 555 (F5)	5,258.17	5,257.94	46	0.005	42	Circle	0.013	9.43	5,259.10	5,258.80	5,259.43	5,259.21	5.13	1.159	71.15	Concrete
565 (F5)	MH 555 (F5)	MH 556 (F5)	5,257.83	5,257.54	58.9	0.005	42	Circle	0.013	9.43	5,258.76	5,258.40	5,259.09	5,258.81	5.1	1.15	70.62	Concrete
566 (F5)	MH 556 (F5)	MH 558 (F5)	5,256.94	5,256.64	60.5	0.005	48	Circle	0.013	9.43	5,257.91	5,257.97	5,258.16	5,258.07	5.04	1.17	101.17	Concrete
567 (F5)	MH 558 (F5)	MH 559 (F5)	5,256.44	5,255.79	130.4	0.005	48	Circle	0.013	11.78	5,257.47	5,257.58	5,257.80	5,257.65	5.39	1.18	101.43	Concrete
568 (F5)	MH 559 (F5)	MH704	5,255.29	5,254.74	60.7	0.009	54	Circle	0.013	15.09	5,257.49	5,257.50	5,257.55	5,257.54	7.07	1.605	187.24	Concrete
650 (F5)	INL 561 (F5)	INL 551 (F5)	5,261.42	5,261.00	41.8	0.01	24	Circle	0.013	3.17	5,262.31	5,262.34	5,262.40	5,262.37	5.08	1.494	22.62	Concrete
651 (F5)	INL 573 (F5)	MH 572 (F5)	5,261.08	5,261.01	13.2	0.005	18	Circle	0.013	2.03	5,261.65	5,261.65	5,261.81	5,261.77	3.58	1.005	7.43	Concrete
652 (F5)	MH 572 (F5)	MH 552 (F5)	5,260.81	5,260.29	104.8	0.005	18	Circle	0.013	2.03	5,261.35	5,260.82	5,261.54	5,261.02	3.58	1.005	7.43	Concrete
653 (F5)	INL 577 (F5)	MH 576 (F5)	5,260.37	5,260.28	9.2	0.01	18	Circle	0.013	2.35	5,260.95	5,260.79	5,261.17	5,261.10	4.76	1.413	10.4	Concrete
654 (F5)	MH 576 (F5)	MH 558 (F5)	5,258.78	5,258.45	65.9	0.005	36	Circle	0.013	2.35	5,259.26	5,258.91	5,259.42	5,259.09	3.47	1.092	47.16	Concrete
660 (F5)	INL 587 (F5)	MH708	5,259.17	5,258.00	169.6	0.007	54	Circle	0.013	6.61	5,260.33	5,260.36	5,260.39	5,260.37	5.03	1.361	163.53	Concrete
662 (F5)	MH 586 (F5)	MH 588 (F5)	5,260.93	5,260.47	92.3	0.005	42	Circle	0.013	1.33	5,261.27	5,260.80	5,261.39	5,260.93	2.87	1.062	71.02	Concrete
663 (F5)	MH 588 (F5)	INL 587 (F5)	5,259.58	5,259.39	26.9	0.007	54	Circle	0.013	4.01	5,260.31	5,260.33	5,260.40	5,260.38	4.36	1.338	165.26	Concrete
664 (F5)	INL 585 (F5)	MH 586 (F5)	5,262.96	5,262.87	9.1	0.01	24	Circle	0.013	1.33	5,263.36	5,263.21	5,263.50	5,263.43	3.93	1.449	22.54	Concrete
665 (F5)	MH 591 (F5)	MH 588 (F5)	5,261.18	5,260.58	86	0.007	42	Circle	0.013	2.68	5,261.67	5,261.01	5,261.84	5,261.25	3.98	1.295	84.03	Concrete
667 (F5)	INL 592 (F5)	MH 591 (F5)	5,261.73	5,261.62	9.2	0.012	36	Circle	0.013	1.09	5,262.05	5,261.88	5,262.16	5,262.08	3.74	1.581	72.95	Concrete
668 (F5)	INL 590 (F5)	MH 591 (F5)	5,261.91	5,261.62	29.2	0.01	36	Circle	0.013	1.59	5,262.30	5,261.94	5,262.44	5,262.18	3.94	1.487	66.72	Concrete
669 (F5)	INL 579 (F5)	MH 559 (F5)	5,255.89	5,255.79	10	0.01	36	Circle	0.013	1.32	5,257.58	5,257.58	5,257.58	5,257.58	3.72	1.469	66.58	Concrete
670 (F5)	INL 578 (F5)	MH 559 (F5)	5,256.08	5,255.79	28.5	0.01	36	Circle	0.013	1.99	5,257.58	5,257.58	5,257.58	5,257.58	4.21	1.505	66.74	Concrete
671 (F5)	INL 580 (F5)	MH 581 (F5)	5,256.70	5,256.40	29.2	0.01	18	Circle	0.013	1.32	5,257.13	5,256.76	5,257.28	5,257.02	4.1	1.44	10.65	Concrete
672 (F5)	INL 583 (F5)	MH 581 (F5)	5,256.50	5,256.41	9.2	0.01	18	Circle	0.013	2.44	5,257.09	5,256.93	5,257.31	5,257.25	4.81	1.414	10.41	Concrete
673 (F5)	MH 581 (F5)	MH-701.1	5,255.80	5,255.20	61.6	0.01	24	Circle	0.013	3.76	5,256.75	5,256.48	5,256.78	5,256.73	1.2	1	22.32	Concrete
STM 501	MH-501	MH 500	5,259.10	5,258.49	61	0.01	48	Circle	0.013	27.74	5,260.66	5,260.32	5,261.24	5,260.70	8.84	1.682	143.64	Concrete
STM 501.1	MH 501.1	MH-501	5,259.59	5,259.30	57.6	0.005	48	Circle	0.013	27.8	5,261.15	5,260.73	5,261.73	5,261.47	6.91	1.188	101.92	Concrete
STM 502	MH 502	MH 501.1	5,261.82	5,259.79	406	0.005	48	Circle	0.013	28.19	5,263.39	5,261.23	5,263.98	5,261.97	6.92	1.184	101.57	Concrete
STM 502 B	INL 502 L	MH 502	5,263.56	5,263.32	24.2	0.01	24	Circle	0.013	3.33	5,264.20	5,264.29	5,264.43	5,264.36	5.14	1.491	22.55	Concrete
STM 503	MH 503	MH 502	5,266.86	5,262.82	354.4	0.011	36	Circle	0.013	4.5	5,267.52	5,264.29	5,267.76	5,264.31	5.63	1.668	71.21	Concrete
STM 503 B	INL 503 L	MH 503	5,267.80	5,267.56	12.4	0.019	18	Circle	0.013	3.14	5,268.47	5,268.08	5,268.73	5,268.60	6.58	1.983	14.59	Concrete
STM 607A	INL 597	MH 595	5,254.00	5,253.84	15.5	0.01	18	Circle	0.013	3.75	5,254.74	5,254.83	5,255.03	5,254.98	5.51	1.429	10.67	Concrete
STM 1201	MH 500	MH-1202	5,257.80	5,254.40	258.5	0.013	48	Circle	0.013	29.3	5,259.40	5,255.54	5,260.01	5,257.07	9.9	1.929	164.74	Concrete
STM 1203	MH 1203.1	MH-1203	5,251.89	5,251.46	43.2	0.01	48	Circle	0.013	39.12	5,254.80	5,254.82	5,255.04	5,255.01	9.71	1.671	143.3	Concrete
STM 1203.1	MH-1202	MH 1203.1	5,254.20	5,252.09	210.8	0.01	48	Circle	0.013	34.04	5,255.94	5,255.17	5,256.59	5,255.34	9.36	1.68	143.7	Concrete
STM 1204	MH 595	MH-1203	5,251.84	5,251.30	87	0.006	42	Circle	0.013	5.68	5,254.82	5,254.82	5,254.83	5,254.83	4.78	1.268	79.26	Concrete
STM 1204 A	MH 595	INL 607B	5,253.84	5,254.00	16.5	-0.01	18	Circle	0.013	1.93	5,254.83	5,254.83	5,254.88	5,254.87	4.48	1.407	10.35	Concrete
STM 1205	MH-1203	MH 1208	5,251.26	5,250.09	117	0.01	48	Circle	0.013	58.73	5,253.57	5,251.92	5,254.52	5,253.63	10.86	1.641	143.64	Concrete
STM 1208	MH 608	O-18	5,247.22	5,245.97	99.8	0.013	54	Circle	0.013	66.04	5,249.59	5,247.75	5,250.53	5,249.72	12.1	1.905	220.06	Concrete
STM 1208	MH 1208	INL 1206	5,249.58	5,248.51	107.3	0.01	54	Circle	0.013	58.67	5,251.80	5,250.26	5,252.68	5,251.90	10.78	1.701	196.36	Concrete
STM 1209	MH 608	INL 1206	5,247.42	5,248.31	89.4	-0.01	54	Circle	0.013	61.76	5,250.60	5,251.02	5,251.50	5,251.34	10.93	1.696	196.2	Concrete
STM-1203.1 A	MH 1203.1	INL 1203.1 L	5,255.61	5,255.70	8.9	-0.01	18	Circle	0.013	2.76	5,256.33	5,256.16	5,256.57	5,256.50	5.03	1.431	10.56	Concrete
STM-1203.1 B	MH 1203.1	INL 1203.1 R	5,255.61	5,255.86	24.7	-0.01	18	Circle	0.013	2.44	5,256.45	5,256.11	5,256.67	5,256.46	4.86	1.434	10.56	Concrete

Text is a bit hard to read.
Please print on landscape orientation.

Pipes - 100yr

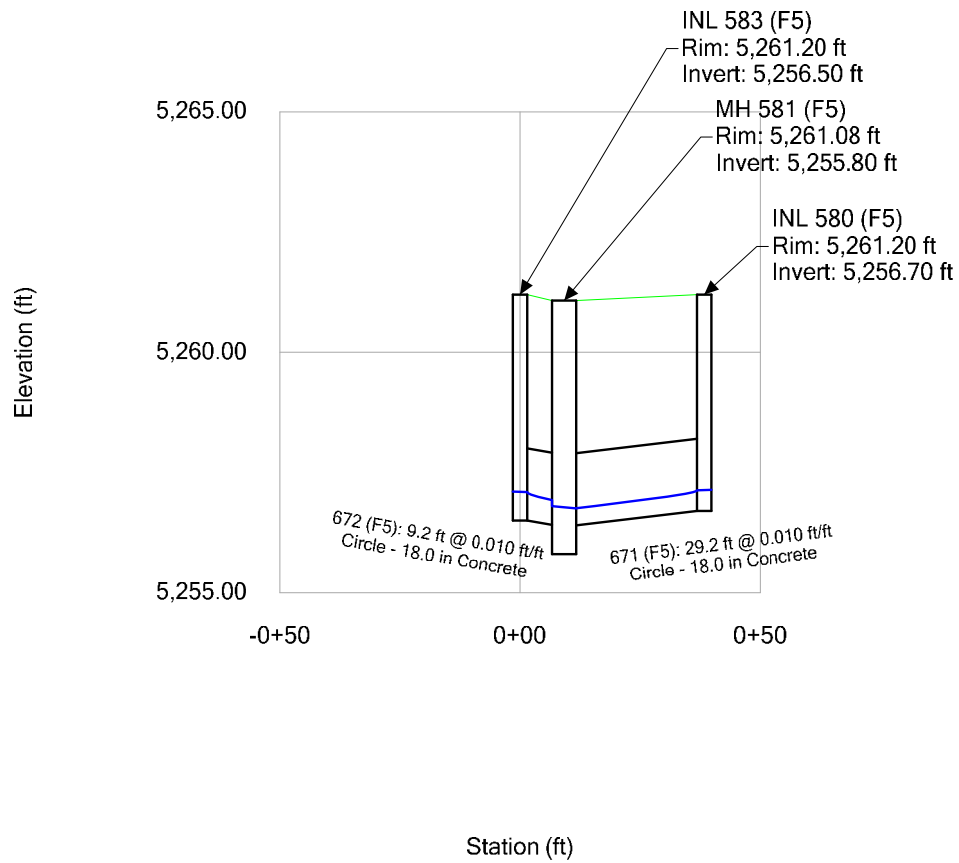
Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Section Type	Manning's n	Flow (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Velocity (ft/s)	Froude Number (Normal)	Capacity (Full Flow) (cfs)	Material
560 (F5)	INL 550 (F5)	INL 551 (F5)	5,263.27	5,261.00	204	0.011	24	Circle	0.013	10.79	5,267.26	5,266.80	5,267.45	5,266.98	3.43	1.526	23.83	Concrete
561 (F5)	INL 551 (F5)	MH 552 (F5)	5,260.80	5,260.53	53.3	0.005	24	Circle	0.013	24.05	5,265.42	5,264.81	5,266.33	5,265.72	7.66	0.954	16	Concrete
562 (F5)	MH 552 (F5)	MH 553 (F5)	5,258.93	5,258.64	57.3	0.005	42	Circle	0.013	30.55	5,264.54	5,264.48	5,264.69	5,264.64	3.18	1.137	71.54	Concrete
563 (F5)	MH 553 (F5)	MH 554 (F5)	5,258.54	5,258.37	33.8	0.005	42	Circle	0.013	30.55	5,264.28	5,264.24	5,264.43	5,264.40	3.18	1.134	71.38	Concrete
564 (F5)	MH 554 (F5)	MH 555 (F5)	5,258.17	5,257.94	46	0.005	42	Circle	0.013	30.55	5,264.04	5,264.00	5,264.19	5,264.15	3.18	1.13	71.15	Concrete
565 (F5)	MH 555 (F5)	MH 556 (F5)	5,257.83	5,257.54	58.9	0.005	42	Circle	0.013	30.55	5,263.98	5,263.92	5,264.14	5,264.08	3.18	1.121	70.62	Concrete
566 (F5)	MH 556 (F5)	MH 558 (F5)	5,256.94	5,256.64	60.5	0.005	48	Circle	0.013	30.55	5,263.92	5,263.89	5,264.01	5,263.98	2.43	1.176	101.17	Concrete
567 (F5)	MH 558 (F5)	MH 559 (F5)	5,256.44	5,255.79	130.4	0.005	48	Circle	0.013	37.59	5,263.68	5,263.59	5,263.82	5,263.73	2.99	1.167	101.43	Concrete
568 (F5)	MH 559 (F5)	MH704	5,255.29	5,254.74	60.7	0.009	54	Circle	0.013	47.17	5,263.38	5,263.35	5,263.52	5,263.48	2.97	1.629	187.24	Concrete
650 (F5)	INL 561 (F5)	INL 551 (F5)	5,261.42	5,261.00	41.8	0.01	24	Circle	0.013	9.27	5,266.87	5,266.80	5,267.00	5,266.93	2.95	1.461	22.62	Concrete
651 (F5)	INL 573 (F5)	MH 572 (F5)	5,261.08	5,261.01	13.2	0.005	18	Circle	0.013	6.5	5,265.58	5,265.53	5,265.79	5,265.74	3.68	0.826	7.43	Concrete
652 (F5)	MH 572 (F5)	MH 552 (F5)	5,260.81	5,260.29	104.8	0.005	18	Circle	0.013	6.5	5,265.21	5,264.81	5,265.42	5,265.02	3.68	0.826	7.43	Concrete
653 (F5)	INL 577 (F5)	MH 576 (F5)	5,260.37	5,260.28	9.2	0.01	18	Circle	0.013	7.04	5,263.96	5,263.92	5,264.21	5,264.17	3.98	1.28	10.4	Concrete
654 (F5)	MH 576 (F5)	MH 558 (F5)	5,258.78	5,258.45	65.9	0.005	36	Circle	0.013	7.04	5,263.90	5,263.89	5,263.91	5,263.90	1	1.132	47.16	Concrete
660 (F5)	INL 587 (F5)	MH708	5,259.17	5,258.00	169.6	0.007	54	Circle	0.013	22.23	5,266.77	5,266.74	5,266.80	5,266.77	1.4	1.422	163.53	Concrete
662 (F5)	MH 586 (F5)	MH 588 (F5)	5,260.93	5,260.47	92.3	0.005	42	Circle	0.013	4.61	5,266.79	5,266.79	5,266.80	5,266.79	0.48	1.133	71.02	Concrete
663 (F5)	MH 588 (F5)	INL 587 (F5)	5,259.58	5,259.39	26.9	0.007	54	Circle	0.013	14.03	5,266.77	5,266.77	5,266.78	5,266.78	0.88	1.419	165.26	Concrete
664 (F5)	INL 585 (F5)	MH 586 (F5)	5,262.96	5,262.87	9.1	0.01	24	Circle	0.013	4.61	5,266.80	5,266.80	5,266.84	5,266.83	1.47	1.493	22.54	Concrete
665 (F5)	MH 591 (F5)	MH 588 (F5)	5,261.18	5,260.58	86	0.007	42	Circle	0.013	9.42	5,266.80	5,266.79	5,266.81	5,266.81	0.98	1.364	84.03	Concrete
667 (F5)	INL 592 (F5)	MH 591 (F5)	5,261.73	5,261.62	9.2	0.012	36	Circle	0.013	2.99	5,266.82	5,266.82	5,266.82	5,266.82	0.42	1.674	72.95	Concrete
668 (F5)	INL 590 (F5)	MH 591 (F5)	5,261.91	5,261.62	29.2	0.01	36	Circle	0.013	6.43	5,266.82	5,266.82	5,266.84	5,266.83	0.91	1.585	66.72	Concrete
669 (F5)	INL 579 (F5)	MH 559 (F5)	5,255.89	5,255.79	10	0.01	36	Circle	0.013	3.6	5,263.59	5,263.59	5,263.59	5,263.59	0.51	1.548	66.58	Concrete
670 (F5)	INL 578 (F5)	MH 559 (F5)	5,256.08	5,255.79	28.5	0.01	36	Circle	0.013	5.98	5,263.59	5,263.59	5,263.60	5,263.60	0.85	1.582	66.74	Concrete
671 (F5)	INL 580 (F5)	MH 581 (F5)	5,256.70	5,256.40	29.2	0.01	18	Circle	0.013	3.66	5,259.92	5,259.88	5,259.98	5,259.95	2.07	1.404	10.65	Concrete
672 (F5)	INL 583 (F5)	MH 581 (F5)	5,256.50	5,256.41	9.2	0.01	18	Circle	0.013	7.64	5,259.93	5,259.88	5,260.22	5,260.17	4.32	1.251	10.41	Concrete
673 (F5)	MH 581 (F5)	MH-701.1	5,255.80	5,255.20	61.6	0.01	24	Circle	0.013	11.3	5,259.57	5,259.42	5,259.78	5,259.62	3.6	0.951	22.32	Concrete
STM 501	MH-501	MH 500	5,259.10	5,258.49	61	0.01	48	Circle	0.013	79.62	5,267.00	5,266.81	5,267.62	5,267.43	6.34	1.585	143.64	Concrete
STM 501.1	MH 501.1	MH-501	5,259.59	5,259.30	57.6	0.005	48	Circle	0.013	79.62	5,267.24	5,267.06	5,267.86	5,267.68	6.34	1.032	101.92	Concrete
STM 502	MH 502	MH 501.1	5,261.82	5,259.79	406	0.005	48	Circle	0.013	79.62	5,268.55	5,267.30	5,269.17	5,267.92	6.34	1.027	101.57	Concrete
STM 502 B	INL 502 L	MH 502	5,263.56	5,263.32	24.2	0.01	24	Circle	0.013	9.5	5,269.54	5,269.50	5,269.68	5,269.64	3.02	1.453	22.55	Concrete
STM 503	MH 503	MH 502	5,266.86	5,262.82	354.4	0.011	36	Circle	0.013	11.94	5,269.60	5,269.50	5,269.65	5,269.54	7.48	1.711	71.21	Concrete
STM 503 B	INL 503 L	MH 503	5,267.80	5,267.56	12.4	0.019	18	Circle	0.013	8.76	5,269.76	5,269.68	5,270.15	5,270.06	4.96	1.843	14.59	Concrete
STM 607A	INL 597	MH 595	5,254.00	5,253.84	15.5	0.01	18	Circle	0.013	8.57	5,259.62	5,259.52	5,259.99	5,259.89	4.85	1.239	10.67	Concrete
STM 1201	MH 500	MH-1202	5,257.80	5,254.40	258.5	0.013	48	Circle	0.013	102.58	5,265.24	5,263.92	5,266.27	5,264.95	8.16	1.779	164.74	Concrete
STM 1203	MH 1203.1	MH-1203	5,251.89	5,251.46	43.2	0.01	48	Circle	0.013	132.29	5,259.82	5,259.45	5,261.54	5,261.17	10.53	1.321	143.3	Concrete
STM 1203.1	MH-1202	MH 1203.1	5,254.20	5,252.09	210.8	0.01	48	Circle	0.013	117.71	5,263.85	5,262.43	5,265.21	5,263.80	9.37	1.425	143.7	Concrete
STM 1204	MH 595	MH-1203	5,251.84	5,251.30	87	0.006	42	Circle	0.013	14.37	5,259.47	5,259.45	5,259.50	5,259.48	1.49	1.296	79.26	Concrete
STM 1204 A	MH 595	INL 607B	5,253.84	5,254.00	16.5	-0.01	18	Circle	0.013	5.8	5,259.57	5,259.52	5,259.74	5,259.69	3.28	1.324	10.35	Concrete
STM 1205	MH-1203	MH 1208	5,251.26	5,250.09	117	0.01	48	Circle	0.013	146.64	5,256.66	5,255.44	5,258.77	5,257.55	11.67	1.171	143.64	Concrete
STM 1208	MH 608	O-18	5,247.22	5,245.97	99.8	0.013	54	Circle	0.013	165.91	5,250.98	5,249.09	5,253.10	5,252.18	15.2	1.681	220.06	Concrete
STM 1208	MH 1208	INL 1206	5,249.58	5,248.51	107.3	0.01	54	Circle	0.013	146.59	5,255.42	5,254.83	5,256.74	5,256.15	9.22	1.506	196.36	Concrete
STM 1209	MH 608	INL 1206	5,247.42	5,248.31	89.4	-0.01	54	Circle	0.013	153.88	5,254.75	5,254.21	5,256.21	5,255.66	9.68	1.477	196.2	Concrete
STM-1203.1 A	MH 1203.1	INL 1203.1 L	5,255.61	5,255.70	8.9	-0.01	18	Circle	0.013	7.75	5,262.48	5,262.43	5,262.78	5,262.73	4.39	1.27	10.56	Concrete
STM-1203.1 B	MH 1203.1	INL 1203.1 R	5,255.61	5,255.86	24.7	-0.01	18	Circle	0.013	6.95	5,262.54	5,262.43	5,262.78	5,262.67	3.93	1.308	10.56	Concrete

Text is a bit hard to read. Please print on landscape orientation, consider a larger sheet size

5yr

Profile Report

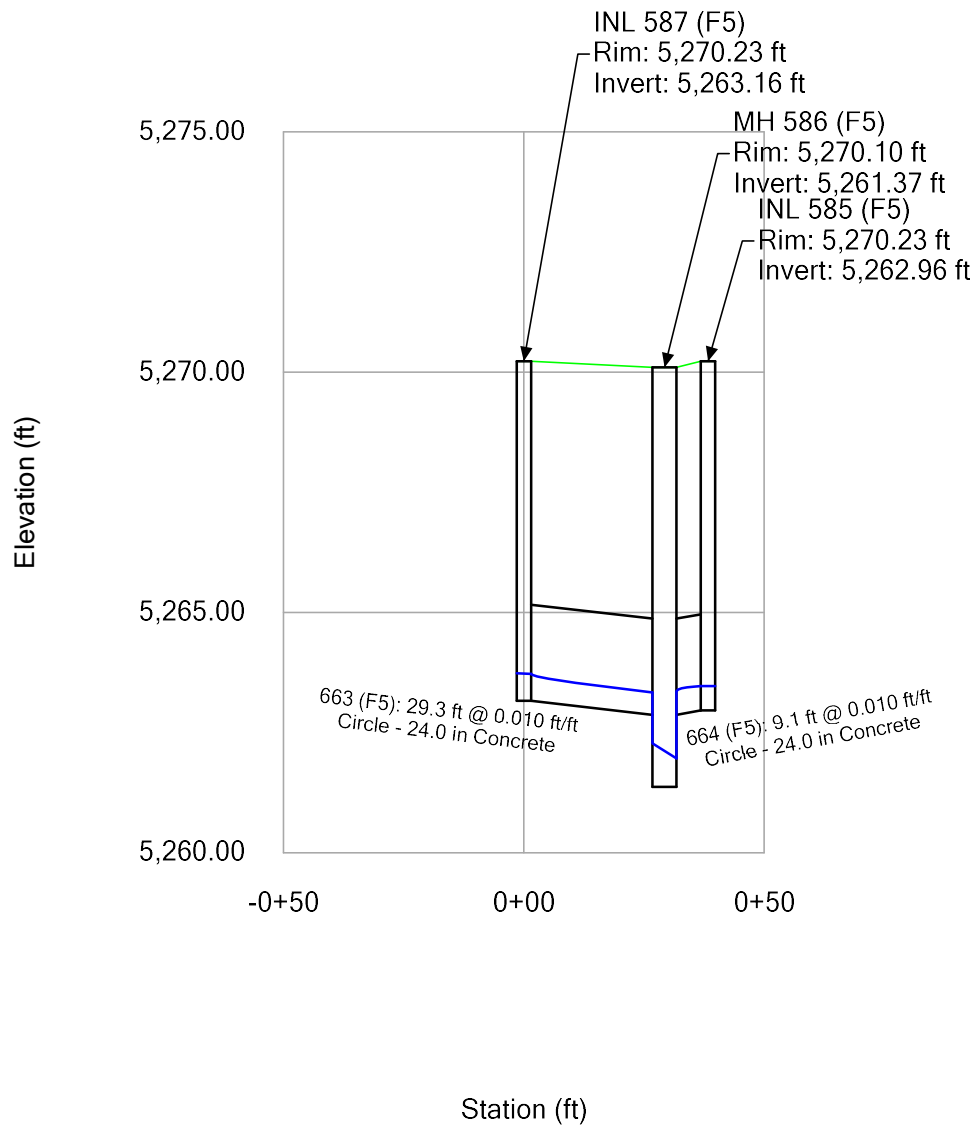
Engineering Profile - PH4 Lateral A5/A6 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



5 yr

Profile Report

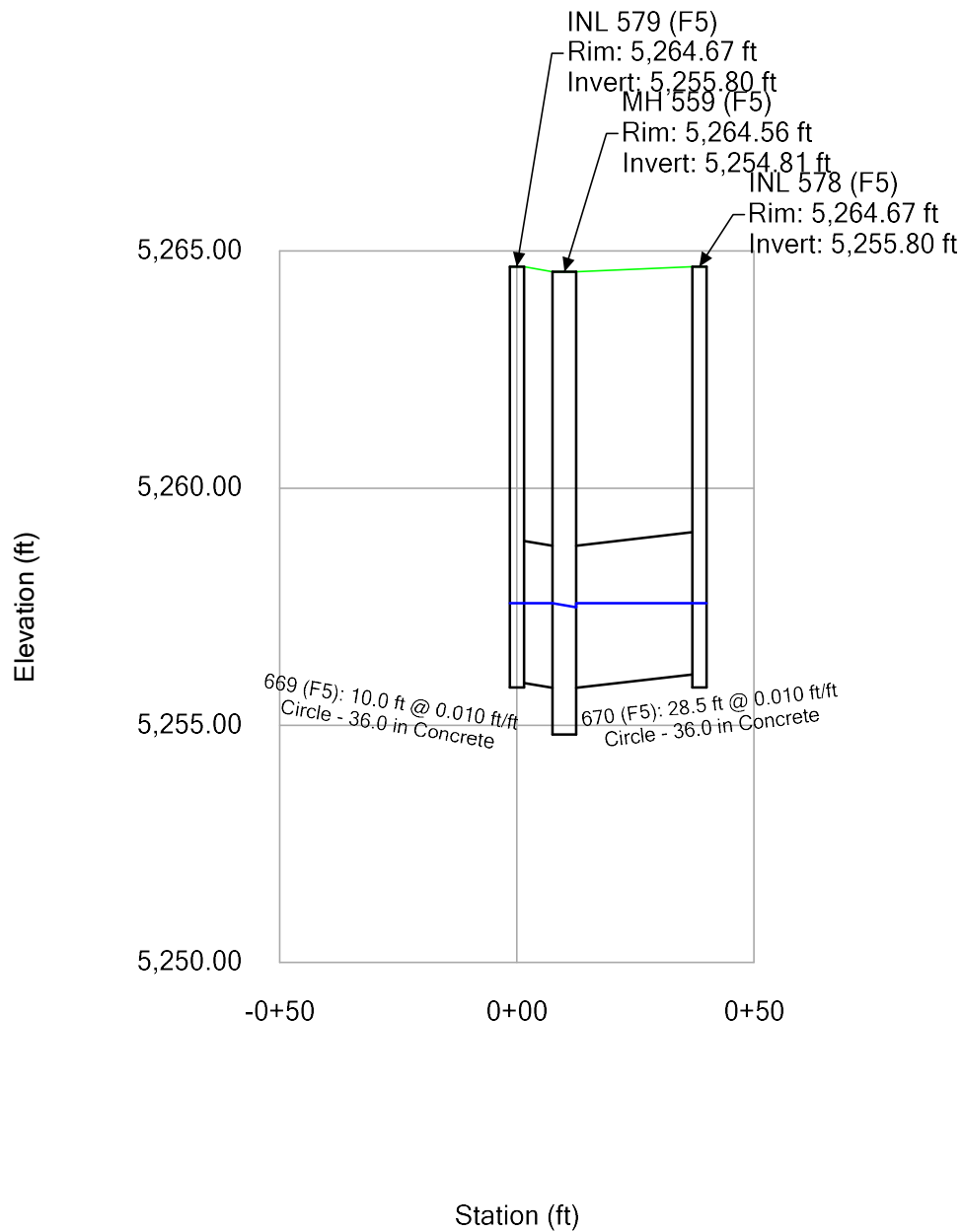
Engineering Profile - PH4 Lateral A9/A10 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



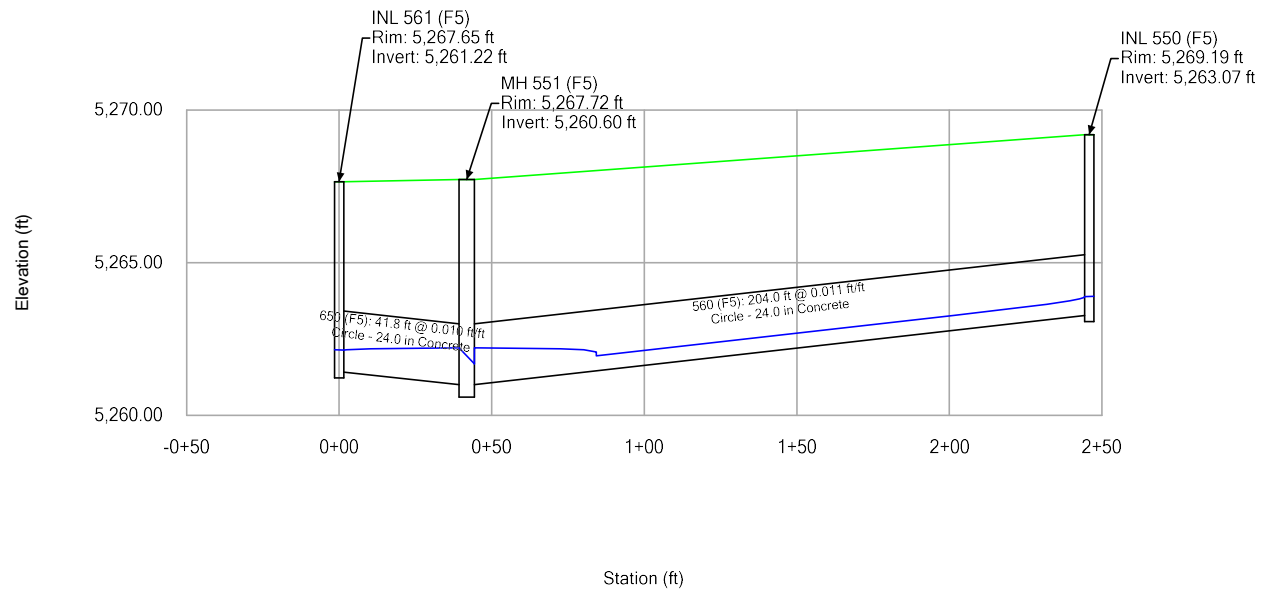
5 yr

Profile Report

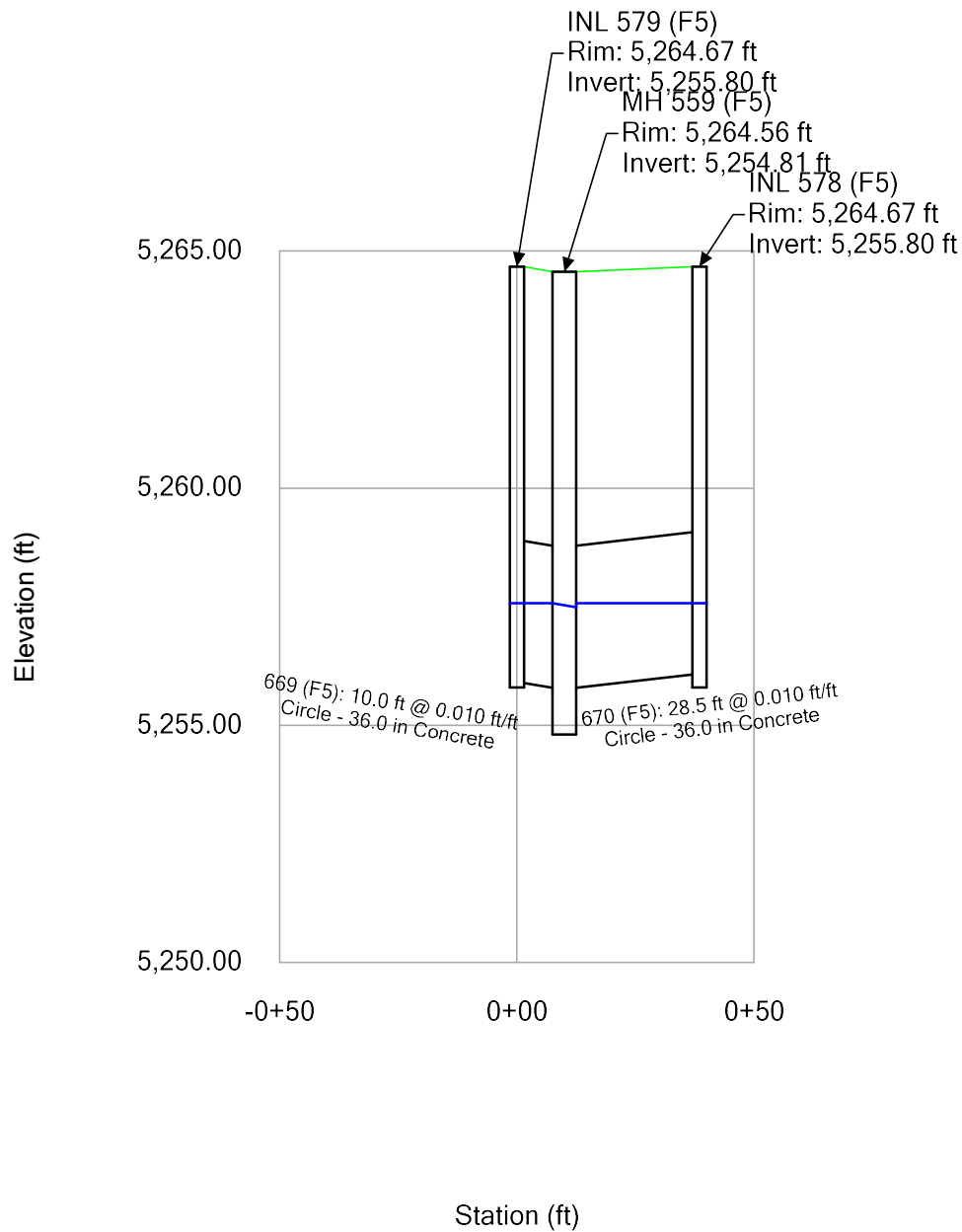
Engineering Profile - PH4 Lateral A11/A7 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



5 yr
Profile Report
Engineering Profile - PH4 A13/A14 (19002220-Hightower Spine
Infrastructure WHITE PAPER COEF.stsw)



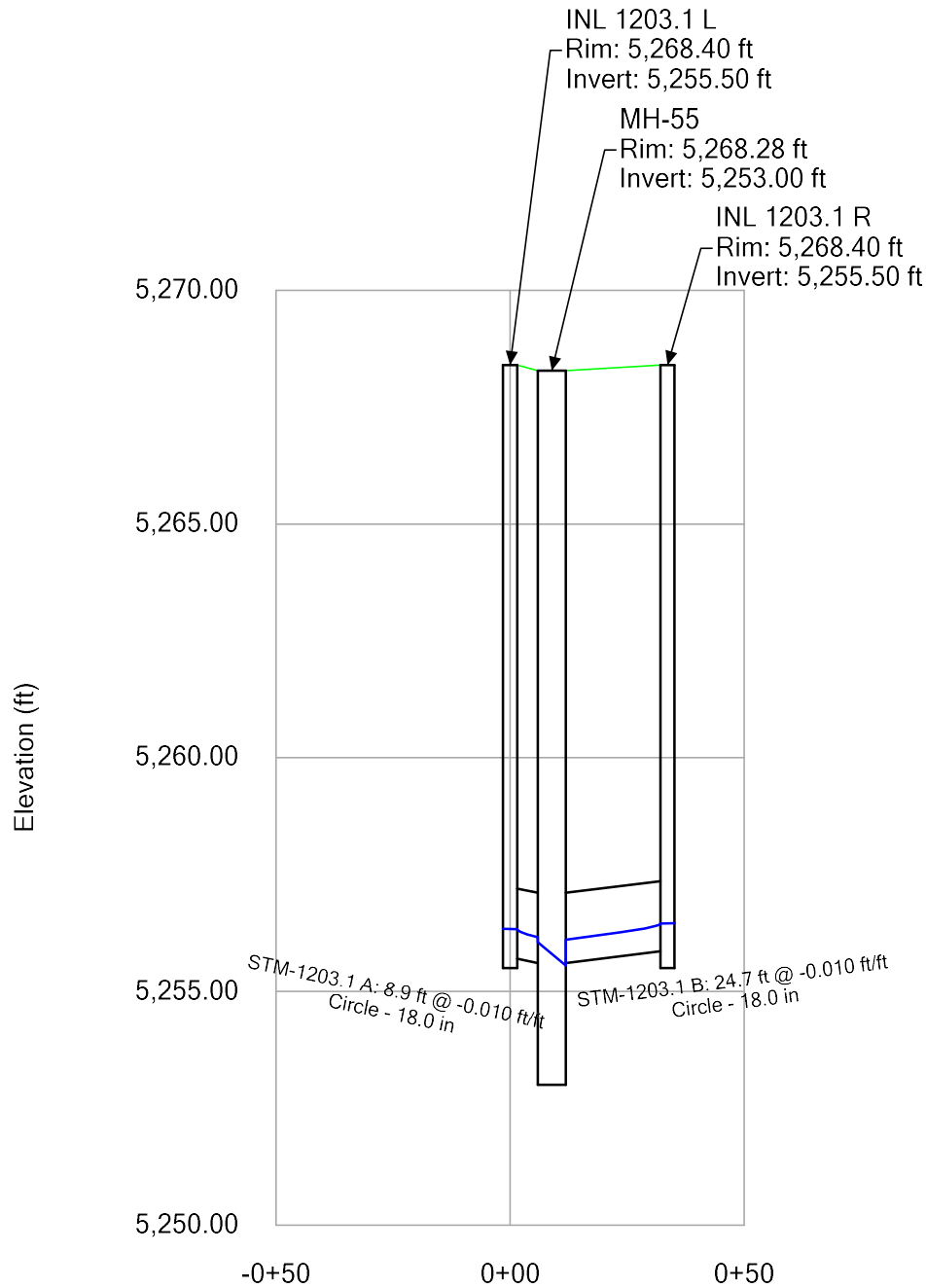
5 yr
Profile Report
Engineering Profile - PH4 Lateral A11/A7 (19002220-Hightower Spine
Infrastructure WHITE PAPER COEF.stsw)



5 yr

Profile Report

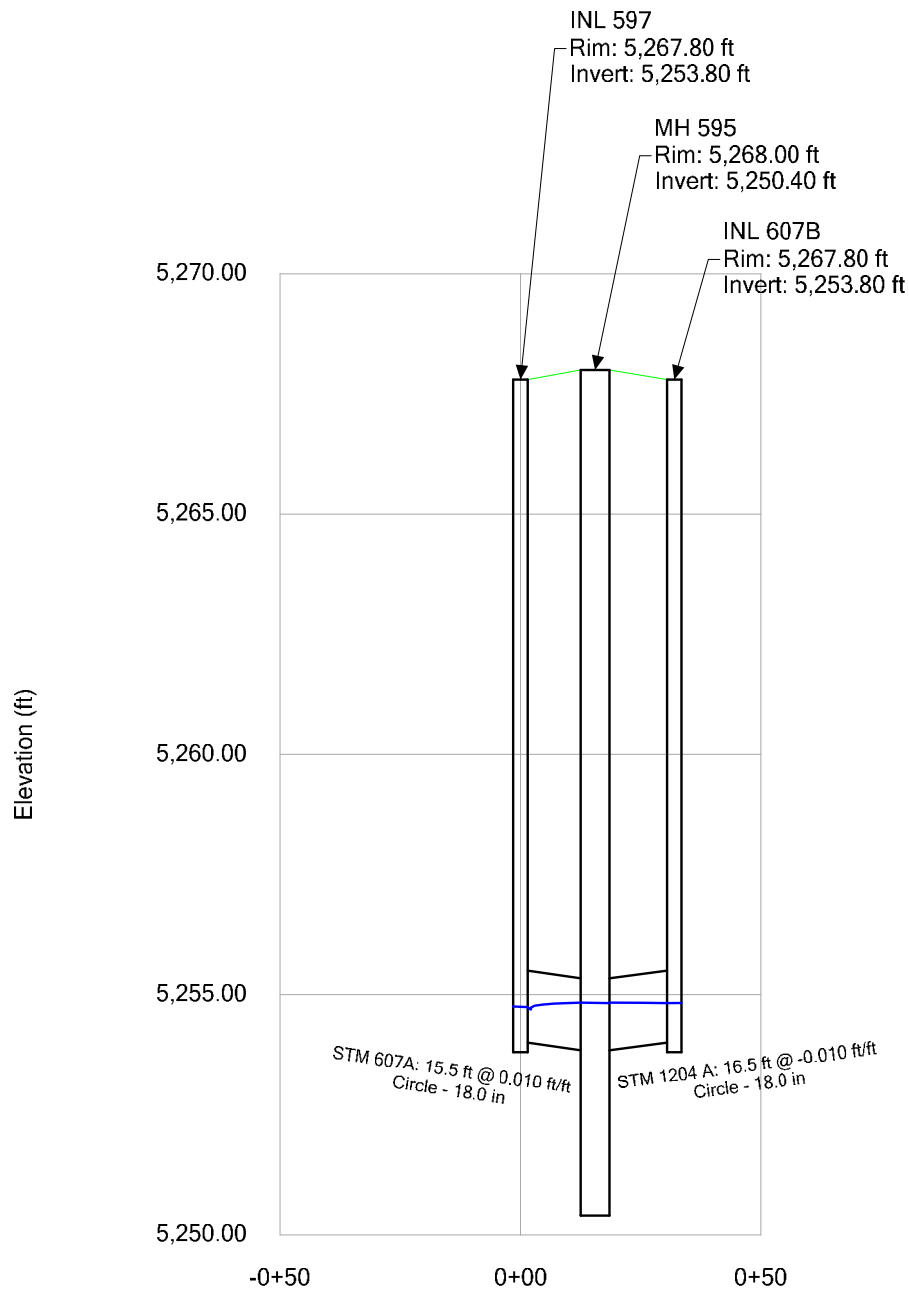
Engineering Profile - Lateral 1203.1 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



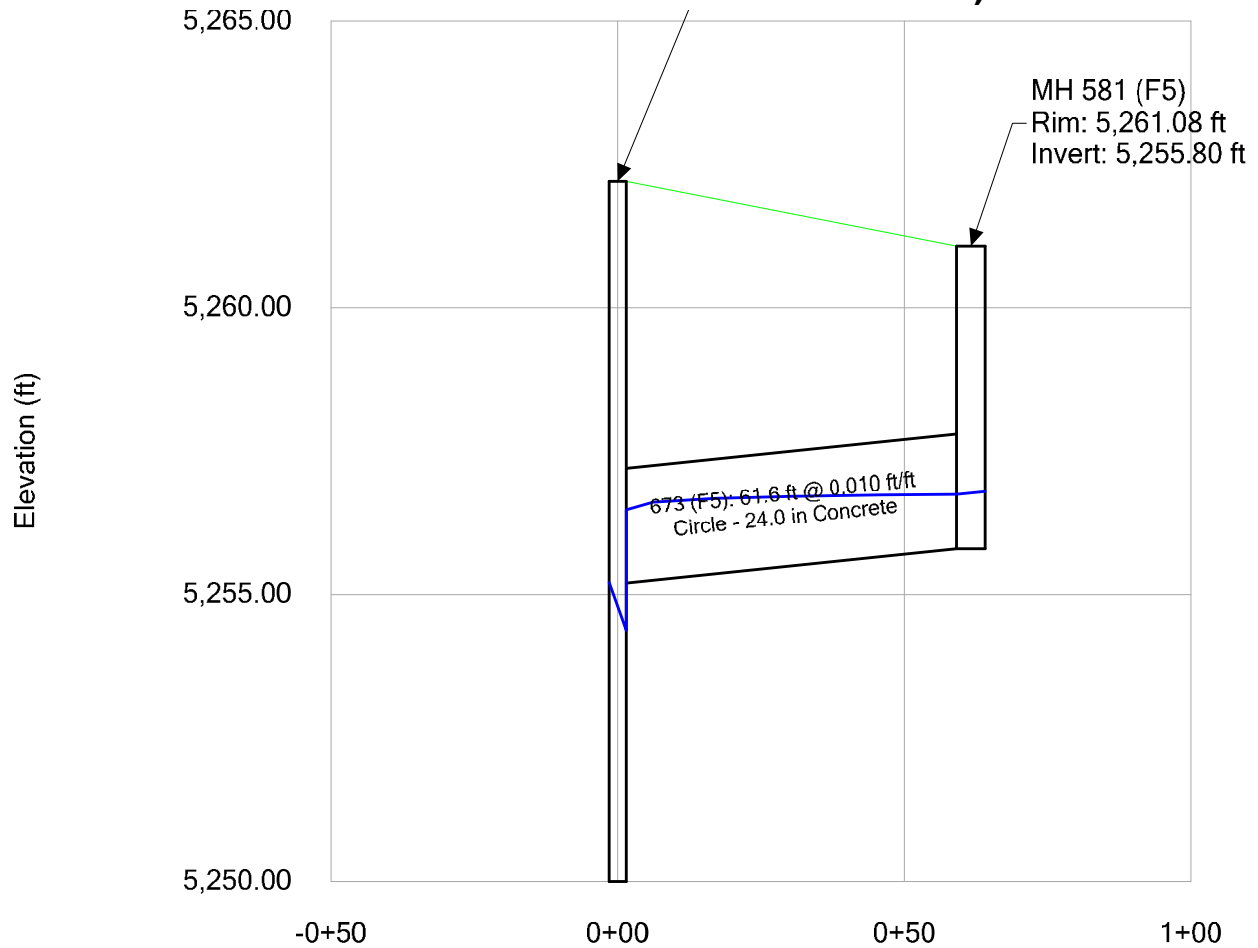
5 yr

Profile Report

Engineering Profile - Lateral 1204 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



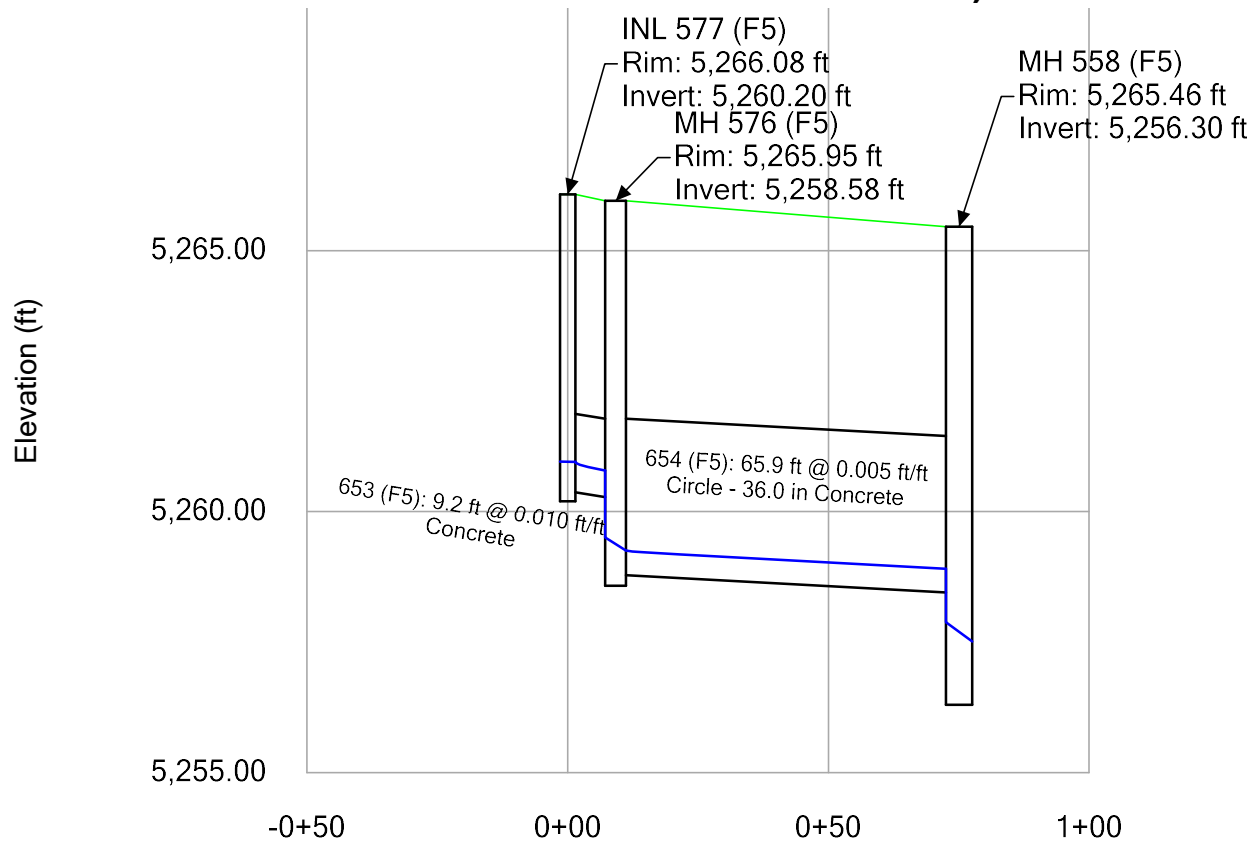
Profile Report **Engineering Profile - PH4 RD 50.1 (19002220-Hightower Spine** **Infrastructure WHITE PAPER COEF.stsw)**



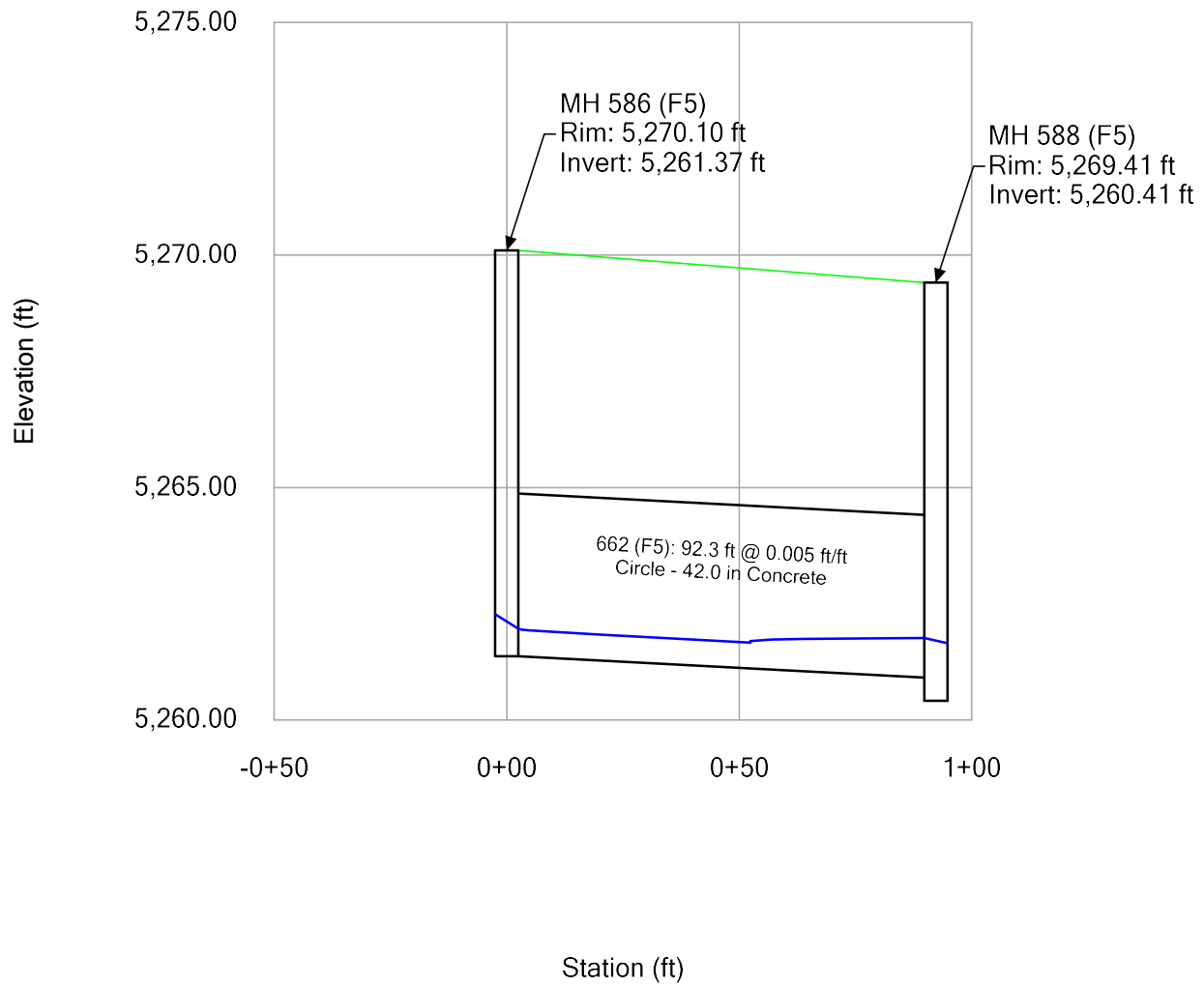
5 yr

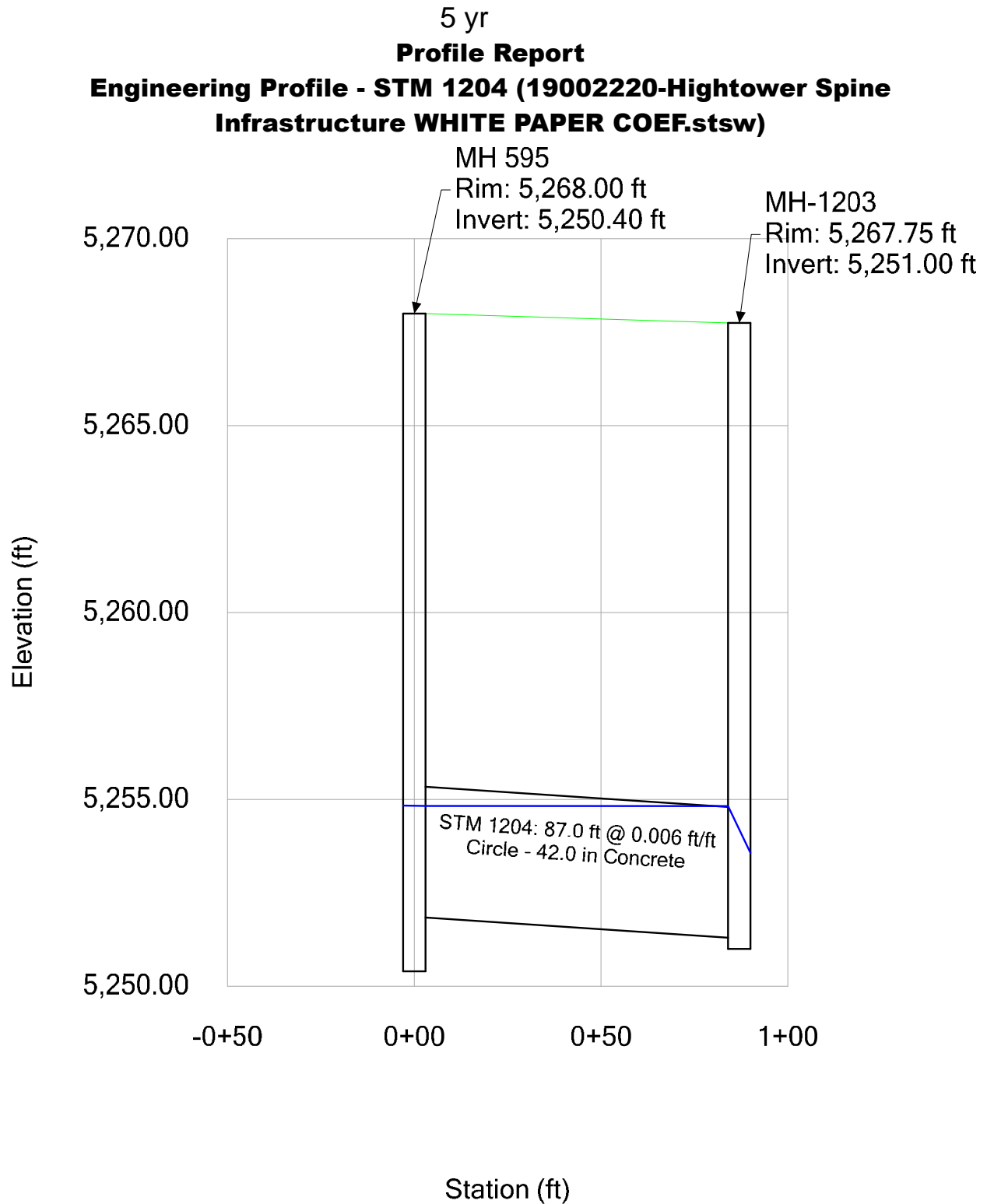
Profile Report

Engineering Profile - PH4 RD 50.2 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



5 yr
Profile Report
Engineering Profile - PH4 RD 50.3 (19002220-Hightower Spine
Infrastructure WHITE PAPER COEF.stsw)

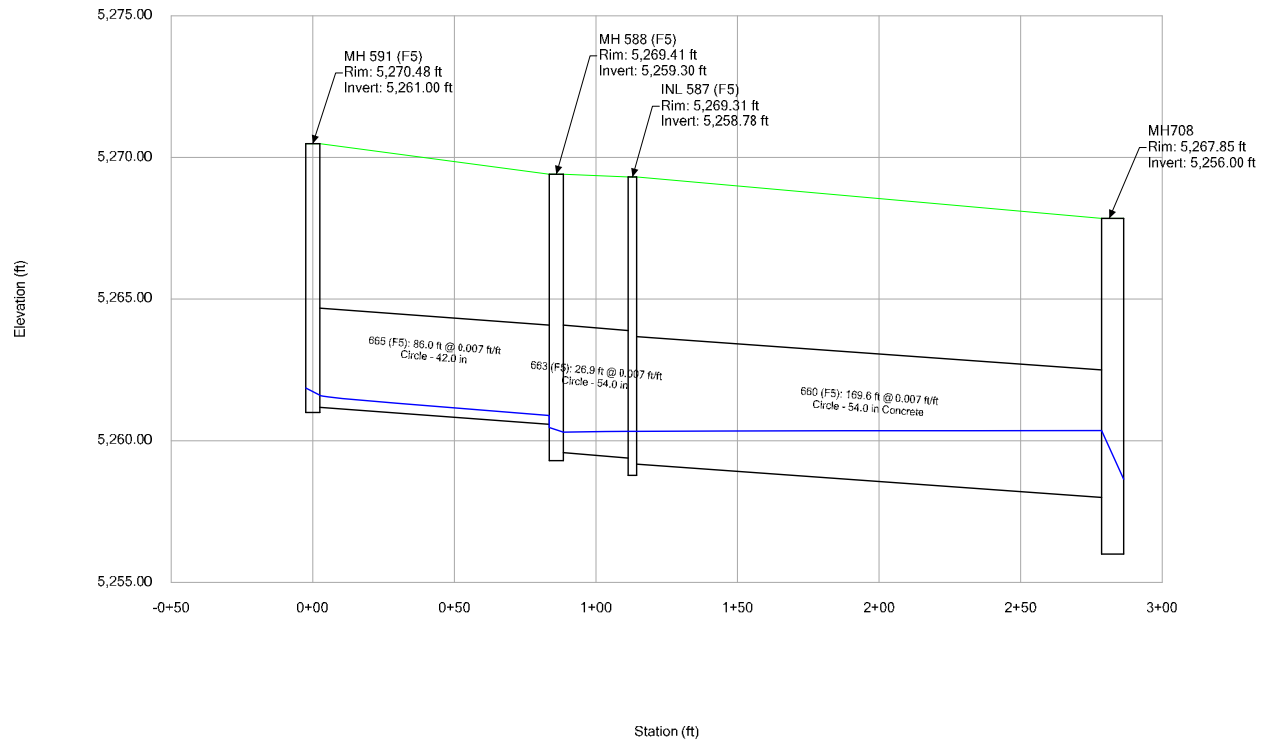




5 yr

Profile Report

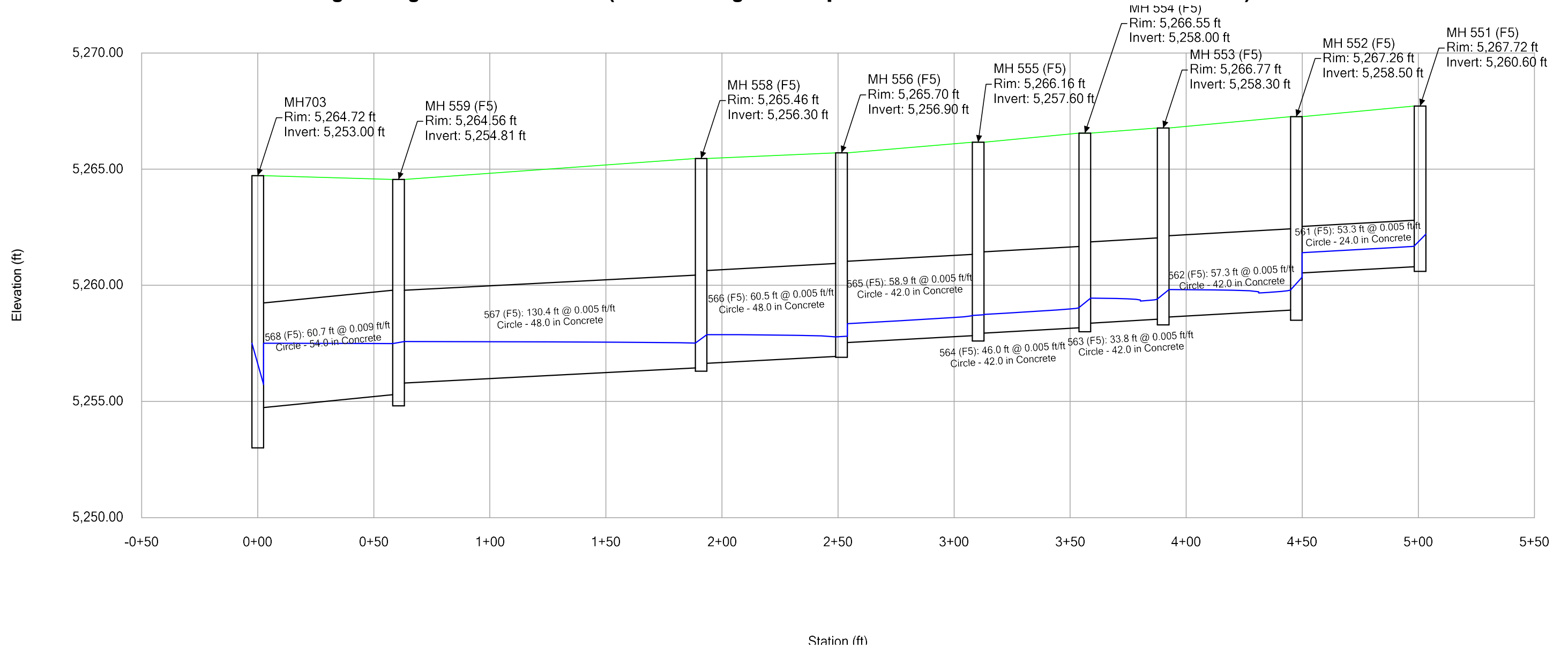
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5 yr

Profile Report

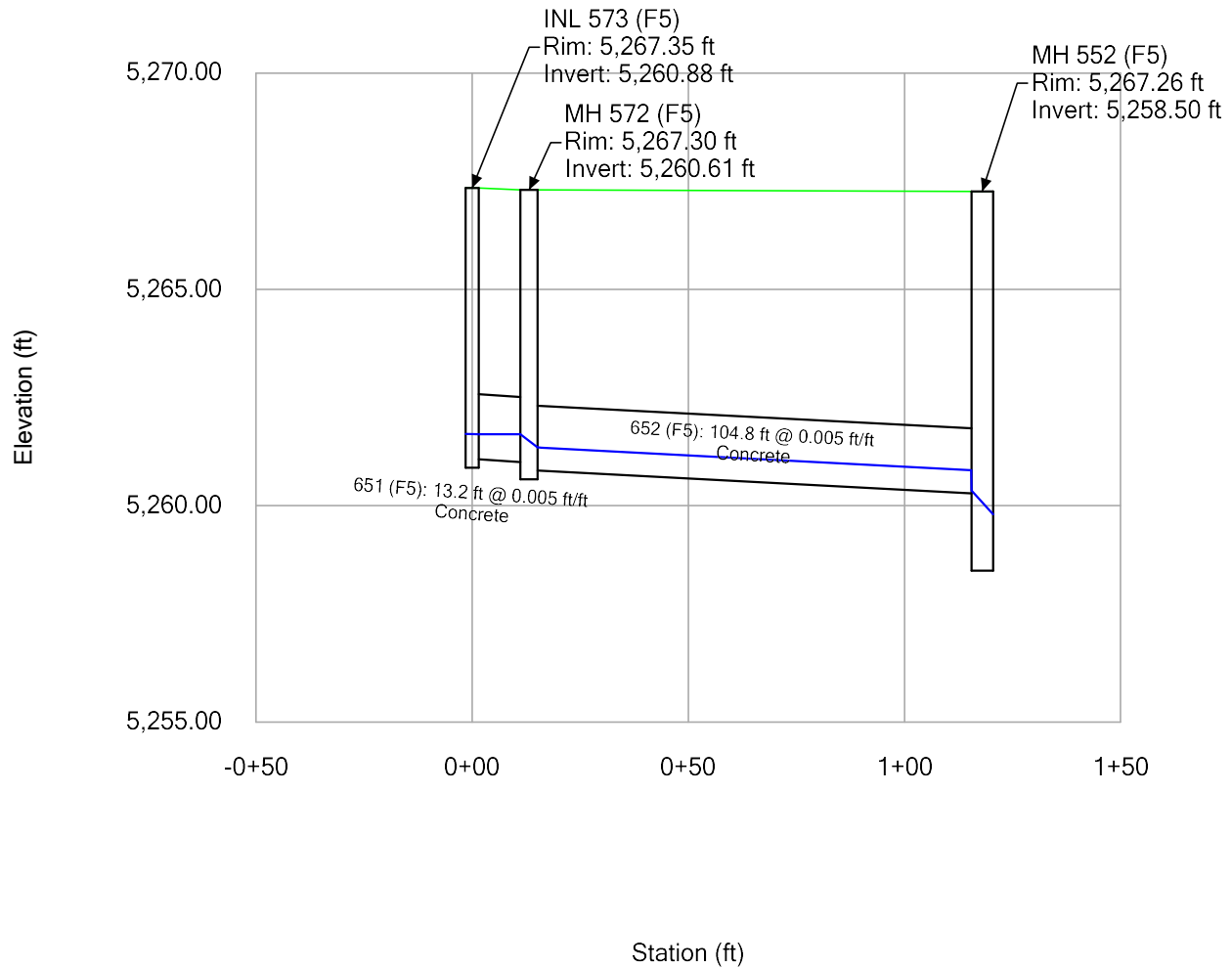
Engineering Profile - PH4 RD 53 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



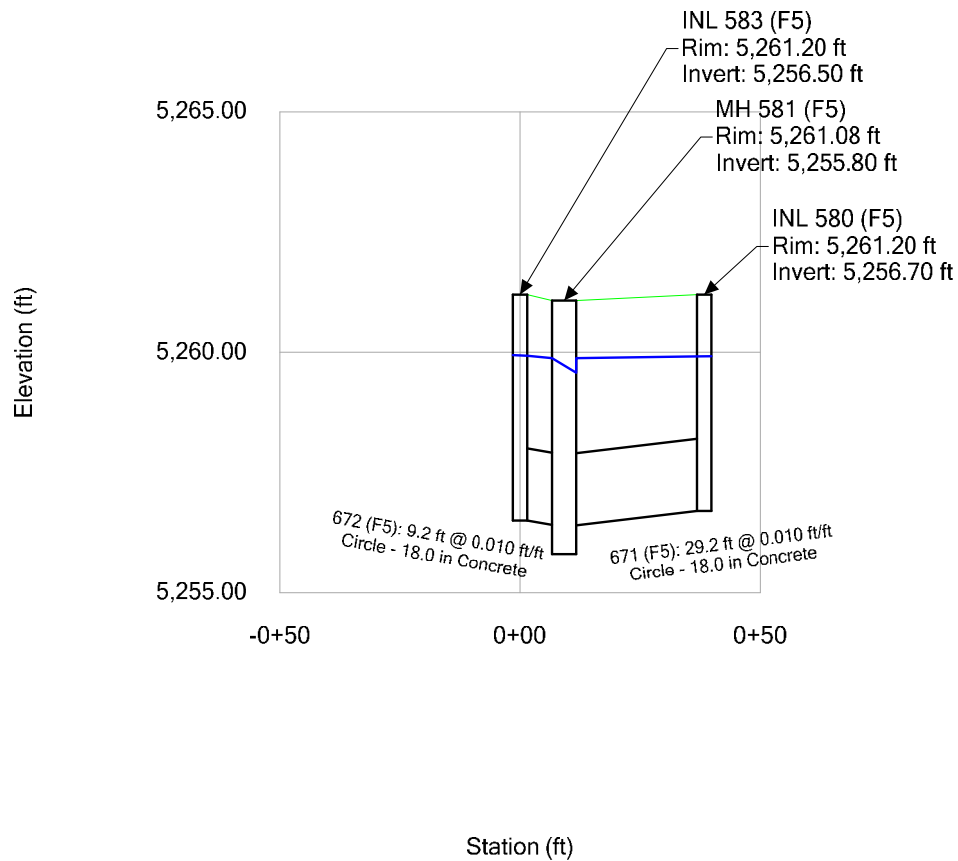
5 yr

Profile Report

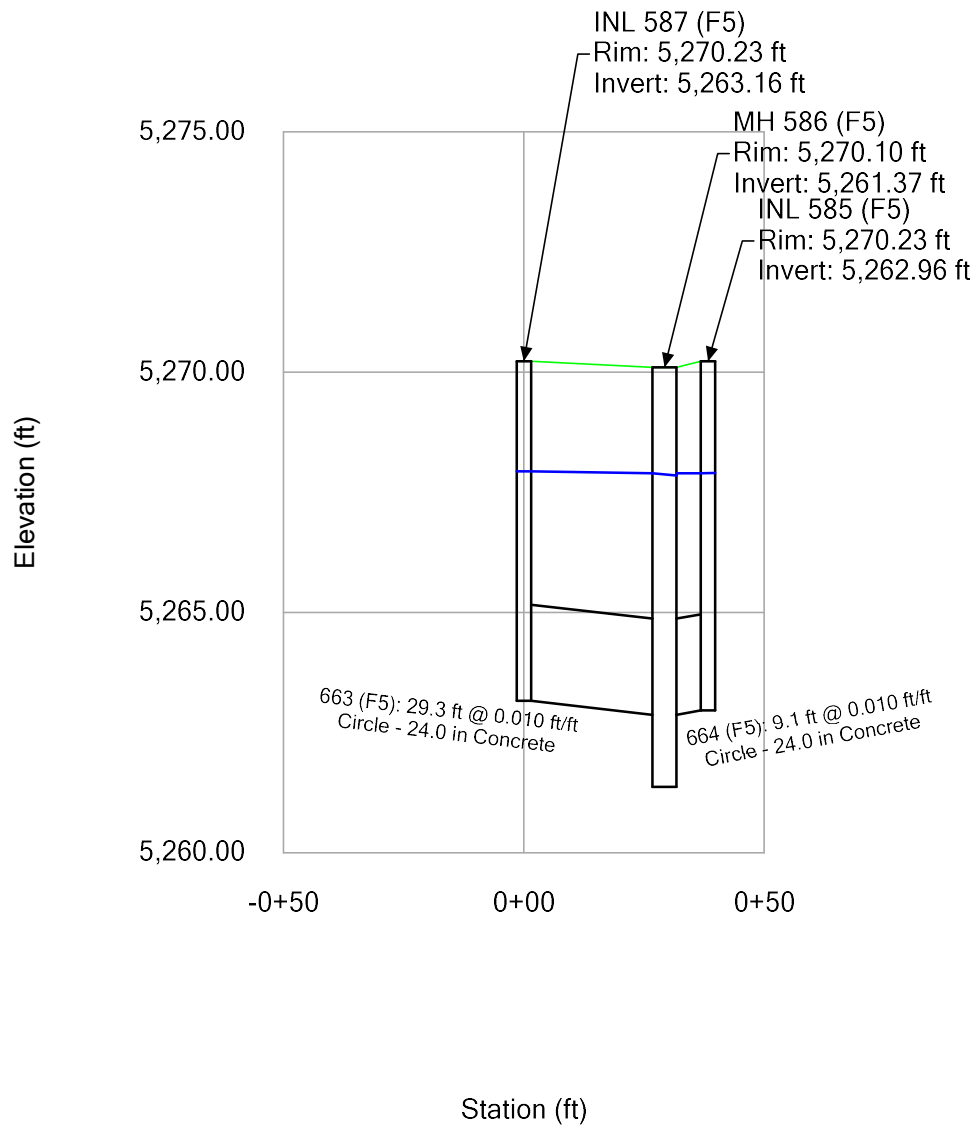
Engineering Profile - PH4 RD 54 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



Profile Report **Engineering Profile - PH4 Lateral A5/A6 (19002220-Hightower Spine** **Infrastructure WHITE PAPER COEF.stsw)**



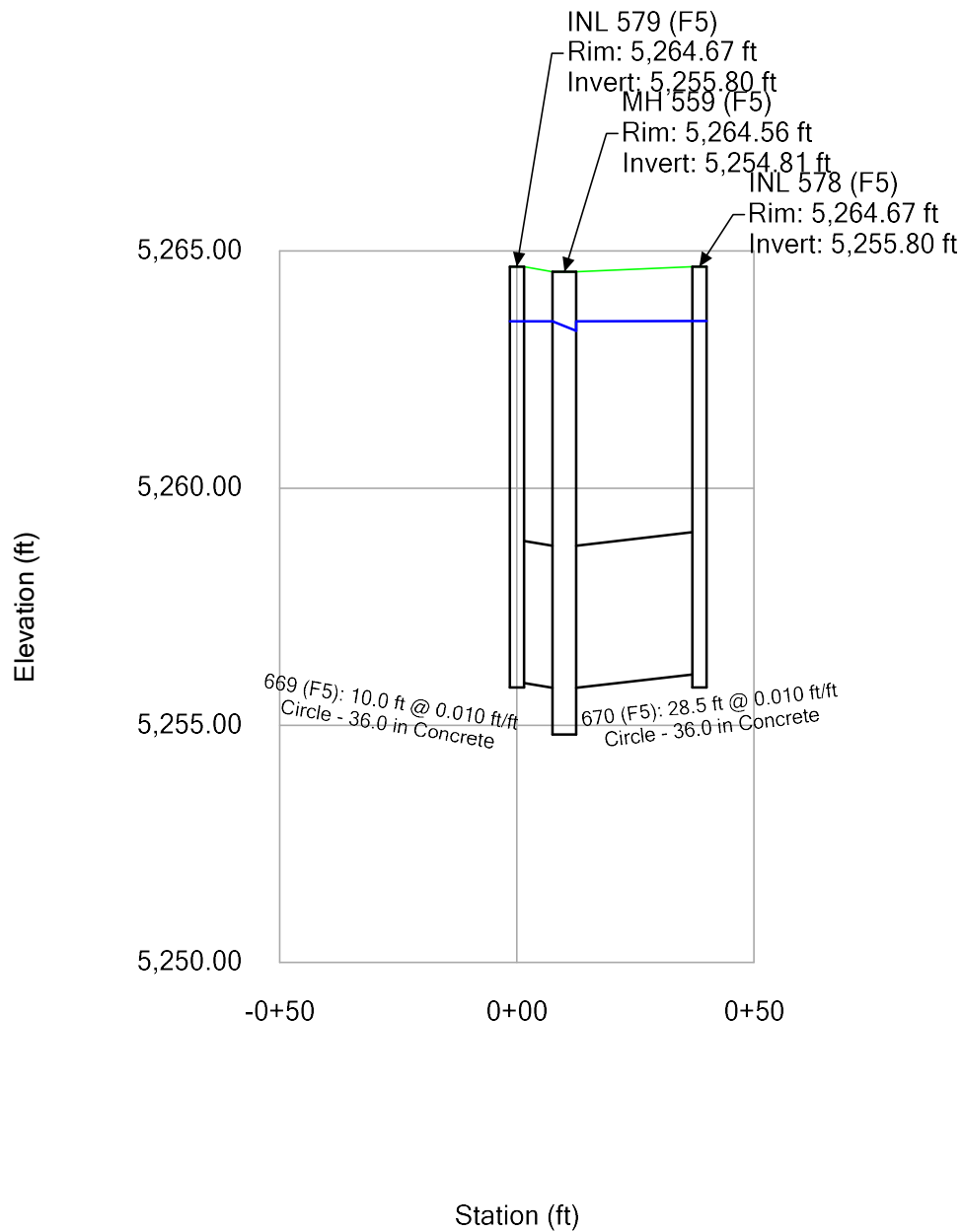
100 yr
Profile Report
Engineering Profile - PH4 Lateral A9/A10 (19002220-Hightower Spine
Infrastructure WHITE PAPER COEF.stsw)



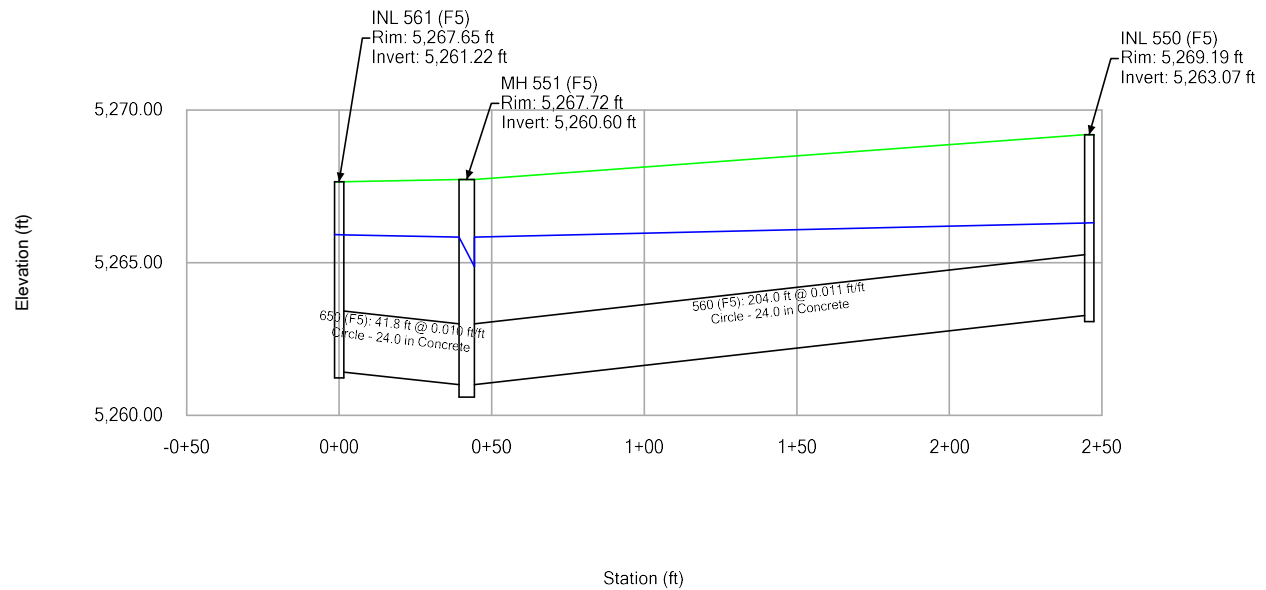
100 yr

Profile Report

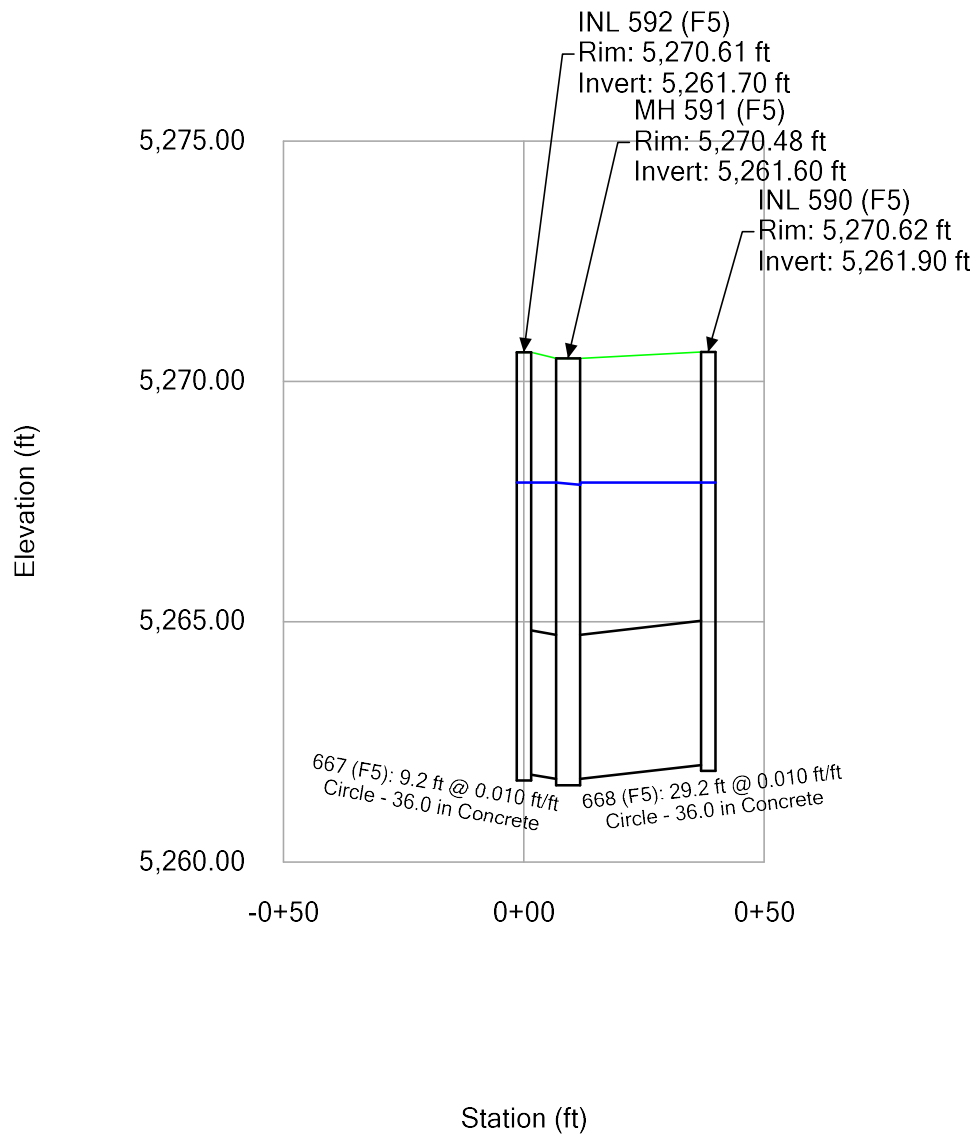
Engineering Profile - PH4 Lateral A11/A7 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



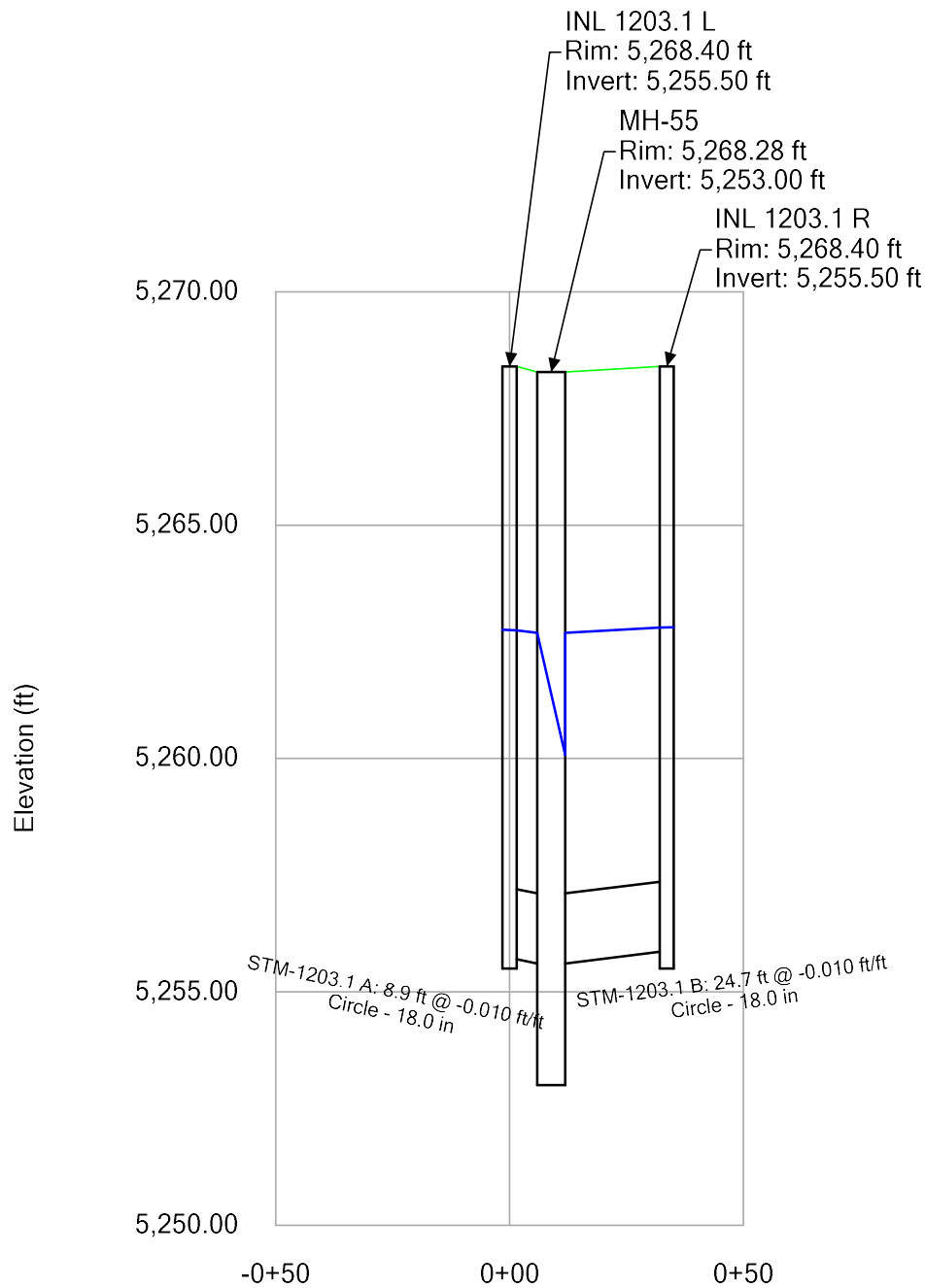
100 yr
Profile Report
Engineering Profile - PH4 A13/A14 (19002220-Hightower Spine
Infrastructure WHITE PAPER COEF.stsw)



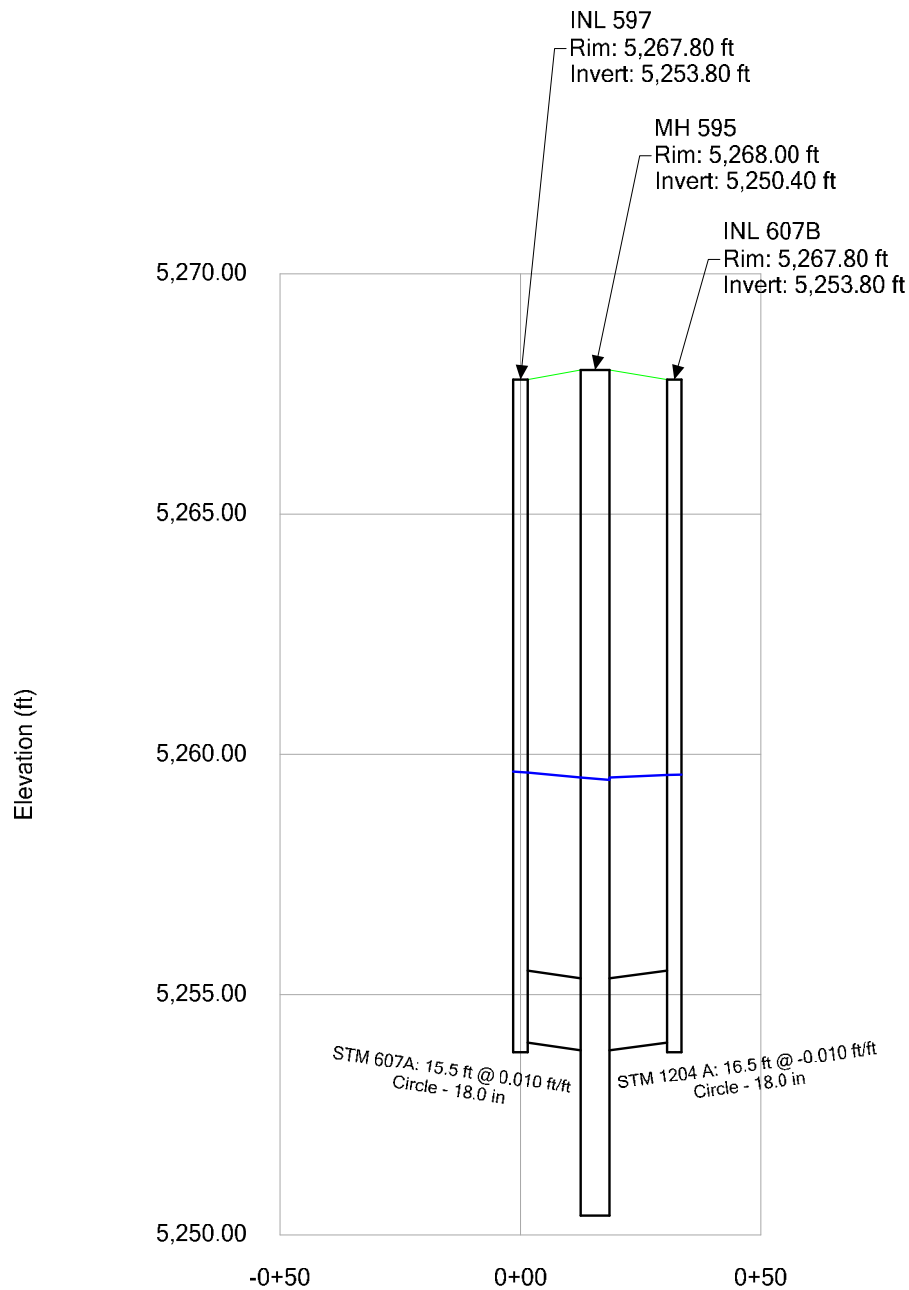
100 yr
Profile Report
Engineering Profile - PH4 Lateral A15/A16 (19002220-Hightower Spine
Infrastructure WHITE PAPER COEF.stsw)



100 yr
Profile Report
Engineering Profile - Lateral 1203.1 (19002220-Hightower Spine
Infrastructure WHITE PAPER COEF.stsw)



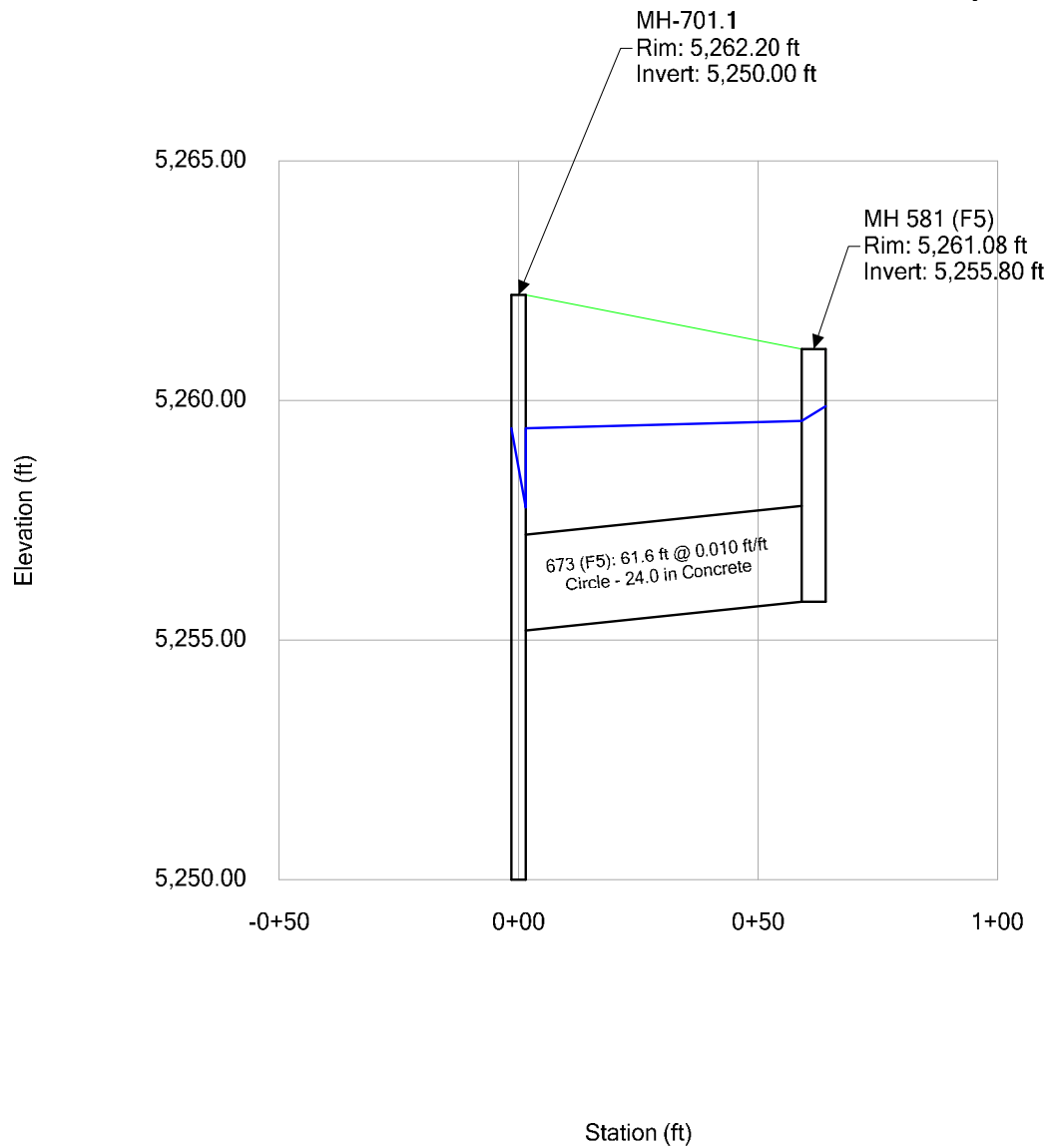
100 yr
Profile Report
Engineering Profile - Lateral 1204 (19002220-Hightower Spine
Infrastructure WHITE PAPER COEF.stsw)



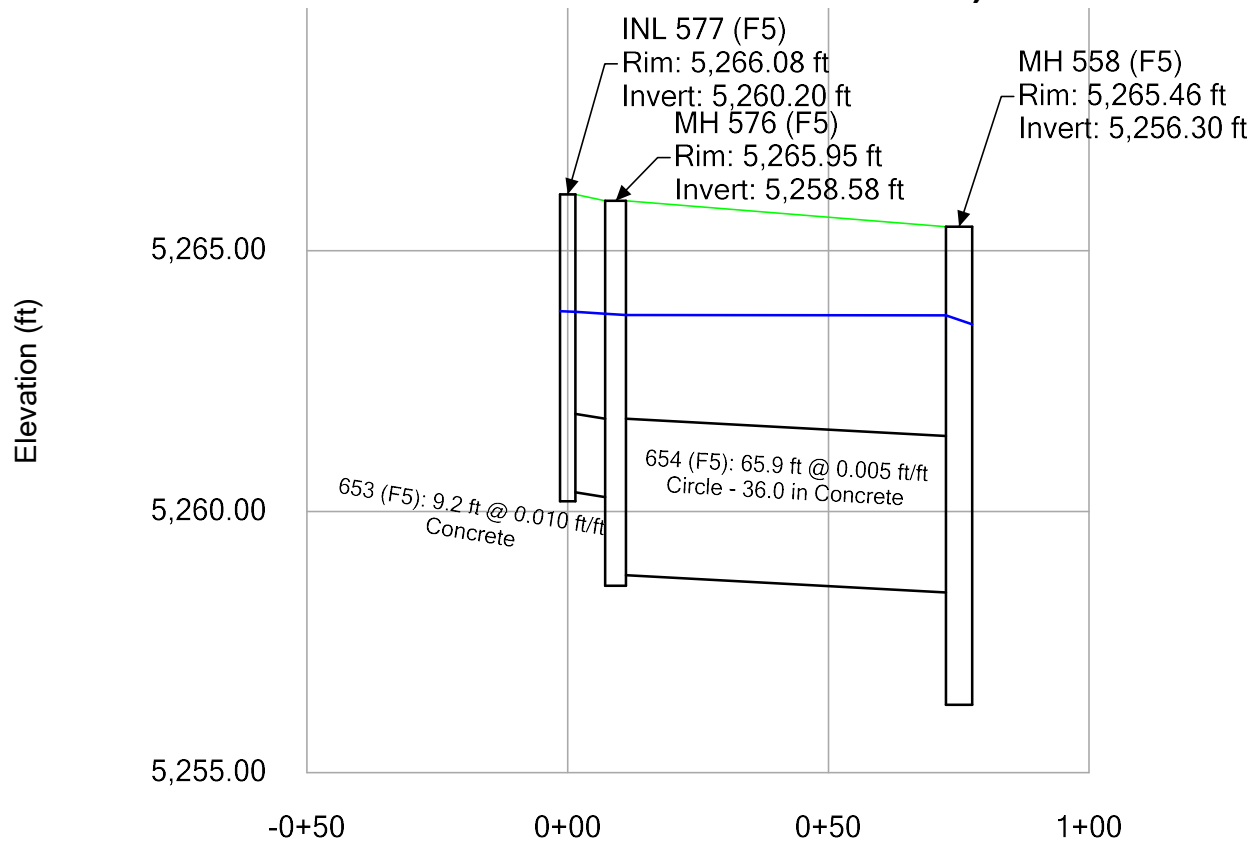
100 yr

Profile Report

Engineering Profile - PH4 RD 50.1 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



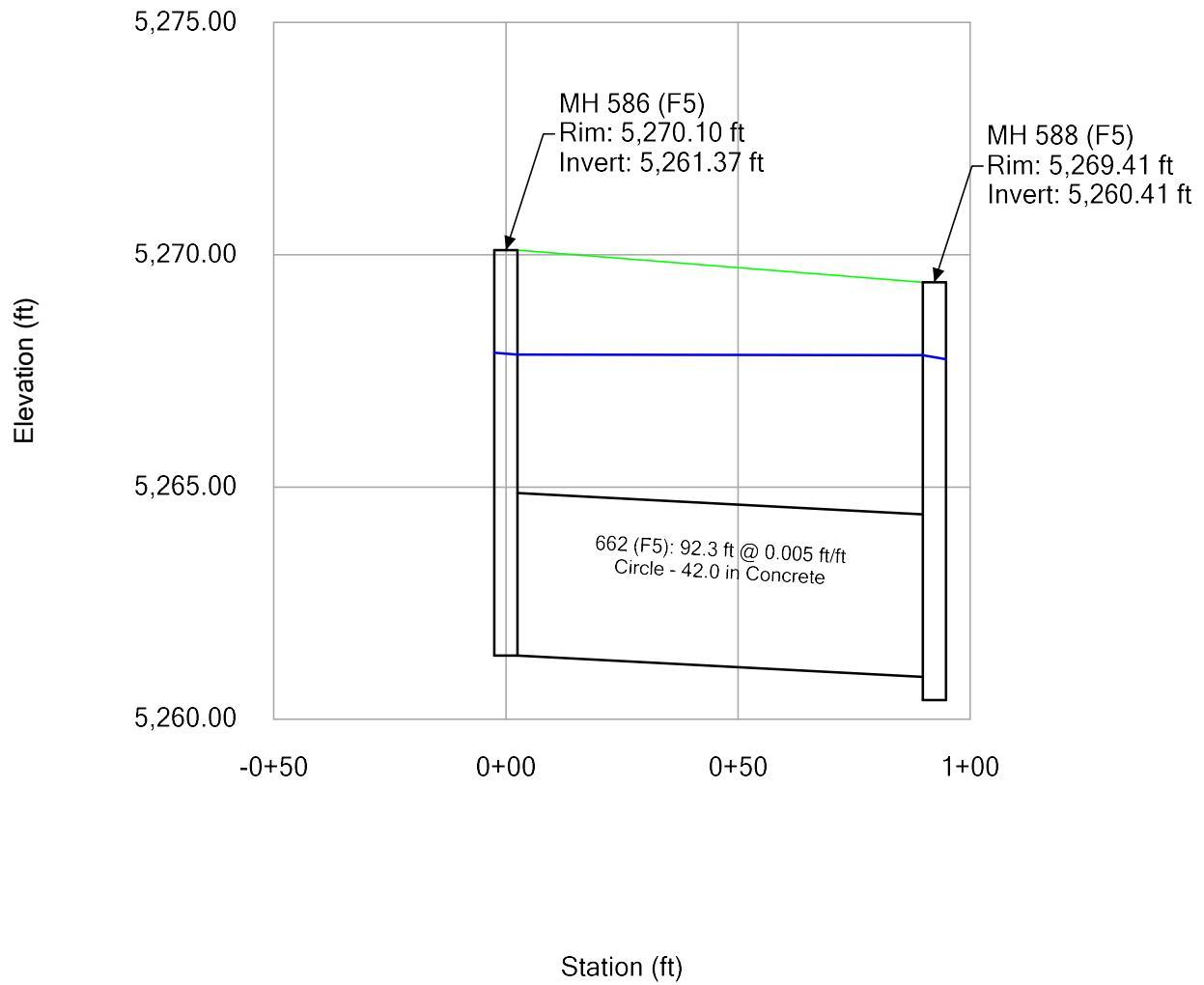
100 yr
Profile Report
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Infrastructure WHITE PAPER COEF.stsw)

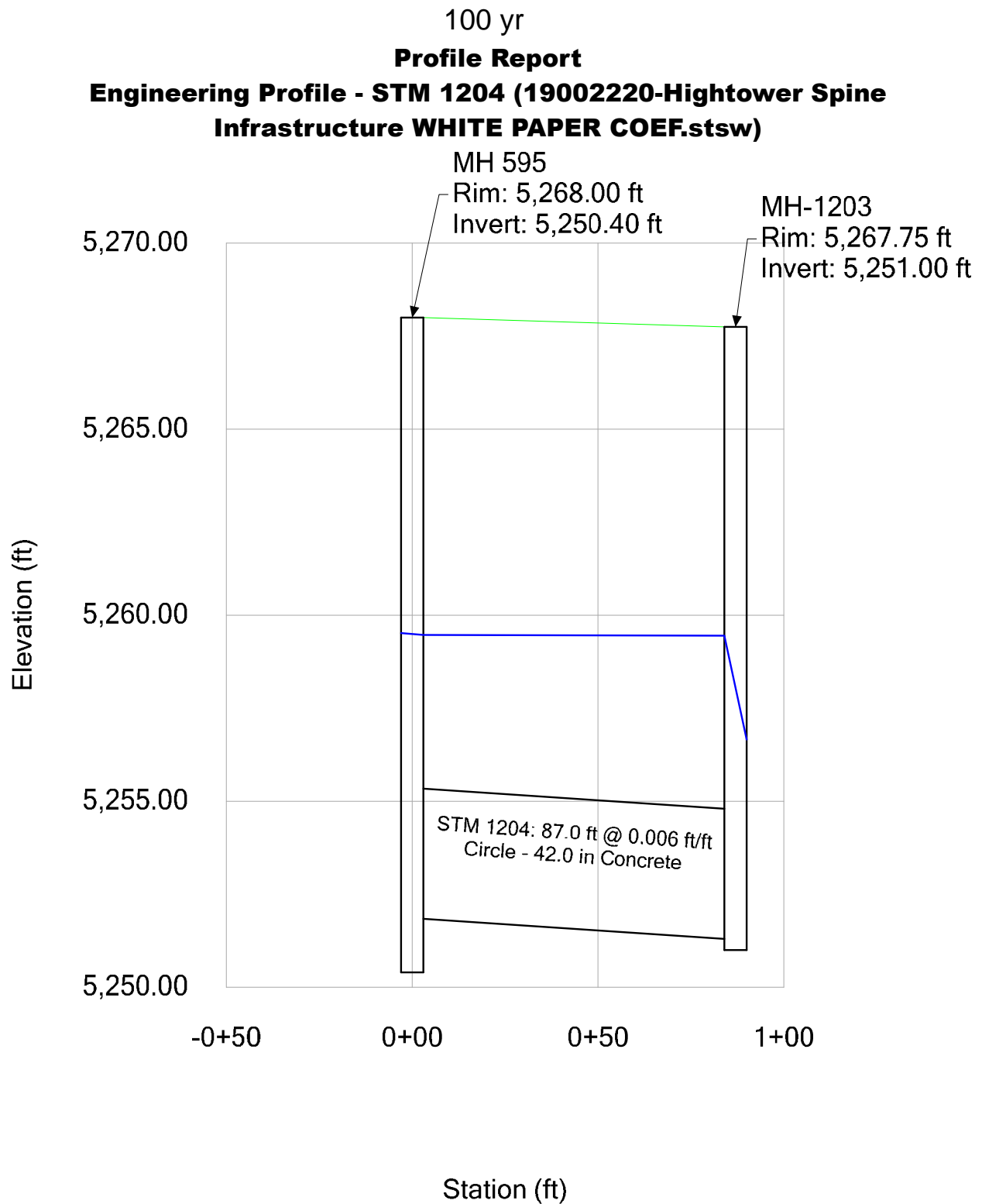


100 yr

Profile Report

Engineering Profile - PH4 RD 50.3 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)

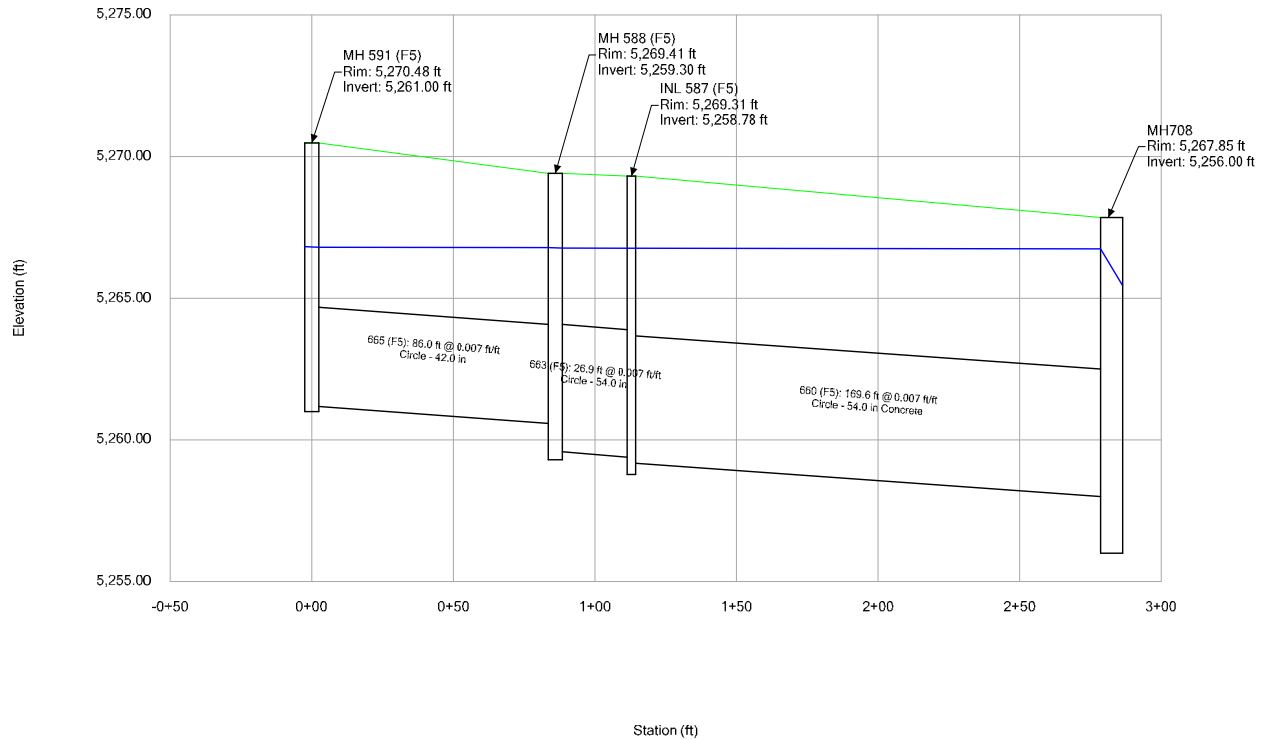




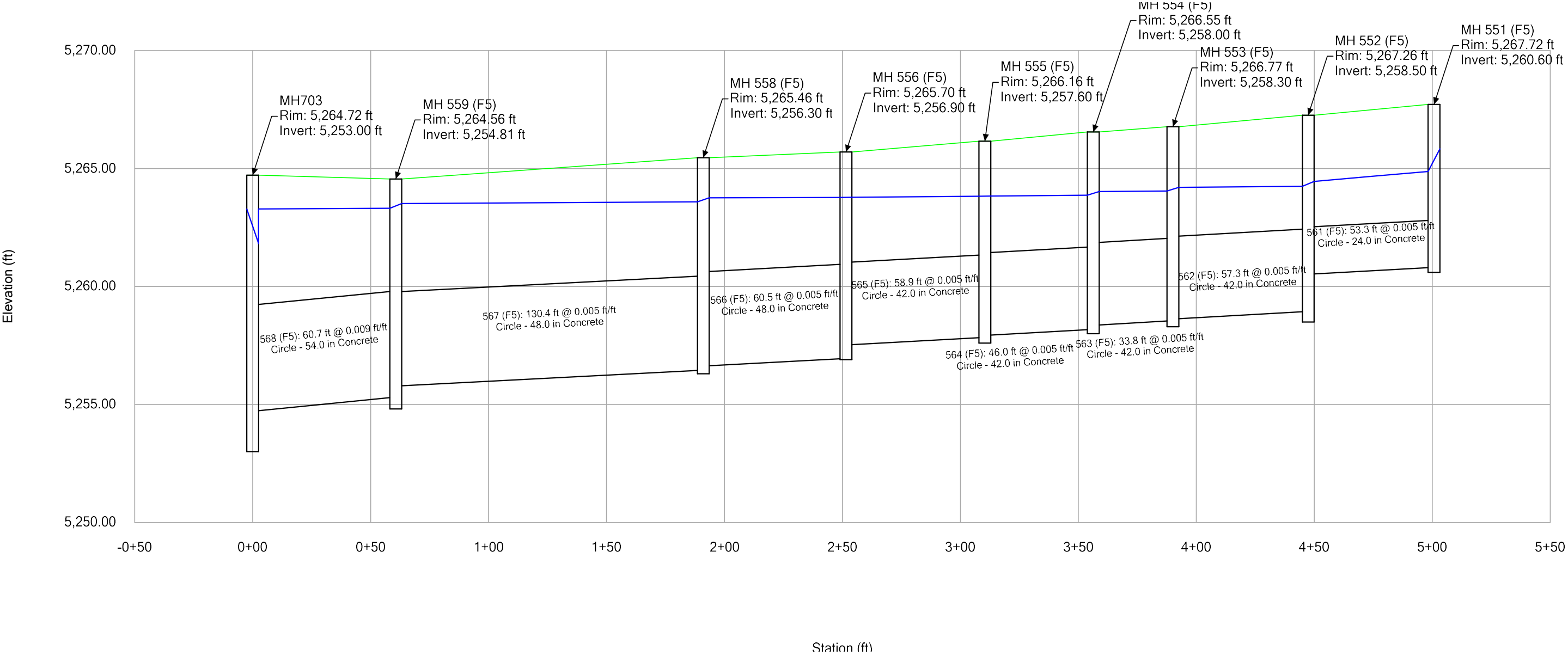
100 yr

Profile Report

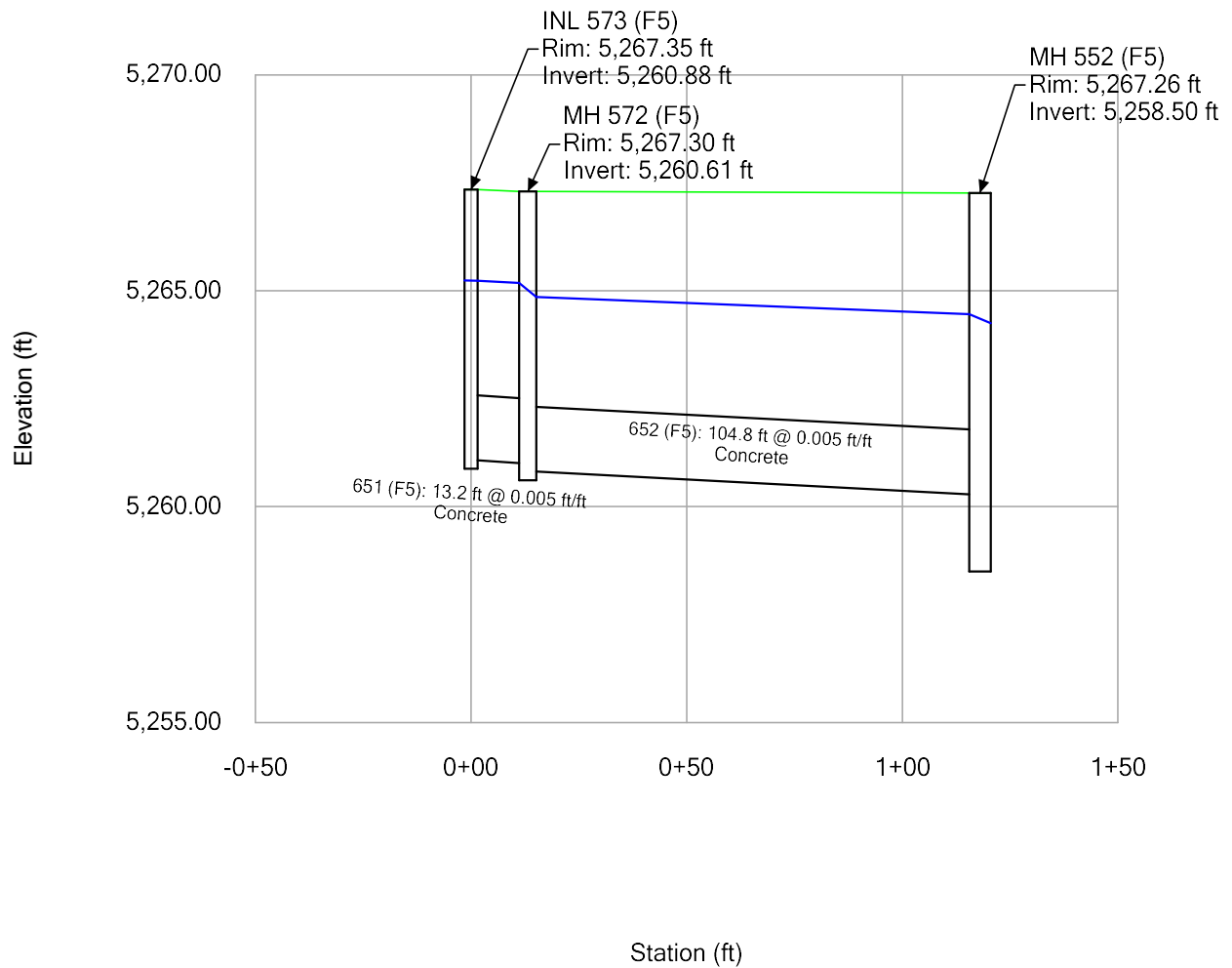
Engineering Profile - PH4 RD 51 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



100 yr
Profile Report
Engineering Profile - PH4 RD 53 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



100 yr
Profile Report
Engineering Profile - PH4 RD 54 (19002220-Hightower Spine
Infrastructure WHITE PAPER COEF.stsw)

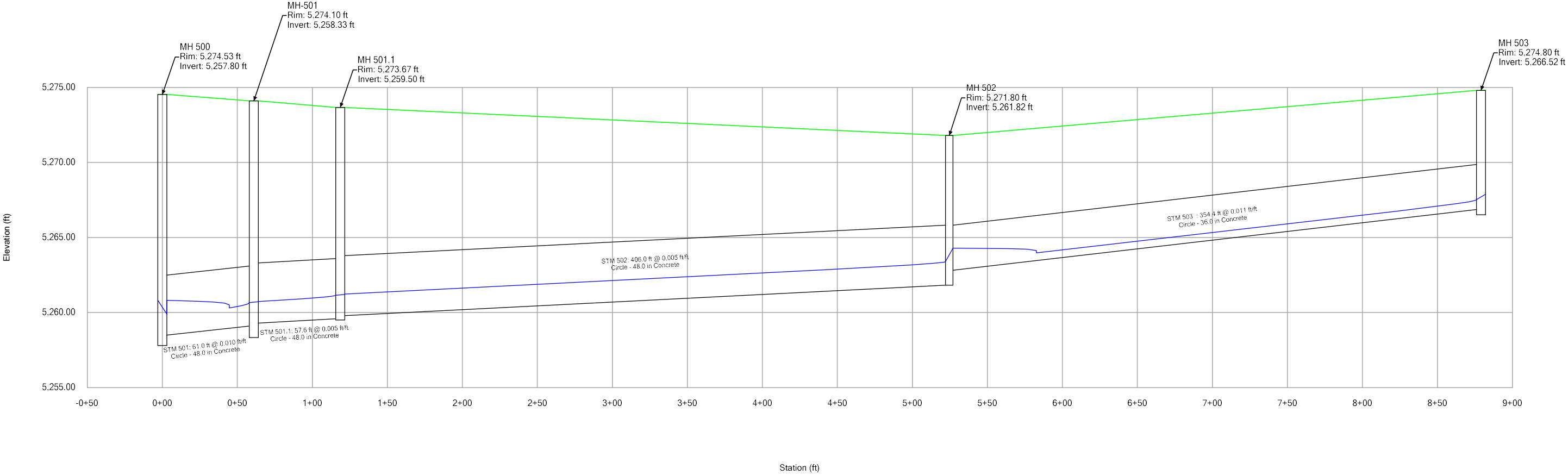


APPENDIX F
REFERENCE MATERIALS

5 yr

Profile Report

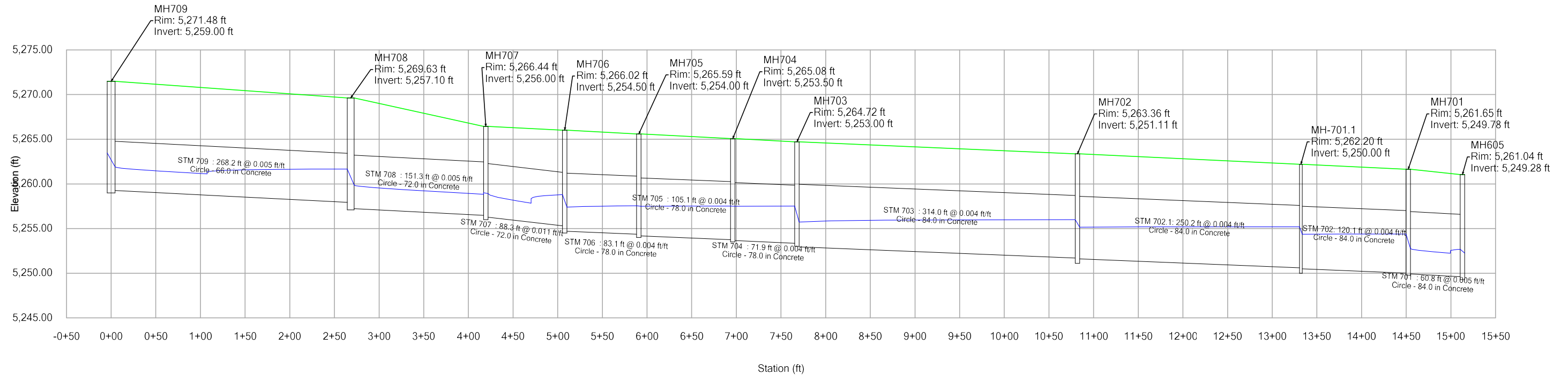
Engineering Profile - Storm Run 05 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



5 yr

Profile Report

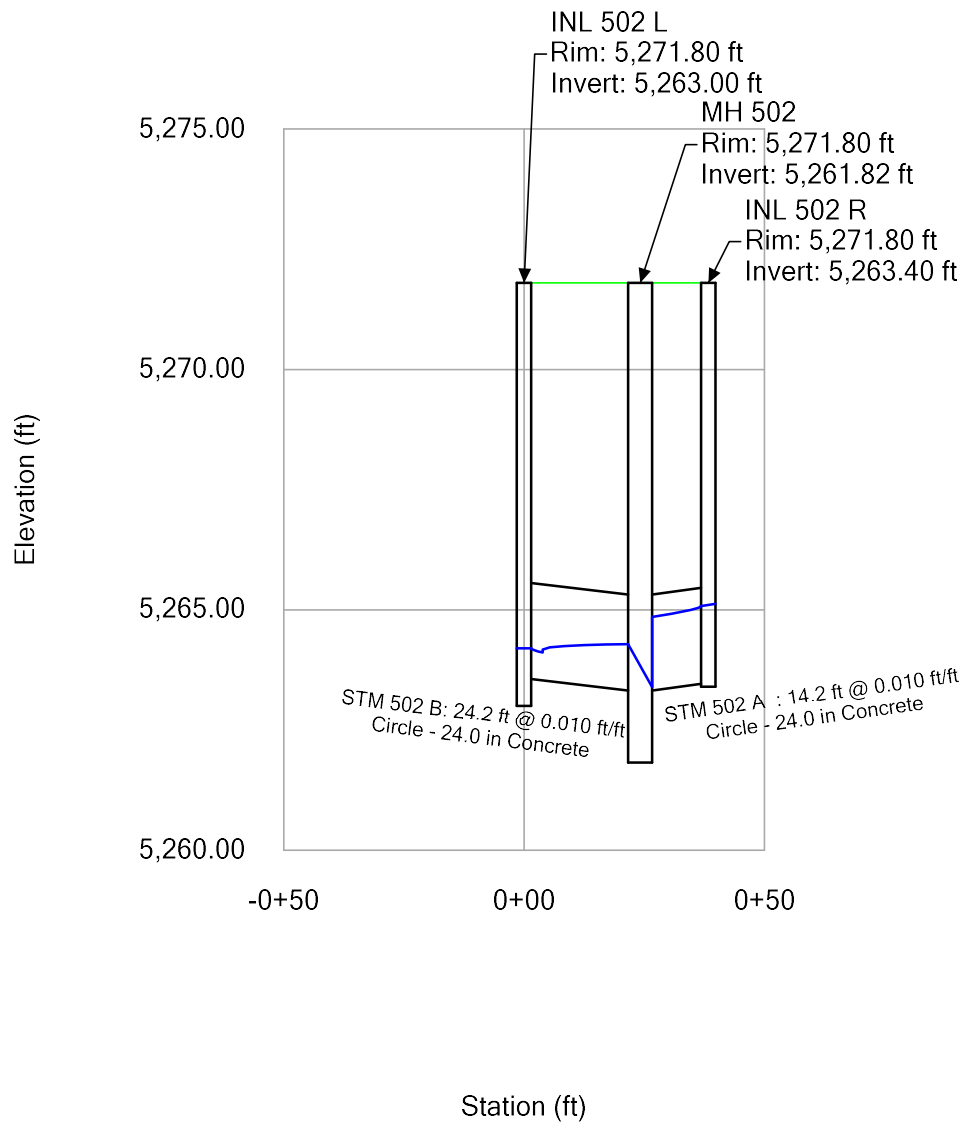
Engineering Profile - Storm Run 07 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



5 yr

Profile Report

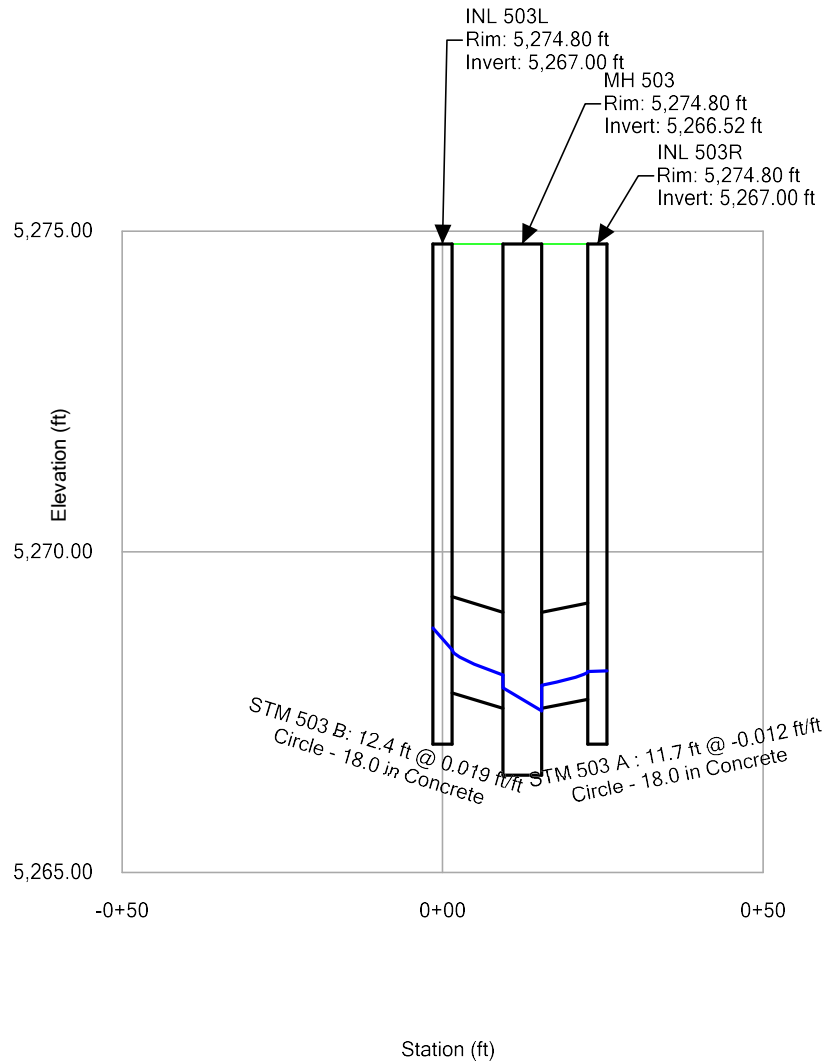
Engineering Profile - Lateral 502 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



5 yr

Profile Report

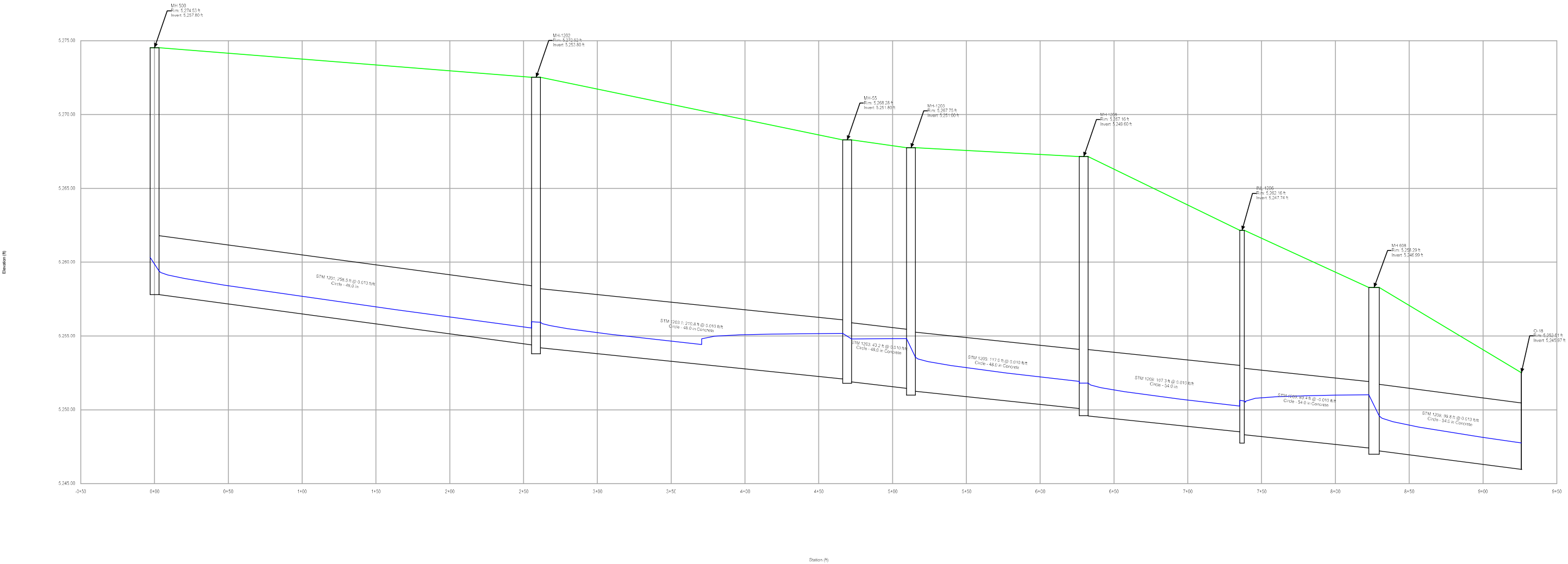
Engineering Profile - Lateral 503 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



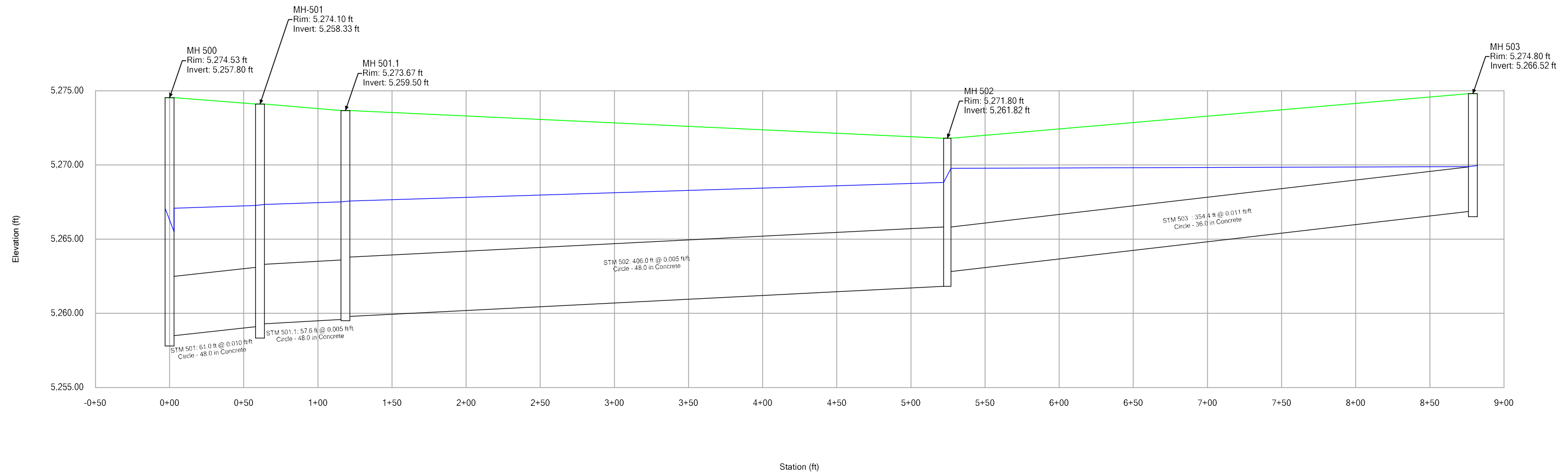
5 yr

Profile Report

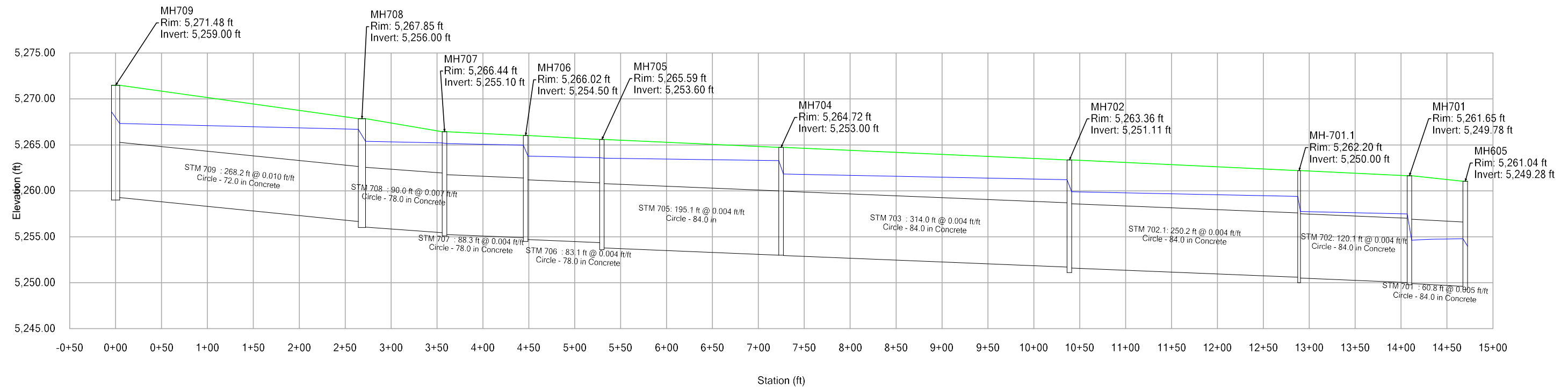
Engineering Profile - Storm Run 12 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



100 yr
Profile Report
Engineering Profile - Storm Run 05 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



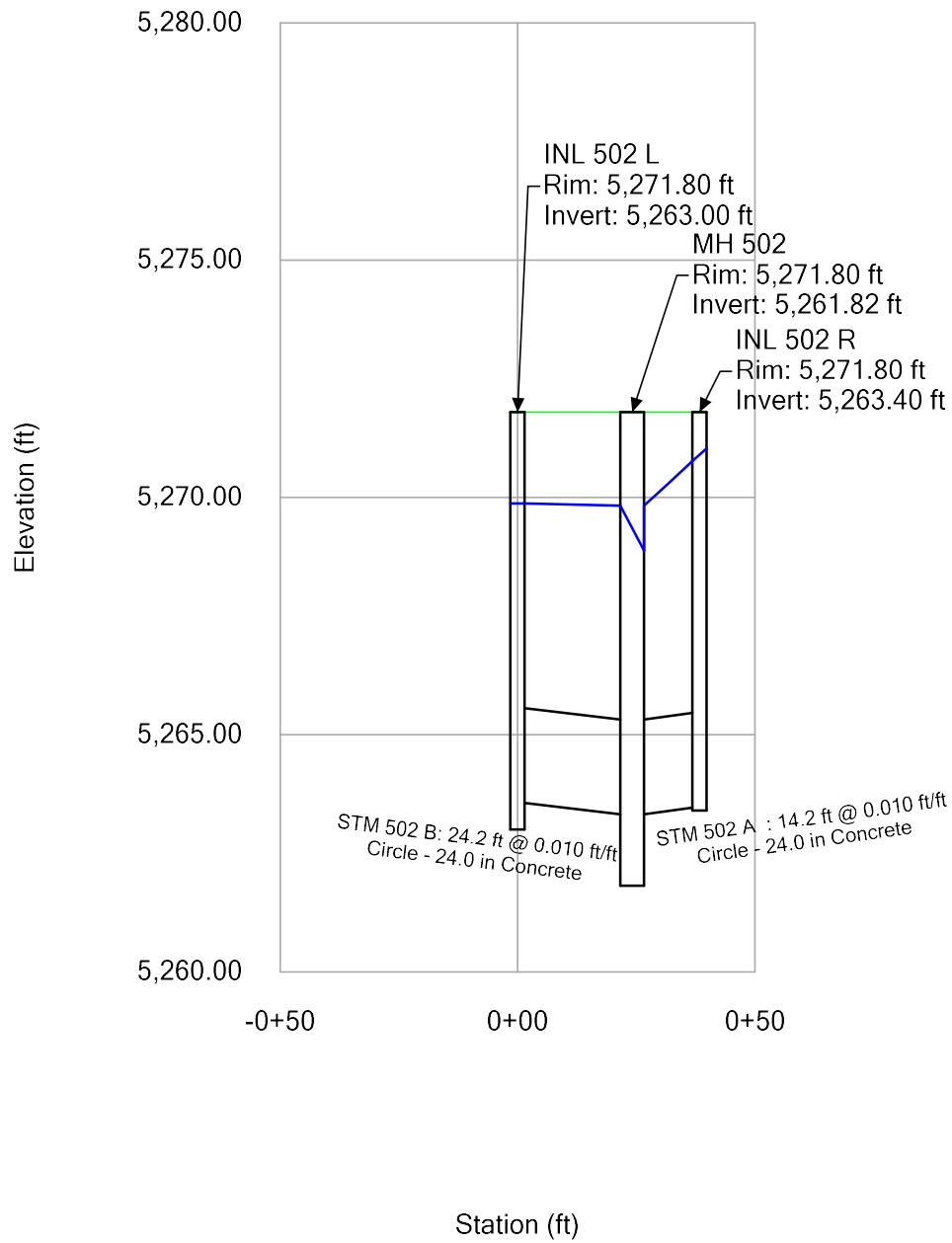
100 yr
Profile Report
Engineering Profile - Storm Run 07 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



100 yr

Profile Report

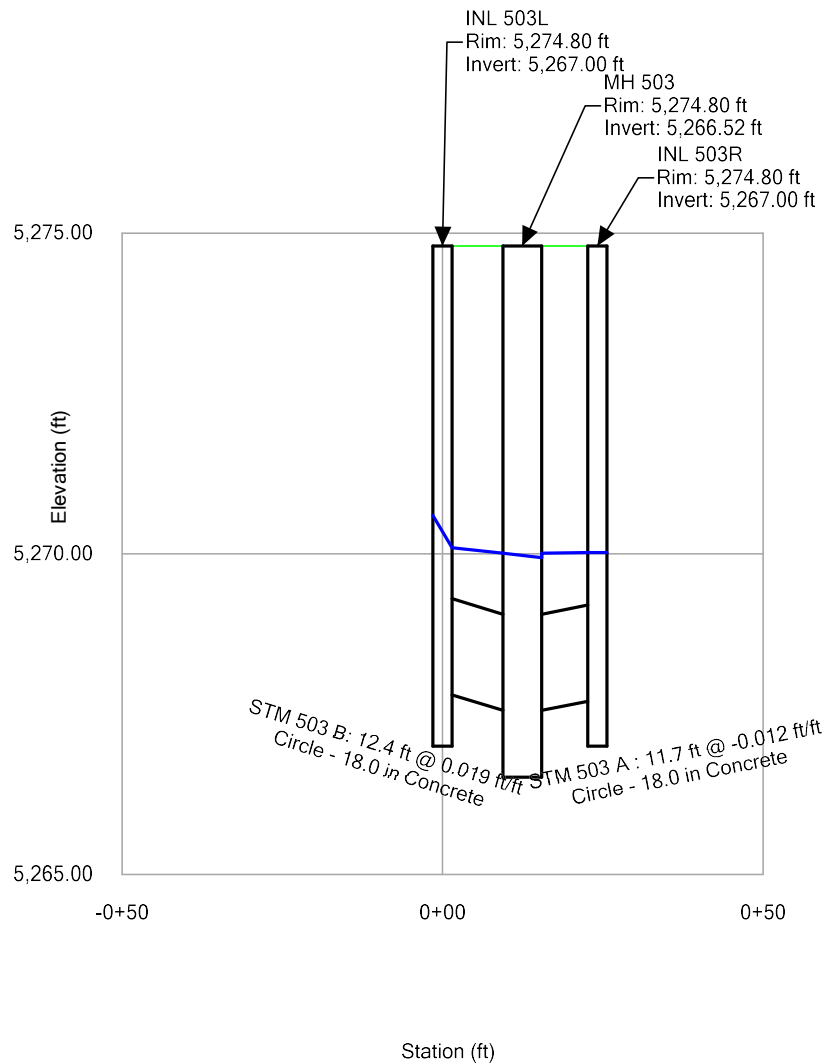
Engineering Profile - Lateral 502 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



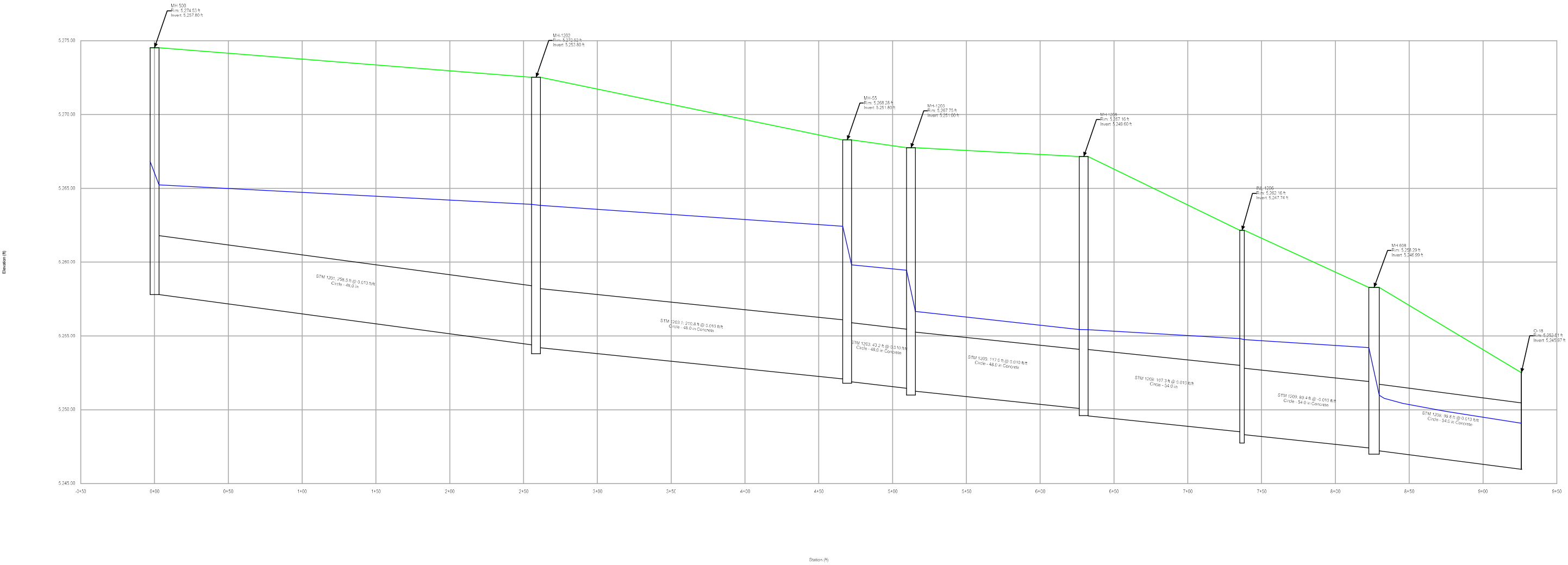
100 yr

Profile Report

Engineering Profile - Lateral 503 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)



100 yr
Profile Report
Engineering Profile - Storm Run 12 (19002220-Hightower Spine Infrastructure WHITE PAPER COEF.stsw)

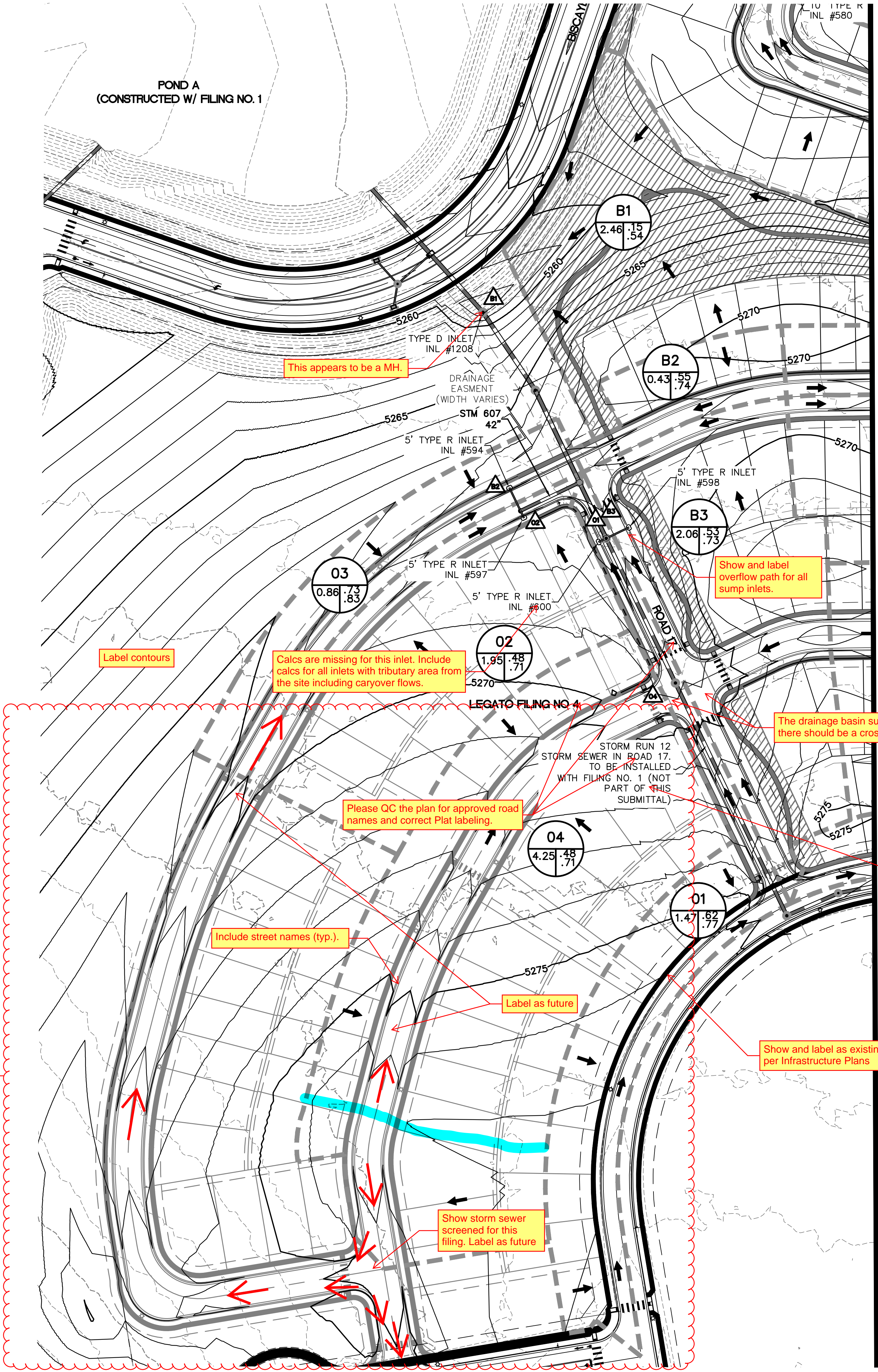


APPENDIX G
DRAINAGE MAPS

Include design points in tables.

RUNOFF SUMMARY					
Basin	Area (ACRES)	C5	C100	Q5 (CFS)	Q100 (CFS)
A-1	1.04	0.49	0.71	1.35	4.15
A-2	1.33	0.49	0.71	1.66	5.11
A-3	1.44	0.45	0.69	1.59	5.16
A-4	1.94	0.40	0.66	1.46	5.10
A-5	2.15	0.48	0.71	2.44	7.64
A-6	0.81	0.58	0.76	1.32	3.66
A-7	1.39	0.53	0.73	1.72	5.02
A-8	1.94	0.51	0.72	2.35	7.04
A-9	1.39	0.41	0.67	1.33	4.61
A-10	2.47	0.47	0.70	2.73	8.62
A-11	0.90	0.60	0.76	1.29	3.47
A-12	1.63	0.48	0.71	1.93	6.06
A-13	2.36	0.53	0.73	2.98	8.71
A-14	1.21	0.35	0.64	1.01	3.93
A-15	3.33	0.42	0.68	3.26	11.19
A-16	0.66	0.58	0.75	1.09	2.99
A-17	2.15	0.33	0.63	1.59	6.43
A-8	1.94	0.51	0.72	2.35	7.04
B-1	2.46	0.15	0.54	0.96	7.34
B-2	0.43	0.55	0.74	0.69	1.96
B-3	2.06	0.53	0.73	2.68	7.81
B-4	2.21	0.56	0.75	3.17	9.00
B-5	1.94	0.57	0.75	3.14	8.76
O-1	1.47	0.62	0.77	2.76	7.25
O-2	1.95	0.48	0.71	2.27	7.12
O-3	0.86	0.73	0.83	1.99	4.79
O-4	4.25	0.48	0.71	4.88	15.30

Please verify that all basins contributory to the storm system proposed with Filing 1 are represented correctly and accounted for in all calculations.



Where do flows go on this roadway?

LEGEND

- PROPERTY BOUNDARY
- EXISTING LOT LINE
- PROPOSED CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED SIDEWALK
- PROPOSED CONCRETE PAVEMENT
- SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED 1' CONTOURS
- EXISTING 1' CONTOURS

A

B

C

D

A = BASIN DESIGNATION
B = AREA IN ACRES
C = 5 YR RUNOFF COEFFICIENT
D = 100 YR RUNOFF COEFFICIENT

#

DESIGN POINT

DRAINAGE BASIN BOUNDARY

→

DRAINAGE FLOW ARROW

HP

LP

HIGH OR LOW POINT

Freeze striping on drainage plan

Grey back previously installed features and label connection points and any modifications made to accommodate new components. Will the rims need to be adjusted to final grade?

Show and label as existing per Infrastructure Plans

Label as future

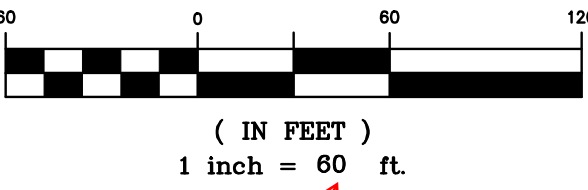
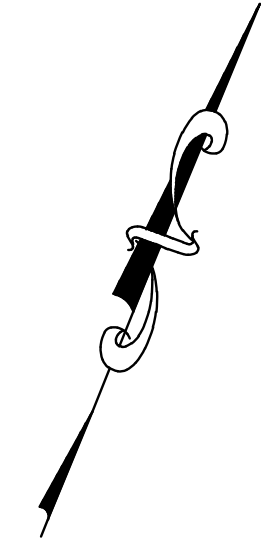
Please QC the plan for approved road names and correct Plat labeling.

Calcs are missing for this inlet. Include calcs for all inlets with tributary area from the site including carryover flows.

Label contours

Show and label overflow path for all sump inlets.

The drainage basin suggests that there should be a cross pan here.



Use correct scale.

811

Know what's below. Call before you dig.

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303.825.7100

COHEN DENVER AIRPORT, LLC

9875 W. LA MANCHA AVE.
LAS VEGAS, NV 89149
(720) 355-1400
BRAD BURNS

CLIENT

COHEN DENVER AIRPORT, LLC

LEGATO FILING NO. 1
COMMERCE CITY, COLORADO

DRAINAGE PLAN
PROPOSED

DATE

7/20/2020

1st SUBMITTAL TO COMMERCE CITY

07/20/20 - DJM

REVISIONS

DR. MDC

CH. DJM

P.M. DJM

JOB

19002860

SHEET NO.

2

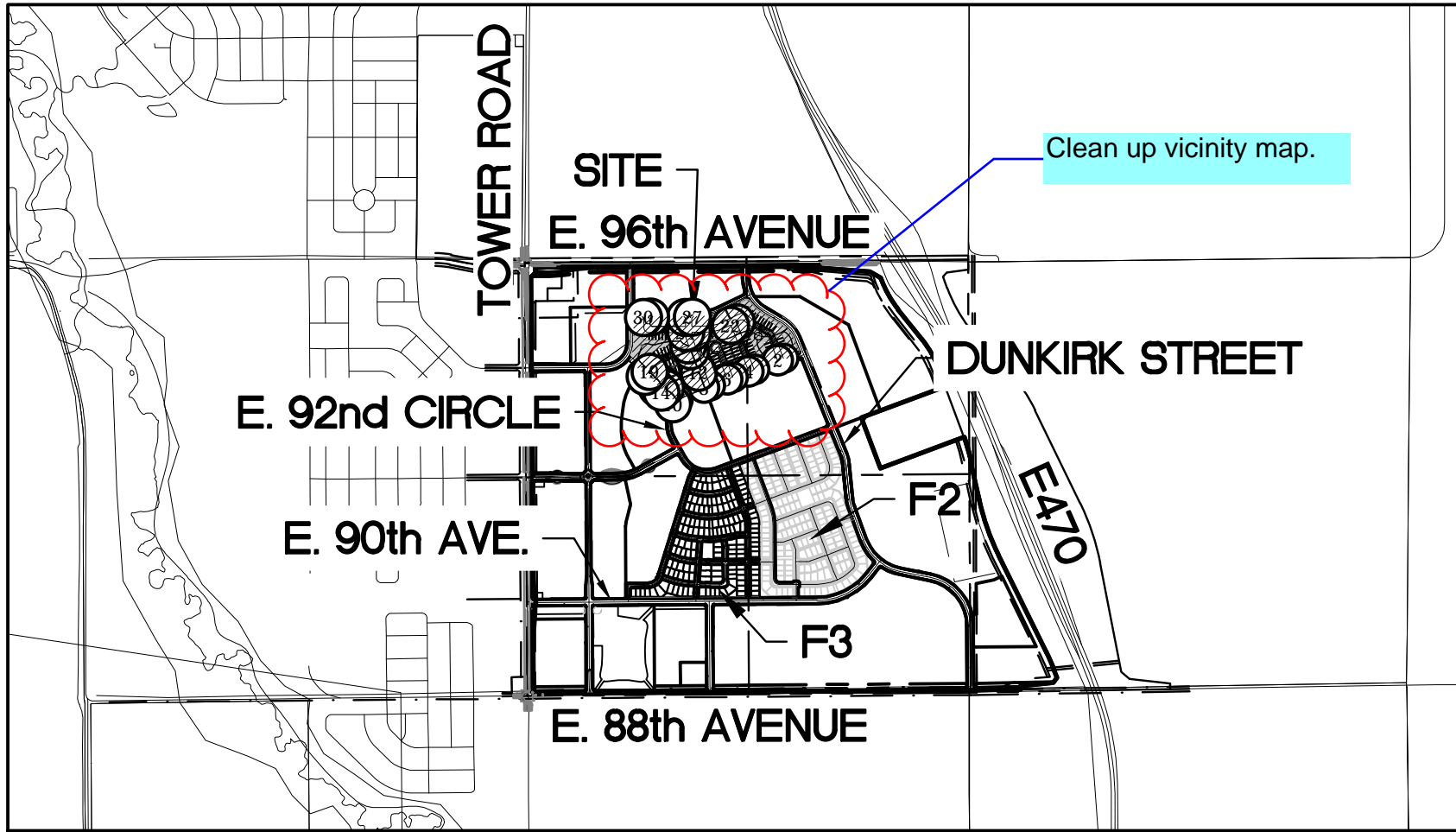
CAD FILE: 19002860 - LEGATO FILING 1 - DRAINAGE MAP PROPOSED.DWG

214

LEGATO FILING NO. 1
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH,
RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO
CONSTRUCTION PLANS

LEGEND	
---	PROPERTY LINE
	PROPOSED FIRE HYDRANT
	PROPOSED INLET
	PROPOSED PEDESTRIAN RAMP
	PROPOSED SIDEWALK
	PROPOSED CURB & GUTTER
---	PROPOSED RIGHT OF WAY
---	PROPOSED LOT LINE
	PROPOSED STREET LIGHT
	PROPOSED GATE VALVE
	EXISTING GATE VALVE
	PROPOSED SANITARY SEWER MANHOLE
	CURB RETURN DESIGNATION
	PROPOSED 8' CROSSPAN
	PROPOSED CONTOURS
	EXISTING CONTOURS

Not the same on the plans



Throughout plans, show spine infrastructure linework existing and gray, and show Filing No. 2 linework as future and also gray. Clearly show and label all connections to these adjacent projects wherever these connection points appear on the plans.

OWNER:
COHEN DENVER AIRPORT, LLC.
2600 PASEO VERDE PARKWAY,
SUITE 250,
HENDERSON, NV 89074
(720) 355-1400
CONTACT: BRAD BURNS

CITY OF COMMERCE CITY:
8602 ROSEMARY ST
COMMERCE CITY, CO 80228
(303) 227-8782
CONTACT: CAITLIN
HASENBALG-LONG

SOUTH ADAMS COUNTY WATER & SANITATION DISTRICT (SACWSD):
6595 E. 70TH AVE.
COMMERCE CITY, CO 80022
(720) 206-0593
CONTACT: JEFF NELSON

UNITED POWER (FLEC):
500 COOPERATIVE WAY,
BRIGHTON, CO 80603
(303) 637-1300

XCEL ENERGY (GAS):
1800 LARIMER ST.
DENVER, CO 80202
(303) 571-7511

CIVIL ENGINEER:
ATWELL, LLC.
6200 SOUTH SYRACUSE WAY,
SUITE 470,
GREENWOOD VILLAGE, CO 80111.
(303) 928-6757
CONTACT: DANIEL MADRUGA

SURVEYOR:
ATWELL, LLC.
143 UNION BLVD.
SUITE 700,
LAKEWOOD, CO 80228.
(303) 928-6724
CONTACT: BRIAN RITZ

LANDSCAPE ARCHITECT/PLANNER:
HENRY DESIGN GROUP
1501 WAZEE STREET,
SUITE 11-C,
DENVER, CO 80202
(303) 446-2368
CONTACT: KAREN HENRY

Sheet List Table	
SHEET NUMBER	SHEET TITLE
1	01 COVER SHEET
2	02 NOTES
3	03 TYP SEC
4	OVERALL UTILITY PLAN
5	AREA GRADING PLAN
6	ROAD 17 (STA 0+00 TO STA 6+50)
7	ROAD 50 (STA 0+00 TO STA 7+50)
8	ROAD 50 (STA 7+50 TO STA 22+10)
9	ROAD 51 (STA 0+00 TO STA 7+81)
10	ROAD 52 (STA 0+00 TO STA 5+63)
11	ROAD 53 (STA 0+00 TO STA 10+60)
12	ROAD 54 (STA 0+00 TO STA 7+96)
13	ROAD 55 (STA 0+00 TO STA 6+65)
14	STREET INTERSECTIONS
15	STREET INTERSECTIONS
16	STREET INTERSECTIONS
17	CURB RETURNS
18	CURB RETURNS
---	STORM RUN 1, 1A, 1B, 1C
---	STORM RUN 2, 3, 3A
---	STORM RUN 4, 4A, 4B, 4C
19	STREET DETAILS 01
20	STREET DETAILS 02

Add an Overall Demo sheet

STANDARD STREET NOTES:

- A CONSTRUCTION (STREET CUT) PERMIT FROM THE CITY OF COMMERCE CITY DEPARTMENT OF PUBLIC WORKS IS REQUIRED PRIOR TO COMMENCING WORK WITHIN THE CITY RIGHT-OF WAY.
- ANY WORK WITHIN STATE HIGHWAY RIGHT-OF-WAY WILL REQUIRE A CDOT CONSTRUCTION PERMIT IN ADDITION TO A CITY PERMIT.
- THE CONTRACTOR SHALL NOTIFY THE CITY OF COMMERCE CITY DEPARTMENT OF PUBLIC WORKS AT LEAST 24 HOURS PRIOR TO STARTING CONSTRUCTION WITHIN THE RIGHT-OF-WAY AT TELEPHONE NUMBER (303) 289-8150.
- THE CONTRACTOR SHALL PROVIDE ALL SIGNS, BARRICADES, FLAG MEN, LIGHTS OR OTHER DEVICES NECESSARY FOR SAFE TRAFFIC CONTROL IN ACCORDANCE WITH THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND AS MODIFIED BY THE COLORADO SUPPLEMENT TO THE MUTCD. A TRAFFIC CONTROL PLAN SHALL BE SUBMITTED TO AND APPROVED BY THE CITY OF COMMERCE CITY DEPARTMENT OF PUBLIC WORKS PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT FOR WORK WITHIN CITY RIGHT-OF-WAY.
- THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. CALL 1-(800) 922-1987 OR 811.
- CONSTRUCTION SPECIFICATIONS: CURRENT EDITION OF THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION HEREAFTER REFERRED TO AS STANDARD SPECIFICATIONS. SPECIAL PROVISIONS AND REVISIONS THERETO AND THE CITY OF COMMERCE CITY DEPARTMENT OF PUBLIC WORKS ENGINEERING CONSTRUCTION STANDARDS AND SPECIFICATIONS.
- THE SUBGRADE MATERIAL SHALL BE SCARIFIED OR REMOVED TO A DEPTH REQUIRED BY THE CITY OF COMMERCE CITY ACCORDING TO INFORMATION OBTAINED FROM LABORATORY TESTS AND/OR AS REQUIRED IN THE PAVEMENT DESIGN REPORT. ADDITIVES OR APPROVED MATERIAL MAY BE REQUIRED IF THE NATIVE MATERIAL IS UNSATISFACTORY. THE SUBGRADE SHALL BE COMPACTED TO A MINIMUM DENSITY DETERMINED IN ACCORDANCE WITH AASHTO DESIGNATION T180 OR T99 AND IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 203.07 (1991 EDITION OR NEWER).
- SERVICE TRENCHES AND UTILITY MAIN TRENCHES SHALL BE COMPACTED THROUGHOUT THE DEPTH OF TRENCH AS SPECIFIED IN ABOVE NOTE. EXACT EXTENT OF NEW PAVEMENT TO BE INSTALLED FOR A STREET CUT PATCH SHALL BE DETERMINED BY THE CITY CONSTRUCTION INSPECTOR UPON COMPLETION OF ROADWAY EXCAVATION. NEW PAVEMENT SHALL CONFORM TO EXISTING SOUND STRUCTURAL SECTION.
- CLASS 6 AAGREGATE BASE COURSE FOR SHOULDERS SHALL BE PLACED AND COMPACTED TO 100% STANDARD PROCTOR AFTER PLACEMENT OF ASPHALT.
- EXISTING ASPHALT PAVEMENT SHALL BE STRAIGHT SAW CUT WHEN ADJOINING WITH NEW ASPHALT PAVEMENT. CSS-1H TACK COAT SHALL BE APPLIED TO ALL EXPOSED SURFACES, INCLUDING SAW CUTS, POTHOLES, TRENCHES AND ASPHALT OVERLAY.
- STRUCTURAL SECTIONS SHALL BE AS APPROVED BY THE CITY OF COMMERCE CITY DEPARTMENT OF PUBLIC WORKS, WITH PAVEMENT DESIGN IN ACCORDANCE WITH THE CITY OF COMMERCE CITY DEPARTMENT OF PUBLIC WORKS ENGINEERING CONSTRUCTION STANDARDS AND SPECIFICATIONS.
- CONCRETE MAY BE PLACED BY MACHINE METHODS PROVIDED THAT ALL FINISH LINES ARE WITHIN 1/8"± TOLERANCE OF THE LINES SHOWN ON THE PLANS. THE FLOWLINE MUST BE FREE DRAINING.
- ONE HALF (1/2) INCH EXPANSION JOINT MATERIAL SHALL BE INSTALLED WHEN ABUTTING ANY EXISTING CONCRETE OR A FIXED STRUCTURE.
- SIDEWALKS AND DRIVEWAYS SHALL HAVE THE NAME OF THE CONTRACTOR AND THE YEAR OF CONSTRUCTION IMPRESSED THEREIN USING BLOCK LETTERS NOT LESS THAN (1) INCH HIGH AND THREE-EIGHTHS (3/8) INCH DEEP IN EACH DRIVEWAY AND EACH END OF CONSTRUCTION, OR A MINIMUM OF EVERY 150 LINEAL FEET OF SIDEWALK.
- A REFLECTIVE CITY OF COMMERCE CITY LOGO SHALL BE ADDED TO EACH STREET SIGN. STREET NAME SIGN PLATES SHALL BE PROVIDED AND INSTALLED BY THE DEVELOPER PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY. COORDINATE WITH CITY OF COMMERCE CITY TRAFFIC ENGINEERING AT (303) 289-8150.
- THE CONTRACTOR SHALL GUARANTEE ALL WORK FOR A PERIOD OF ONE YEAR AFTER THE DATE OF ACCEPTANCE OF THE WORK BY THE CITY AND SHALL REPAIR OR REPLACE ANY OR ALL SUCH WORK, TOGETHER WITH ANY OTHER WORK WHICH MAY BE DISPLACED IN SO DOING, THAT MAY PROVE DEFECTIVE IN WORKMANSHIP AND/OR MATERIALS WITHIN THE ONE YEAR PERIOD FROM DATE OF ACCEPTANCE WITHOUT EXPENSE WHATSOEVER TO THE CITY. ORDINARY WEAR AND TEAR, UNUSUAL ABUSE OR NEGLECT EXCEPTED. PRIOR TO INITIAL ACCEPTANCE OF PUBLIC IMPROVEMENTS, THE CITY MAY REQUIRE THE APPLICANT OR HIS CONTRACTOR TO FILE A MAINTENANCE BOND WITH THE CITY IN THE AMOUNT OF FIFTEEN (15) PERCENT OF THE ESTIMATED COST OF CONSTRUCTION OR AN AMOUNT ADEQUATE TO ENSURE THE SATISFACTORY MAINTENANCE AND CONDITION OF THE REQUIRED PUBLIC IMPROVEMENTS FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF THEIR FINAL ACCEPTANCE AND DEDICATION TO THE CITY.
- NO PORTION OF ANY STREET SHALL BE PAVED WITH THE FINAL LIFT OF ASPHALT UNTIL ALL UTILITIES HAVE BEEN RELOCATED, INSTALLED OR STUBBED TO THE BACK OF SIDEWALK AND ALL STREET LIGHTS RELOCATED AS NECESSARY.
- ANGLE POINTS IN THE CURB AND GUTTER AND ALL POINTS OF GRADE CHANGE NOT WITHIN A VERTICAL CURVE SHALL BE ROUNDED IN THE FIELD TO PRODUCE A SMOOTH GRADUAL CURVE FOR PROPER APPEARANCE.

VICINITY MAP
SCALE 1"=2000'

STANDARD STREET NOTES (CONTINUED):

- SURVEY MONUMENTS. THE STANDARD SURVEY MONUMENT AS SHOWN IN DESIGN STANDARD DETAIL NO. 300-24 OR 300-25 WILL BE INSTALLED AT ALL SECTION AND QUARTER SECTION CORNERS. SURVEY MONUMENTS SHALL BE SET IN ACCORDANCE WITH THE COLORADO REVISED STATUTES, AND AS REQUIRED BY THE BYLAWS AND RULES OF PROCEDURE OF THE COLORADO STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND PROFESSIONAL LAND SURVEYORS. ALL MONUMENTS SHALL BE SET WITHIN 60 DAYS OF COMPLETION OF STREETS. IF THE MONUMENTS ARE NOT INSTALLED, THE CITY SHALL HAVE THE WORK PERFORMED BY A REGISTERED LAND SURVEYOR AND MAKE A CLAIM AGAINST THE COLLATERAL FOR ALL COSTS INCLUDING ADMINISTRATION AND LEGAL FEES.
- MYLAR COPIES OF "AS BUILT" PLANS SHALL BE SUBMITTED TO THE ENGINEERING DIVISION PRIOR TO INITIAL ACCEPTANCE OF IMPROVEMENTS.
- NO REVISIONS TO THESE PLANS SHALL BE MADE WITHOUT THE APPROVAL OF BOTH THE CITY ENGINEER AND THE DESIGN ENGINEER. ANY REVISIONS OR CHANGES THERETO SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO ANY REQUESTS FOR INSPECTION.
- BENCHMARK. ALL ELEVATIONS SHOWN ON THESE PLANS FOR IMPROVEMENTS OR NOTED ELSEWHERE ARE REFERENCED TO THE BENCHMARK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MONUMENT OR BENCHMARK WHICH IS DESTROYED OR DISTURBED. DAMAGED MONUMENT SHALL BE RE-ESTABLISHED AND REPLACED BY A LICENSED LAND SURVEYOR AND A MONUMENT RECORD FILED AS REQUIRED.
- THE CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER, THE ENGINEER, AND THE CITY OF COMMERCE CITY HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER, THE ENGINEER, OR THE CITY OF COMMERCE CITY.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE ALL NECESSARY UTILITY RELOCATIONS WITH THE APPROPRIATE UTILITY COMPANY.
- ADJUST RIM OF ALL CLEAN-OUTS, MANHOLES, VALVE COVERS AND SURVEY MONUMENT COVERS TO FINISH GRADE.
- THE CONTRACTOR SHALL PROVIDE FOR INGRESS AND EGRESS FOR PRIVATE PROPERTY ADJACENT TO THE WORK THROUGHOUT PERIOD OF CONSTRUCTION.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE DESIGN ENGINEER OF ANY PROBLEM IN CONFORMING TO THE APPROVED LINE AND GRADE FOR ANY ELEMENT OF THE PROPOSED IMPROVEMENTS PRIOR TO ITS CONSTRUCTION.
- IT SHALL BE THE DESIGN ENGINEER'S RESPONSIBILITY TO RESOLVE CONSTRUCTION PROBLEMS DUE TO CHANGED CONDITIONS OR DESIGN ERRORS ENCOUNTERED BY THE CONTRACTOR DURING THE PROGRESS OF ANY PORTION OF THE PROPOSED WORK. IF, IN THE OPINION OF THE CONSTRUCTION INSPECTOR, PROPOSED ALTERATIONS TO THE APPROVED PLANS INVOLVE SIGNIFICANT CHANGES TO THE CHARACTER OF THE WORK OR TO FUTURE CONTIGUOUS PUBLIC OR PRIVATE IMPROVEMENTS, THE DESIGN ENGINEER SHALL BE RESPONSIBLE FOR SUBMITTING REVISED PLANS TO THE CITY OF COMMERCE CITY FOR APPROVAL PRIOR TO ANY FURTHER CONSTRUCTION RELATED TO THAT PORTION OF THE WORK.
- LOCATION OF UNDERGROUND UTILITIES WAS TAKEN FROM THE RECORDS OF THE CONTROLLING AGENCIES. NO RESPONSIBILITY FOR THEIR ACCURACY IS ASSUMED BY THE ENGINEER. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE AND/OR LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR THE PREVENTION OF DAMAGE TO ADJACENT PROPERTY. NO PERSON SHALL EXCAVATE ON LAND SO CLOSE TO THE PROPERTY LINE AS TO ENDANGER ANY ADJOINING IMPROVEMENTS, SIDEWALK, ALLEY OR UTILITY WITHOUT SUPPORTING AND PROTECTING SUCH PROPERTY FROM SETTLING, OR OTHER DAMAGE THAT MIGHT RESULT FROM THE WORK PRESCRIBED ON THIS PLAN. THE LOCAL AGENCY WILL HOLD THE CONTRACTOR RESPONSIBLE FOR CORRECTION OF DAMAGE TO ADJACENT PROPERTY, PUBLIC OR PRIVATE.

STORM SEWER NOTES:

- ALL STORM SEWER CONSTRUCTION, INCLUDING MANHOLES, INLETS AND PIPE TRENCHES, SHALL BE GOVERNED BY THE COMMERCE CITY STORM DRAINAGE DESIGN AND TECHNICAL CRITERIA MANUAL AND STANDARDS SPECIFICATIONS, AND THE COLORADO DEPARTMENT OF HIGHWAYS STANDARDS SPECIFICATIONS, LATEST EDITION. IN THE EVENT OF CONFLICT THE COMMERCE CITY STANDARDS WILL GOVERN.
- ALL STORM SEWER PIPE SHALL BE ASTM C76 CLASS III REINFORCED CONCRETE PIPE (RCP) UNLESS OTHERWISE SPECIFIED IN THESE PLANS.
- ALL STORM SEWER INLETS SHALL HAVE ONE FOOT OF CLEARANCE BELOW INVERT OUT OF PIPE, TO TOP OF BOTTOM SLAB.

STORM SEWER NOTES (CONTINUED):

- FOR CONSTRUCTION IN THE CITY OF COMMERCE CITY, THE FOLLOWING MODIFICATIONS HAVE BEEN MADE TO THE CDOT STANDARD TYPE R INLET:
 - THE 5-FOOT TYPE R INLET SHALL HAVE ONE MANHOLE RING AND LID.
 - THE 10-FOOT TYPE R INLET SHALL HAVE TWO MANHOLE RINGS AND LIDS.
 - THE 15-FOOT TYPE R INLET SHALL HAVE THREE MANHOLE RINGS AND LIDS, WITH ON MANHOLE RING AND LID BEING LOCATED AT THE CENTER OF THE INLET.
 - THE 20-FOOT TYPE R INLET SHALL HAVE FOUR MANHOLE RINGS AND LIDS. A HANGING CENTER WALL SHALL BE BUILT WITH A BOTTOM OPENING DEPTH SUFFICIENT TO HANDLE DESIGN WATER FLOWS. THE CENTER TWO MANHOLES SHALL BE LOCATED ONE EACH, ON BOTH SIDES OF THE CENTER WALL.
- ALL STORM SEWER MANHOLES SHALL BE 1/4 INCH LOW TO FLUSH WITH FINAL PAVED SURFACE.
- PRIOR TO INITIAL ACCEPTANCE OF PUBLIC IMPROVEMENTS, THE CITY MAY REQUIRE THE APPLICANT OR HIS CONTRACTOR TO FILE A MAINTENANCE BOND WITH THE CITY IN THE AMOUNT OF FIFTEEN (15) PERCENT OF THE ESTIMATED COST OF CONSTRUCTION OR AN AMOUNT ADEQUATE TO ENSURE THE SATISFACTORY MAINTENANCE AND CONDITION OF THE REQUIRED PUBLIC IMPROVEMENTS FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF THEIR FINAL ACCEPTANCE AND DEDICATION TO THE CITY.
- THE CONTRACTOR SHALL FURNISH AND INSTALL, PER SPECIFICATIONS, THE APPROPRIATE BURIED UTILITY WARNING AND IDENTIFICATION TAPE ABOVE ALL PUBLIC SEWER LINES, INCLUDING SEWER LATERALS LOCATED IN PUBLIC RIGHTS-OF-WAY.
- AFTER COMPLETION OF PIPE LAYING, ALL MAIN LINE SEWERS, SERVICE LATERALS AND STRUCTURES SHALL BE TESTED IN THE PRESENCE OF THE INSPECTOR. IT WILL BE THE PERMITTEE'S RESPONSIBILITY TO PAY FOR THE COST OF THIS WORK.
- COMPACTION TESTS SHALL BE SUPPLIED BY CONTRACTOR FOR ALL TRENCHES.
- BEDDING FOR THE RCP PIPE SHALL BE AG7122 NO. 57/67 CRUSHED ROCK. SQUEEGEE OR MIXTURES CONTAINING SQUEEGEE SHALL NOT BE USED. BEDDING SHALL BE SIX TO EIGHT INCHES DEEP UNDER THE PIPE AND BACKFILLED TO THE SPRING LINE.
- REQUEST FOR AN INSPECTION OF REINFORCEMENT AND SUBGRADE MUST BE CALLED 24 HOURS PRIOR TO PLACEMENT OF CONCRETE AT MANHOLES AND INLETS. STORM SEWER INSTALLATION SHALL BE SUBJECTED TO ADDITIONAL PERIODIC INSPECTION BY THE ENGINEER. FOR STORM SEWER IN THE ROADWAY AREA, TRENCH COMPACTION SHALL BE IN ACCORDANCE WITH AASHTO 199 OR T180 AS REQUIRED IN SECTION 203.11 OF THE CDOT STANDARD SPECIFICATIONS. COMPACTION TESTS MUST BE PERFORMED BY A GEOTECHNICAL ENGINEER AND SHALL BE A MINIMUM OF EVERY 250 FEET ALONG THE TRENCH. TESTING INTERVALS MAY BE INCREASED AT THE DISCRETION OF THE CITY INSPECTOR.

RECEIVING WATER NOTE:

- ULTIMATE RECEIVING WATER OF SITE STORMWATER RUNOFF IS SECOND CREEK.

BENCHMARK:

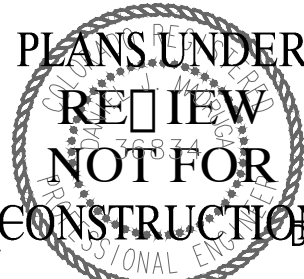
#5 REBAR WITH 2" ALUMINUM CAP.
N=1,194,345.18 E=3,208,552.02 ELEV=5295.09 (NAVD 88)

BASIS OF BEARING:

BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST OF THE 6TH P.P. AS MONUMENTED AT THE NORTHWEST CORNER BY A FOUND 2-1/2" ALUMINUM CAP IN RANGE BOX STAMPED "ISI 2018 LS 29425" AND AT THE NORTH QUARTER CORNER BY A FOUND 2" ALUMINUM CAP STAMPED WESTERN STATES SURVEYING INC. 1994 LS 24960".
SAID LINE BEARS N89°38'58"E.

ENGINEER'S STATEMENT

THE CONSTRUCTION PLANS INCLUDED HEREIN HAVE BEEN PREPARED UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF COMMERCE CITY ENGINEERING CONSTRUCTION STANDARDS AND SPECIFICATIONS MANUAL.



DANIEL J. MADRUGA, P.E.
COLORADO NO. 36834
FOR AND ON BEHALF OF ATWELL, LLC.

Know what's below.
Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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303.825.7100

CLIENT	COHEN DENVER AIRPORT, LLC	LEGATO FILING NO. 1 COMMERCE CITY, COLORADO CONSTRUCTION DOCUMENTS COVER SHEET
DATE	7/20/2020	
A 1st SUBMITTAL TO COMMERCE CITY	7/20/2020 - 6 PM	
REVISIONS		
DR.	JRB	CH. DJM
P.M.	DJM	
JOB	19002860	
SHEET NO.	1	

CAD FILE: 19002860 - COVER.SWG



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IN THE WORK, OF ANY NEARBY
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SUITE 250
HENDERSON, NV 89074
(720) 355-1400
BRAD BURNS

JOHN DENVER AIRPORT, LLC
LEGATO FILING NO. 1
COMMERCE CITY, COLORADO
CONSTRUCTION DOCUMENTS
TYP SEC

1

DATE 7/20/2020

A	1ST SUBMITTAL TO COMMERCE
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REVISIONS

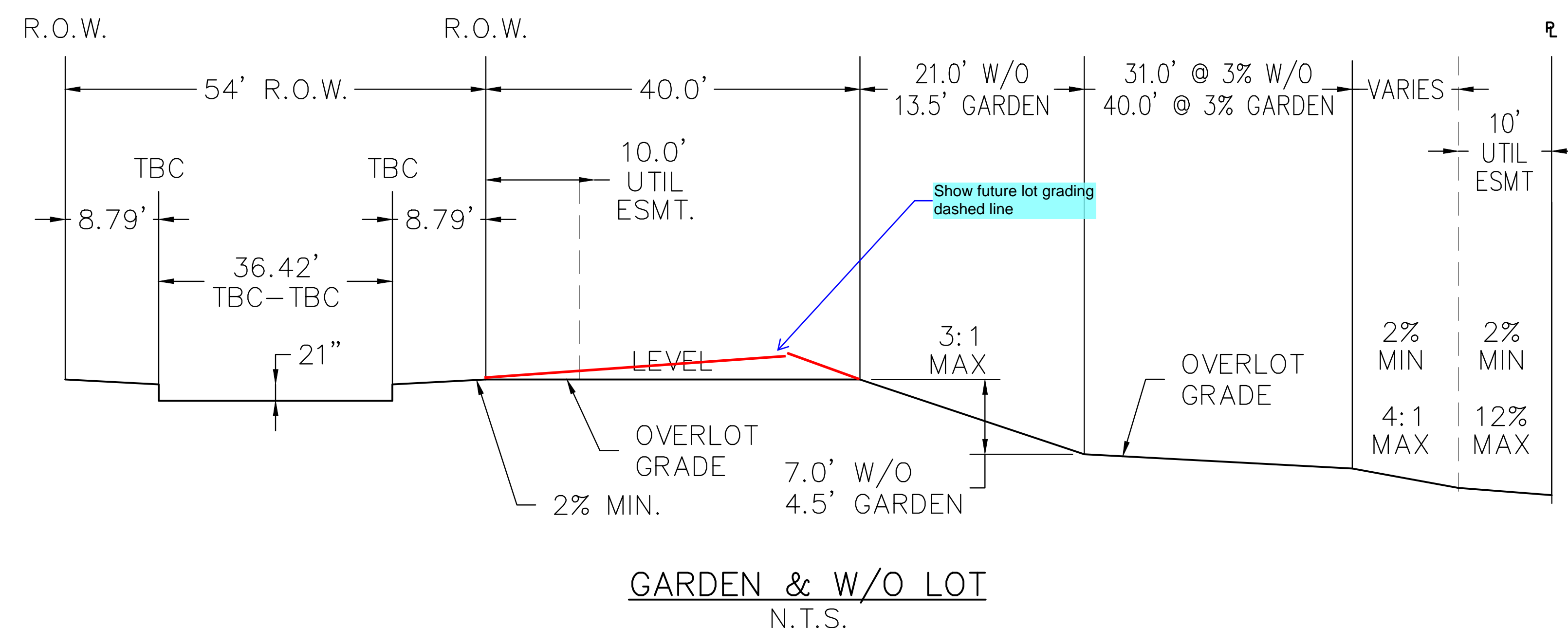
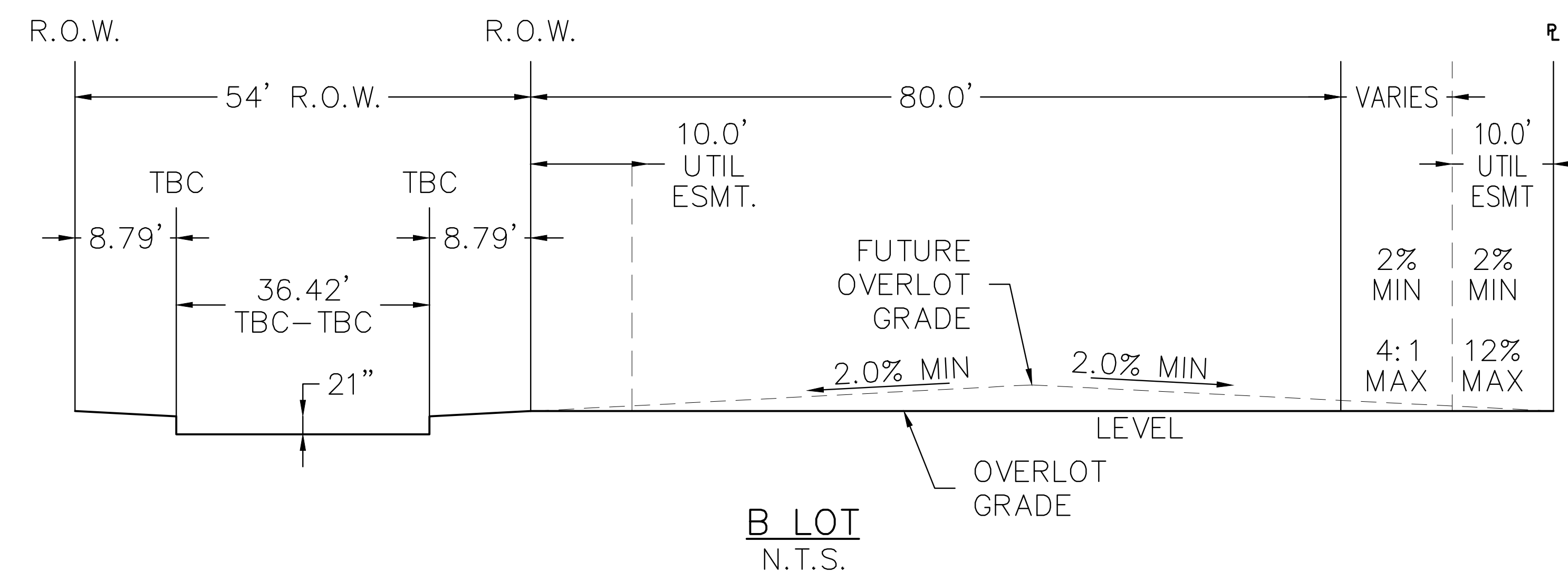
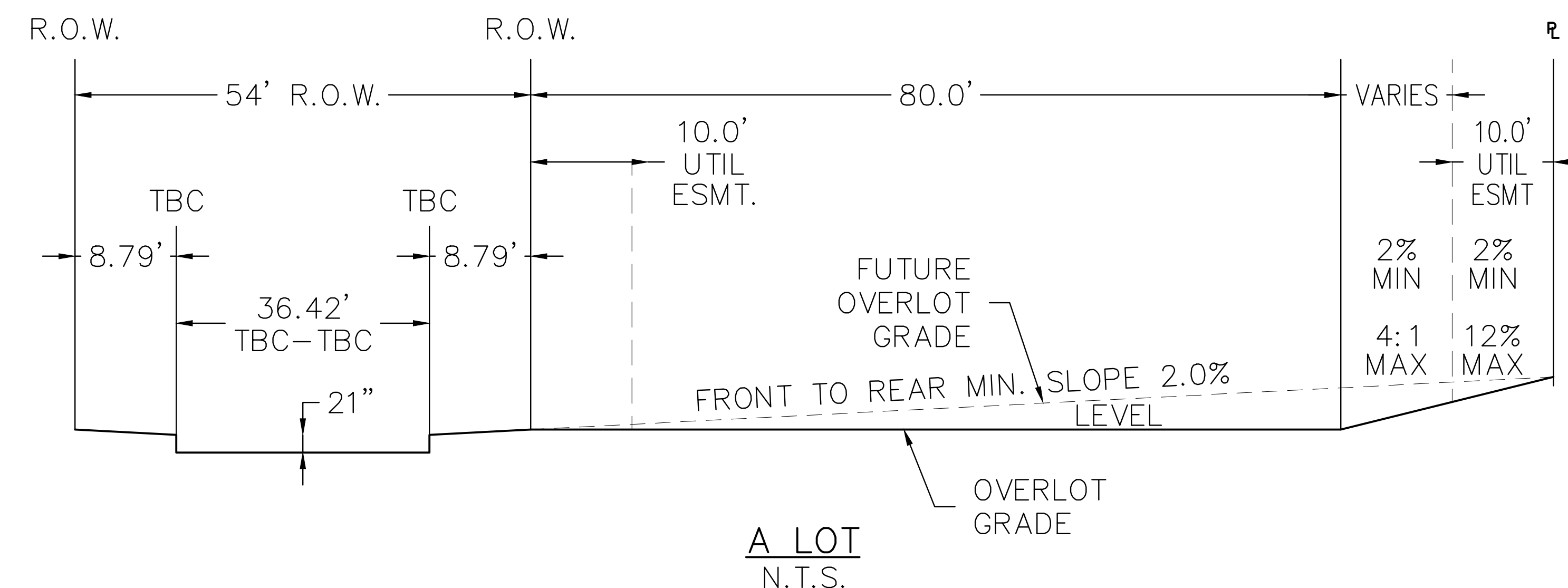
MR.	JRB	CH.	DJM
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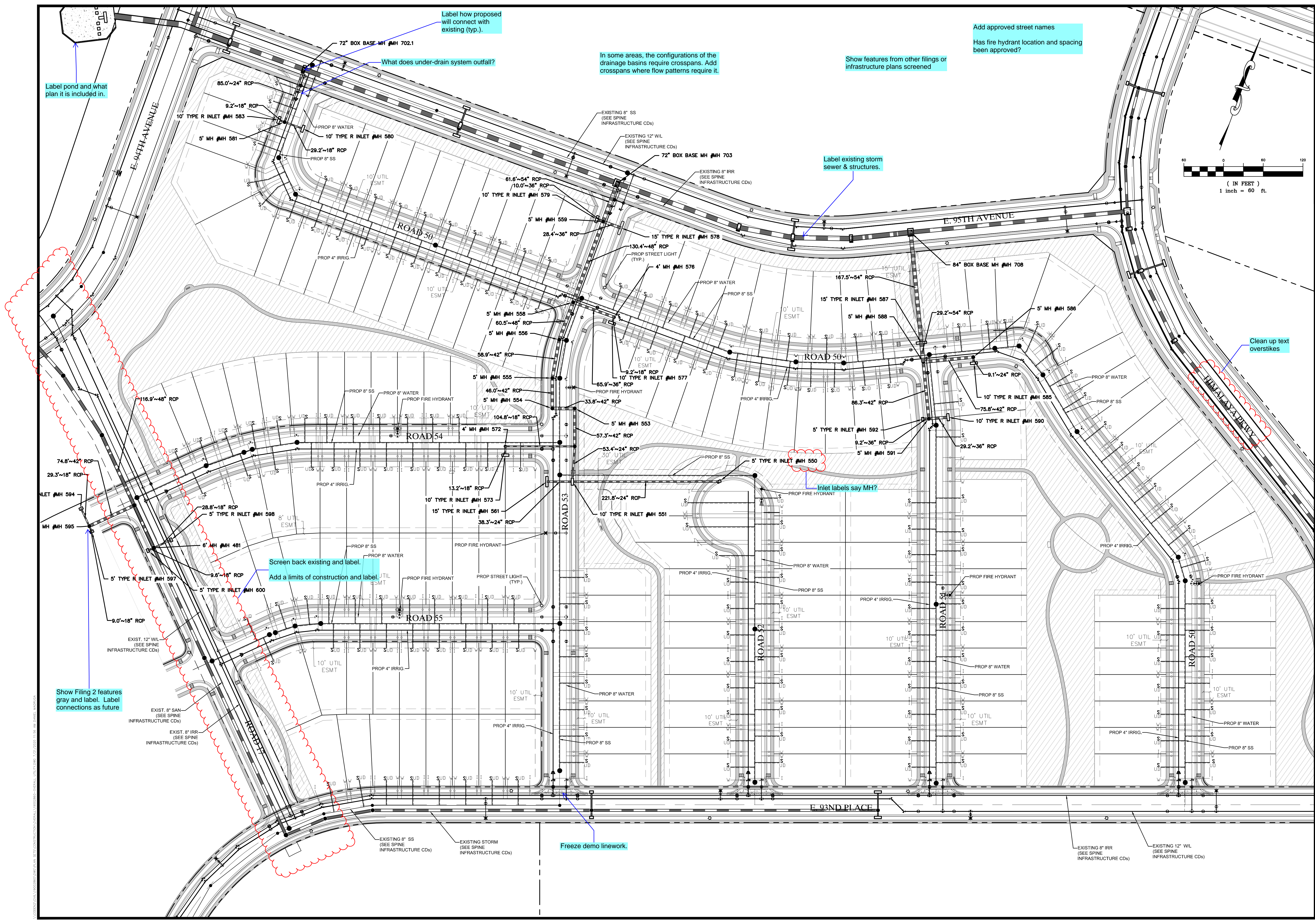
P.M. DJM

OB 19002860

SHEET NO. 0

217





Label pond and what plan it is included in.

Label how proposed will connect with existing (typ.).

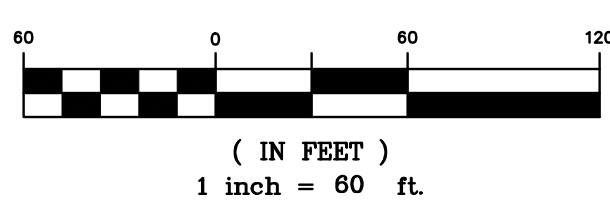
What does under-drain system outfall?

In some areas, the configurations of the drainage basins require crossspans. Add crossspans where flow patterns require it.

Show features from other filings or infrastructure plans screened

Add approved street names
Has fire hydrant location and spacing been approved?

Label existing storm sewer & structures.



Clean up text overstakes

Screen back existing and label.
Add a limits of construction and label.

Inlet labels say MH?

Show Filing 2 features gray and label. Label connections as future

Freeze demo linework.

Know what's below.
Call before you dig.

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COHEN DENVER AIRPORT, LLC	COHEN DENVER AIRPORT, LLC
2600 PASEO VERDE PARKWAY SUITE 250 HENDERSON, NV 89074 (720) 355-1400 BRAD BURNS	LEGATO FILING NO. 1 COMMERCE CITY, COLORADO CONSTRUCTION DOCUMENTS OVERALL UTILITY PLAN

CLIENT

DATE 7/21/2020

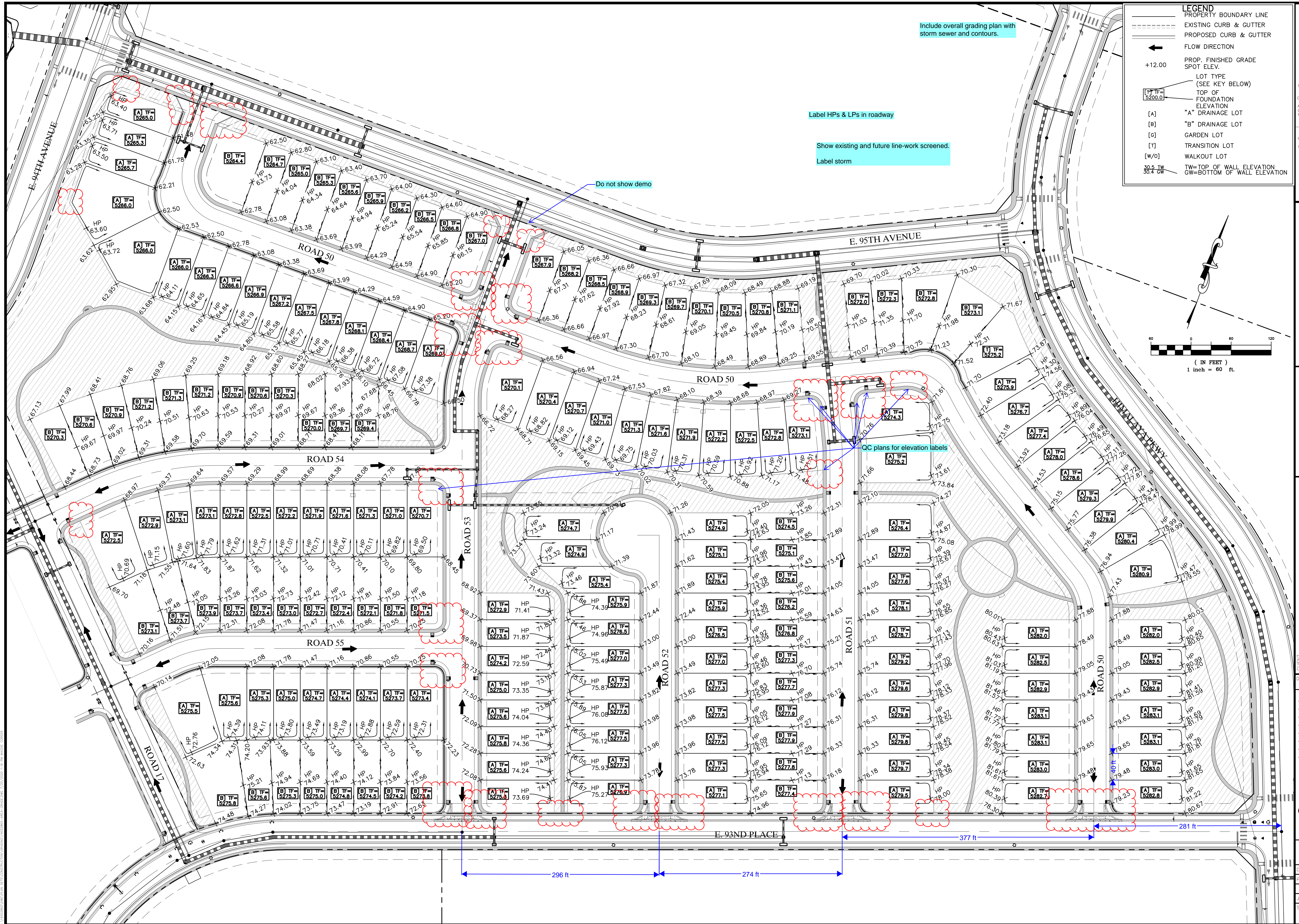
1st SUBMITTAL TO COMMERCE CITY 7/20/2020 - 10M

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PLANS UNDER REVIEW NOT FOR CONSTRUCTION

DR. JRB	CH. DJM
P.M. DJM	
JOB 19002860	
SHEET NO.	

CAD FILE: 19002860-OVERALL UTILITY.DWG



LEGEND

- PROPERTY BOUNDARY LINE
- EXISTING CURB & GUTTER
- PROPOSED CURB & GUTTER
- FLOW DIRECTION
- PROP. FINISHED GRADE SPOT ELEV.
- LOT TYPE (SEE KEY BELOW)
- TOP OF FOUNDATION ELEVATION
- "A" DRAINAGE LOT
- "B" DRAINAGE LOT
- GARDEN LOT
- TRANSITION LOT
- WALKOUT LOT
- TW=TOP OF WALL ELEVATION
- GW=BOTTOM OF WALL ELEVATION

30.5 TW
30.4 GW

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(720) 355-1400
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COHEN DENVER AIRPORT, LLC

LEGATO FILING NO. 1
COMMERCE CITY, COLORADO
CONSTRUCTION DOCUMENTS
AREA GRADING PLAN

CLIENT: COHEN DENVER AIRPORT, LLC

DATE: 7/20/2020

A 1st SUBMITTAL TO COMMERCE CITY: 7/20/2020 - 10 AM

REVISIONS

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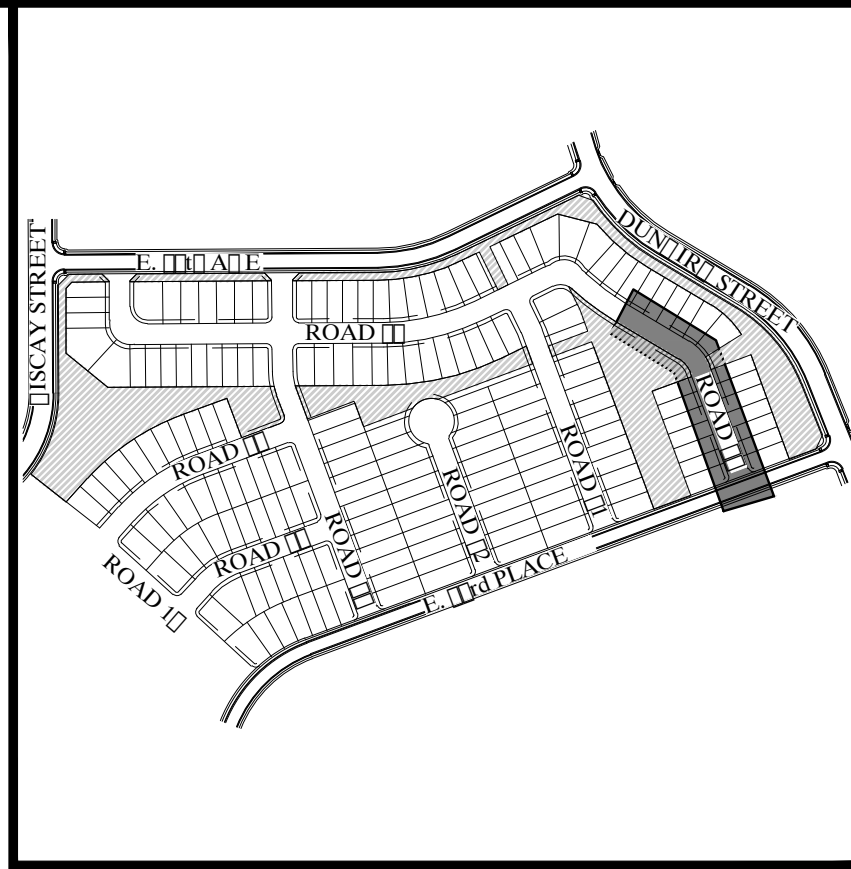
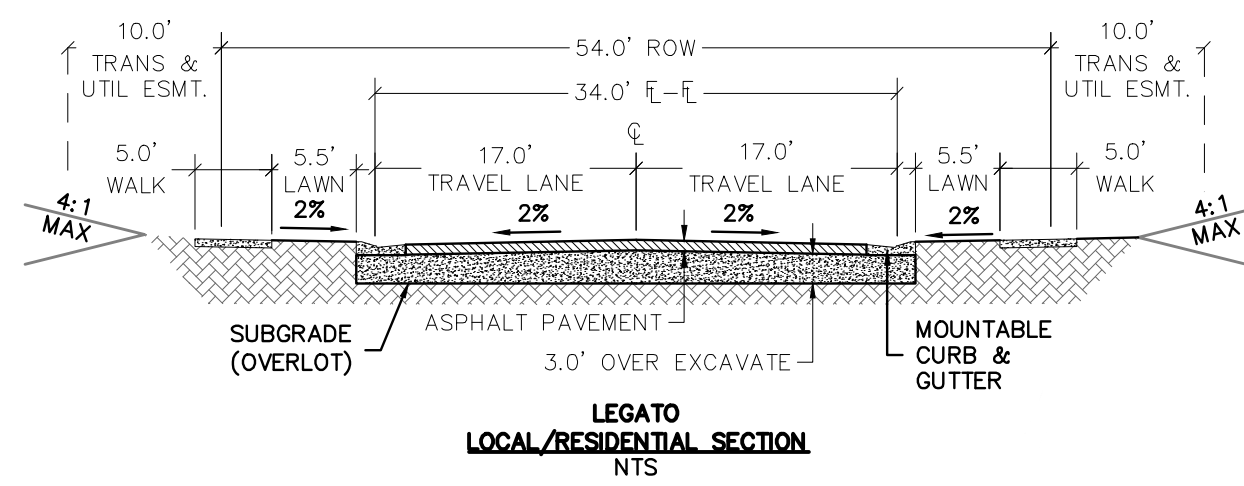
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P.M. DJM

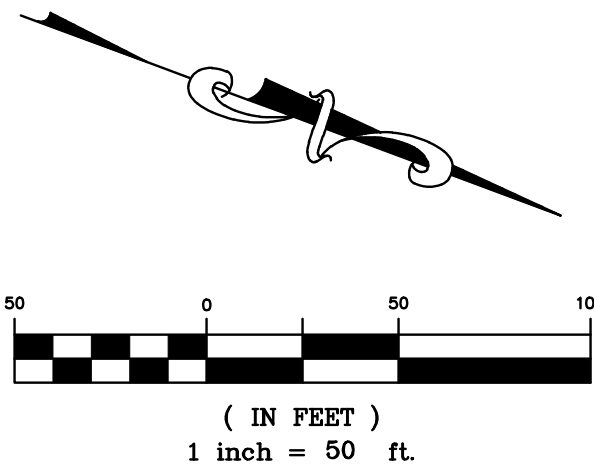
JOB: 19002860

SHEET NO.

CAD FILE: 19002860-AREA-GRADING.DWG



KEY MAP
SCALE: 1"=500'



BENCHMARK:
BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER SECTION 22, TOWNSHIP SOUTH, RANGE 66 WEST OF THE 6TH P.P. AS MONUMENTED AT THE NORTHWEST CORNER BY A FOUND 2-1/2" ALUMINUM CAP IN RANGE BOX STAMPED "ISI 2018 LS 29425" AND AT THE NORTH QUARTER CORNER BY A FOUND 2" ALUMINUM CAP STAMPED "WESTERN STATES SURVEYING INC. 1994 LS 24960" SAID LINE BEARS N89°38'58"E.

This is confusing, please add an Overall Demo Sheet, detail each intersections demo, show saw cut etc.

Typical all connections to existing.

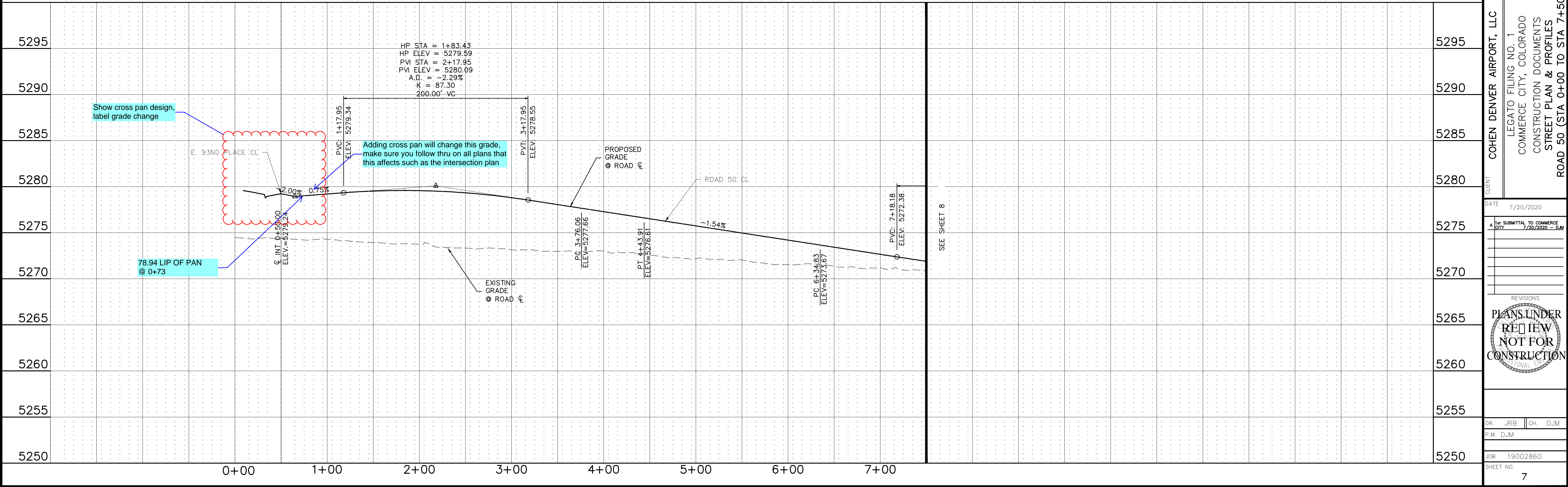
Something to think about, there are 7 intersection that will have demo, it would be cost effective to block out that curb and walk IF this construction will occur within a reasonable time of infrastructure completion. You may be able to just add a notation on the Infrastructure plans that states something about leaving the curb and walk out at the discretion of the construction manager if the connecting roadway is anticipated to be connected soon and that if the connection doesn't take place the contractor is to construct the curb/walk prior to final acceptance and/or at the discretion of the City Inspector.

Please QC your plans for label overstrikes

Label what this means

Please QC your plans for label locations

Right-of-way line must show
Typical all sheets



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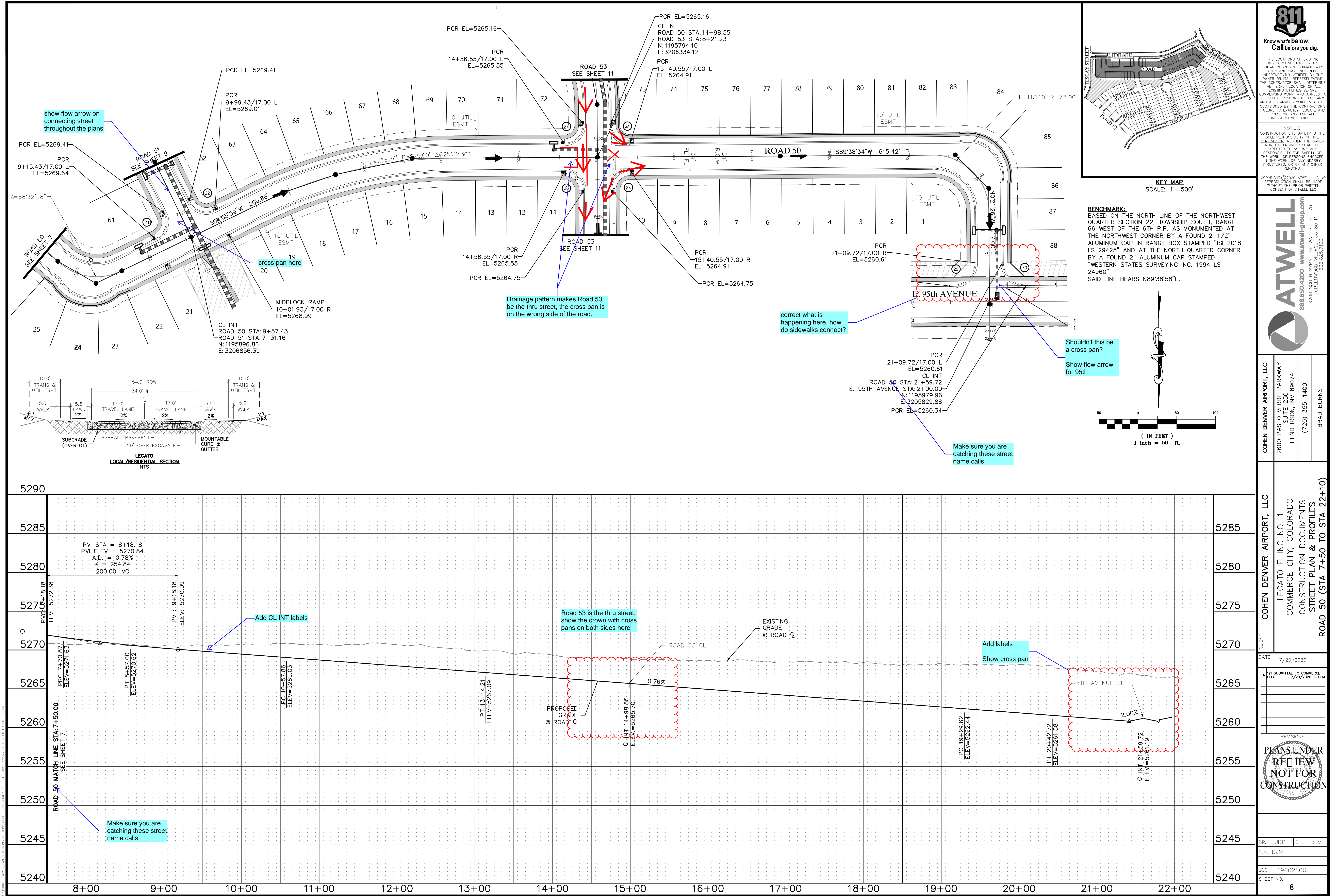
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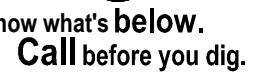
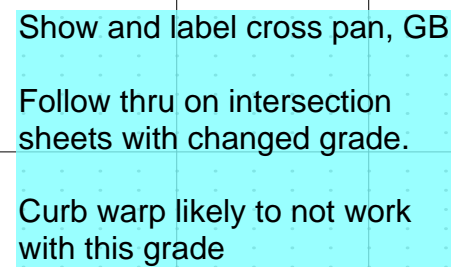
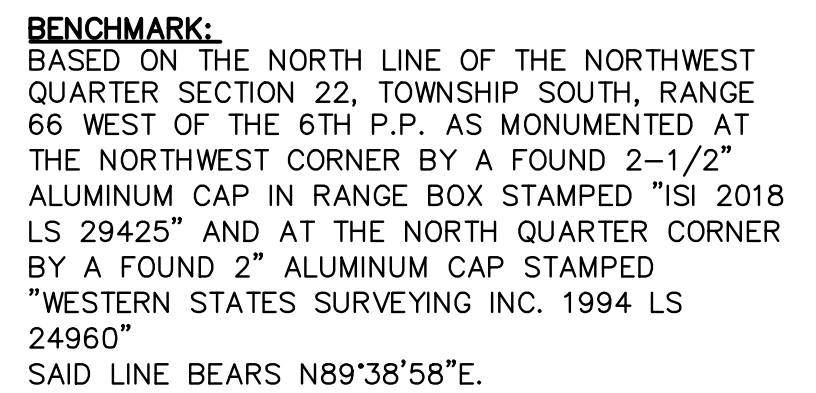
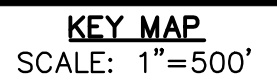
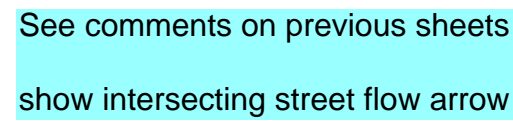
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DATE: 7/20/2020	DATE: 7/20/2020
A 1st SUBMITTAL TO COMMERCE CITY	A 1st SUBMITTAL TO COMMERCE CITY
REVISIONS	REVISIONS
PLANS UNDER REVIEW NOT FOR CONSTRUCTION	PLANS UNDER REVIEW NOT FOR CONSTRUCTION
DR: JRB CH: DJM	DR: JRB CH: DJM
P.M. DJM	P.M. DJM
JOB: 19002860	JOB: 19002860
SHEET NO. 7	SHEET NO. 7

CAD FILE: 19002860-STREET-50.DWG





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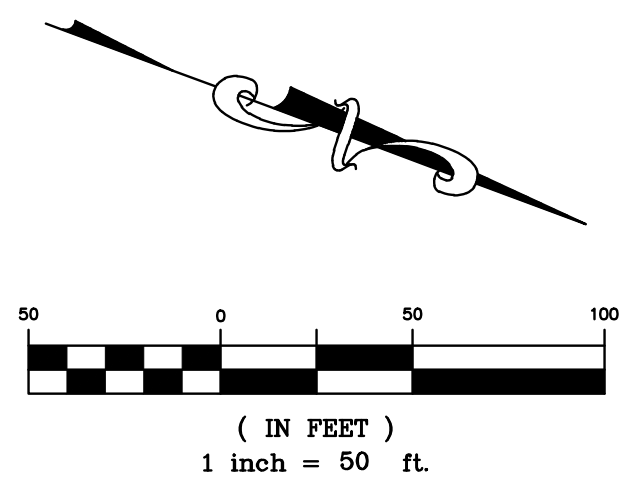
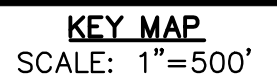
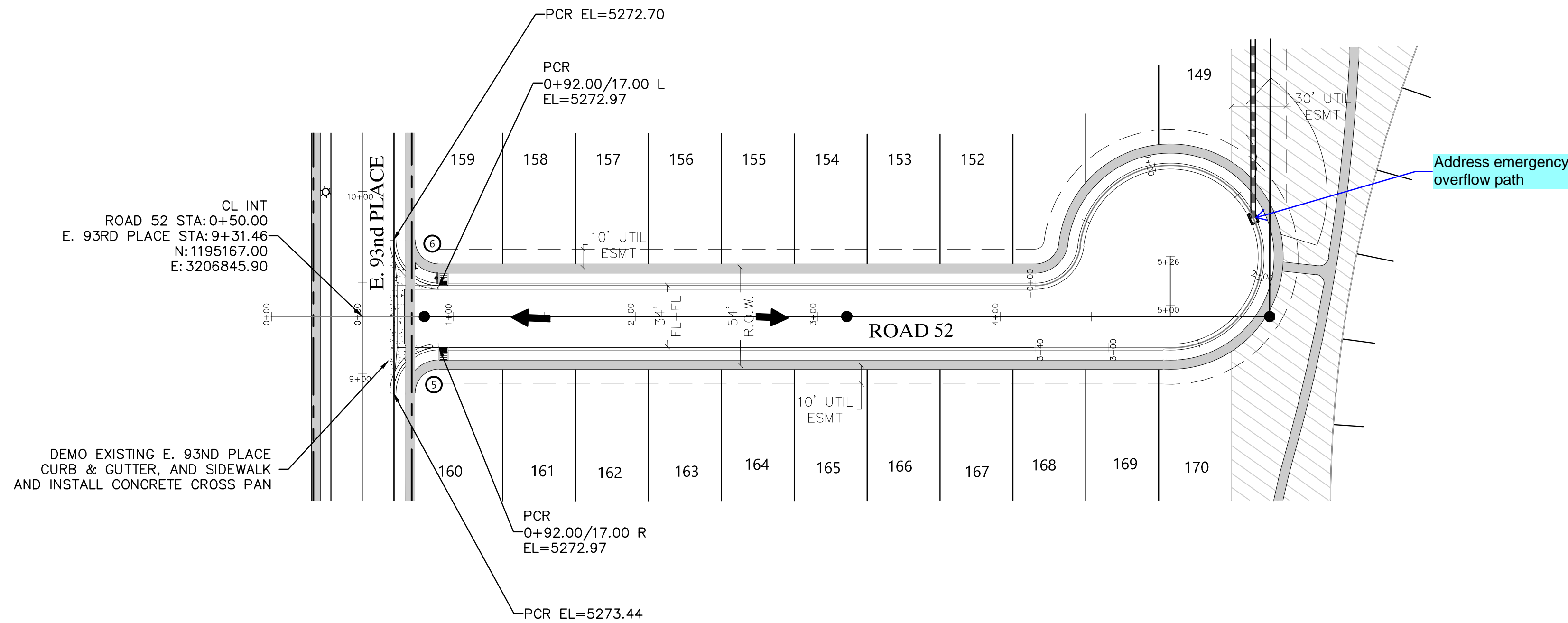
JRB	CH.	DJM
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DJM

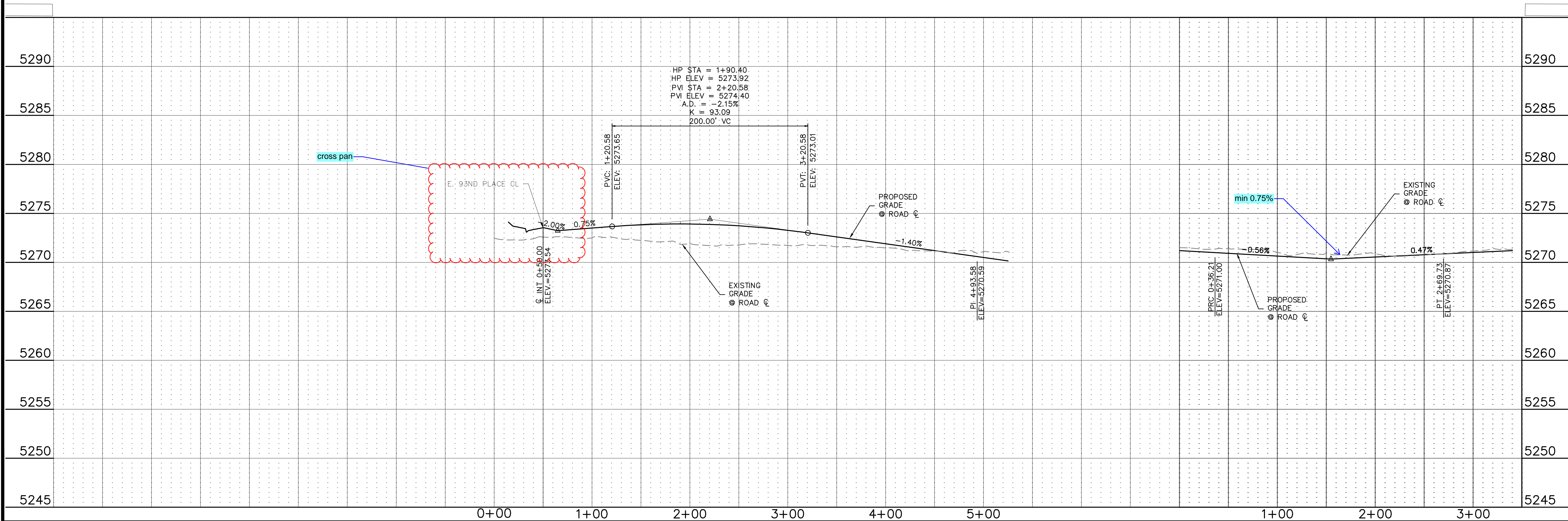
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9



BENCHMARK:
BASED ON THE NORTH LINE OF THE NORTHWEST
QUARTER SECTION 22, TOWNSHIP SOUTH, RANGE
66 WEST OF THE 6TH P.P. AS MONUMENTED AT
THE NORTHWEST CORNER BY A FOUND 2-1/2"
ALUMINUM CAP IN RANGE BOX STAMPED "ISI 2018
LS 29425" AND AT THE NORTH QUARTER CORNER
BY A FOUND 2" ALUMINUM CAP STAMPED
"WESTERN STATES SURVEYING INC. 1994 LS
24960"
SAID LINE BEARS N89°38'58"E.



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COMMERCE CITY, COLORADO
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STREET PLAN & PROFILES
ROAD 52 (STA 0+00 TO STA 5+00)

DATE 7/20/2020

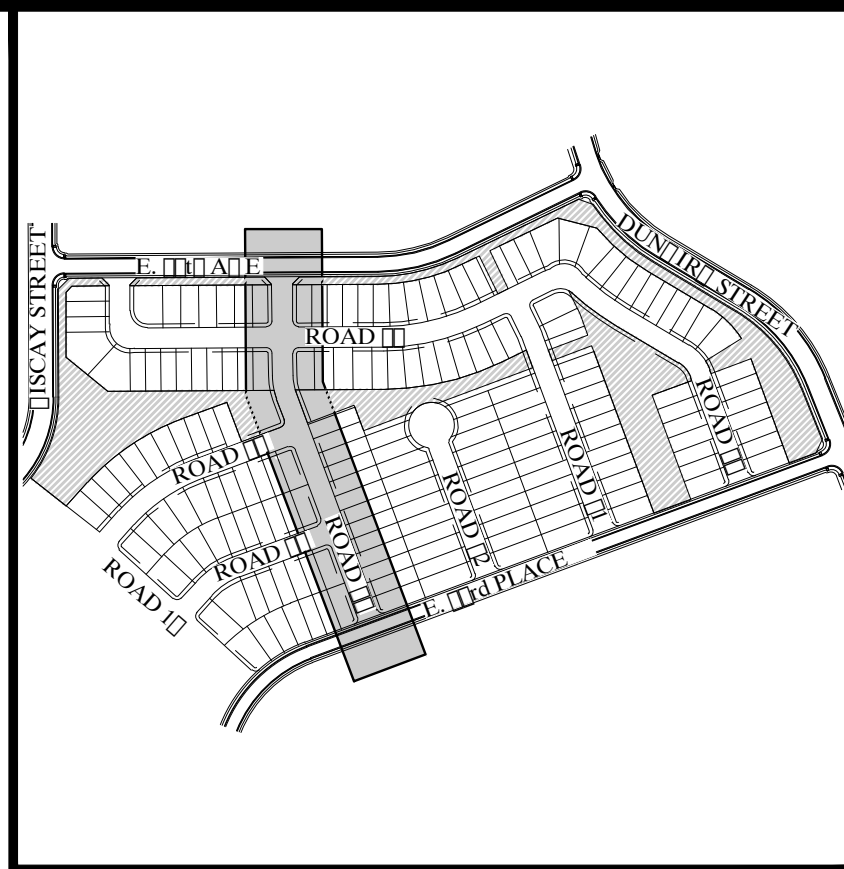
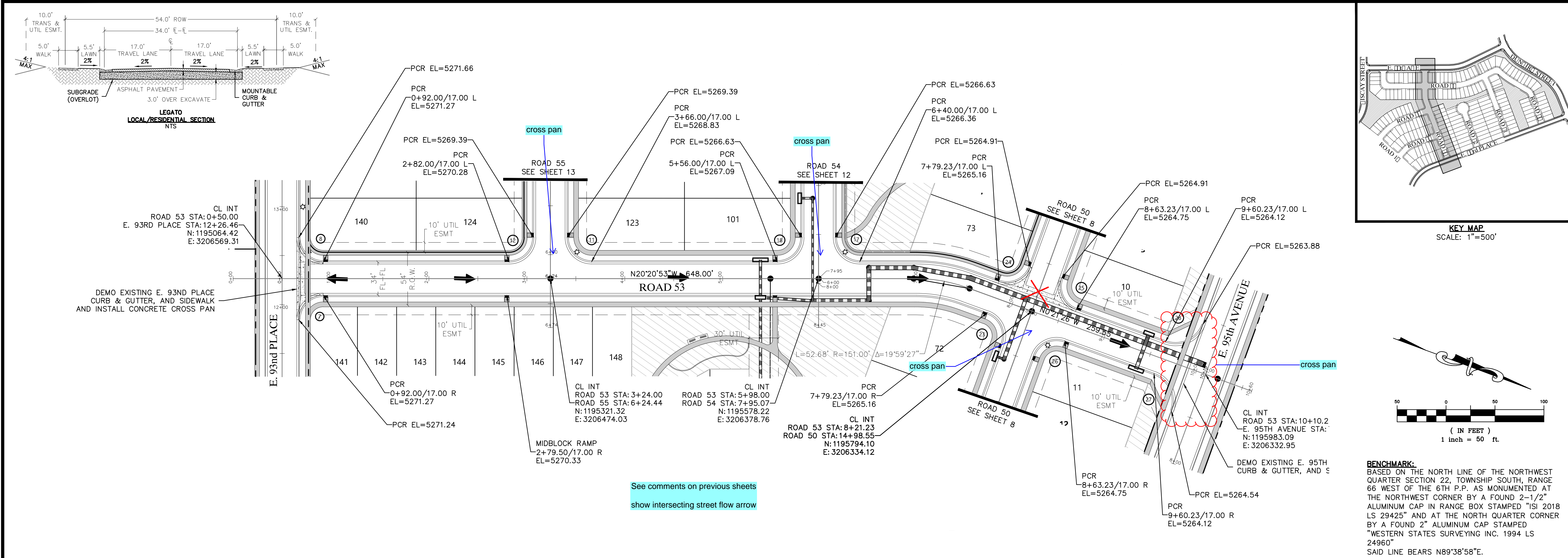
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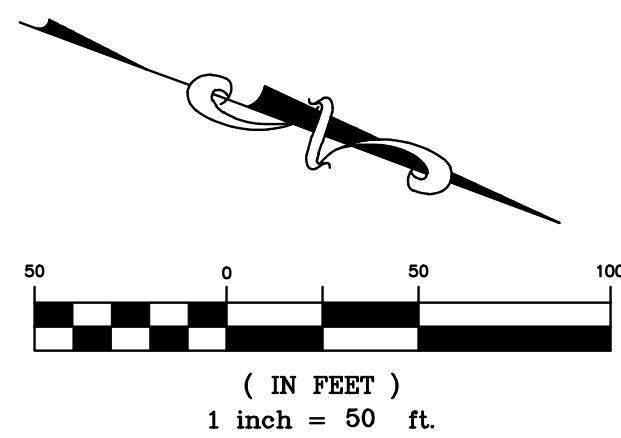
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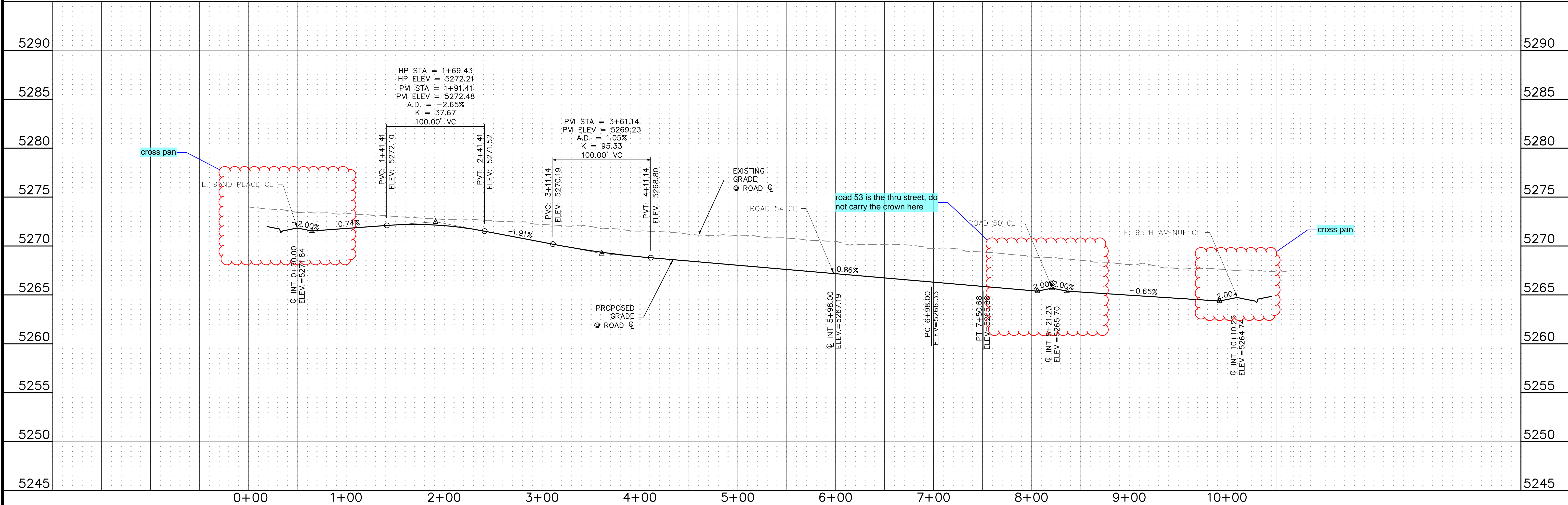
DR.	JRB	CH.	DJM
P.M. DJM			
JOB		19002860	
SHEET NO.			
10			



KEY MAP
SCALE: 1"=500'



BENCHMARK:
BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER SECTION 22, TOWNSHIP SOUTH, RANGE 66 WEST OF THE 6TH P.P. AS MONUMENTED AT THE NORTHWEST CORNER BY A FOUND 2-1/2" ALUMINUM CAP IN RANGE BOX STAMPED "ISI 2018 LS 29425" AND AT THE NORTH QUARTER CORNER BY A FOUND 2" ALUMINUM CAP STAMPED "WESTERN STATES SURVEYING INC. 1994 LS 24960"
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CLIENT: COHEN DENVER AIRPORT, LLC

DATE: 7/20/2020

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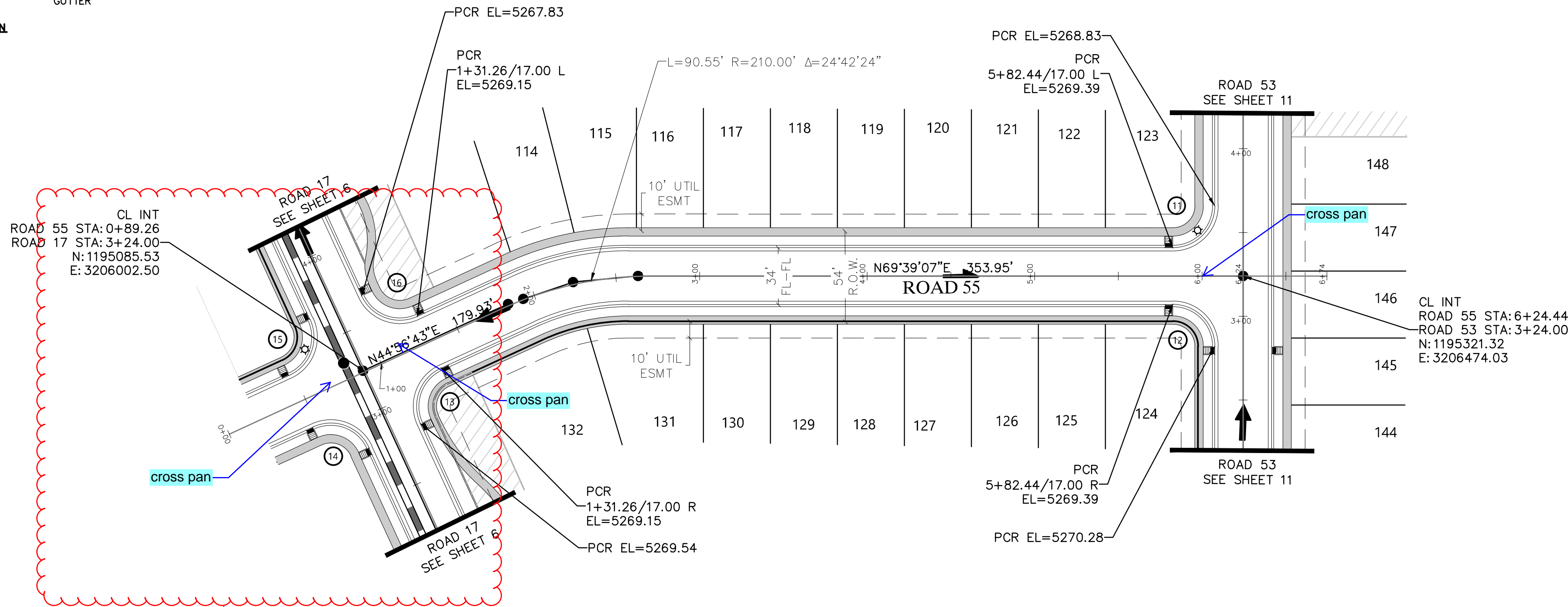
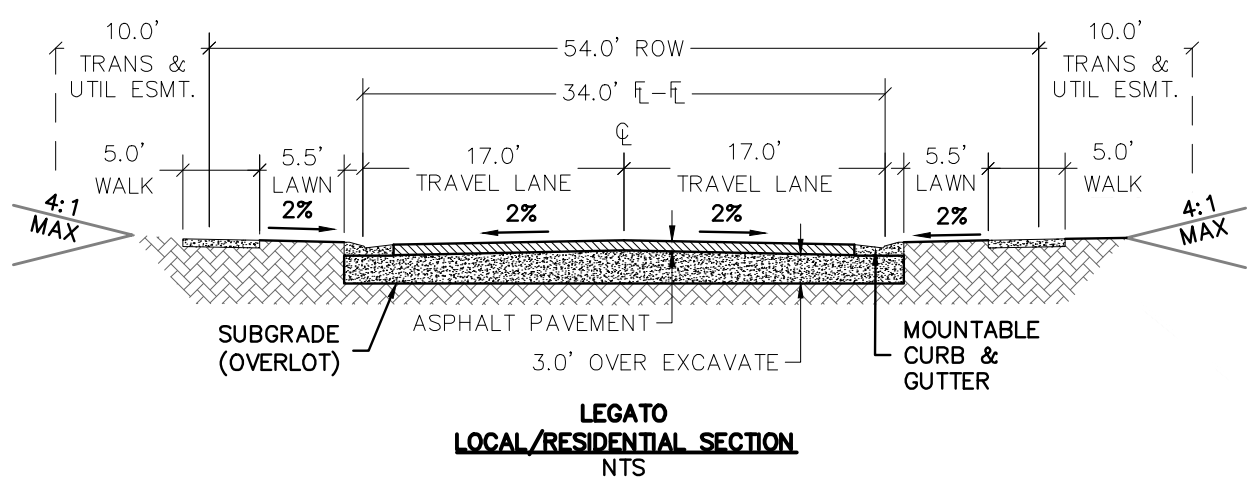
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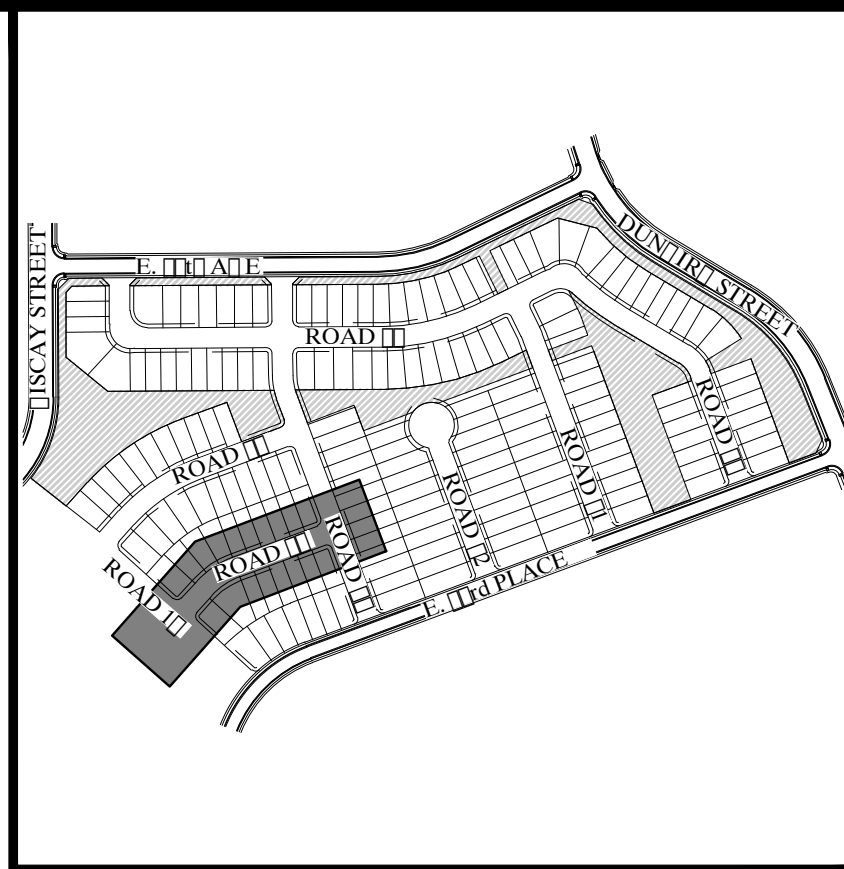
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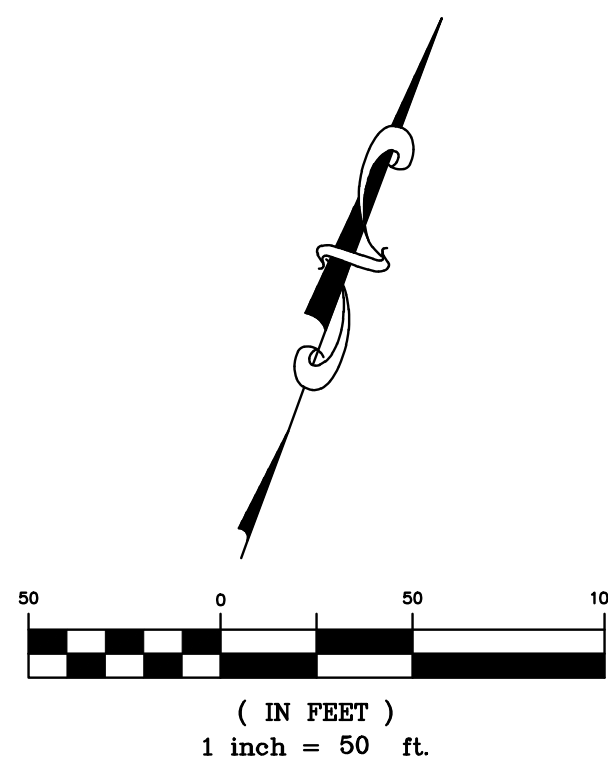


clearly show and label what is part of this plan set and what is future

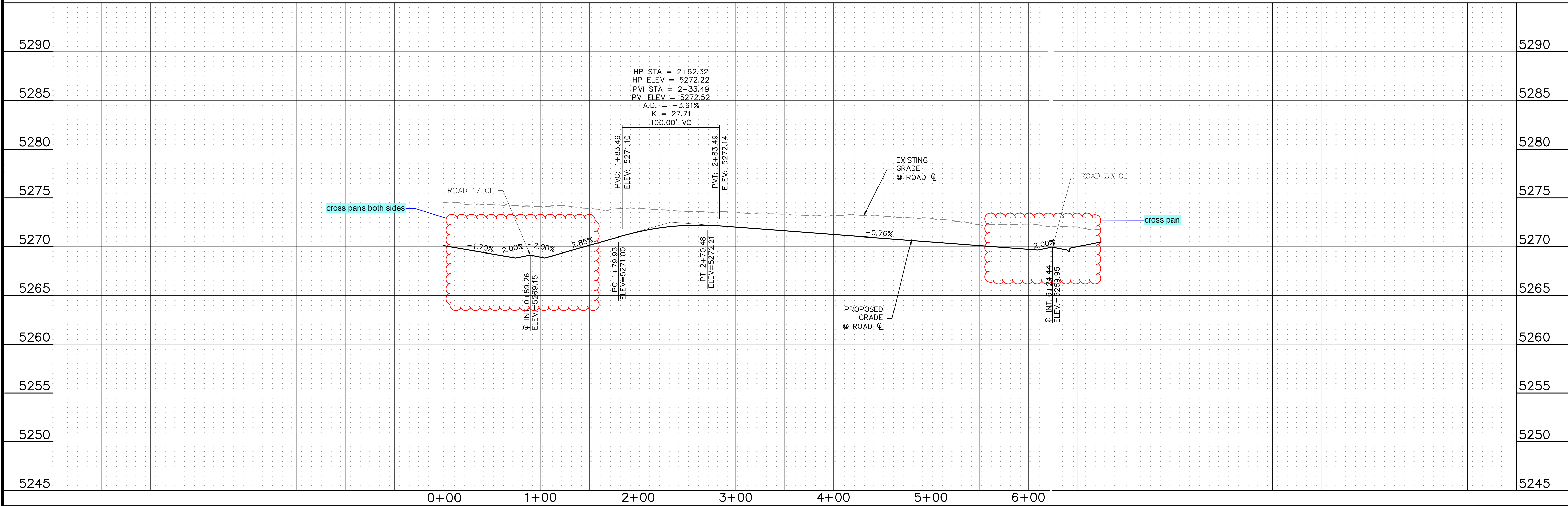
See comments on previous sheets
show intersecting street flow arrow



KEY MAP
SCALE: 1"=500'



BENCHMARK:
BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER SECTION 22, TOWNSHIP SOUTH, RANGE 66 WEST OF THE 6TH P.P. AS MONUMENTED AT THE NORTHWEST CORNER BY A FOUND 2-1/2" ALUMINUM CAP IN RANGE BOX STAMPED "ISI 2018 LS 29425" AND AT THE NORTH QUARTER CORNER BY A FOUND 2" ALUMINUM CAP STAMPED "WESTERN STATES SURVEYING INC. 1994 LS 24960"
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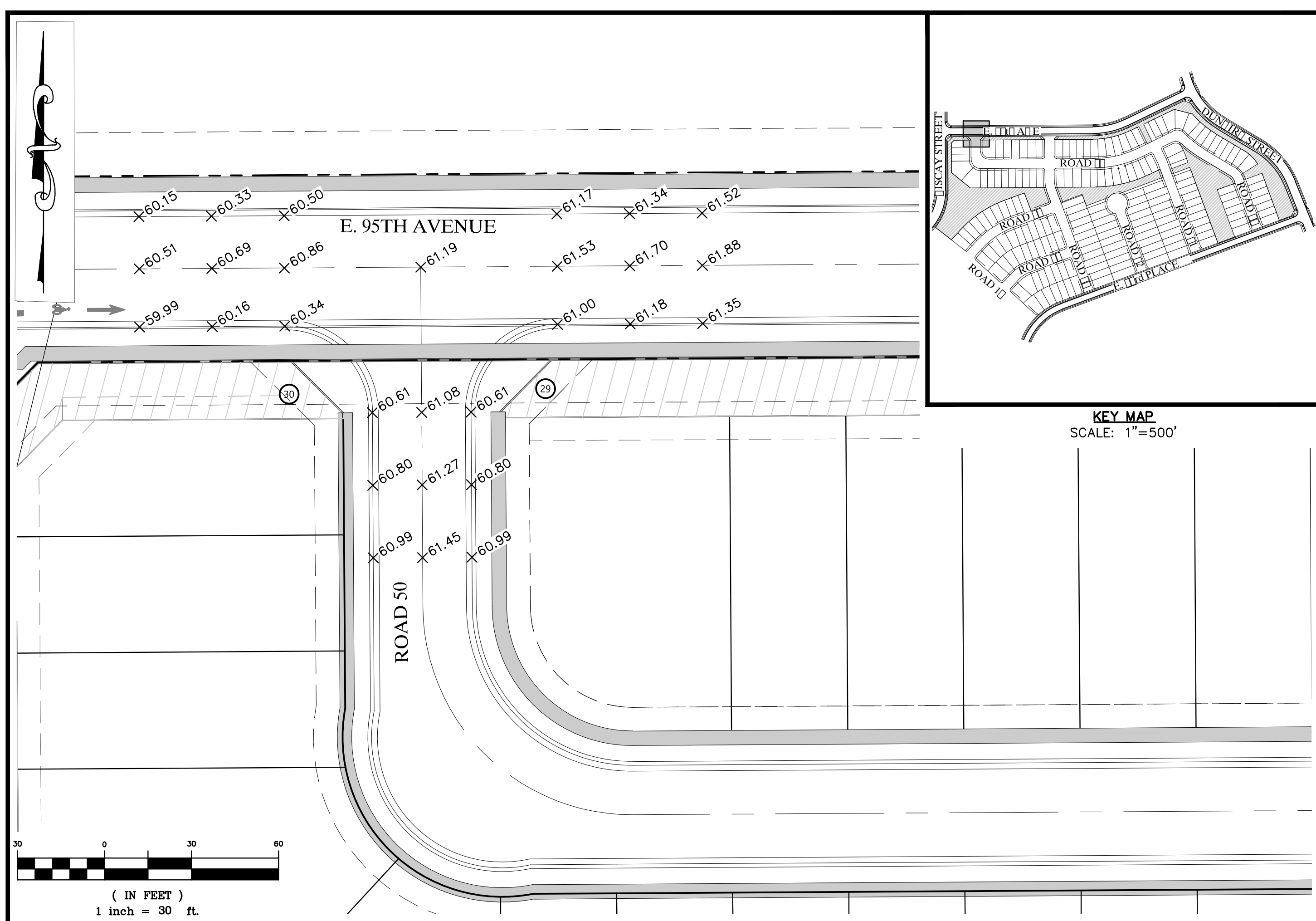
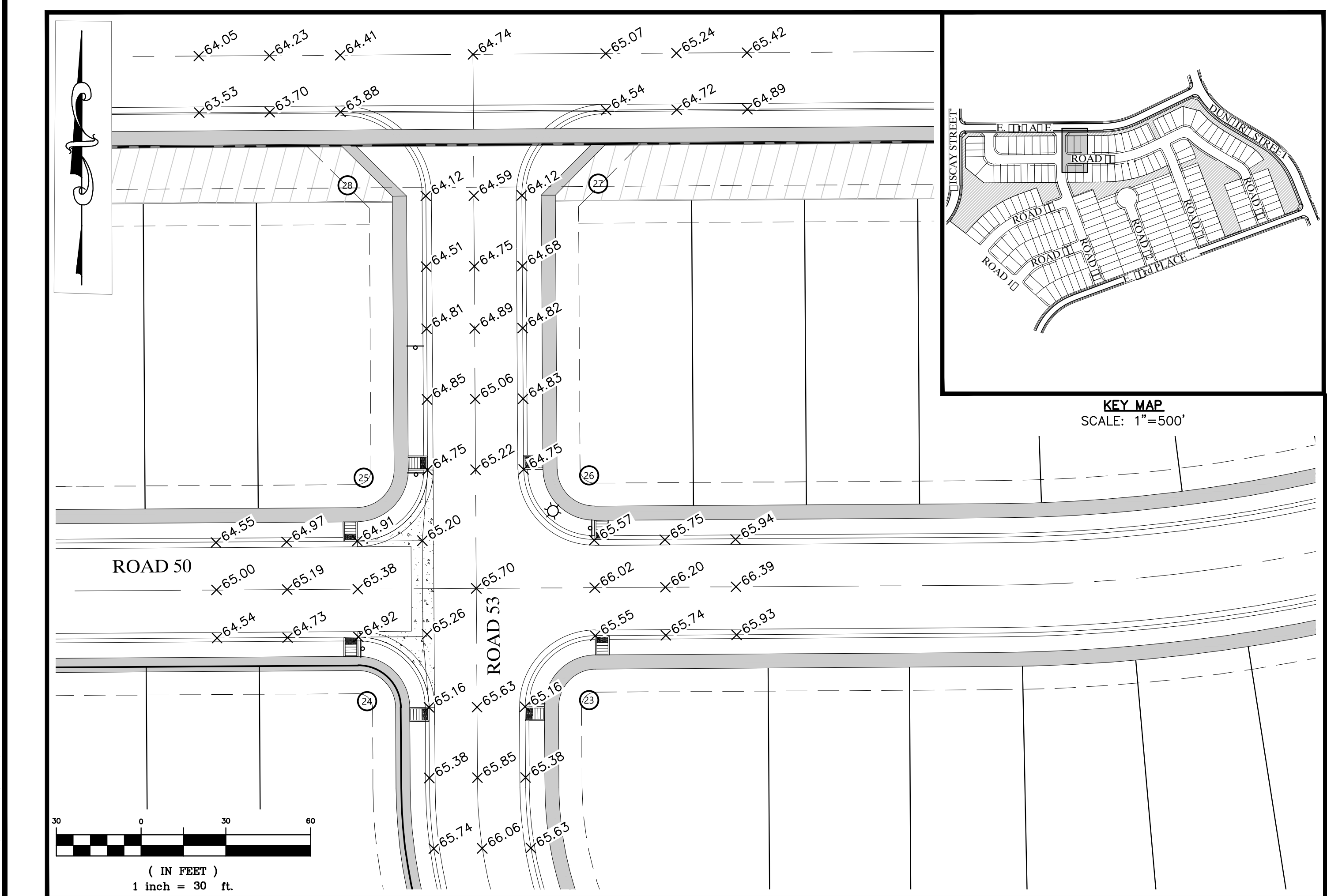
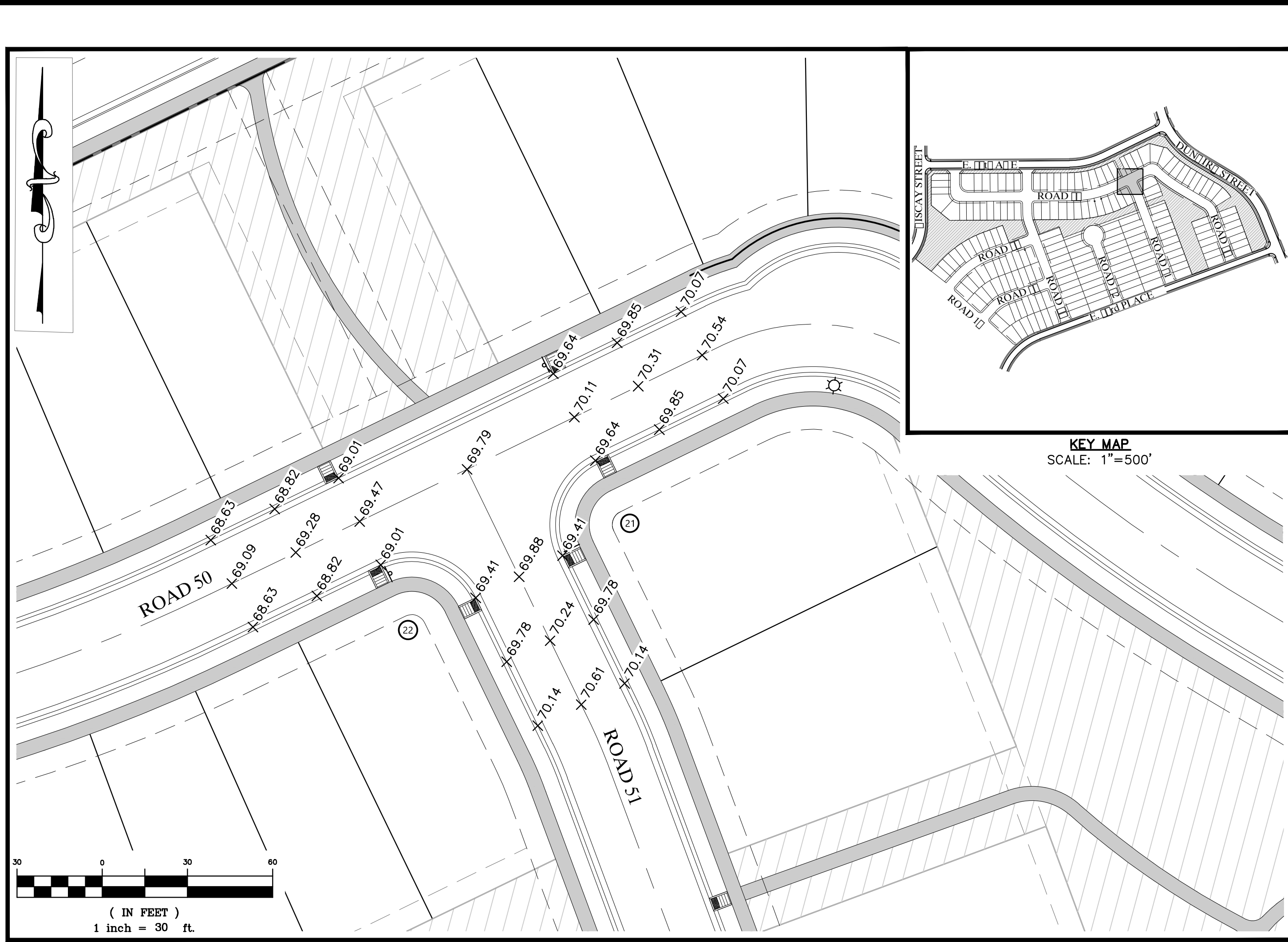
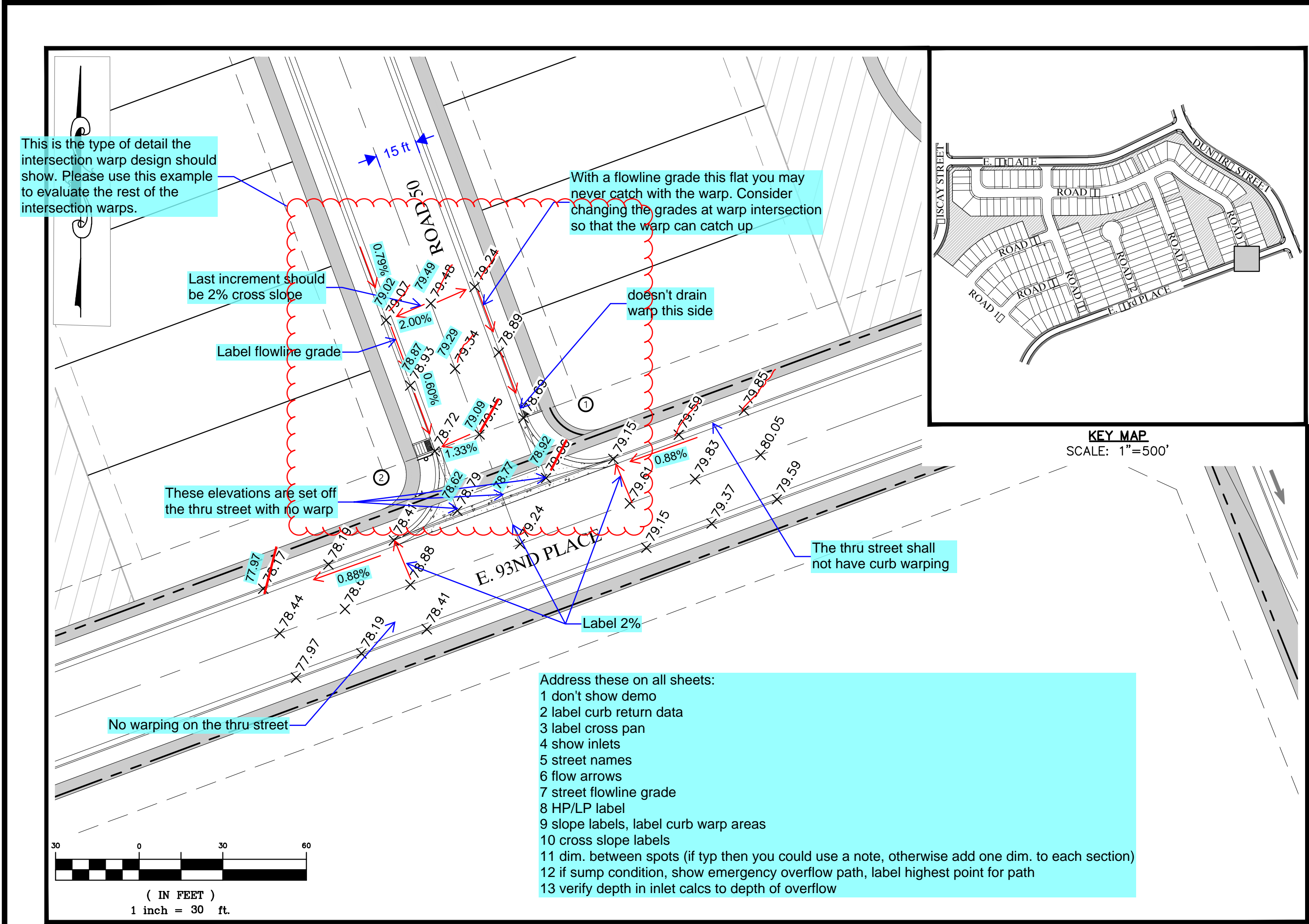
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P.M: DJM
JOB: 19002860
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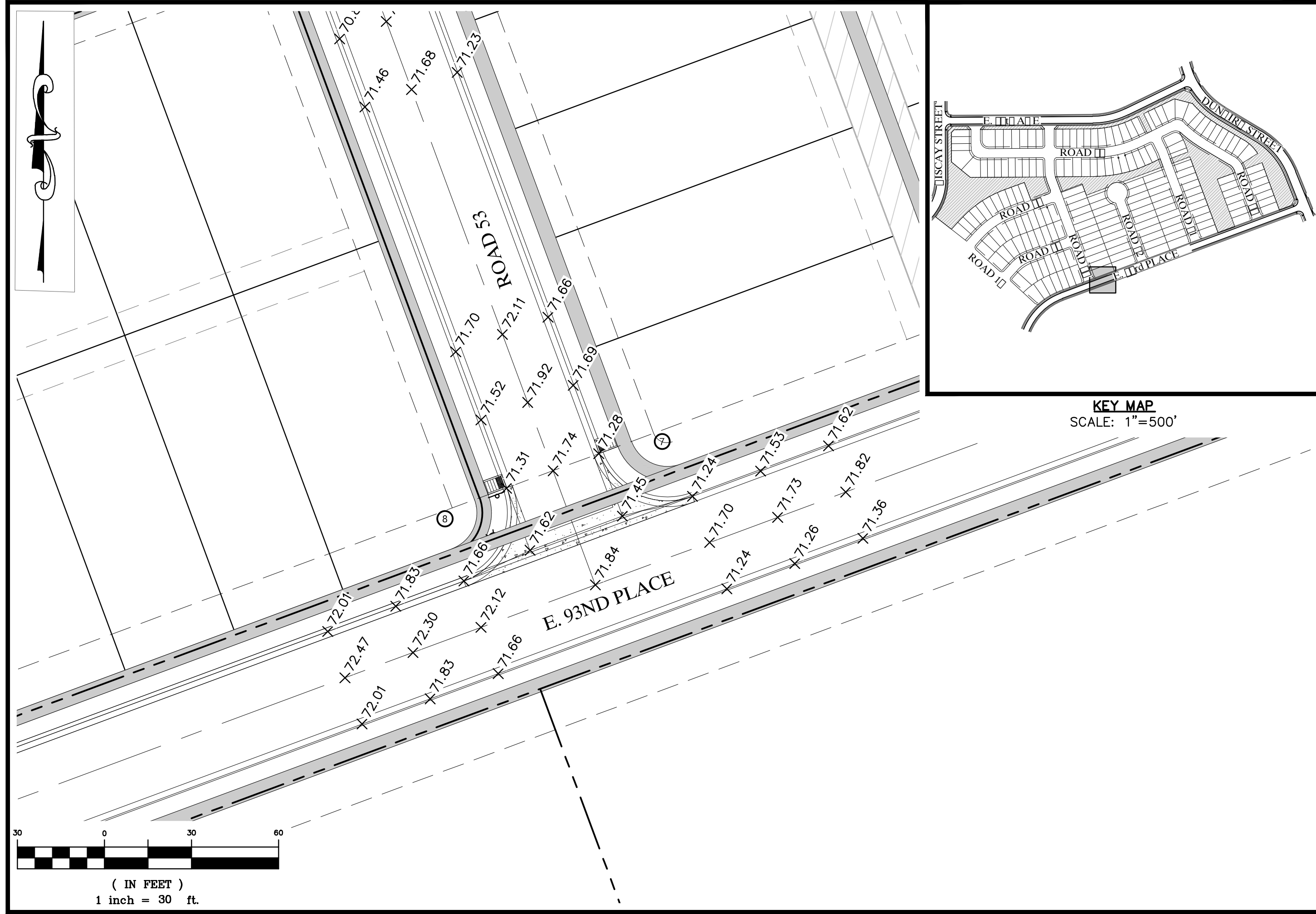
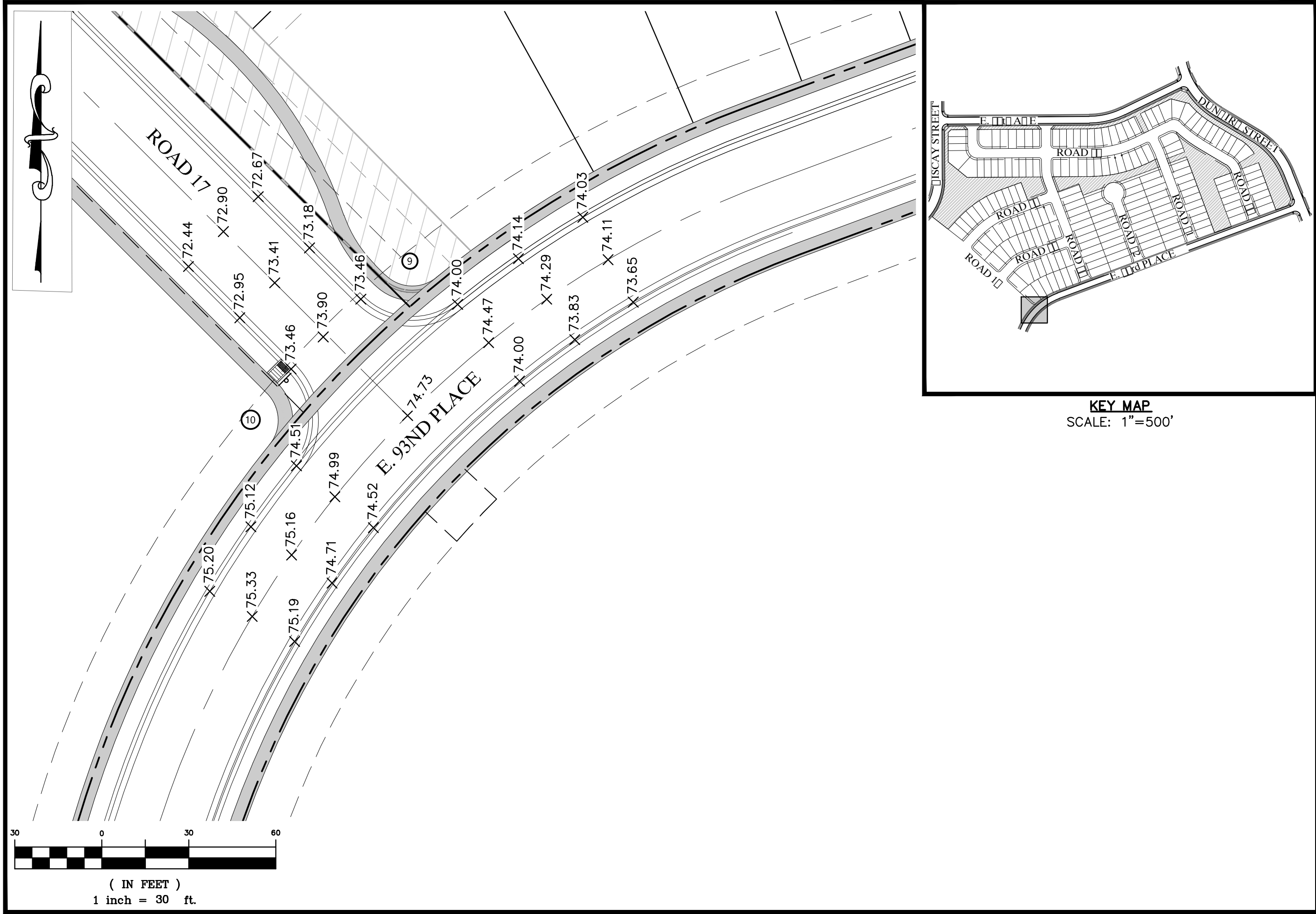
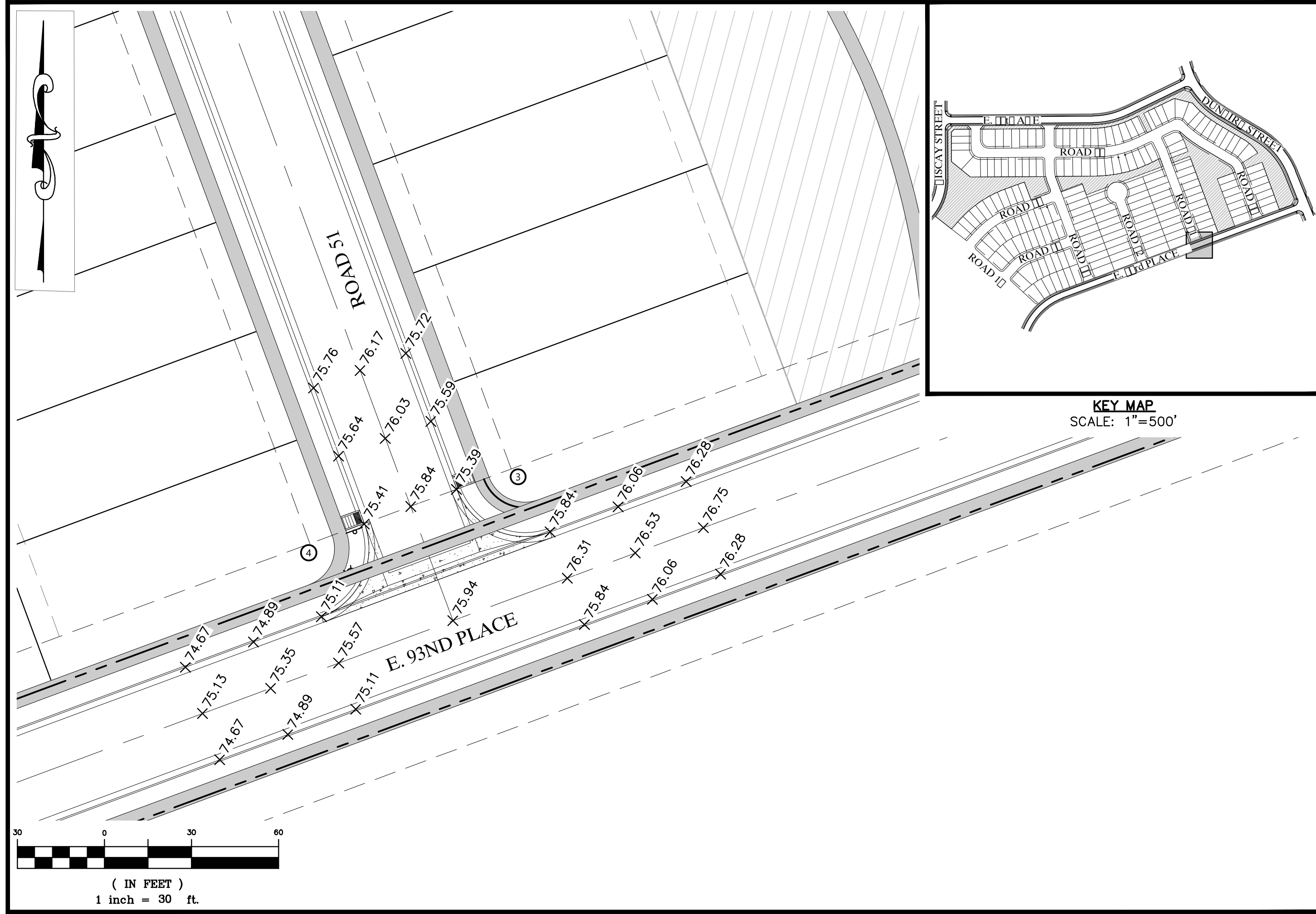
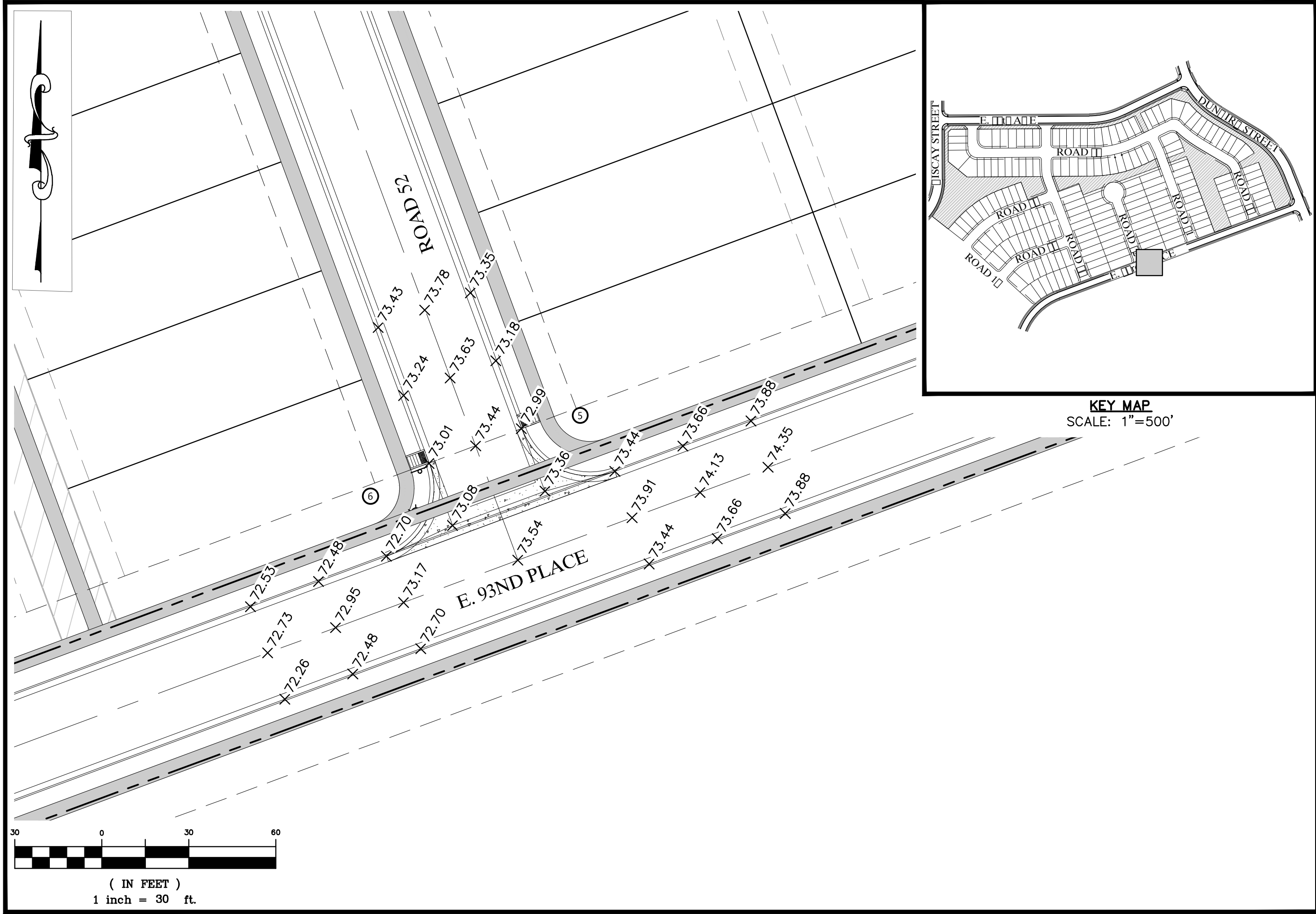



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CLIENT	COHEN DENVER AIRPORT, LLC
DATE	7/20/2020
PROJECT	LEGATO FILING NO. 1 COMMERCE CITY, COLORADO CONSTRUCTION DOCUMENTS STREET INTERSECTIONS
REVISIONS	
DR.	JRB
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P.M.	DJM
JOB	19002860
SHEET NO.	14

CAD FILE: 19002860-INTSECTIONS.DWG

\\V:\CONSTRUCTION\19002860-INTSECTIONS.DWG 7/20/2020 2:54 PM MAGUI, CARRIE






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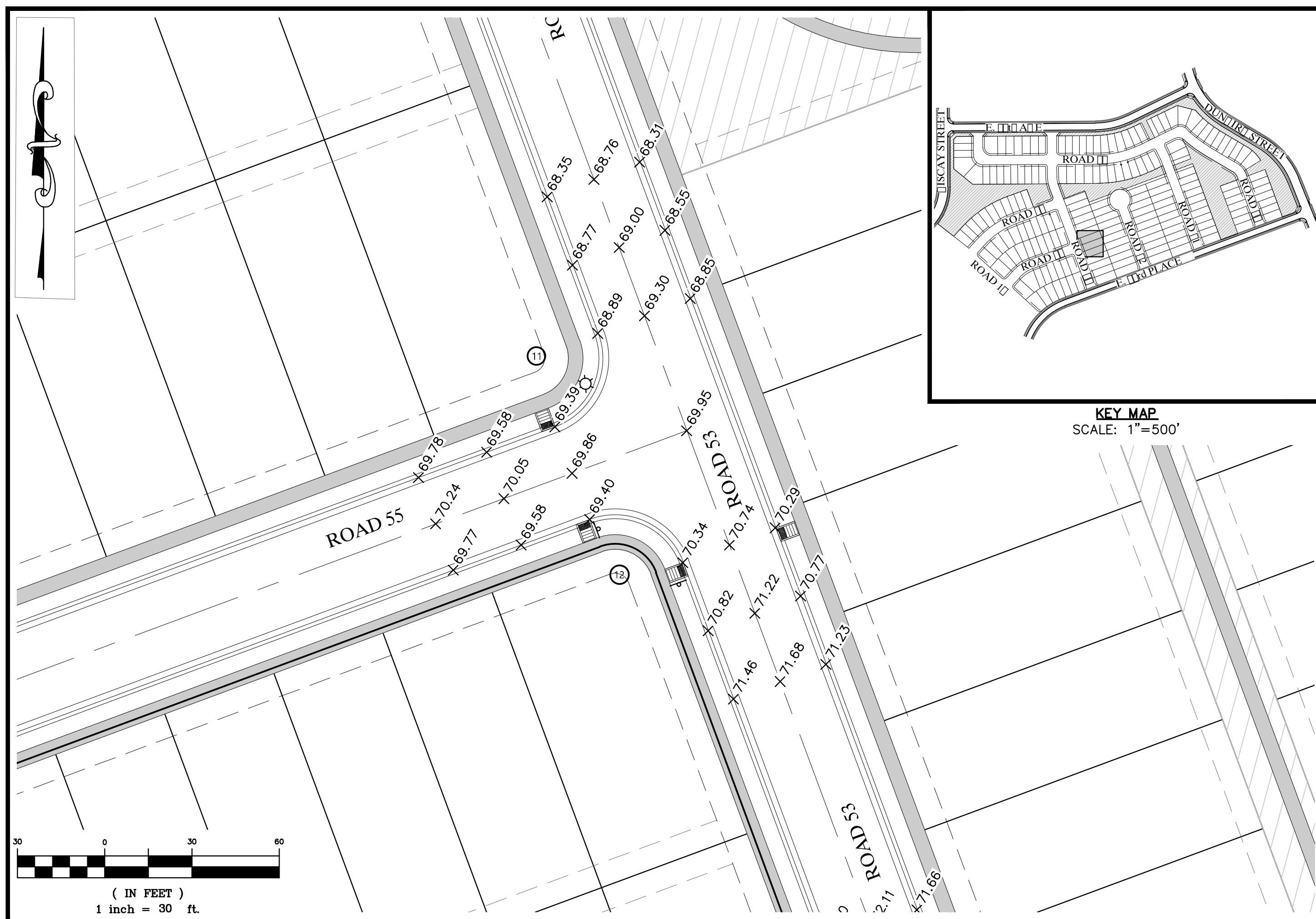
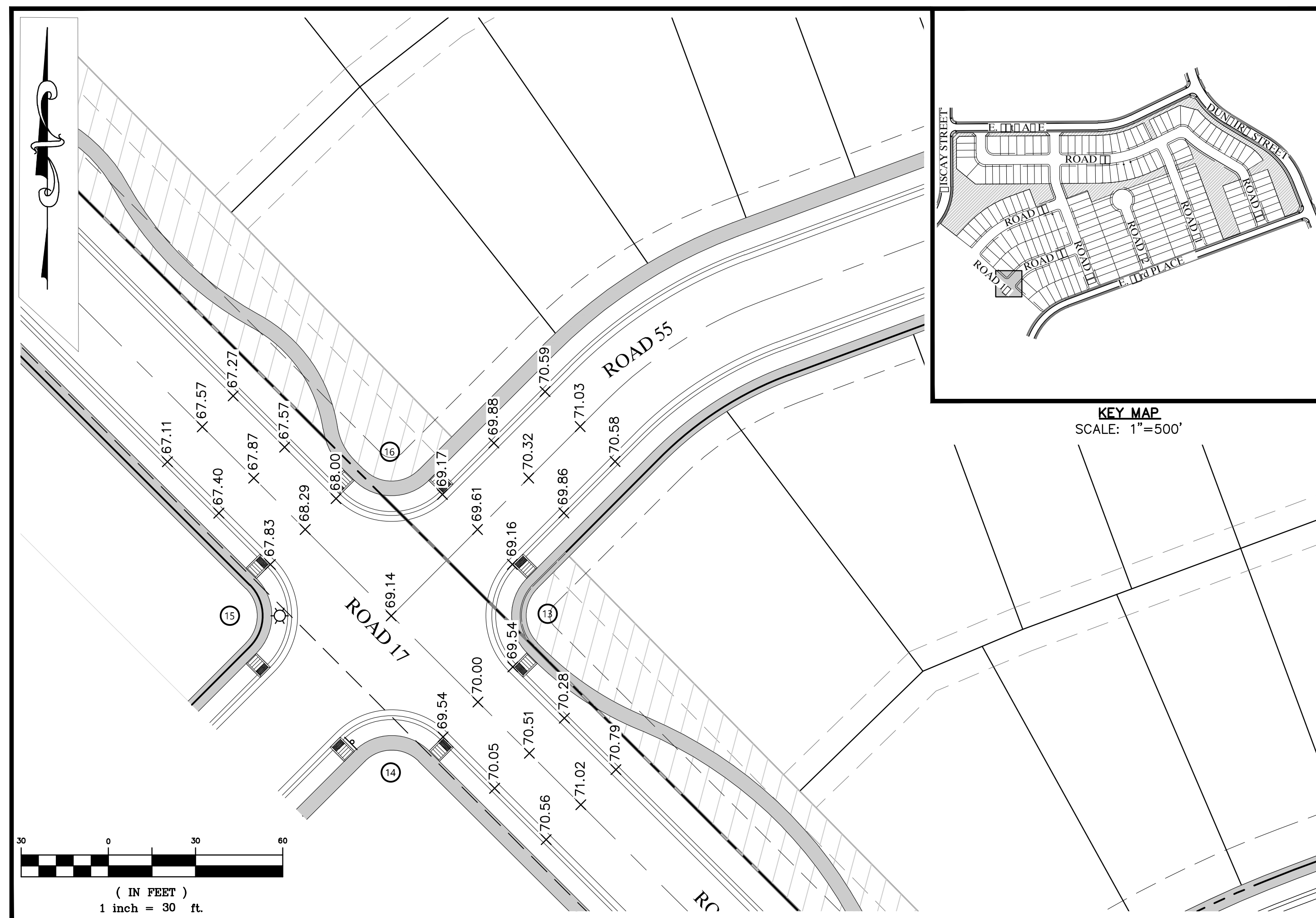
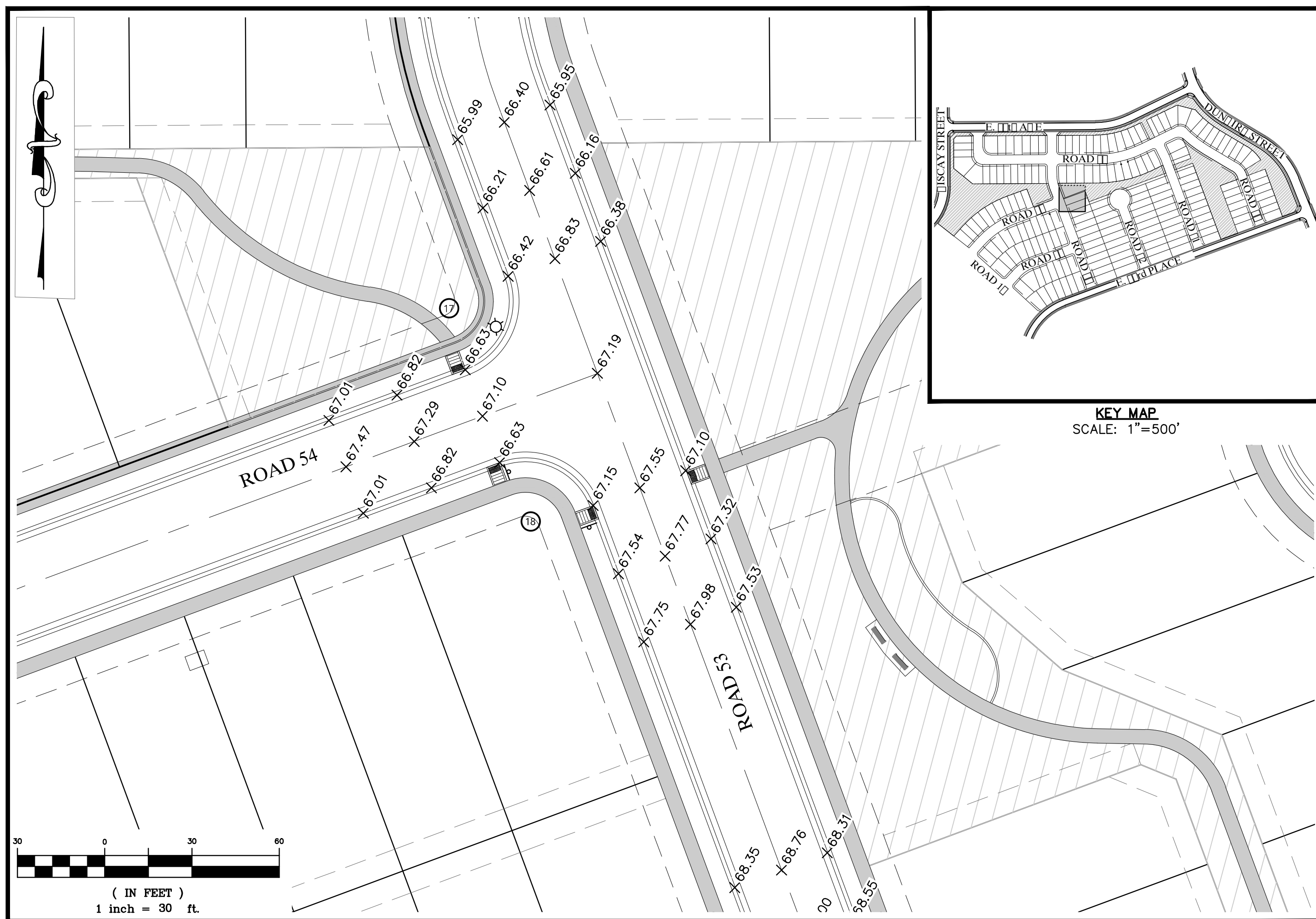
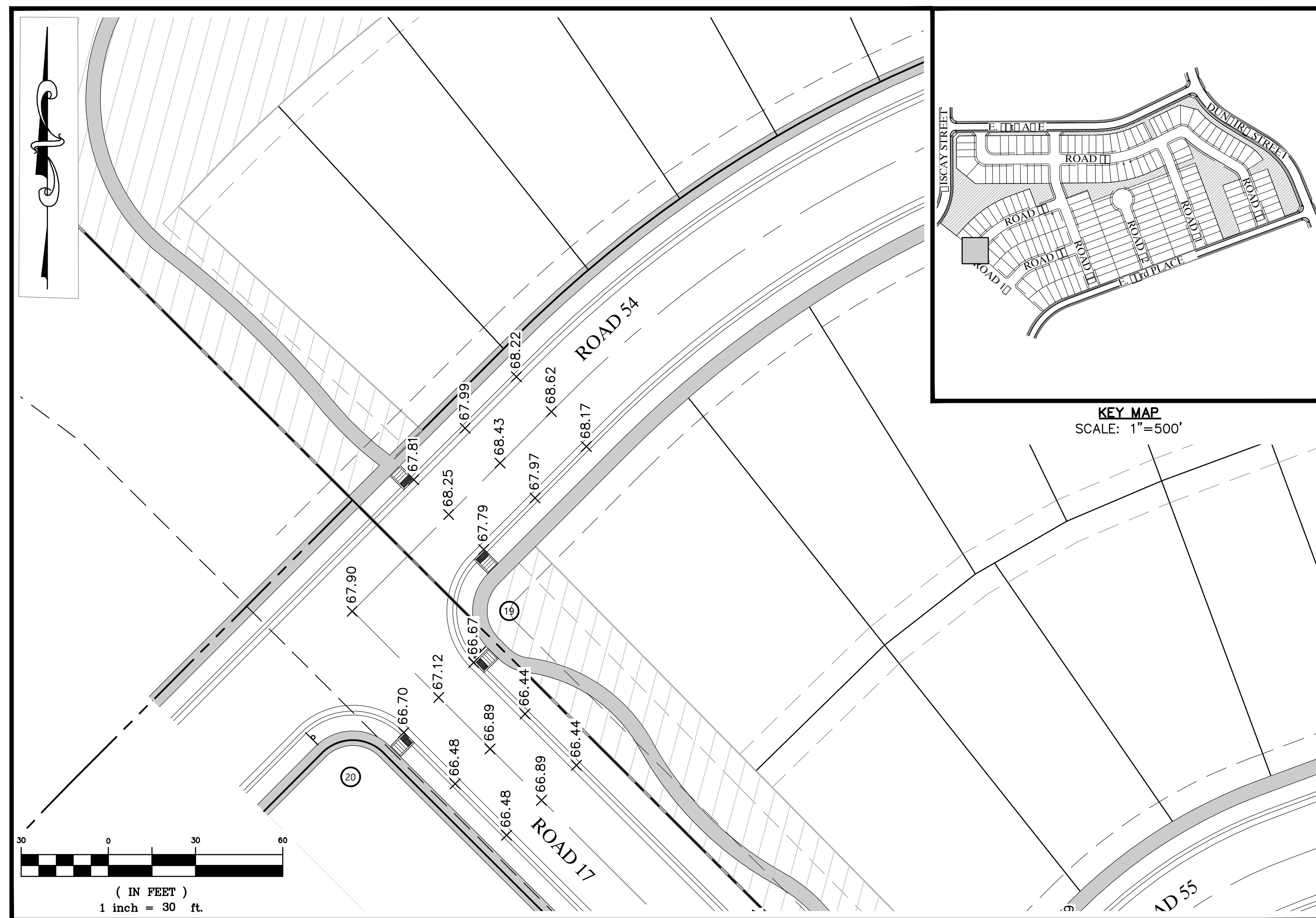
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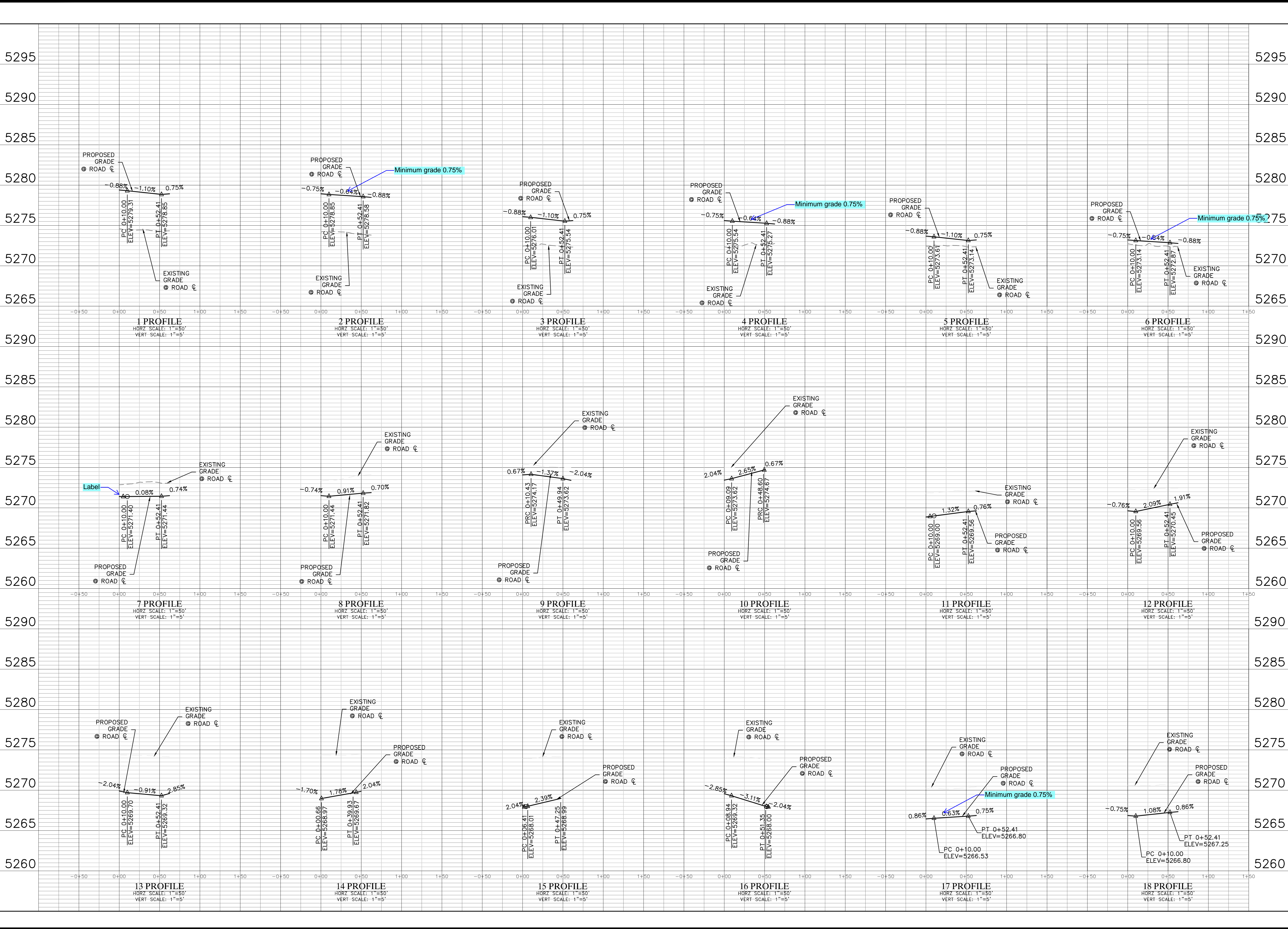
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1st SUBMITTAL TO COMMERCE CITY	7/20/2020 - D.M.
REVISIONS	
PLANS UNDER REVIEW NOT FOR CONSTRUCTION	
DR. JRB	CH. DJM
P.M. DJM	
JOB	19002860
SHEET NO.	15

CAD FILE: 19002860-INTSECTIONS.DWG



\\V:\GIS\DATA\PROJECTS\19002860-CURB-RETURN\PROFILES\DWG 7/20/2020 2:08 PM MARSH, DORIS






Know what's below.
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LEGATO FILING NO. 1
COMMERCE CITY, COLORADO
CONSTRUCTION DOCUMENTS
CURB RETURNS

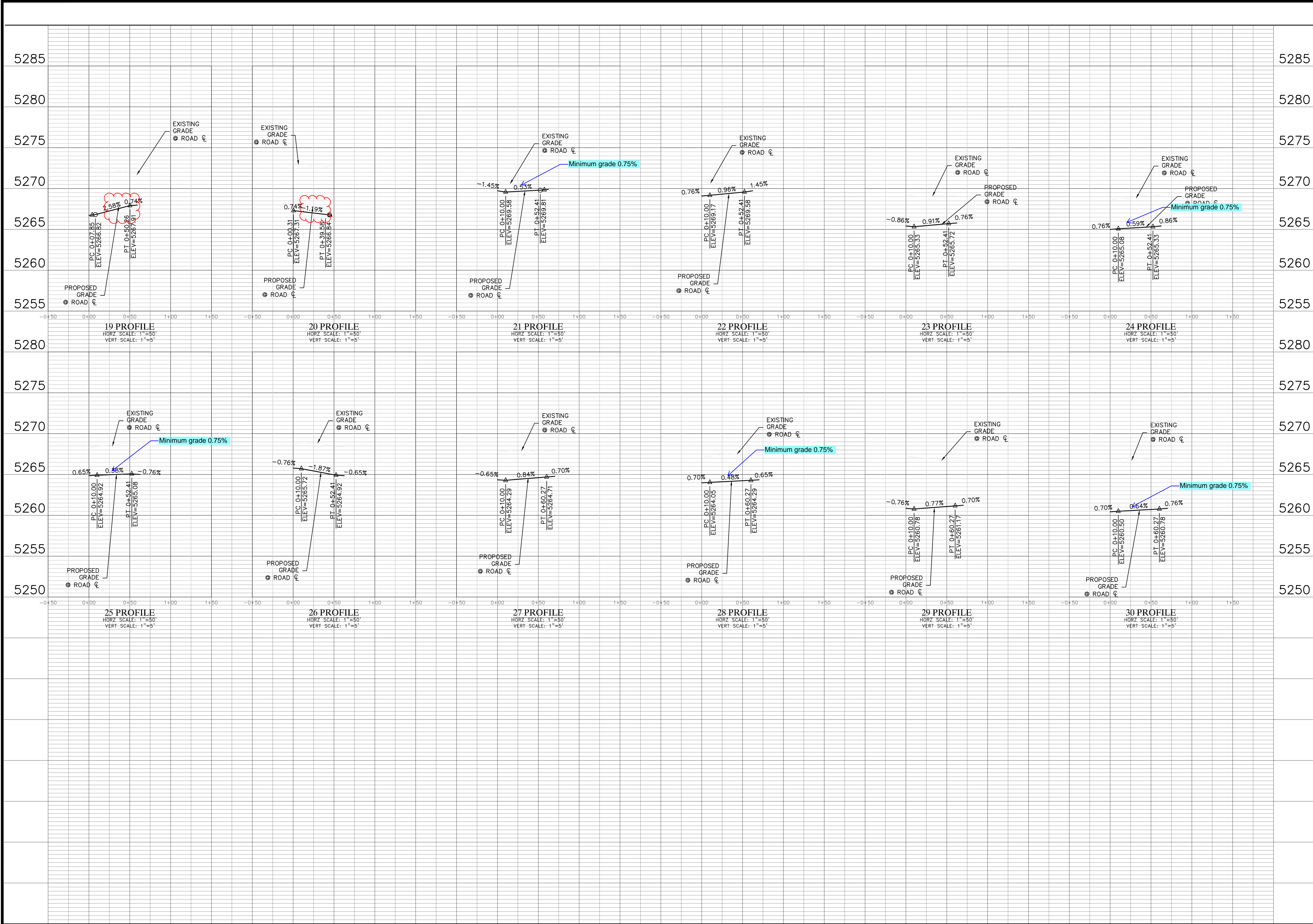
CLIENT
DATE 7/20/2020
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REVISIONS
PLANS UNDER REVIEW NOT FOR CONSTRUCTION

DR. JRB CH. DJM
P.M. DJM
JOB 19002860
SHEET NO. 17

CAD FILE: 19002860-CURB-RETURN-PROFILES.DWG

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CONSTRUCTION DOCUMENTS
CURB RETURNS

DATE 7/20/2020

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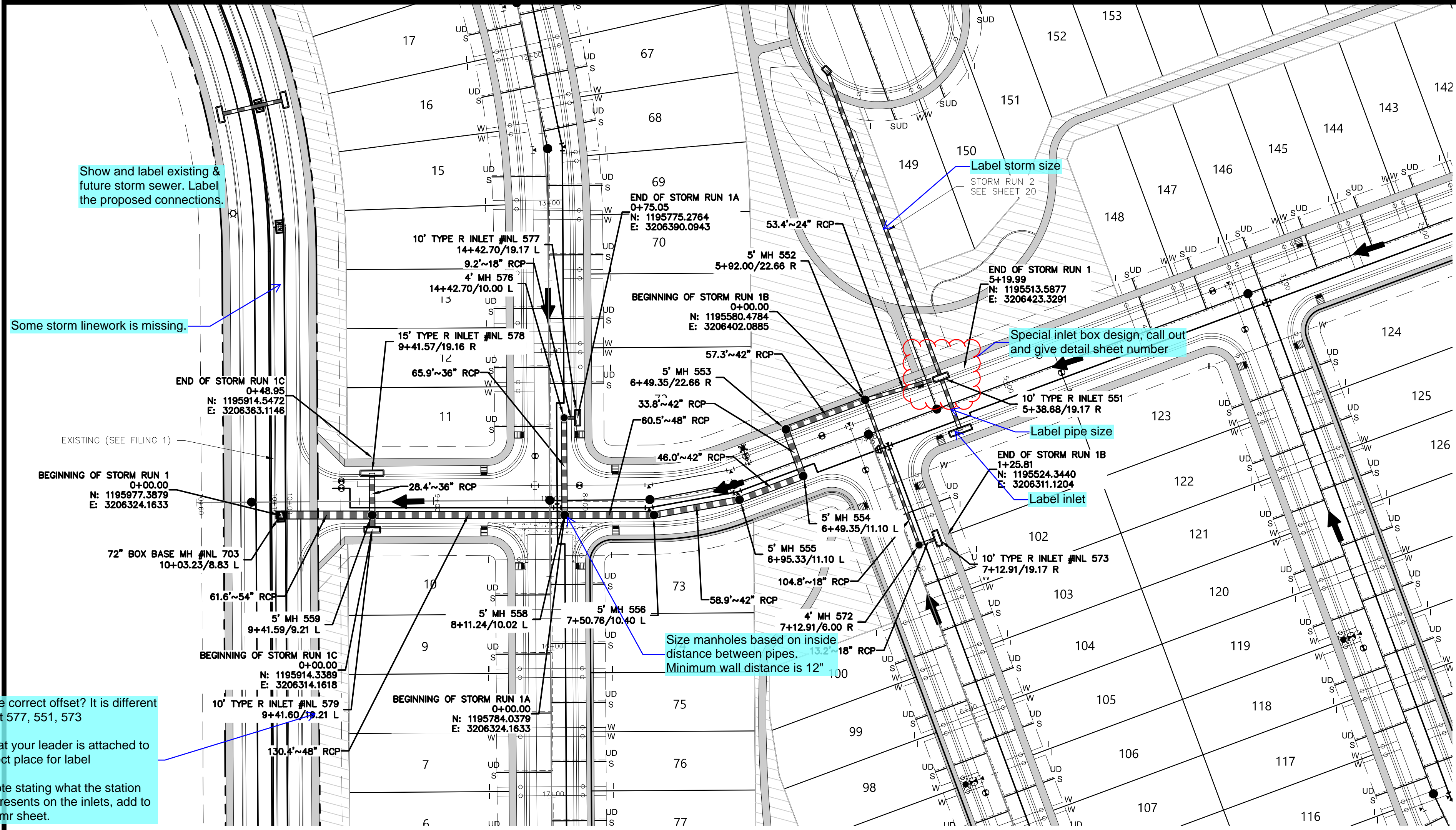
REVISIONS

PLANS UNDER REVIEW NOT FOR CONSTRUCTION

DR. JRB CH. DJM
P.M. DJM

JOB 19002860
SHEET NO. 18

CAD FILE: 19002860-CURB-RETURN-PROFILES.DWG



Ensure water and irrigation crossing meet SACWSD standards for clearances, construction, and encasement.

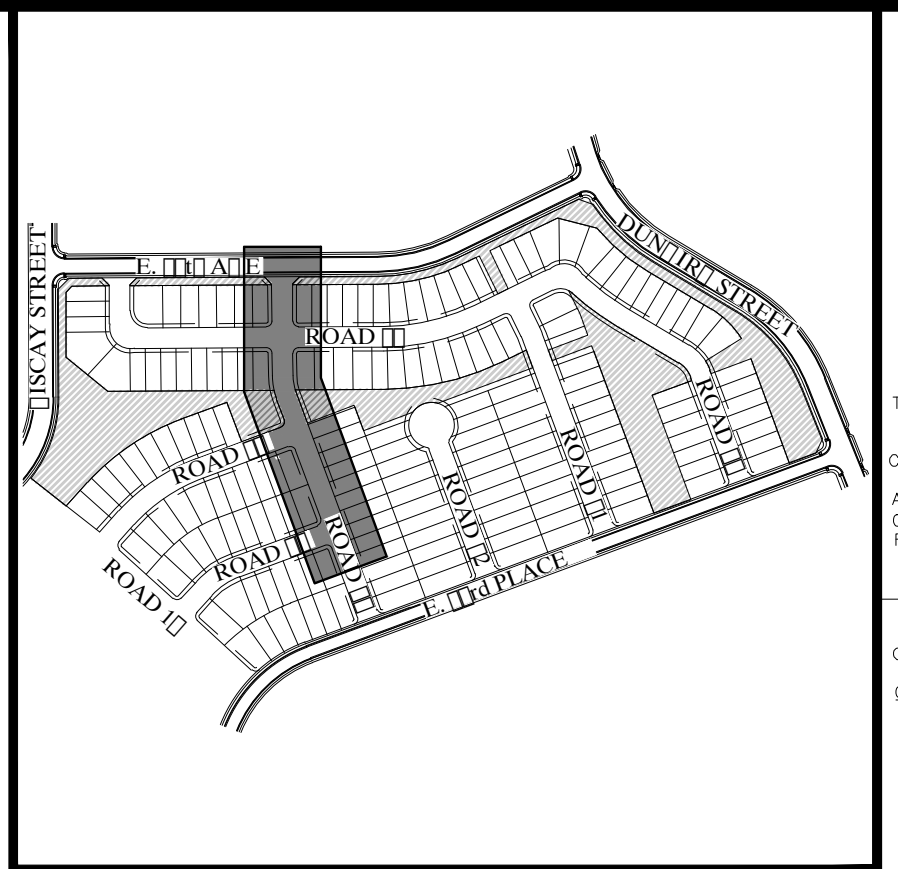
Show dimensions for:
ROW
FL-FL
Offset from other utilities
Easements

On all Storm P&Ps

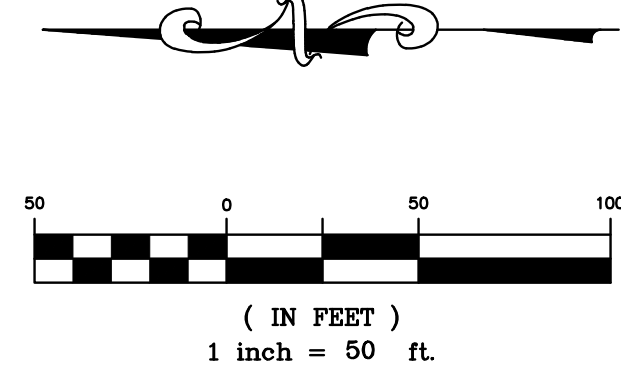
Label all easements (typ.)

Label street names all streets

Clearly label all continuous grade inlets



KEY MAP
SCALE: 1"=500'



811
Know what's below.
Call before you dig.

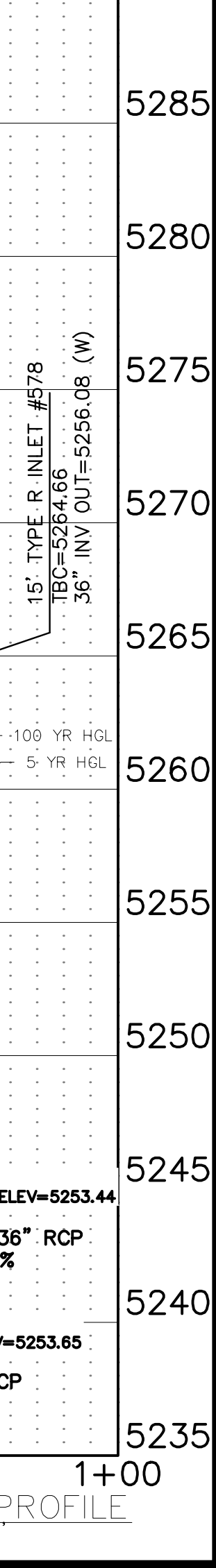
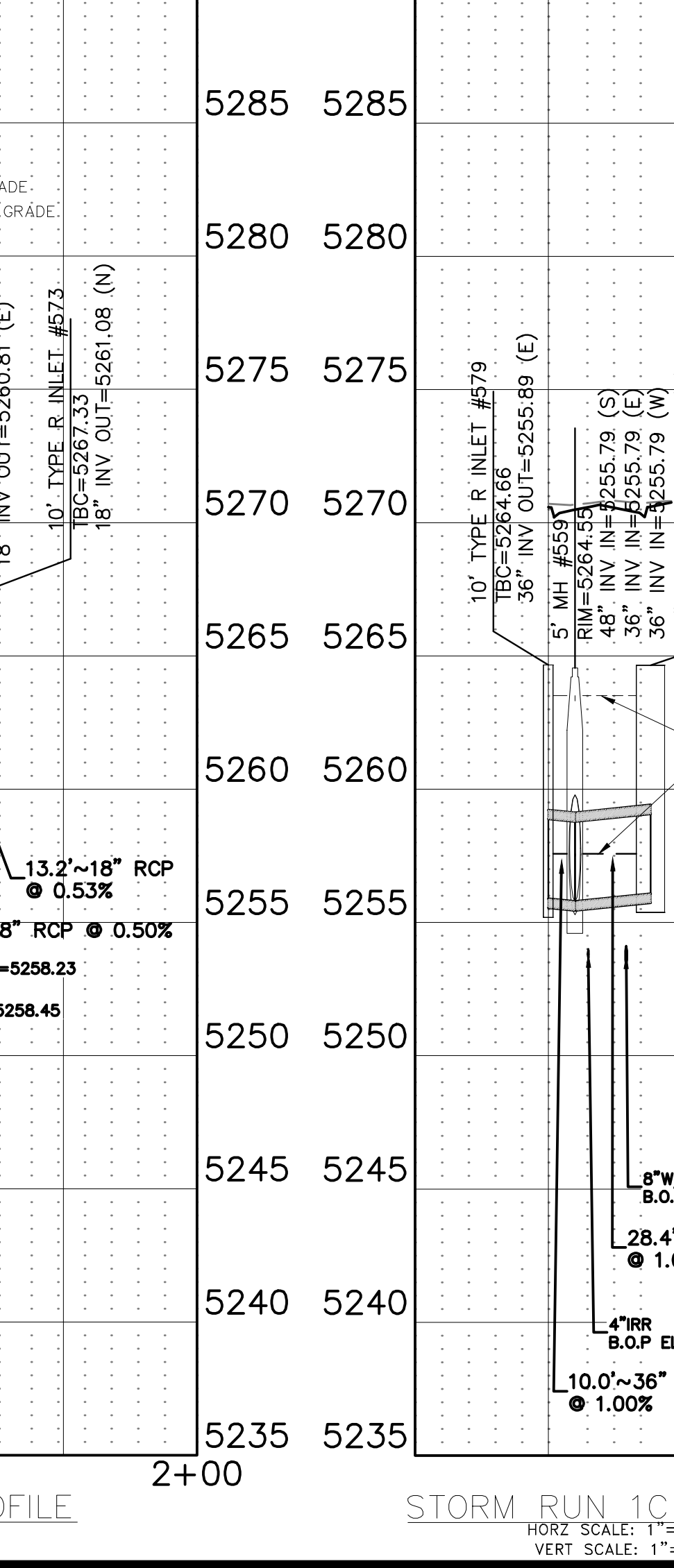
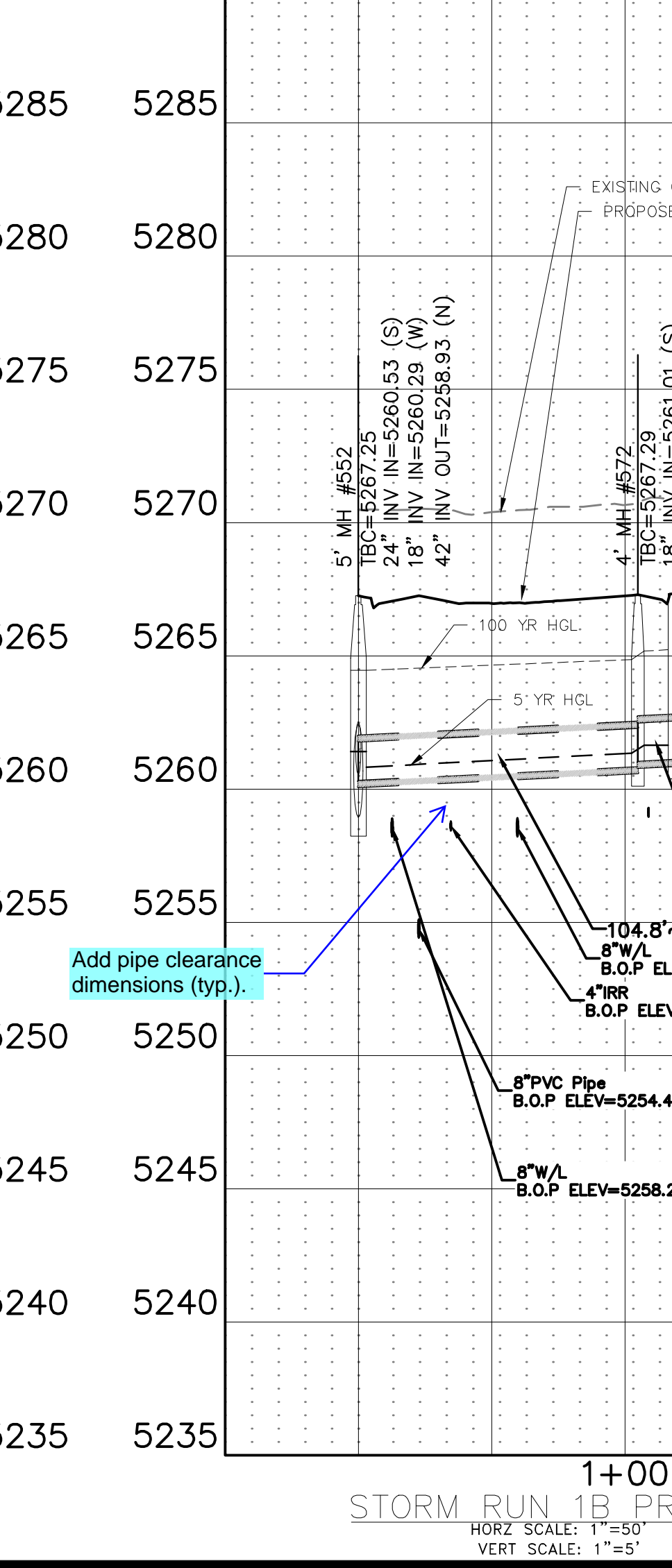
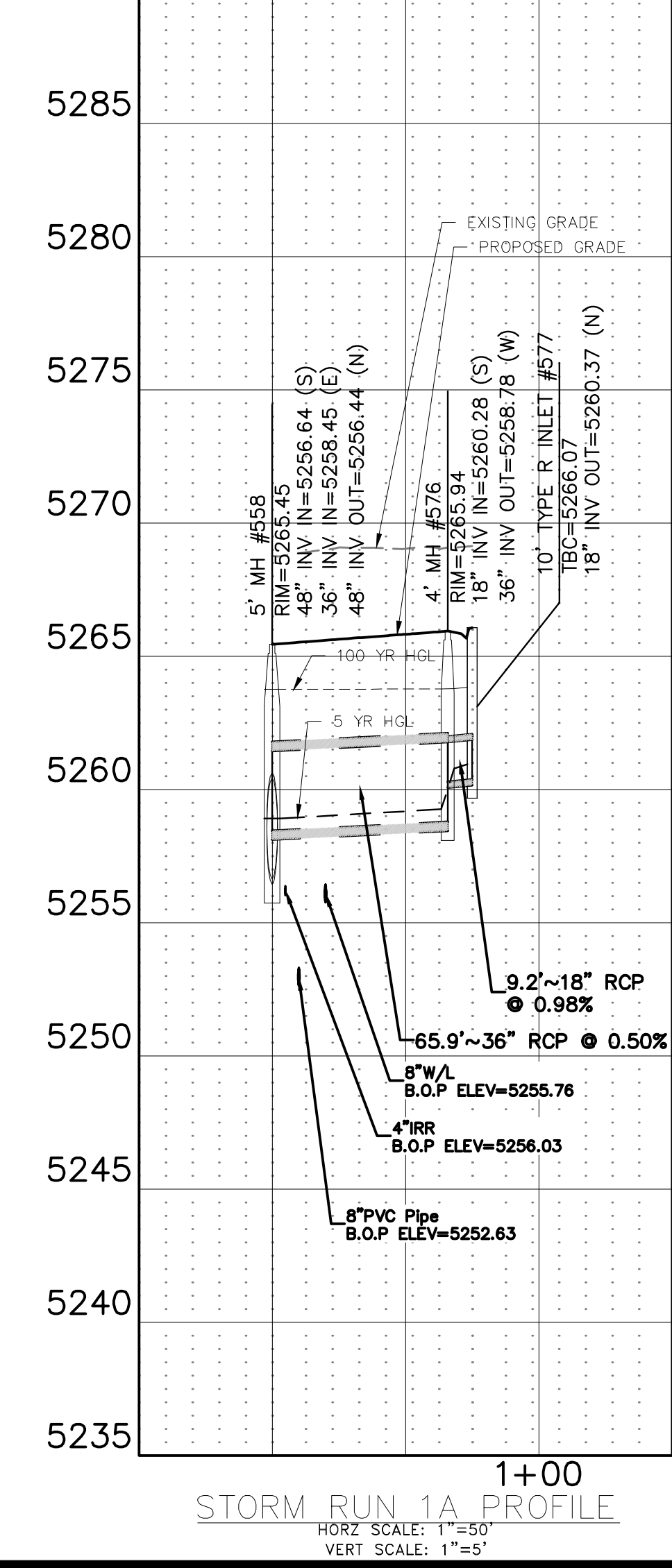
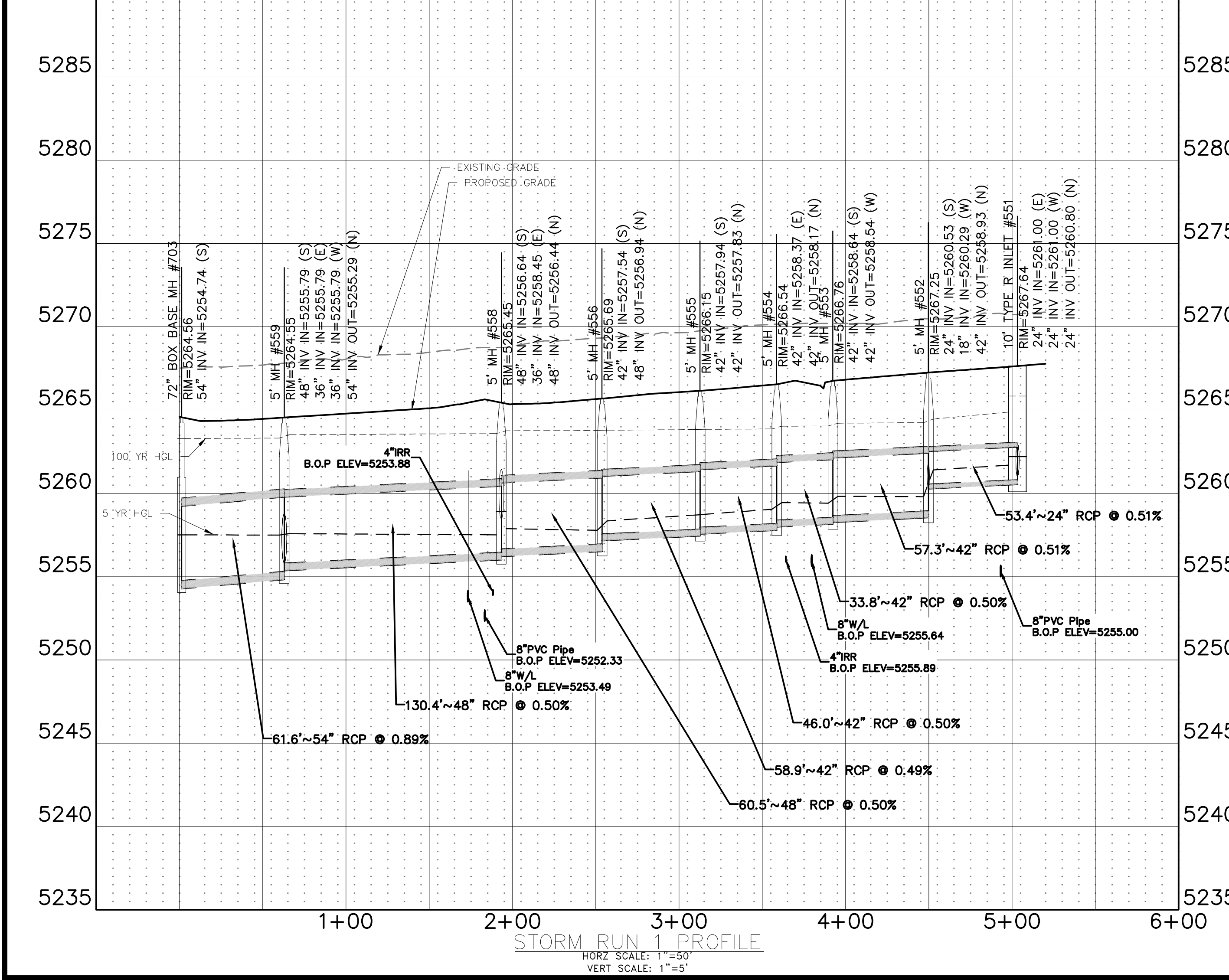
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LEGATO FILING NO. 1
COMMERCE CITY, COLORADO
CONSTRUCTION DOCUMENTS
STORM PLAN & PROFILES
STORM RUN 1, 1A, 1B, 1C

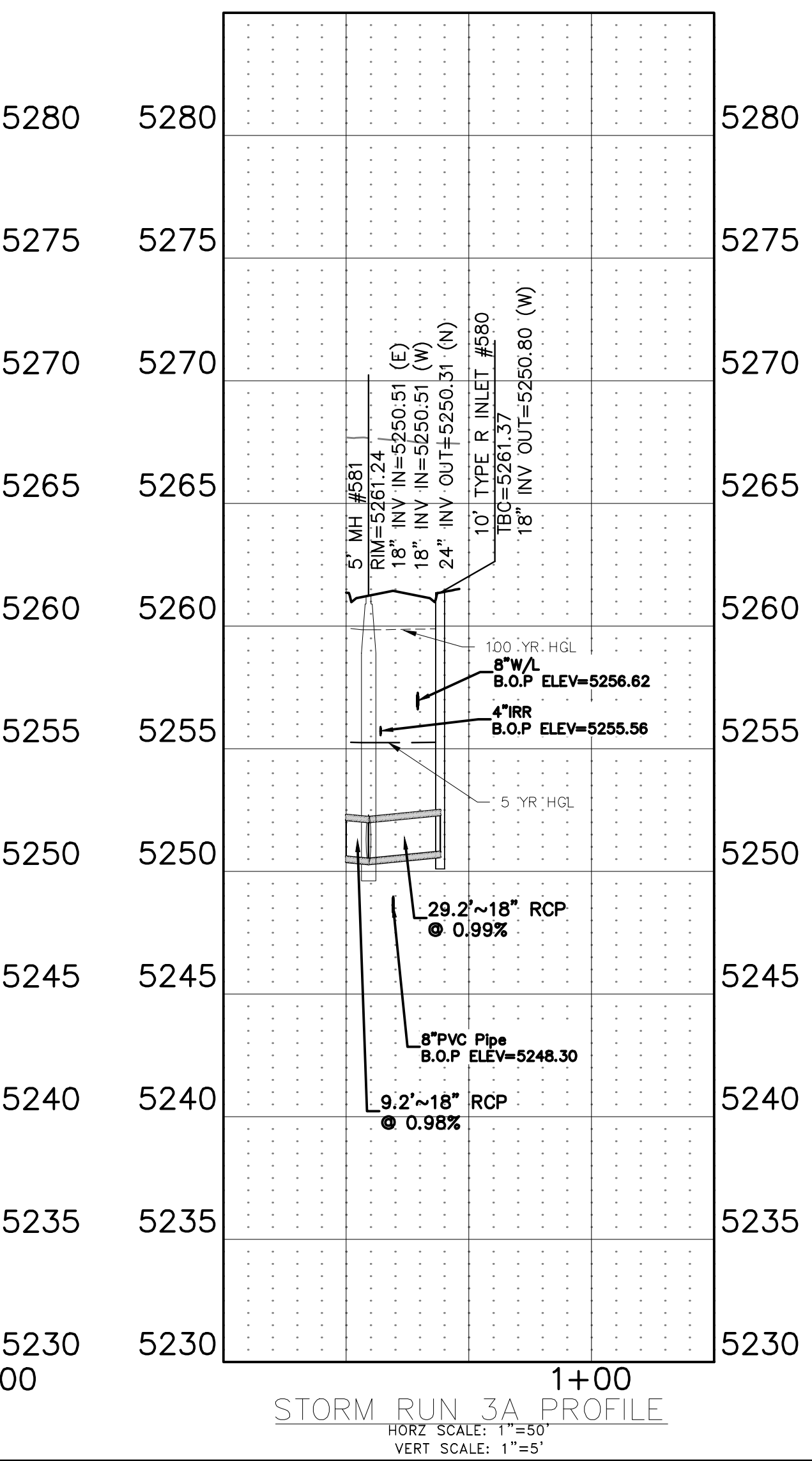
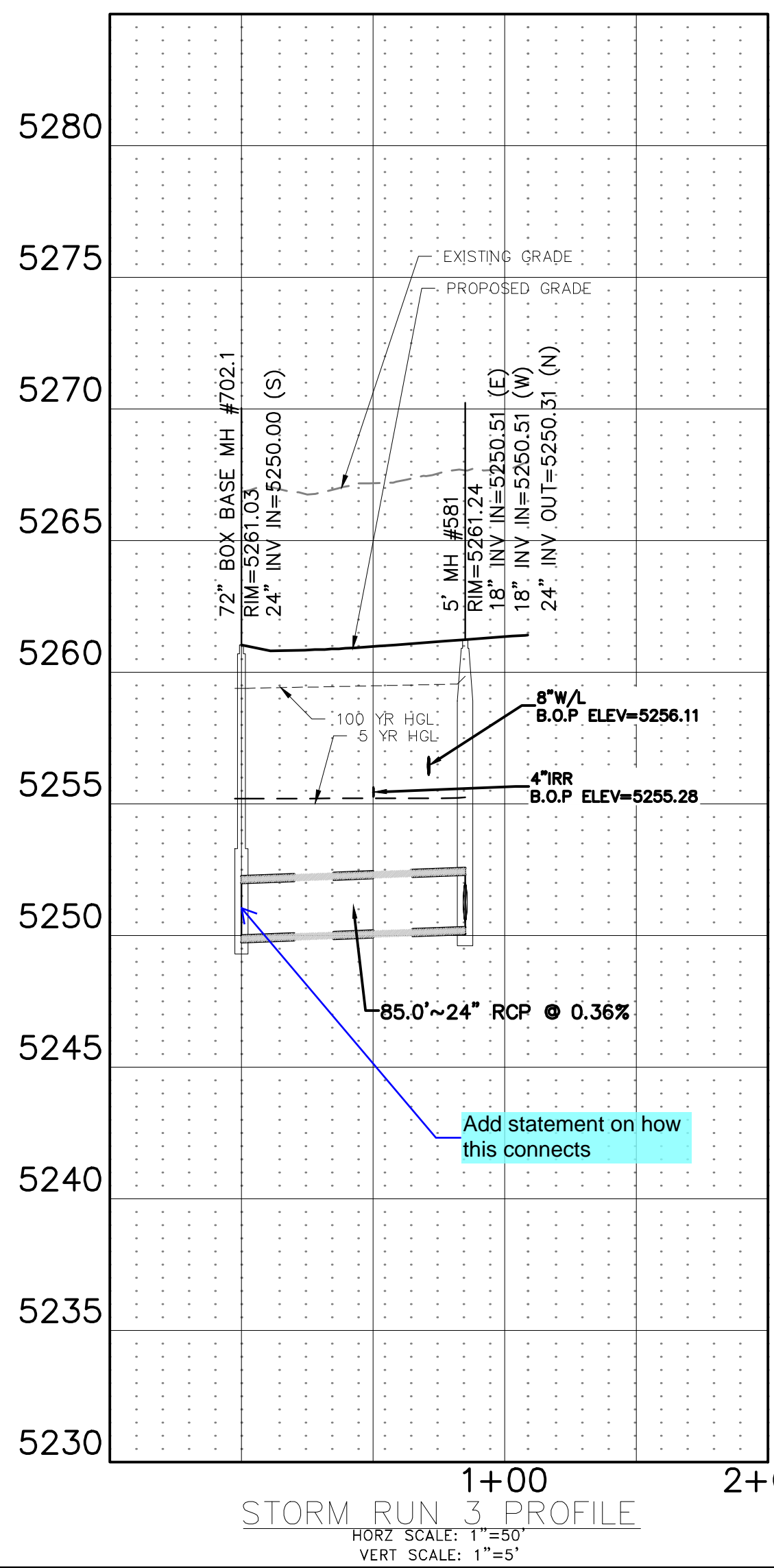
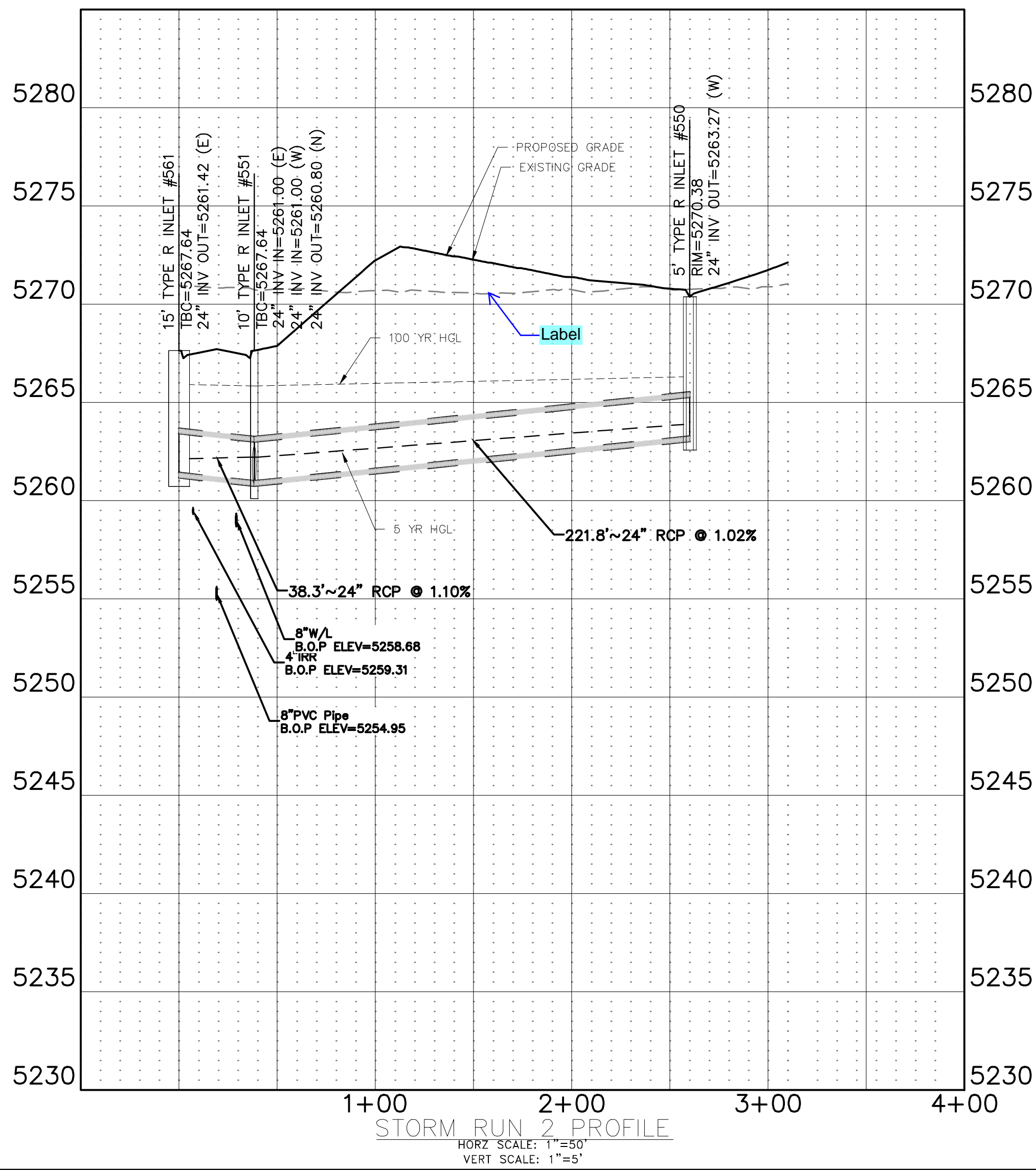
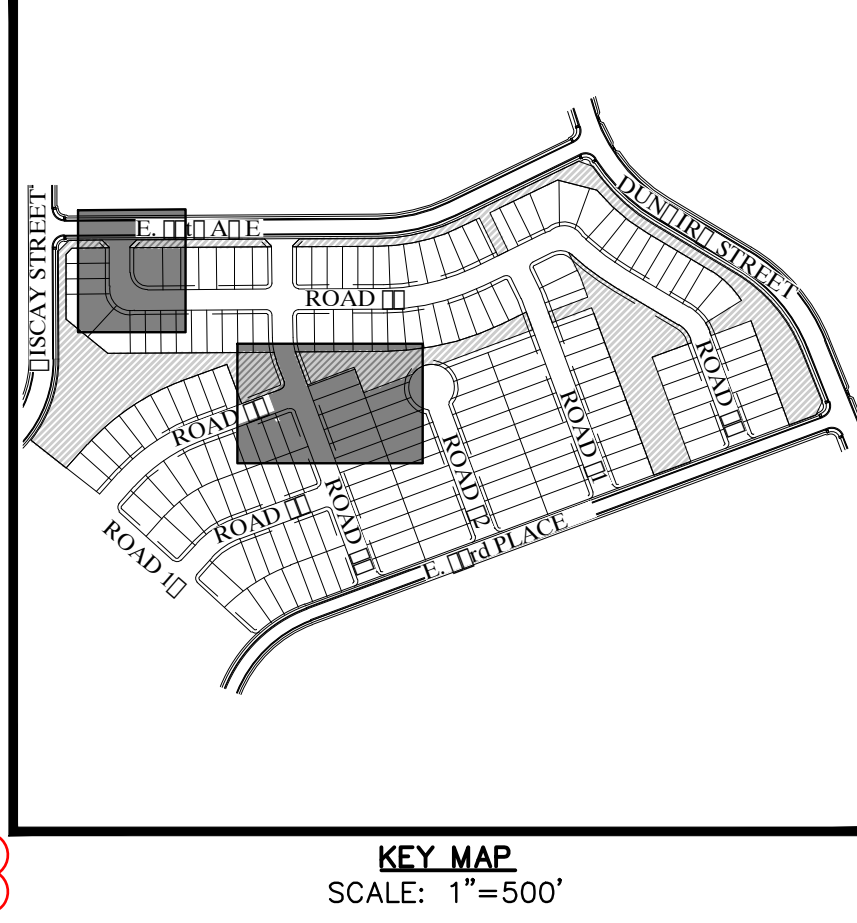
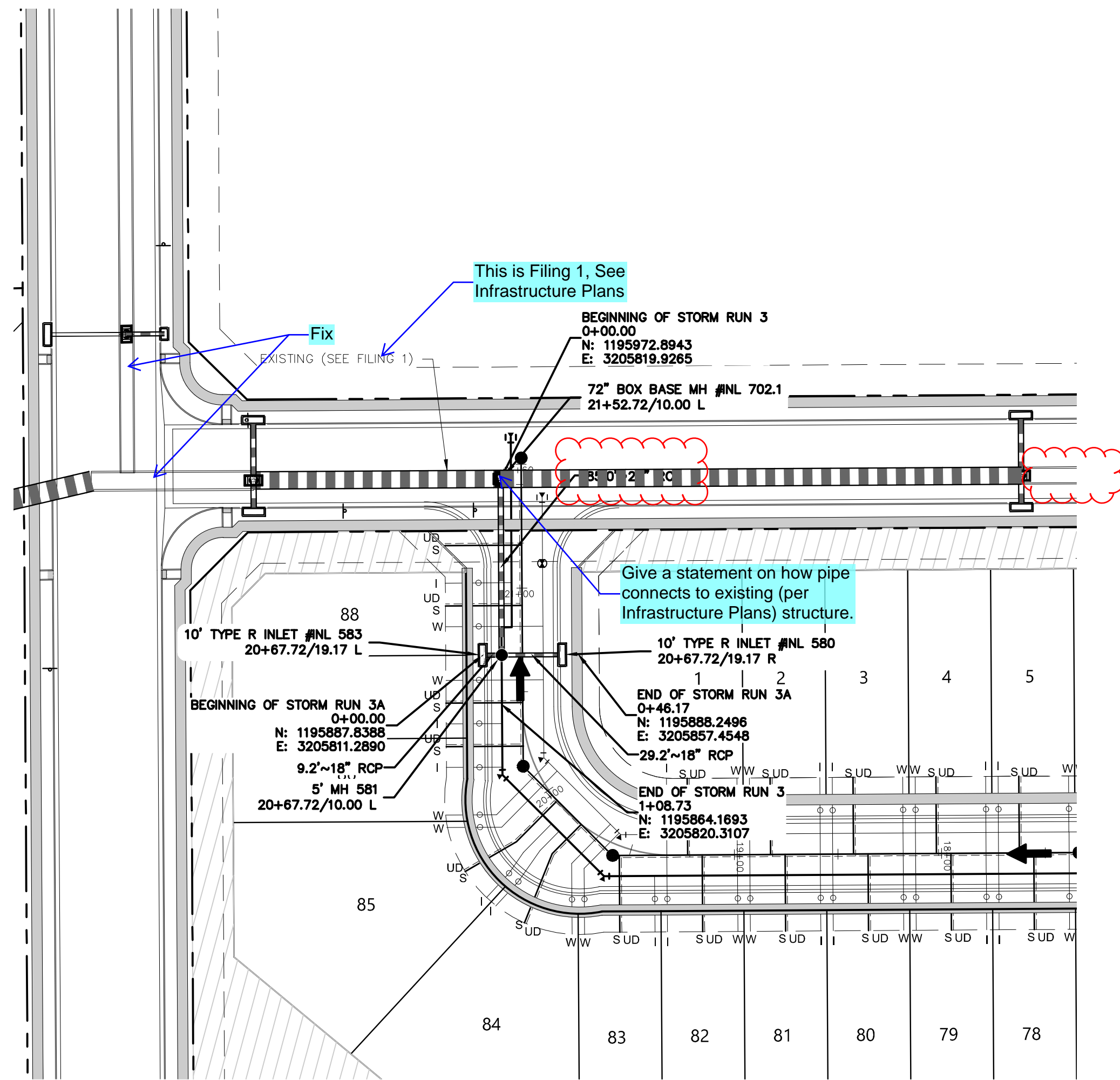
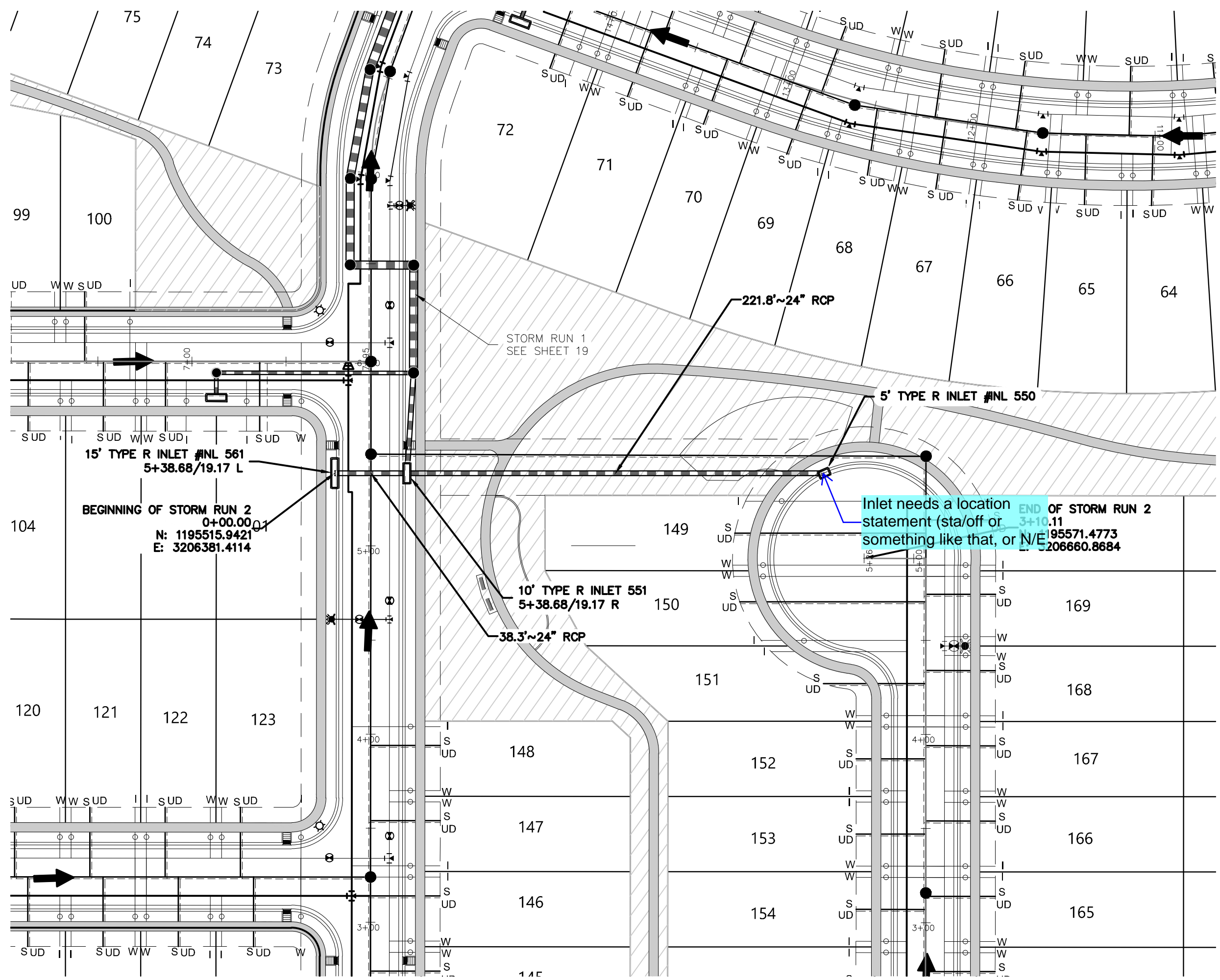
DATE: 7/20/2020

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PLANS UNDER REVIEW NOT FOR CONSTRUCTION

DR: JRB CH: DJM
P.M. DJM

JOB: 19002860
SHEET NO.: 19



Clearly label all continuous grade inlets

Know what's below.
Call before you dig.

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COMMERCE CITY, COLORADO
CONSTRUCTION DOCUMENTS
STORM PLAN & PROFILES
STORM RUN 2, 3, 3A

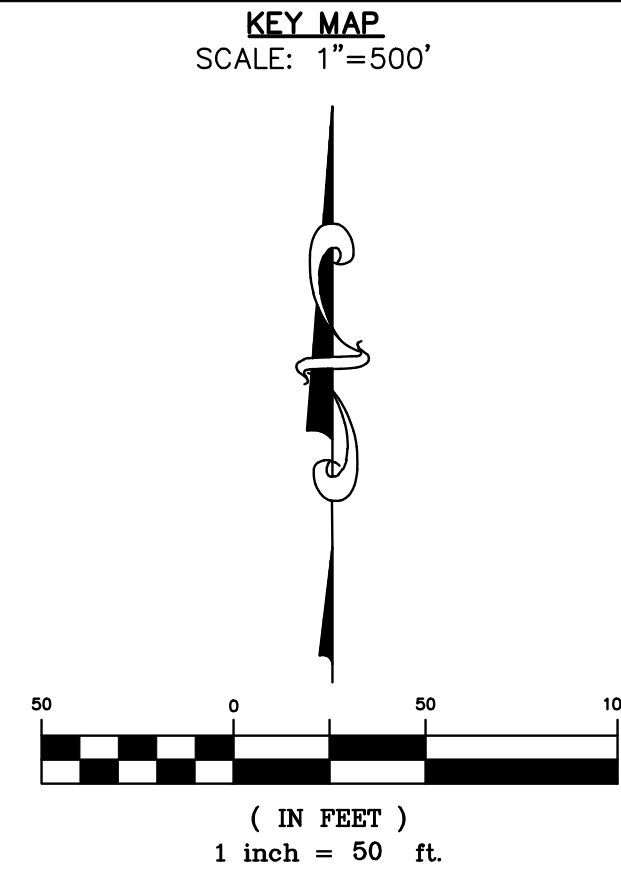
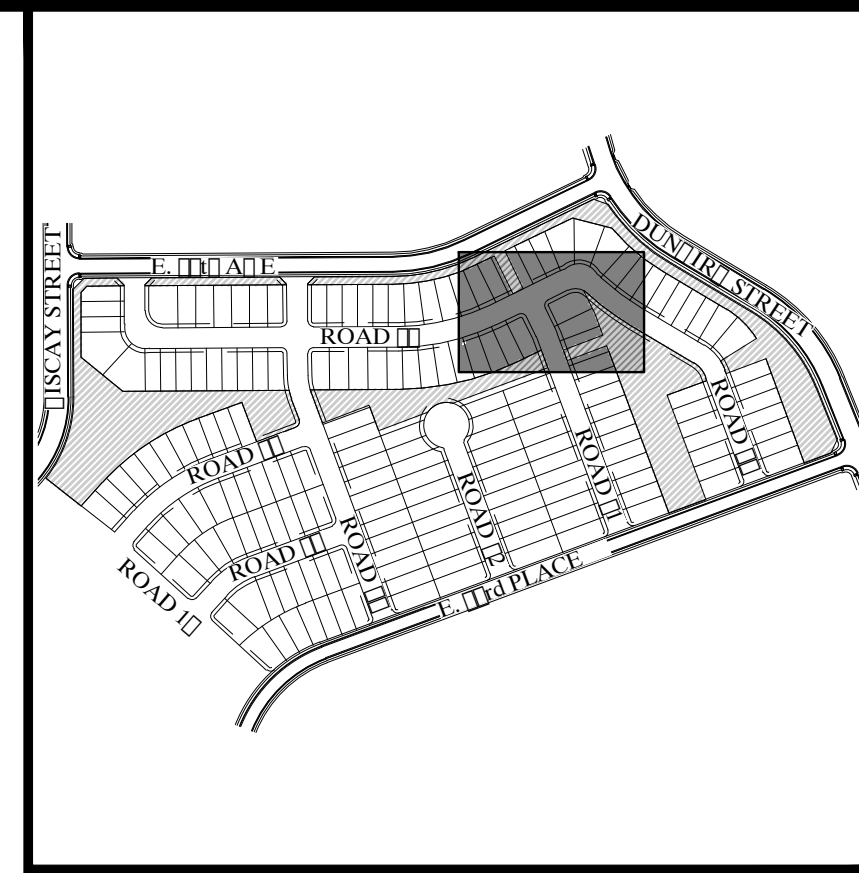
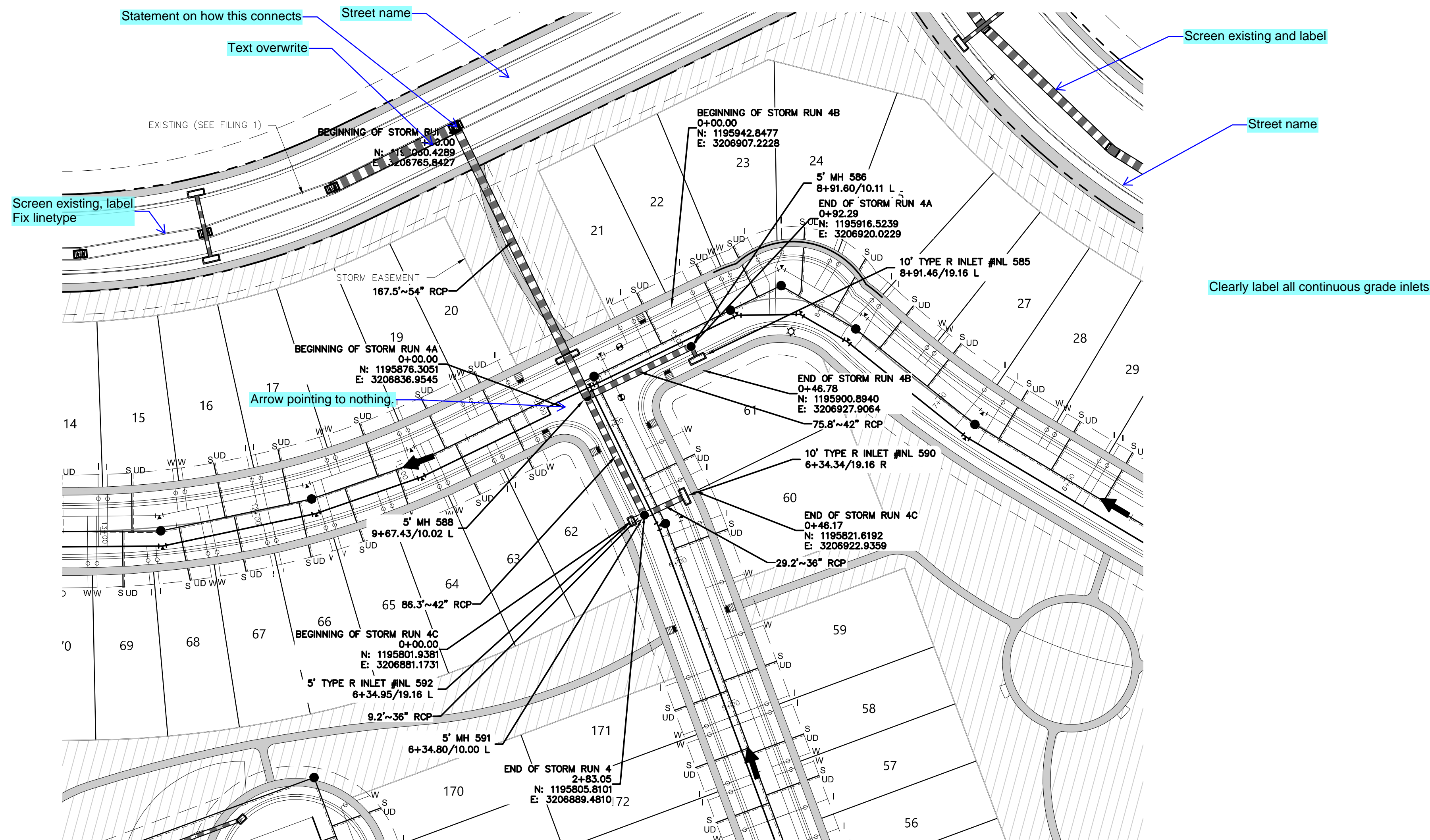
DATE: 7/20/2020
SUBMITTAL TO COMMERCE CITY: 7/20/2020 - D.M.

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PLANS UNDER REVIEW NOT FOR CONSTRUCTION

DR. JRB CH. DJM
P.M. DJM
JOB: 19002860
SHEET NO: 20

\\ATWELL\GIS\DWG\19002860-STORM RUN 2.DWG 7/20/2020 2:27 PM MARISE CORDELL

CAD FILE: 19002860-STORM RUN 2.DWG



811
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STORM PLAN & PROFILES
STORM RUN 4, 4A, 4B, 4C

CLIENT
DATE 7/20/2020

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7/20/2020 - 0.0M

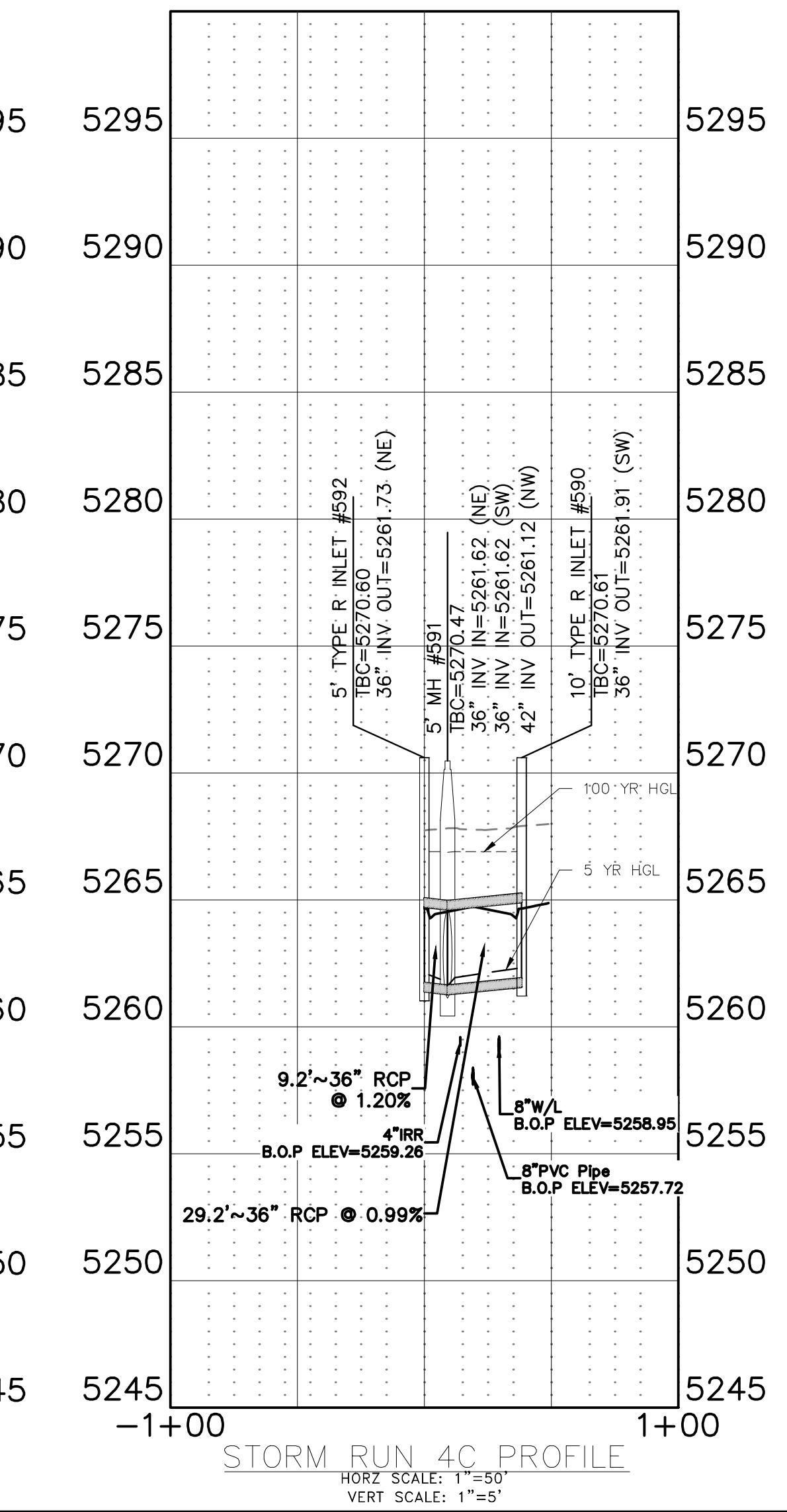
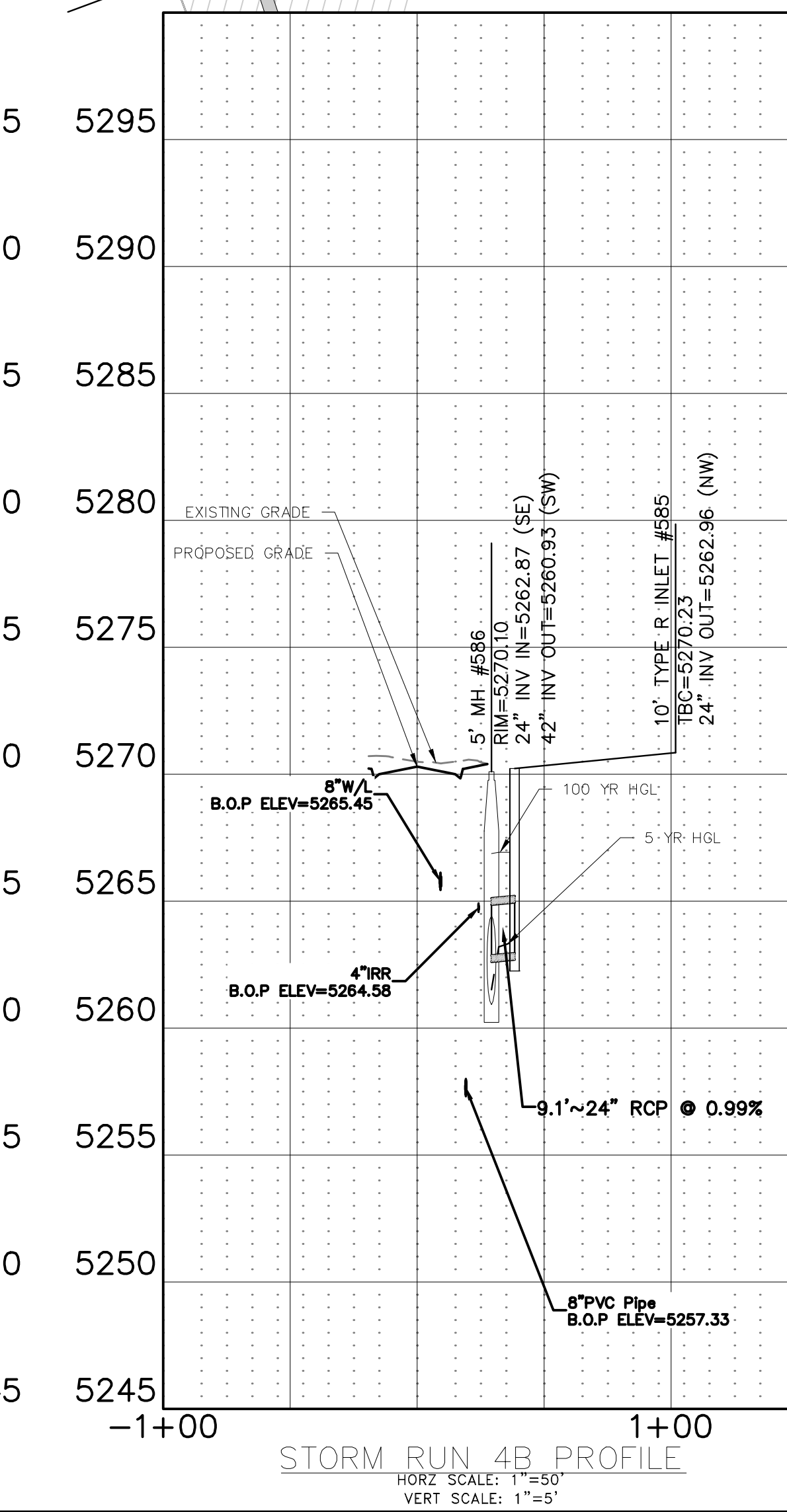
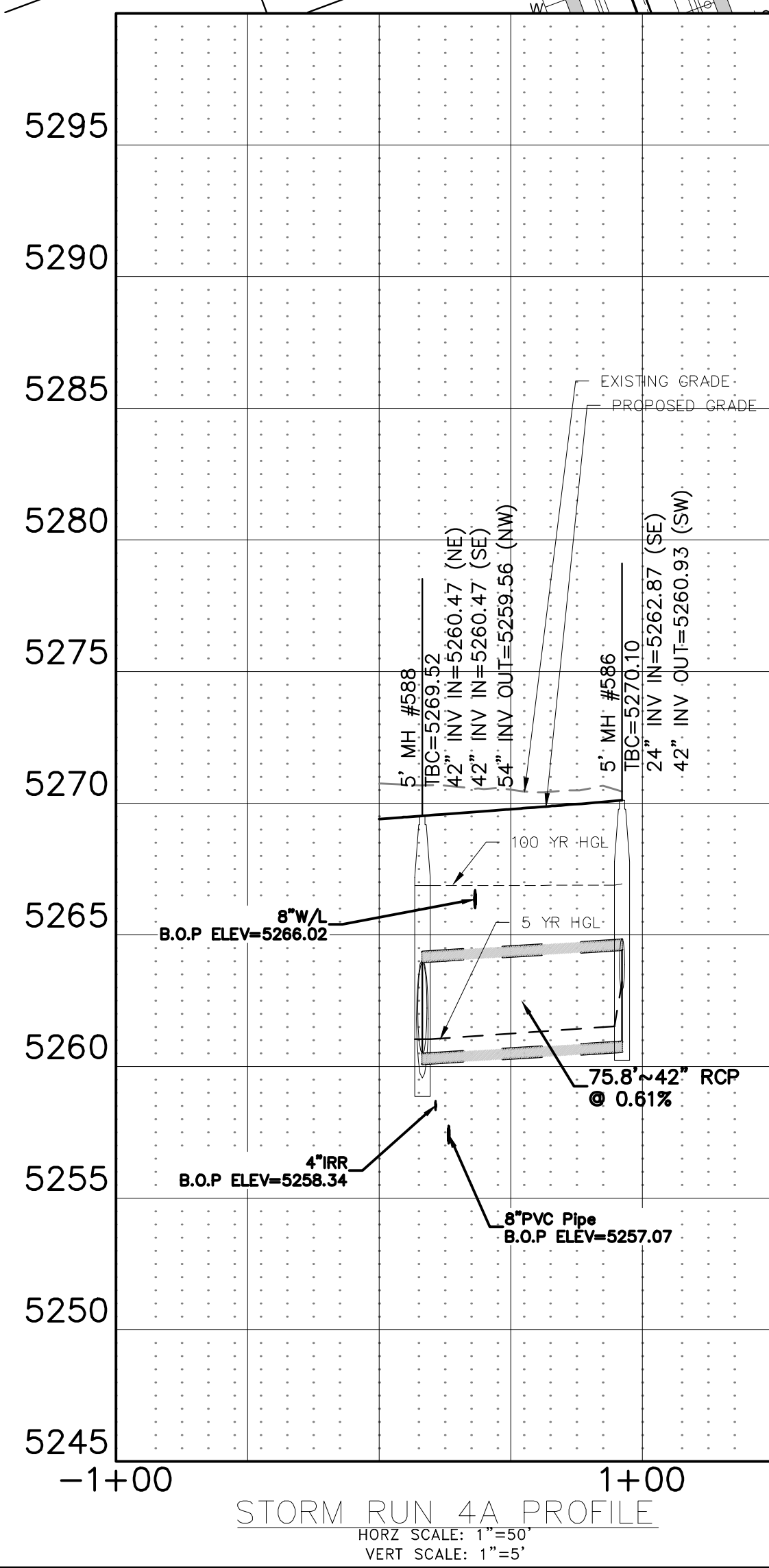
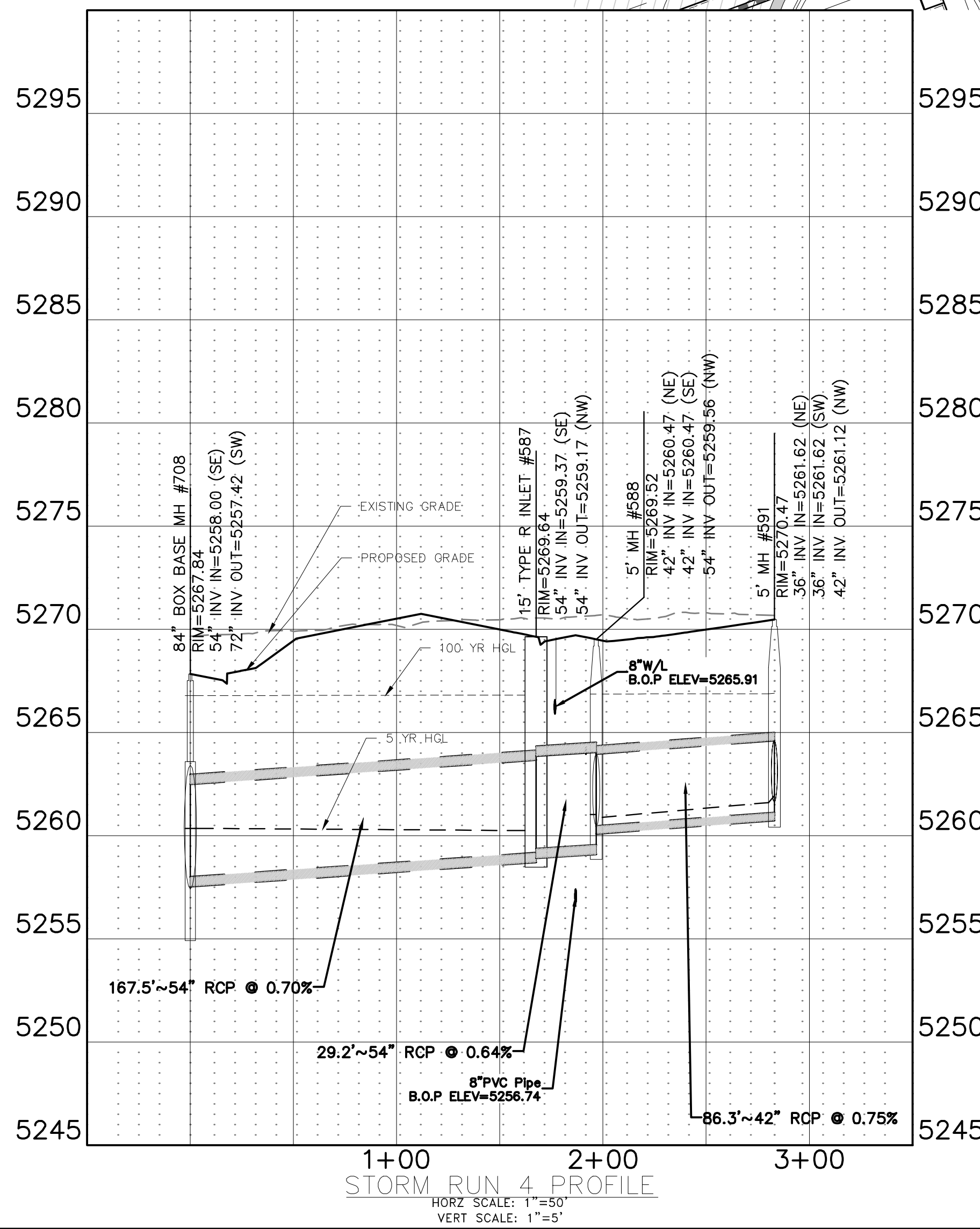
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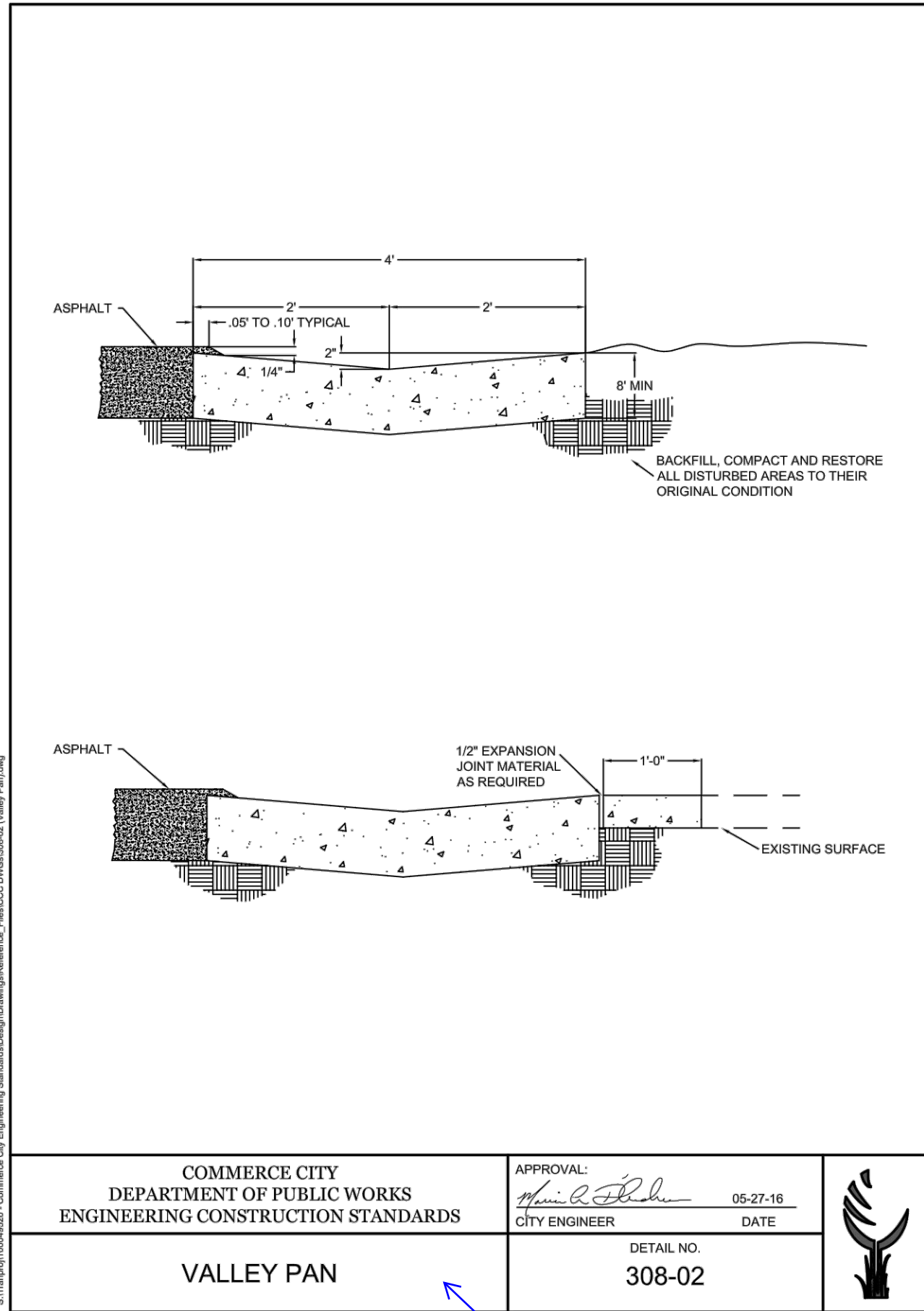
PLANS UNDER REVIEW
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P.M. DJM

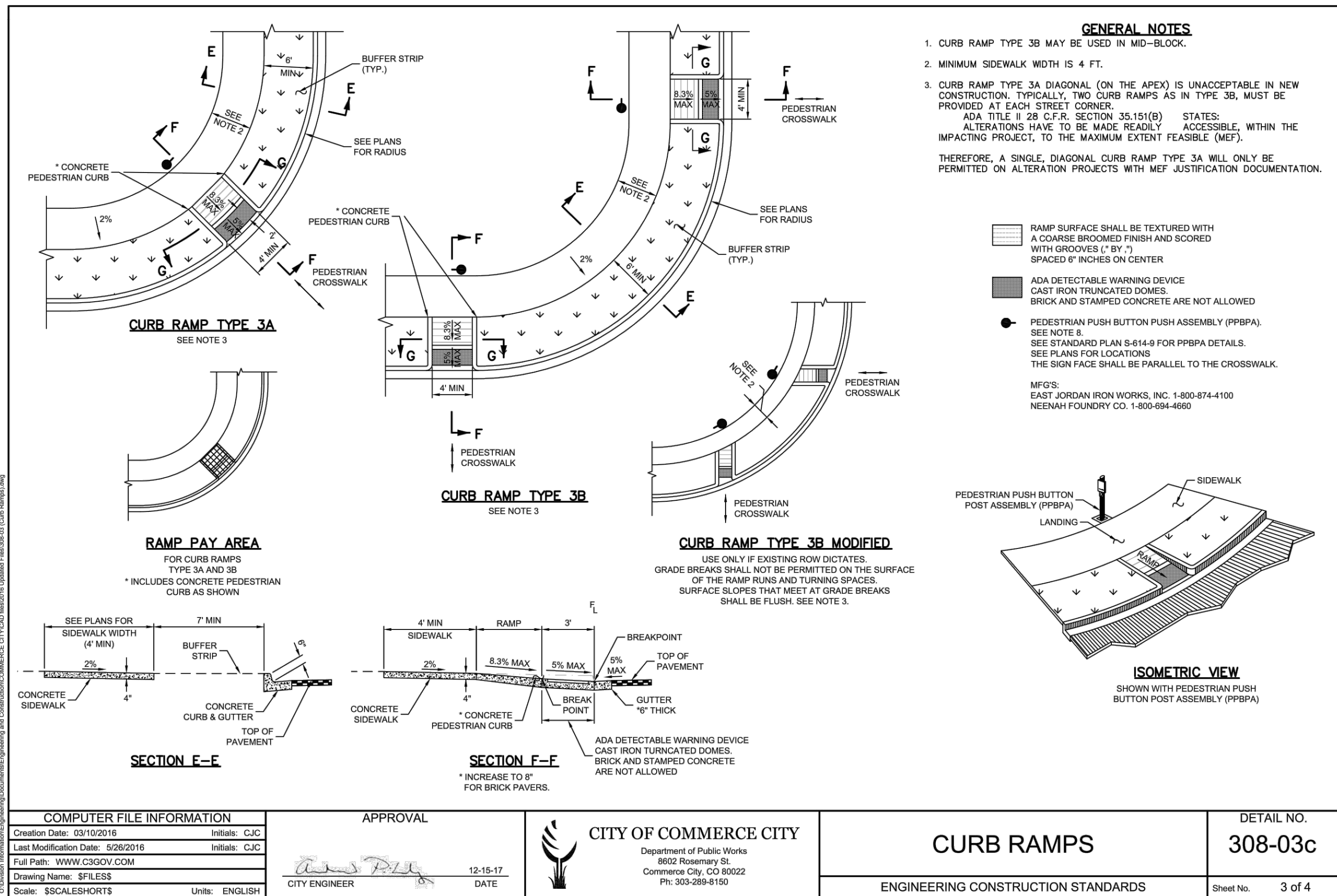
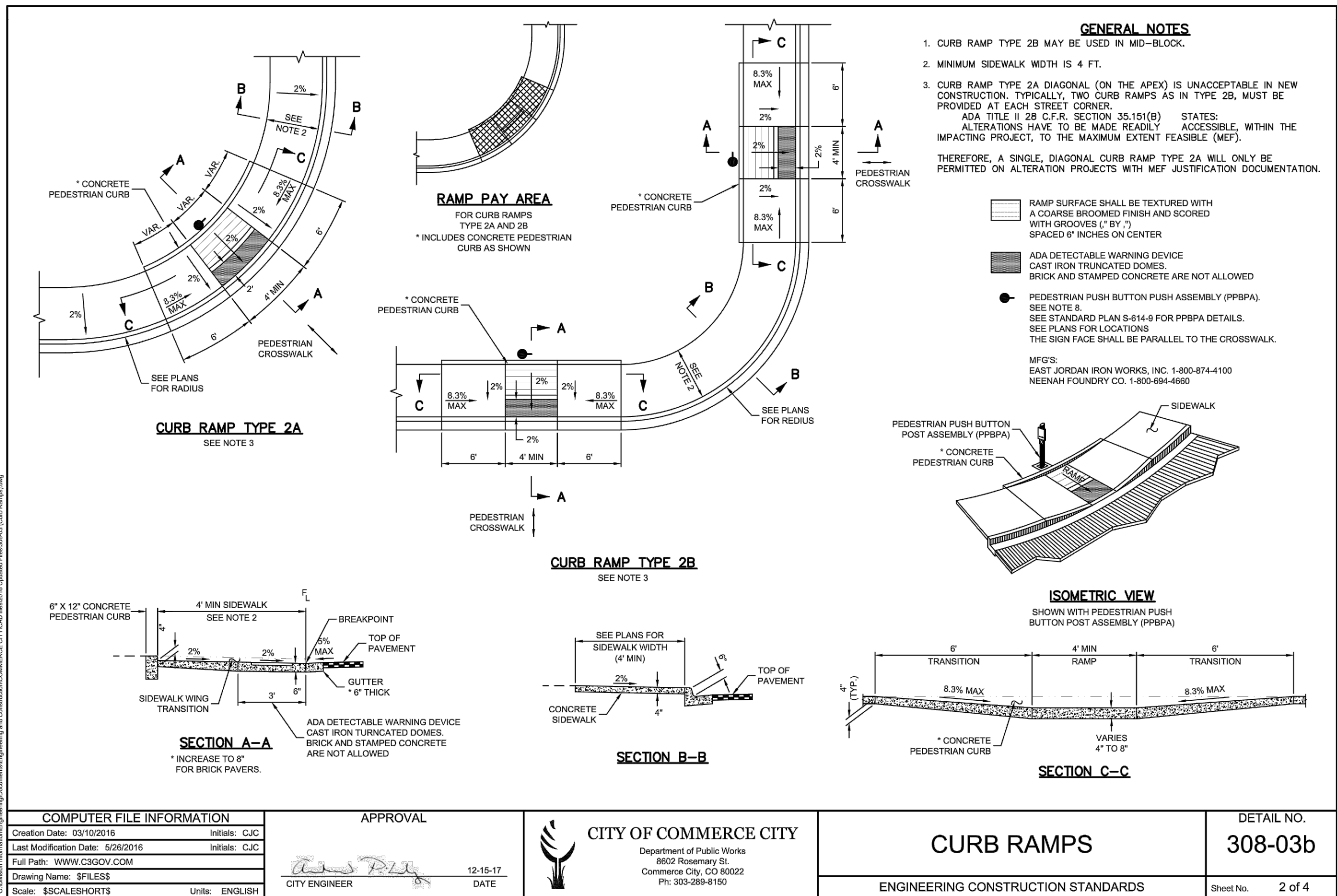
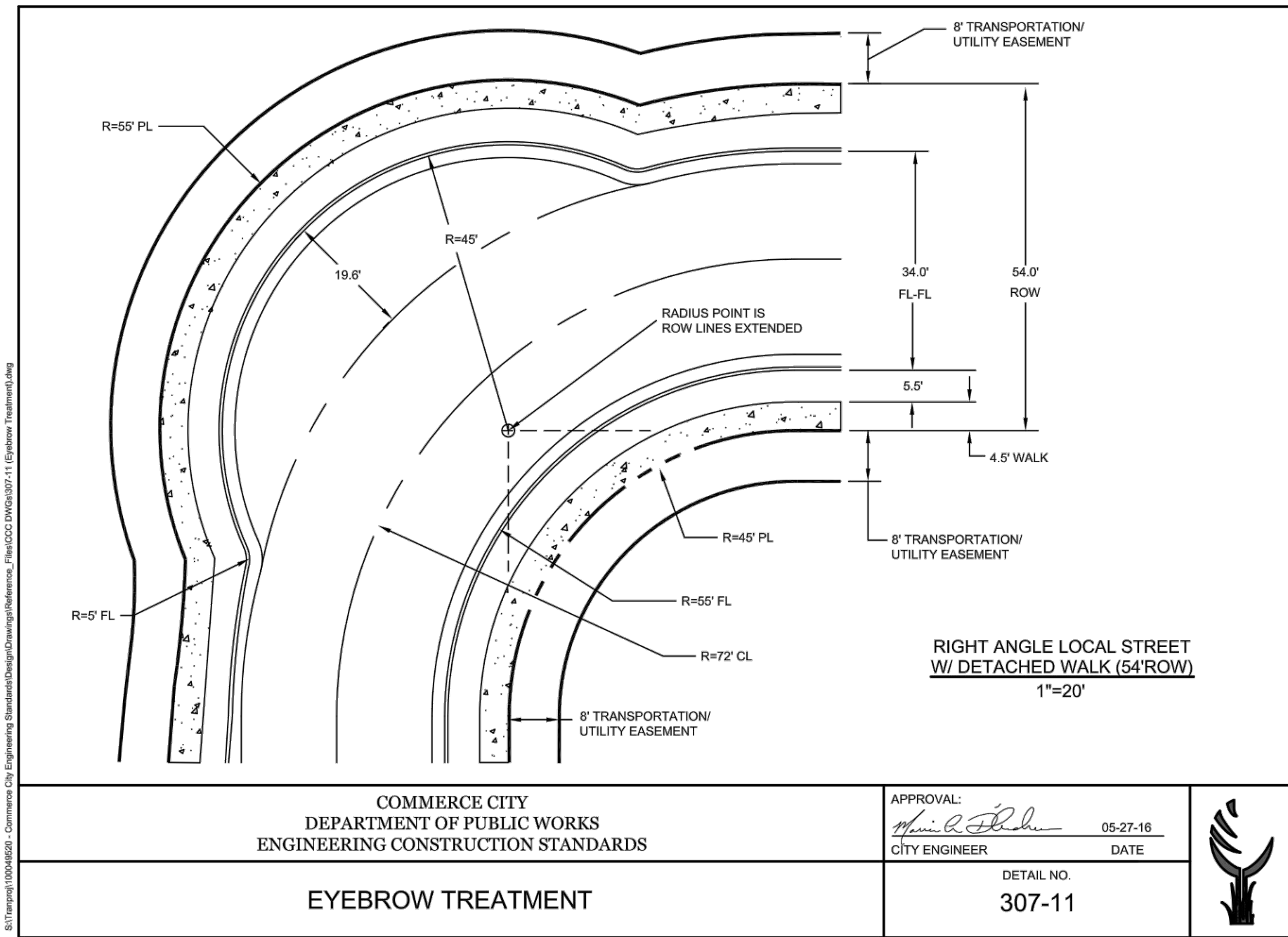
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SHEET NO.

21





Include details for storm structures.



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COMMERCE CITY, COLORADO
CONSTRUCTION DOCUMENTS
STREET DETAILS 01

DATE 7/20/2020

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DR. JRB CH. DJM

P.M. DJM

JOB 19002860

SHEET NO. 22

CAD FILE: 19002860-STREET DETAILS.DWG



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LEGATO FILING NO.
MERCER CITY, COLORADO
STRUCTION DOCUMENTS
STREET DETAILS 02

A	1ST SUBMITTAL TO COMMERCE CITY	7/20/2020 - DJ
---	--------------------------------	----------------

INTEROFFICE MEMORANDUM

TO: Stacy Wasinger, Planner
FROM: Elna L. Smith, Consulting Development Review Engineer
DATE: May 18, 2021
SUBJECT: Legato Filing 1 – PUD and Plat – Review 2
S-772-20-20, Z-953-D-472-20

Public Works has reviewed the above resubmittal and has a few remaining comments as follow:

General:

1. A public improvement agreement (PIA) will need to be submitted with this project. Please include an itemized quantity/cost estimate for review.
2. The PIA will need to be executed before the Plat, Drainage Study and Civil Construction Plans can be approved.

PUD:

1. See redlined pdf for comments.

Plat:

1. See redlined pdf for comments.

Next Steps:

Please include the following in your next submittal:

- Address all comments on the pdf documents, include how the comment has been addressed, or a descriptive reason for not addressing the comment.
- Electronic files with PDF copies of all submittal documents. Please send electronic submittals to pwsubmittals@c3gov.com, and cc me.

If you have any questions, please feel free to contact me via email at esmith@liveyourcore.com (new email address) or by phone at 303-730-5901 to discuss any of these comments.

ec: Joe Wilson, Public Works Director
Chris Hodyl, City Development Review Manager
Brent Soderlin, City Engineer
Lee Alverson, City Development Review
Kevin Rohrbough, P.E., Consulting Development Review Engineer

LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST, OF THE 6TH PRINCIPAL MERIDIAN, CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO SHEET 1 OF 9

LEGAL DESCRIPTION AND DEDICATION:

KNOW ALL MEN BY THESE PRESENTS THAT COHEN DENVER AIRPORT LLC, A NEVADA LIMITED LIABILITY COMPANY, BEING THE OWNER OF THAT PART OF SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST, CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS; TO WIT:

TRACT D2, LEGATO WEST, RECORDED UNDER RECEPTION NO. _____ ADAMS COUNTY, COLORADO RECORDS, BEING A PART OT SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF ADAMS, STATE OF COLORADO;

CONTAINING 1,475,365 SQUARE FEET, OR 33.87 ACRES, MORE OR LESS.

HAVE BY THESE PRESENTS LAID OUT, PLATTED AND SUBDIVIDED THE SAME INTO LOTS AND TRACTS AS SHOWN ON THIS PLAT UNDER THE NAME AND STYLE OF LEGATO FILING NO. 1 AND DO HEREBY GRANT TO THE CITY OF COMMERCE CITY , COUNTY OF ADAMS, STATE OF COLORADO, FOR THE USE OF THE PUBLIC, THE STREETS AND OTHER PUBLIC WAYS AND EASEMENTS HEREON SHOWN, FOR PUBLIC UTILITY, TELECOM, AND DRAINAGE AND OTHER PUBLIC PURPOSES AS DETERMINED BY COMMERCE CITY.

EXECUTED THIS _____ DAY OF _____, A.D. 20____

COHEN DENVER AIRPORT LLC, A NEVADA LIMITED LIABILITY COMPANY

BY: _____

AS: _____

STATE OF COLORADO)
COUNTY OF ADAMS)SS
STATE OF COLORADO)

THE FOREGOING DEDICATION WAS ACKNOWLEDGED BEFORE ME

THIS _____ DAY OF _____ A.D. 20____

BY: _____

MY COMMISSION EXPIRES: _____

NOTARY PUBLIC: _____

NOTES:

- NOTICE: ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.
- ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUTE 18-4-508, C.R.S.
- BASIS OF BEARINGS: BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEING MONUMENTED AT THE WEST END BY A FOUND 2-1/2" ALUMINUM CAP IN RANGE BOX STAMPED "ISI 2018 PLS 29425" AND AT THE EAST END BY A FOUND 2" ALUMINUM CAP STAMPED "WESTERN STATES SURVEYING INC. 1994 PLS 24960". SAID NORTH LINE BEARS NORTH 89°35'58" EAST, WITH ALL BEARINGS CONTAINED HEREIN RELATIVE THERETO.
- THE SUBJECT PROPERTY LIES WITHIN ZONE X, AREAS DETERMINED TO BE OUTSIDE OF THE ANNUAL 0.2% CHANCE FLOODPLAIN, PER FEMA FLOOD INSURANCE RATE MAP FOR ADAMS COUNTY, COLORADO, MAP NO. 08001C0635H, REVISED DATE MARCH 05, 2007.
- THE SUBJECT PROPERTY IS THE SAME AS THE PROPERTY DESCRIBED IN THAT CERTAIN TITLE COMMITMENT NO. H0621380-023-CN4-CN ISSUED BY HERITAGE TITLE COMPANY, INC., WITH AN EFFECTIVE DATE OF OCTOBER 9, 2020 AND THAT ALL EASEMENTS, COVENANTS AND RESTRICTIONS REFERENCED IN SAID TITLE COMMITMENT OR APPARENT FROM A PHYSICAL INSPECTION OF THE SUBJECT PROPERTY OR OTHERWISE KNOWN TO ATWELL, LLC HAVE BEEN PLOTTED HEREON OR OTHERWISE NOTED AS TO THEIR EFFECT OF THE SUBJECT PROPERTY.



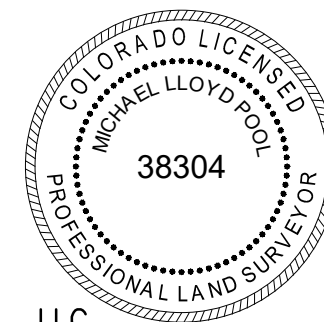
VICINITY MAP
SCALE: 1"=2000'

NOTES:

- DISTANCES SHOWN HEREON ARE EXPRESSED IN U.S. SURVEY FEET AND DECIMALS THEREOF. ONE U.S. SURVEY FOOT EQUALS EXACTLY 1200/3937 METER.
- THIS PLAT IS THE SAME AS THAT PROPERTY SHOWN ON THE LEGATO PUD ZONE DOCUMENT RECORDED AT RECEPTION NO. 2020000063902, ADAMS COUNTY RECORDS.
- REFER TO THE CITY OF COMMERCE CITY DESIGN GUIDELINES FOR ADDITIONAL INFORMATION.
- NOTICE IS HEREBY GIVEN:
 - ANY CONSTRUCTION ACROSS ANY EXISTING SUBDIVISION LOT LINE IS IN VIOLATION OF THE SUBDIVISION REGULATION OF THE CITY, EXCEPT AS HEREIN AUTHORIZED.
 - ANY DIVISION OF AN EXISTING LOT, OR CONVEYANCE OF PART OF AN EXISTING SUBDIVISION LOT, IS IN VIOLATION OF THIS ARTICLE UNLESS (1) APPROVED BY THE CITY OF COMMERCE CITY; OR (2) IS EXCEPTED FROM THE DEFINITION OF "SUBDIVISION" AS PROVIDED BY THE SUBDIVISION REGULATIONS.
 - THIS PLAT DOES NOT ESTABLISH WATER AVAILABILITY FOR THE SUBJECT PROPERTY. WATER AND WASTEWATER SERVICE IS PROVIDED BY THE SOUTH ADAMS COUNTY WATER AND SANITATION DISTRICT. INVESTIGATION OF THE CURRENT WATER AVAILABILITY FOR THE PROPERTY AND ACQUISITION OF ANY ADDITIONAL WATER REQUIRED FOR DEVELOPMENT OF THE PROPERTY SHALL BE THE SOLE RESPONSIBILITY OF THE DEVELOPER, ITS SUCCESSORS AND ASSIGNS. DEVELOPMENT APPROVALS WILL NOT BE GRANTED WITHOUT PROOF OF WATER AVAILABILITY.
- PERMANENT STRUCTURES, IMPROVEMENTS, OBJECTS, BUILDING WALLS, WELLS, AND OTHER OBJECTS THAT MAY INTERFERE WITH THE UTILITY FACILITIES OR USE THEREOF (INTERFERING OBJECTS) SHALL NOT BE PERMITTED WITHIN SAID UTILITY EASEMENTS AND THE UTILITY PROVIDERS, AS GRANTEES, MAY REMOVE ANY INTERFERING OBJECTS AT NO COST TO SUCH GRANTEES, INCLUDING, WITHOUT LIMITATION, VEGETATION. PUBLIC SERVICE COMPANY OF COLORADO (PSCo) AND ITS SUCCESSORS RESERVE THE RIGHT TO REQUIRE ADDITIONAL EASEMENTS AND TO REQUIRE THE PROPERTY OWNER TO GRANT PSCo AN EASEMENT ON ITS STANDARD FORM.

SURVEYOR'S CERTIFICATE:

I, MICHAEL LLOYD POOL, A REGISTERED LAND SURVEYOR, REGISTERED IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THERE ARE NO ROADS, PIPELINES, IRRIGATION DITCHES, OR OTHER EASEMENTS IN EVIDENCE OR KNOWN BY ME TO EXIST ON OR ACROSS THE HEREIN BEFORE DESCRIBED PROPERTY EXCEPT AS SHOWN ON THIS PLAT. I FURTHER CERTIFY THAT I HAVE PERFORMED THE SURVEY SHOWN HEREON, OR SUCH SURVEY WAS PREPARED UNDER MY DIRECT RESPONSIBILITY AND SUPERVISION, THAT THIS PLAT ACCURATELY REPRESENTS SAID SURVEY, AND THAT ALL MONUMENTS EXIST AS SHOWN HEREON.



MICHAEL LLOYD POOL, PLS
COLORADO REG. NO. 38304
FOR AND ON BEHALF OF ATWELL, LLC

CITY STAFF CERTIFICATE:

APPROVED BY THE CITY ENGINEER OF THE CITY OF COMMERCE CITY

THIS _____ DAY OF _____, A.D. 20____

CITY ENGINEER

APPROVED BY THE DIRECTOR, DEPARTMENT OF COMMUNITY DEVELOPMENT OF THE CITY OF COMMERCE CITY

THIS _____ DAY OF _____, A.D. 20____

DIRECTOR, COMMUNITY DEVELOPMENT

ADAMS COUNTY CLERK AND RECORDER'S CERTIFICATE:

THIS PLAT WAS FILED FOR RECORD IN THE OFFICE OF ADAMS COUNTY CLERK AND RECORDER, IN THE STATE OF COLORADO, AT _____ M., ON THE

_____ DAY OF _____, A.D. 20____

COUNTY CLERK AND RECORDER

BY: _____
DEPUTY

RECEPTION NO. _____



REVISIONS		SHEET 1 OF 9
REVISED	12/07/2020	
REVISED	12/22/2020	FILE NO. 19002860_FINAL PLAT
		DATE 07/19/2020
		DRAWN BY TWK
		CHECK BY MLP
		JOB NO. 19002860

A current Title will be necessary within 60 days of projected approval

LEGATO FILING NO. 1

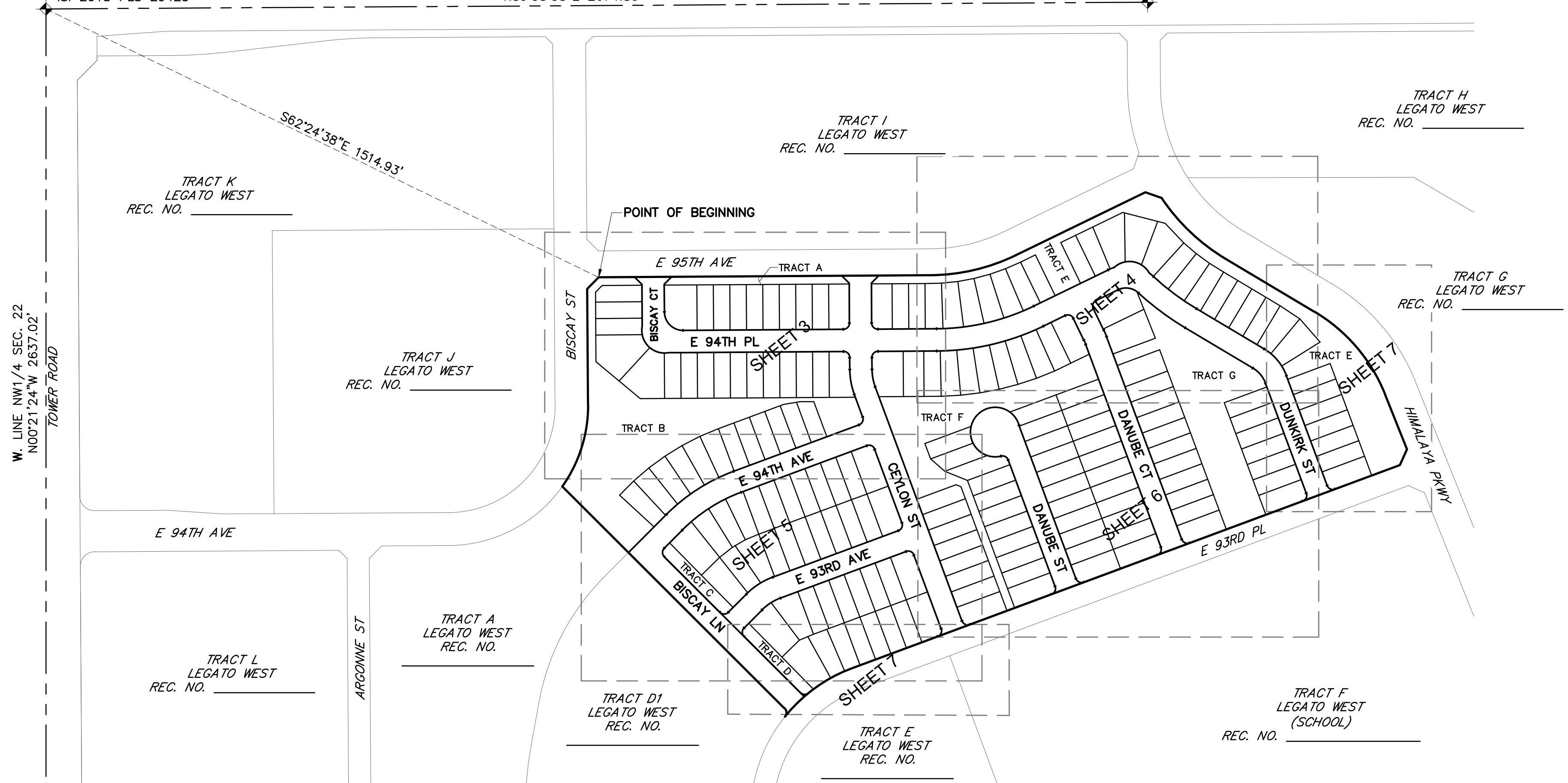
A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO
SHEET 2 OF 9

POINT OF COMMENCEMENT
NW COR. SEC. 22
FOUND 2-1/2" ALUMINUM
CAP IN RANGE BOX
"ISI 2018 PLS 29425"

BASIS OF BEARINGS
N. LINE NW1/4 SEC. 22
N89°38'58"E 2674.80'

E 96TH AVE
EXIST. 106' R.O.W.

N1/4 COR. SEC. 22
FOUND 2" ALUMINUM
CAP "WESTERN STATES SURVEYING
INC. 1994 PLS 24960"



W. LINE NW1/4 SEC. 22
N00°21'24"W 2637.02'
TOWER ROAD

TRACT L
LEGATO WEST
REC. NO. _____

TRACT A
LEGATO WEST
REC. NO. _____

TRACT D1
LEGATO WEST
REC. NO. _____

TRACT E
LEGATO WEST
REC. NO. _____

TRACT F
LEGATO WEST
(SCHOOL)
REC. NO. _____

TRACT G
LEGATO WEST
REC. NO. _____

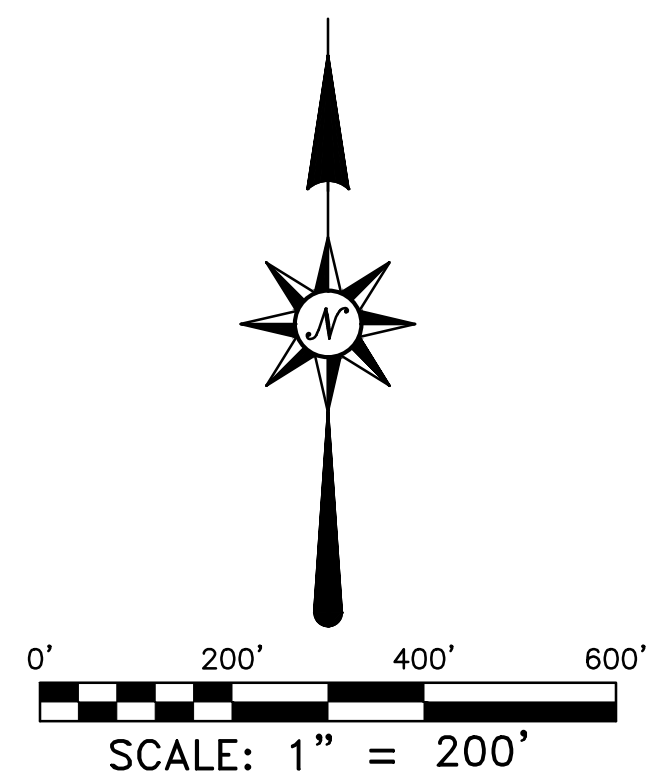
TRACT H
LEGATO WEST
REC. NO. _____

LAND USE	NO. OF PARCELS	AREA IN ACRES	% OF PROJECT
LOTS	181	20.10	57.7
TRACTS	7	7.17	20.6
RIGHT OF WAY		7.7	
TOTAL		34.84	100

TRACT	AREA (S.F.)	AREA (AC.)	USE	OWNER/ MAINTENANCE
A	8,657	0.20	OPEN SPACE	HOA
B	98,756	2.27	OPEN SPACE	HOA
C	6,975	0.16	OPEN SPACE	HOA
D	6,486	0.15	OPEN SPACE	HOA
E	78,872	1.81	OPEN SPACE	HOA
F	55,701	1.28	OPEN SPACE	HOA
G	69,063	1.59	OPEN SPACE	HOA
TOTAL	324,510	7.46		

All reception numbers will need to be added before Public Works can give a final acceptance of this plat.

W1/4 COR. SEC. 22
FOUND 2-1/2" ALUMINUM
CAP IN RANGE BOX
"ISI 2018 PLS 29425"



866.850.4200 www.atwell-group.com

143 UNION BOULEVARD, SUITE 700
LAKEWOOD, CO 80228
303.462.1100

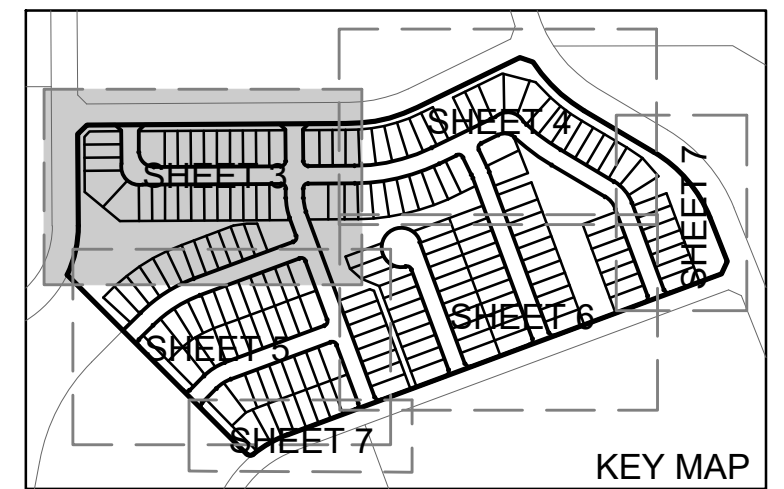
REVISIONS	
REVISED	12/07/2020
REVISED	12/22/2020

SHEET
2
OF 9

FILE NO. 19002860_FINAL PLAT
DATE 07/19/2020
DRAWN BY TWK
CHECK BY MLP
JOB NO. 19002860

LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF ADAMS,
CITY OF COMMERCE CITY, STATE OF COLORADO
SHEET 3 OF 9



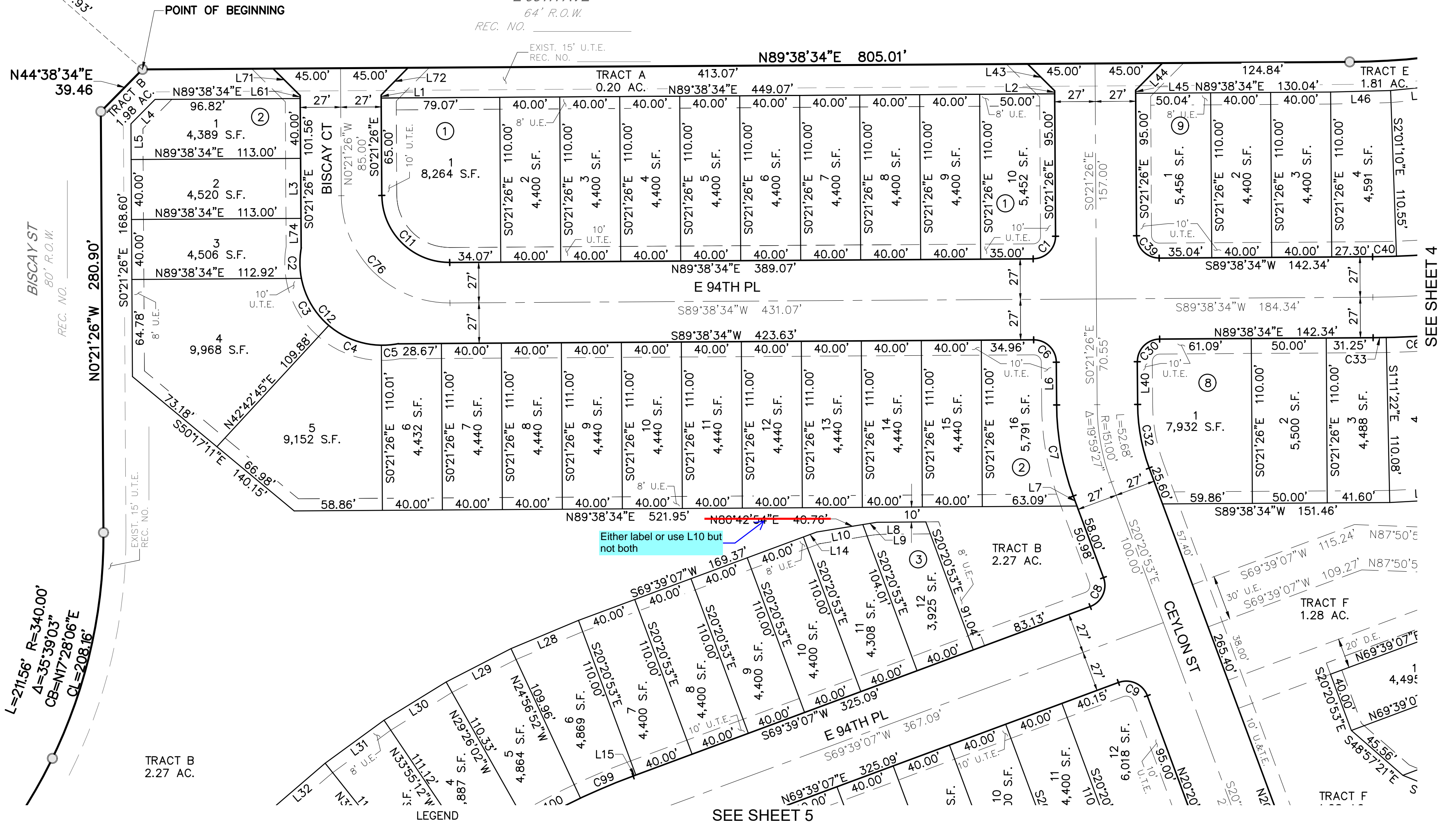
POINT OF COMMENCEMENT
NW COR. SEC. 22
FOUND 2-1/2" ALUMINUM
CAP IN RANGE BOX
"ISI 2018 PLS 29425"

S62°24'38"E 1514.93'

TRACT I
LEGATO WEST
REC. NO. _____

E 95TH AVE
64' R.O.W.
REC. NO. _____

EXIST. 15' U.T.E.
REC. NO. _____



SEE SHEET 4

SEE SHEET 5

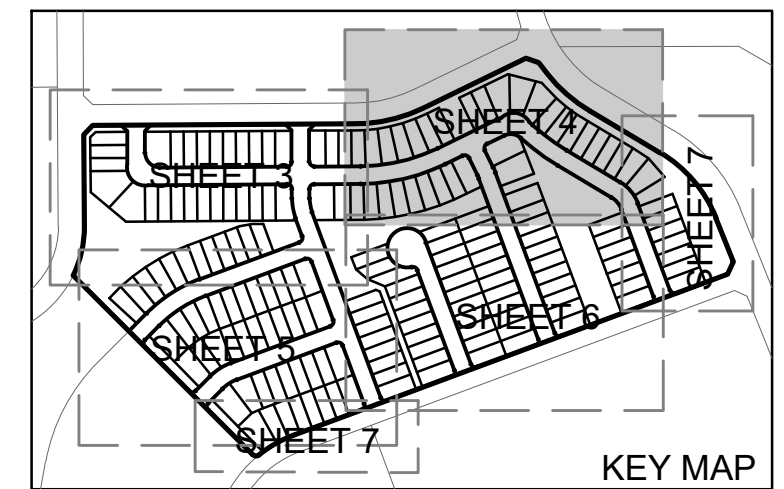
---	SUBJECT PARCEL BOUNDARY LINE
---	CENTERLINE
---	LOT/TRACT LINE
---	ADJACENT PROPERTY LINE
---	PROPOSED EASEMENT LINE
---	EXISTING EASEMENT LINE
---	U.E. = UTILITY EASEMENT
---	U.T.E. = UTILITY & TRANSPORTATION EASEMENT
---	D.E. = DRAINAGE EASEMENT
---	SET #4 REBAR WITH BLUE PLASTIC CAP "ATWELL PLS 38304"
---	BLOCK NUMBER

ATWELL
866.850.4200 www.atwell-group.com
143 UNION BOULEVARD, SUITE 700
LAKEWOOD, CO 80228
303.462.1100

REVISIONS		SHEET 3 OF 9
REVISED	12/07/2020	
REVISED	12/22/2020	
REVISED	03/02/2021	
FILE NO. 19002860_FINAL PLAT		DATE 07/19/2020
DRAWN BY TWK		CHECK BY MLP
JOB NO. 19002860		

LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF ADAMS,
CITY OF COMMERCE CITY, STATE OF COLORADO
SHEET 4 OF 9



TRACT H
LEGATO WEST
REC. NO. _____

TRACT G
LEGATO WEST
REC. NO. _____

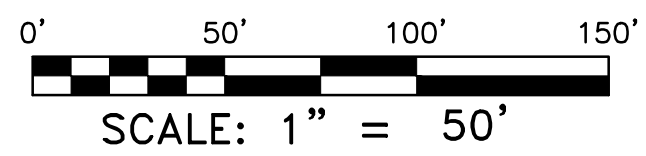
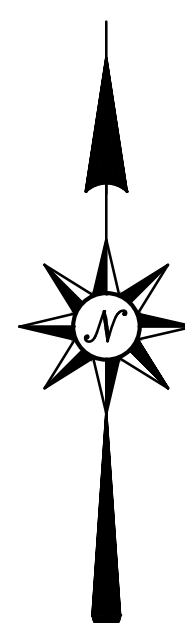
TRACT I
LEGATO WEST
REC. NO. _____



SEE SHEET 3

SEE SHEET 6

SEE SHEET 7



LEGEND

- SUBJECT PARCEL BOUNDARY LINE
- CENTERLINE
- LOT/TRACT LINE
- ADJACENT PROPERTY LINE
- PROPOSED EASEMENT LINE
- EXISTING EASEMENT LINE
- SET #4 REBAR WITH BLUE PLASTIC CAP "ATWELL PLS 38304"
- U.E. = UTILITY EASEMENT
- U.T.E. = UTILITY & TRANSPORTATION EASEMENT
- Ⓢ BLOCK NUMBER

866.850.4200 www.atwell-group.com
143 UNION BOULEVARD, SUITE 700
LAKEWOOD, CO 80228
303.462.1100

REVISIONS	
REVISED	12/07/2020
REVISED	12/22/2020

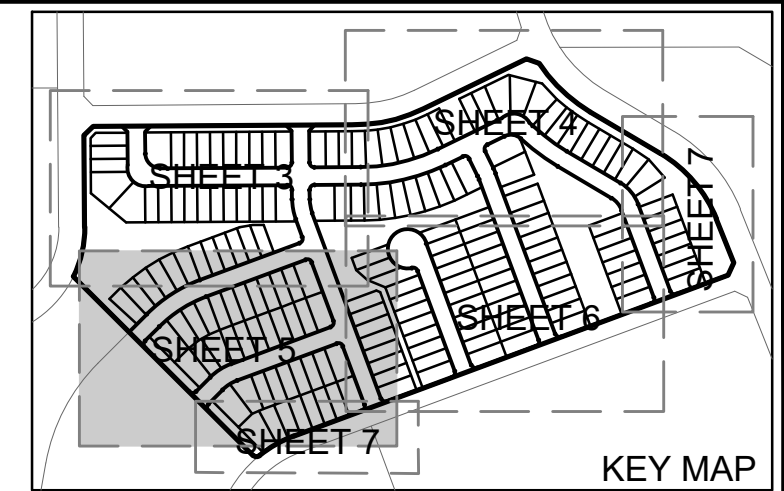
SHEET
4
OF 9

FILE NO. 19002860_FINAL PLAT
DATE 07/19/2020
DRAWN BY TWK
CHECK BY MLP
JOB NO. 19002860

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A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF ADAMS,
CITY OF COMMERCE CITY, STATE OF COLORADO

SEE SHEET 3



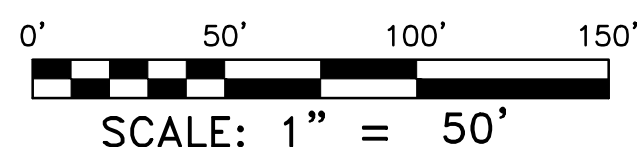
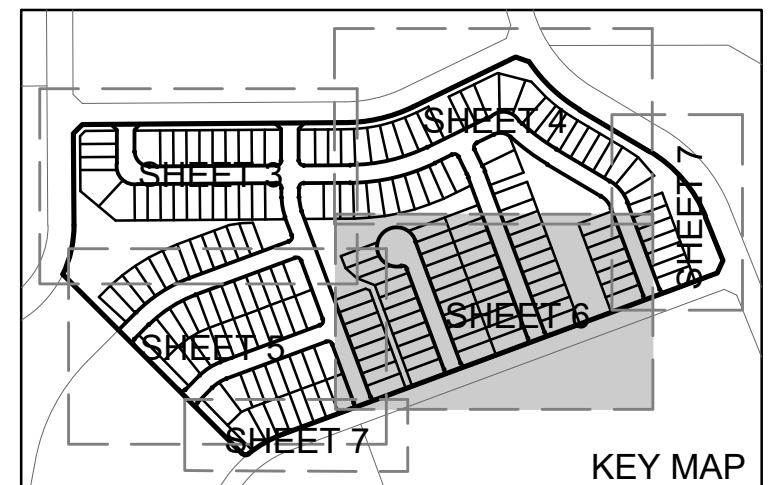
_____	SUBJECT PARCEL BOUNDARY LINE
_____	CENTERLINE
_____	LOT/TRACT LINE
_____	ADJACENT PROPERTY LINE
- - - - -	PROPOSED EASEMENT LINE
- - - - -	EXISTING EASEMENT LINE
SET #4 REBAR WITH BLUE	U.E. = UTILITY EASEMENT
○ PLASTIC CAP "ATWELL PLS	U.T.E. = UTILITY &
38304"	TRANSPORTATION EASEMENT
(11) BLOCK NUMBER	



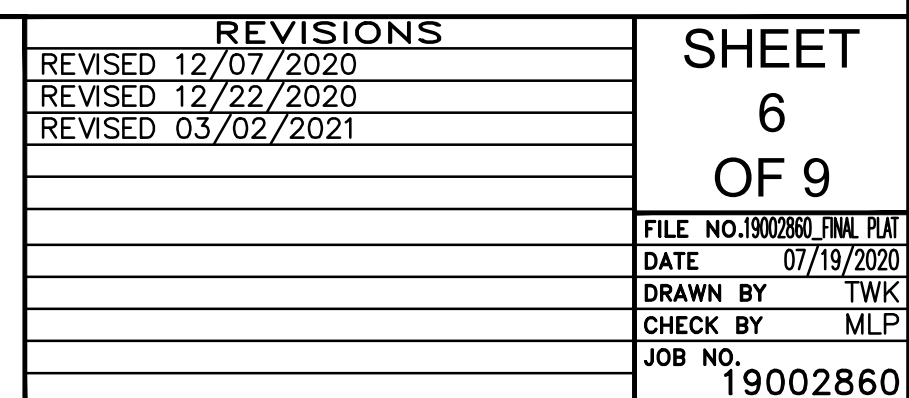
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A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF ADAMS,
CITY OF COMMERCE CITY, STATE OF COLORADO

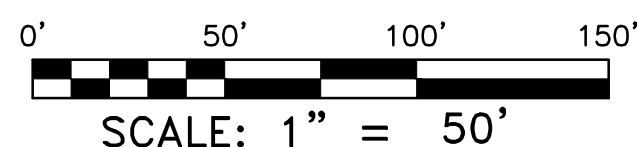
SHEET 6 OF 9



_____	SUBJECT PARCEL BOUNDARY LINE
_____	CENTERLINE
_____	LOT/TRACT LINE
_____	ADJACENT PROPERTY LINE
_____	PROPOSED EASEMENT LINE
_____	EXISTING EASEMENT LINE
SET #4 REBAR WITH BLUE	U.E. = UTILITY EASEMENT
○ PLASTIC CAP "ATWELL PLS	U.T.E. = UTILITY &
38304"	TRANSPORTATION EASEMENT
(11) BLOCK NUMBER	D.E. = DRAINAGE EASEMENT



A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF ADAMS,
CITY OF COMMERCE CITY, STATE OF COLORADO
SHEET 7 OF 9



LEGEND

	SUBJECT PARCEL BOUNDARY LINE
	CENTERLINE
	LOT/TRACT LINE
	ADJACENT PROPERTY LINE
	PROPOSED EASEMENT LINE
	EXISTING EASEMENT LINE
SET #4 REBAR WITH BLUE ● PLASTIC CAP "ATWELL PLS 38304"	U.E. = UTILITY EASEMENT U.T.E. = UTILITY & TRANSPORTATION EASEMENT
(11) BLOCK NUMBER	



<div> <div>REVISIONS</div> <div> <div>REVISED 12/07/2020</div> <div>REVISED 12/22/2020</div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> </div>		<div> <div>SHEET</div> <div>7</div> <div>OF 9</div> </div>
<div> <div>FILE NO.19002860_FINAL PLAT</div> <div>DATE 07/19/2020</div> <div>DRAWN BY TWK</div> <div>CHECK BY MLP</div> <div>JOB NO.</div> <div>19002860</div> </div>		

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LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO
SHEET 8 OF 9

LINE TABLE		
LINE	LENGTH	BEARING
L1	2.00'	S00°21'26"E
L2	2.00'	S00°21'26"E
L3	40.00'	S00°21'26"E
L4	22.89'	N44°38'34"E
L5	23.82'	N00°21'26"W
L6	28.55'	S00°21'26"E
L7	7.02'	S20°20'53"E
L8	32.59'	N89°38'34"E
L9	9.55'	N80°42'54"E
L10	31.21'	N80°42'54"E
L13	3.24'	S44°56'43"W
L14	9.37'	N69°39'07"E
L15	1.96'	S69°39'07"W
L16	7.53'	N59°59'47"E
L17	18.17'	S44°56'43"W
L18	4.94'	S69°39'07"W
L19	16.11'	N44°56'43"E
L20	4.94'	N69°39'07"E
L21	15.60'	S44°56'43"W
L22	21.13'	N69°39'07"E
L23	22.07'	S67°10'58"W
L24	15.15'	S67°10'58"W
L25	13.03'	S67°51'13"E
L26	12.14'	N20°20'53"W
L27	2.18'	S20°20'53"E

LINE TABLE		
LINE	LENGTH	BEARING
L28	48.83'	S67°18'16"W
L29	48.61'	S62°48'33"W
L30	48.61'	S58°19'23"W
L31	48.61'	S53°50'13"W
L32	48.61'	S49°21'03"W
L33	48.61'	S44°51'53"W
L34	47.32'	S68°19'28"W
L35	47.31'	S71°40'32"W
L36	47.31'	S75°29'00"W
L37	47.31'	S79°17'28"W
L38	47.31'	S83°05'56"W
L39	47.31'	S86°48'56"W
L40	28.55'	S00°21'26"E
L41	20.41'	S64°05'59"W
L42	25.22'	N20°20'53"W
L43	25.46'	N45°21'26"W
L44	25.46'	N44°38'34"E
L45	2.00'	S00°21'26"E
L46	40.00'	N88°35'12"E
L47	40.00'	N84°15'14"E
L48	40.00'	N79°41'14"E
L49	40.00'	N75°07'14"E
L50	40.00'	N70°33'15"E
L51	40.00'	N66°00'16"E
L52	40.00'	N64°05'59"E

LINE TABLE		
LINE	LENGTH	BEARING
L53	65.54'	N43°34'51"W
L54	40.00'	N49°23'53"W
L55	40.00'	N53°48'23"W
L56	40.00'	N58°03'09"W
L57	57.28'	S56°17'35"E
L58	74.65'	S41°08'49"E
L61	2.00'	S00°21'26"E
L62	9.06'	S20°20'53"E
L63	40.00'	S64°05'59"W
L64	3.25'	N25°54'01"W
L65	17.97'	S64°05'59"W
L66	20.07'	N59°13'22"W
L67	10.85'	N59°13'22"W
L68	3.94'	S75°33'01"E
L69	18.80'	S75°33'01"E
L70	9.06'	N20°20'53"W
L71	25.46'	S45°21'26"E
L72	25.46'	S44°38'34"W
L73	20.00'	N69°39'07"E
L74	19.56'	S00°21'26"E

Curve Table					
CURVE #	LENGTH	RADIUS	DELTA	CHORD BRG	CHORD LENGTH
C1	23.56'	15.00'	90°00'00"	N44°38'34"E	21.21
C2	20.56'	55.00'	21°25'05"	S0°07'25"E	20.44
C3	37.14'	55.00'	38°41'18"	S30°10'37"E	36.44
C4	38.31'	55.00'	39°54'47"	S69°28'39"E	37.54
C5	11.39'	55.00'	11°51'56"	N84°37'59"E	11.37
C6	23.56'	15.00'	90°00'00"	N45°21'26"W	21.21
C7	62.11'	178.00'	19°59'27"	S10°21'09"E	61.79
C8	23.56'	15.00'	90°00'00"	N24°39'07"E	21.21
C9	23.56'	15.00'	90°00'00"	N65°20'53"W	21.21
C10	23.56'	15.00'	90°00'00"	N24°39'07"E	21.21
C11	70.69'	45.00'	90°00'00"	S45°21'26"E	63.64
C12	107.40'	55.00'	111°53'06"	S45°21'26"E	91.13
C13	23.56'	15.00'	90°00'00"	N89°56'41"E	21.21
C14	23.56'	15.00'	90°00'00"	S0°03'13"E	21.21
C15	29.96'	397.00'	4°19'24"	S47°06'25"W	29.95
C16	4.57'	177.00'	1°28'50"	S45°41'08"W	4.57
C17	23.56'	15.00'	90°00'00"	S0°03'17"E	21.21
C18	21.95'	15.00'	83°50'58"	S86°58'46"E	20.04
C19	23.56'	15.00'	90°00'00"	N24°39'07"E	21.21
C20	23.56'	15.00'	90°00'00"	N65°20'53"W	21.21
C21	27.90'	123.00'	12°59'42"	S51°26'34"W	27.84
C22	25.14'	123.00'	11°42'42"	S63°47'46"W	25.10
C23	15.23'	377.00'	2°18'54"	S52°15'12"W	15.23
C24	18.85'	377.00'	2°51'54"	S68°13'10"W	18.85
C25	23.56'	15.00'	90°00'00"	S65°20'53"E	21.21
C26	23.56'	15.00'	90°00'00"	N24°39'07"E	21.21
C27	21.73'	15.00'	82°59'01"	N61°50'23"W	19.88
C28	23.56'	15.00'	90°00'00"	S65°20'53"E	21.21
C29	23.56'	15.00'	90°00'00"	N24°39'07"E	21.21
C30	23.56'	15.00'	90°00'00"	S44°38'34"W	21.21
C31	23.56'	15.00'	90°00'00"	N70°54'01"W	21.21
C32	43.26'	124.00'	19°59'27"	S10°21'09"E	43.05
C33	8.75'	602.00'	0°49'57"	N89°13'36"E	8.75
C34	19.59'	602.00'	1°51'52"	N65°01'55"E	19.59
C35	11.92'	123.00'	5°33'09"	N23°07'27"W	11.91

Curve Table					
CURVE #	LENGTH	RADIUS	DELTA	CHORD BRG	CHORD LENGTH
C36	26.02'	127.00'	11°44'18"	N26°13'02"W	25.97
C37	4.61'	45.00'	5°51'48"	N50°17'27"W	4.60
C38	49.53'	73.00'	38°52'30"	N39°47'08"W	48.59
C39	23.56'	15.00'	90°00'00"	S45°21'26"E	21.21
C40	15.90'	548.00'	1°39'45"	N88°48'42"E	15.90
C41	27.59'	548.00'	2°53'06"	N65°32'32"E	27.59
C42	23.56'	15.00'	90°00'00"	S19°05'59"W	21.21
C43	49.23'	45.00'	62°40'40"	N84°33'41"W	46.81
C44	17.15'	177.00'	5°33'09"	N23°07'27"W	17.15
C45	23.56'	15.00'	90°00'00"	S65°20'53"E	21.21
C46	5.75'	99.00'	3°19'32"	S65°45'45"W	5.75
C47	10.09'	99.00'	5°50'26"	S70°20'44"W	10.09
C48	30.32'	55.00'	31°35'23"	S63°23'49"W	29.94
C49	27.41'	55.00'	28°33'08"	N43°53'04"W	27.13
C50	12.96'	99.00'	7°30'05"	N51°31'17"W	12.95
C51	0.71'	99.00'	0°24'41"	N47°33'54"W	0.71
C52	19.98'	127.00'	9°00'55"	N54°42'55"W	19.96
C53	23.56'	15.00'	90°00'00"	S65°20'53"E	21.21
C54	23.56'	15.00'	90°00'00"	N24°39'07"E	21.21
C55	15.84'	99.00'	9°09'59"	S68°40'58"W	15.82
C56	98.67'	55.00'	102°47'22"	N81°00'11"W	85.96
C57	53.83'	45.00'	68°32'28"	N81°37'47"W	50.68
C58	86.17'	127.00'	38°52'30"	N39°47'08"W	84.53
C59	14.54'	150.00'	5°33'09"	N23°07'27"W	14.53
C60	50.16'	548.00'	5°14'41"	N85°21'29"E	50.14
C61	53.04'	123.00'	24°42'24"	S57°17'55"W	52.63
C62	76.32'	177.00'	24°42'24"	S57°17'55"W	75.73
C63	50.23'	548.00'	5°15'07"	N80°06'36"E	50.21
C64	50.24'	548.00'	5°15'09"	N74°51'28"E	50.22
C65	50.18'	548.00'	5°14'49"	N69°36'29"E	50.17
C66	40.01'	602.00'	3°48'28"	N86°54'24"E	40.00
C67	40.01'	602.00'	3°48'28"	N83°05'56"E	40.00
C68	40.01'	602.00'	3°48'28"	N79°17'28"E	40.00
C69	40.01'	602.00'	3°48'28"	N75°29'00"E	40.00
C70	40.01'	602.00'	3°48'28"	N71°40'32"E	40.00



REVISIONS		SHEET 8 OF 9
REVISED	12/07/2020	
REVISED	12/22/2020	
		FILE NO.19002860_FINAL PLAT
		DATE 07/19/2020
		DRAWN BY TWK
		CHECK BY MLP
		JOB NO. 19002860

LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST,
OF THE 6TH PRINCIPAL MERIDIAN, CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO
SHEET 9 OF 9

Curve Table					
CURVE #	LENGTH	RADIUS	DELTA	CHORD BRG	CHORD LENGTH
C71	40.01'	602.00'	3°48'28"	N67°52'05"E	40.00
C72	268.38'	602.00'	25°32'36"	N76°52'17"E	266.16
C73	244.31'	548.00'	25°32'36"	N76°52'17"E	242.29
C74	86.13'	72.00'	68°32'28"	N81°37'47"W	81.09
C75	256.34'	575.00'	25°32'36"	N76°52'17"E	254.23
C76	113.10'	72.00'	90°00'00"	S45°21'26"E	101.82
C77	46.65'	630.00'	4°14'35"	S49°28'50"E	46.64
C78	48.47'	630.00'	4°24'30"	S53°48'23"E	48.46
C79	35.32'	630.00'	3°12'44"	S57°37'00"E	35.32
C80	130.45'	630.00'	11°51'49"	S53°17'28"E	130.22
C81	141.63'	684.00'	11°51'49"	S53°17'28"E	141.38
C82	136.04'	657.00'	11°51'49"	S53°17'28"E	135.80
C83	67.85'	100.00'	38°52'30"	N39°47'08"W	66.56
C84	40.17'	127.00'	18°07'17"	N41°08'49"W	40.00
C85	117.60'	60.00'	112°17'49"	S69°39'07"W	99.66
C86	42.04'	60.00'	40°08'43"	S6°34'08"E	41.19
C87	46.73'	60.00'	44°37'43"	S48°57'21"E	45.56
C88	33.57'	60.00'	32°03'41"	S87°18'03"E	33.14
C89	279.80'	60.00'	267°11'23"	S30°15'48"W	86.91
C90	31.96'	177.00'	10°20'49"	S64°28'43"W	31.92
C91	39.79'	177.00'	12°52'45"	S52°51'56"W	39.70
C92	64.68'	150.00'	24°42'24"	S57°17'55"W	64.18
C93	171.19'	397.00'	24°42'24"	S57°17'55"W	169.87
C94	194.48'	451.00'	24°42'24"	S57°17'55"W	192.97
C95	182.83'	424.00'	24°42'24"	S57°17'55"W	181.42
C96	52.32'	397.00'	7°33'05"	S53°02'40"W	52.29
C97	47.83'	397.00'	6°54'11"	S60°16'18"W	47.80
C98	41.08'	397.00'	5°55'44"	S66°41'15"W	41.06
C99	38.05'	451.00'	4°50'03"	S67°14'06"W	38.04
C100	40.00'	451.00'	5°04'56"	S62°16'36"W	39.99
C101	39.96'	451.00'	5°04'38"	S57°11'50"W	39.95
C102	39.90'	451.00'	5°04'07"	S52°07'27"W	39.88
C103	36.56'	451.00'	4°38'41"	S47°16'03"W	36.55
C104	40.94'	55.00'	42°38'51"	N79°29'04"W	40.00
C105	39.85'	60.00'	38°03'28"	N35°10'14"W	39.13



ATWELL
866.850.4200 www.atwell-group.com
143 UNION BOULEVARD, SUITE 700
LAKEWOOD, CO 80228
303.462.1100

REVISIONS		SHEET 9 OF 9
REVISED	12/07/2020	
REVISED	12/22/2020	
		FILE NO.19002860_FINAL PLAT
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MAINTENANCE ELIGIBILITY PROGRAM (MEP)

MHFD Referral Review Comments

For Internal MHFD Use Only.	
MEP ID:	108003
Submittal ID:	10006309
Partner ID:	S-772-20-20
MEP Phase:	Referral

Date: June 11, 2021
To: Julia Friedman
Via email
RE: MHFD Referral Review Comments

Project Name:	Legato FLG 1
Location:	Commerce City
Drainageway:	Gramma Gulch

This letter is in response to the request for our comments concerning the referenced project. We have reviewed this proposal only as it relates to maintenance eligibility of major drainage features, in this case:

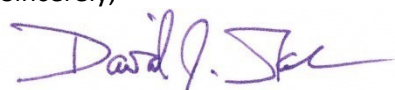
- Gramma Gulch

We have the following comments to offer:

We have no comments on this filing is not eligible for maintenance, we would like to continue to see submittals as they relate to Gramma Gulch.

We appreciate the opportunity to review this proposal. Please feel free to contact me with any questions or concerns.

Sincerely,



David Skuodas, PE, CFM, LEED AP
Watershed Manager
Mile High Flood District

Project:	S-772-20-20, Z-953-D-472-20
Location:	NEC 88 th Ave and Tower Road
Review Type:	Development Review
Fire Code:	2018 International Fire Code with Local Amendments
Planner:	Stacy Wasinger swasinger@c3gov.com
Date:	9/14/2020
Reviewer:	Sarah Krzanowsky, Fire Prevention Officer

Comments specific to the Development Review will be in red. These comments require response from the applicant. In addition to submitting a response to Commerce City, South Adams County Fire Department requires responses to be submitted directly to the Reviewer.

The 2018 International Fire Code may be referenced at:

https://codes.iccsafe.org/content/IFC2018?site_type=public

General

1. South Adams County Fire Department (SACFD) requires an impact fee of **\$668.00 per single family dwelling** of any proposed building. For fees and other information see <https://sacfd.org/fireandemergencyservicesimpactfees/>

Fire Department Access

2. New and existing buildings shall have approved address numbers, building numbers or approved building identification placed in a position that is plainly legible and visible from the street or road fronting the property. These numbers shall contrast with their background.
3. Any dead-end roads greater than 150 feet in length will require fire department approved turnarounds.
 - a. Current cul-de-sac at the end of Road 52 meets this requirement.
4. Where fire hydrants are located curbs shall be painted red.
5. Where a fire hydrant is located on a fire apparatus access road, the minimum width of the road shall be 26 feet, exclusive of shoulders.
6. Upon receiving 30th building permit for construction a second means of fire department access shall be required for accessing all active construction sites.
7. Fire department access roads shall be constructed of all-weather, durable materials capable of supporting a minimum of 75,000 lbs.
8. Street and roads shall be identified with approved signs (permanent or temporary) at each intersection, when construction of new roadways allows passage by vehicles.

Water Supply

1. Fire hydrant spacing is required to be no more than 400 feet apart, with all portions of a structure being accessible within 400 feet of a fire hydrant.
2. All sides of the first floor of all structures must be accessible from within 150 feet from a fire department access road.
3. Where fire hydrants are located, they are required to have a minimum 3-foot clear working space all around, this includes to be clear of any landscaping that could obstruct the working space.
4. Fire hydrants shall be installed in accordance with South Adams County Water and Sanitation District's guidelines, and shall be installed, inspected, and operational prior to vertical construction commences.
5. Minimum fire flow: 1,500 gallons per minute for 2 hours.

If/when application for construction/building permits are submitted, SACFD will review related plans at that time, to include any related comments.

Please contact your assigned SACFD plans examiner by phone or e-mail if you have any questions regarding the comments on the following pages or if you would like to set up a meeting.

Sarah Krzanowsky

Sarah Krzanowsky

Fire Prevention Officer II

Colorado Fire Inspector III - Cert. # 206309904

International Code Council – Fire Plans Examiner Cert # 9163298

Project:	S-772-20-21, Z-953-D-472-21
Location:	NEC 88 th Ave & Tower Road
Review Type:	Development Review
Fire Code:	2018 International Fire Code with Local Amendments
Planner:	Julia Friedman jfriedman@c3gov.com
Date:	6/14/2021
Reviewer:	Sarah Krzanowsky, Fire Protection Specialist

Comments specific to the Development Review will be in red. These comments require response from the applicant. In addition to submitting a response to Commerce City, South Adams County Fire Department requires responses to be submitted directly to the Reviewer. The 2018 International Fire Code may be referenced at:
https://codes.iccsafe.org/content/IFC2018?site_type=public

General

1. The following comments are subject to change as more information is received or if there are changes to the plans during subsequent reviews. The comments/requirements below are not all inclusive but are provided to aid in your site design process.

Water Supply

2. Construction plans for fire hydrant placement have been submitted to SACFD for review and are still under review for correct distances to other fire hydrants and all sides of the first floor of all structures. This development review does not include sheets for fire hydrant placement to verify locations.

If/when application for construction/building permits are submitted, SACFD will review related plans at that time, to include any related comments.

Please contact your assigned SACFD plans examiner by phone or e-mail if you have any questions regarding the comments on the following pages or if you would like to set up a meeting.

Sarah Krzanowsky

Sarah Krzanowsky

Fire Protection Specialist

Colorado Fire Inspector III - Cert. # 206309904

International Code Council – Fire Plans Examiner Cert # 9163298

Re:	General comments for all projects within the South Adams County Water & Sanitation District
Reviewer:	Jeff Nelson, Development Review Supervisor

SACWSD Rules & Regulations can be found here:

<https://www.sacwsd.org/DocumentCenter/View/776/Rules-and-Regulations?bidId=>

SACWSD Design & Construction Standards can be found here:

<https://www.sacwsd.org/DocumentCenter/View/773/SACWSD-Design-Standards-and-Specifications?bidId=>

SACWSD Service Application can be found here:

<https://www.sacwsd.org/DocumentCenter/View/912/Development-Service-Application-2020?bidId=>

Comments specific to the referenced review can be found below. Any response from the applicant must be sent to SACWSD Development by emailing Development@sacwsd.org.

General Comments:

1. Determine whether the parcel is included in the District. If not, initiate the inclusion process and become included within the District's service area. This process typically takes between 90-180 days to complete. If the parcel is not included, offsite utility construction may be required to provide adequate fire flow's to this site.
2. Identify the source and amount of water owned in order to serve the entire development as envisioned and present evidence to support ownership of adequate Equivalent Residential Units (ERUs).
3. Complete the District's service application with corresponding design plans including site, potable water, irrigation water, and wastewater utility plans, plumbing plans, and District standard details.
4. Design and construct the District's water and sewer infrastructure in accordance with current approved Design Standards and Construction Specifications.
5. Per SACWSD rules and regulations each building will be required to have individual water meters and sanitary sewer service lines.
6. Pay appropriate connection fees and pass all required inspections.

If you have any questions about the comments given, please contact the SACWSD Development department at **(720) 206 – 0595** or email Development@sacwsd.org.

Sincerely,

Jeff Nelson

Development Review Supervisor

South Adams County Water & Sanitation District
Distribution & Collection
10200 E 102nd Ave. • Henderson, CO 80640 • (720) 206 – 0595 • www.sacwsd.org



Re:	S-772-20-21, Z-953-D-472-21
Date:	8/4/2021
Review Type:	PUD Permits
Business Name:	Cohen Denver Airport LLC
Business Address:	2600 Paseo Verde Pkwy. #250, Henderson, NV 89074
Project Name:	Legato Filing 1
Project Location:	NEC 88 th Ave. & Tower Rd.
Reviewer:	Jeff Nelson, Development Review Supervisor

SACWSD Rules & Regulations can be found here:

<https://www.sacwsd.org/DocumentCenter/View/776/Rules-and-Regulations?bidId=>

SACWSD Design & Construction Standards can be found here:

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Comments specific to the referenced review can be found below. Any response from the applicant must be sent to SACWSD Development by emailing Development@sacwsd.org.

General Comments:

1. Determine whether the parcel is included in the District. If not, initiate the inclusion process and become included within the District's service area. This process typically takes between 90-180 days to complete. If the parcel is not included, offsite utility construction may be required to provide adequate fire flow's to this site.
2. Identify the source and amount of water owned in order to serve the entire development as envisioned and present evidence to support ownership of adequate Equivalent Residential Units (ERUs).
3. Complete the District's service application with corresponding design plans including site, potable water, irrigation water, and wastewater utility plans, plumbing plans, and District standard details.
4. Design and construct the District's water and sewer infrastructure in accordance with current approved Design Standards and Construction Specifications.
5. Per SACWSD rules and regulations each building will be required to have individual water meters and sanitary sewer service lines.
6. Pay appropriate connection fees and pass all required inspections.

Project Special Conditions:

1. SACWSD has been working diligently with the Legato project engineer to assure PZ 41 future engineering and construction has been taken into account.
2. SACWSD has determined that Filing 1 and Filing 2 of Legato as presented does not surpass the ERU milestone within PZ 41 establish to assure projects are not approved without adequate ERU's within this PZ or pressure zone.
3. The ERU chart provided in the Infrastructure and F1 plans was approved between both parties as a tool to assure proper planning of ERU allocation and PZ 41 engineering and construction be kept in consideration.
4. To fully serve the Legato development final buildout the PZ 41 plant with both irrigation and potable water pumping stations shall be constructed.
5. The project applicant has stated they would be acquiring ERU's from SACWSD through the Phase 4A ERU program for both Filing 1 and Filing 2.

South Adams County Water & Sanitation District
Distribution & Collection
10200 E 102nd Ave. • Henderson, CO 80640 • (720) 206 – 0595 • www.sacwsd.org



If you have any questions about the comments given, please contact the SACWSD Development department at (720) 206 – 0595 or email Development@sacwsd.org.

Sincerely,

Jeff Nelson
Development Review Supervisor

September 9, 2020

Stacey Wasinger
City of Commerce City
Community Development Department
7887 East 60th Avenue
Commerce City, CO 80022

RE: Legato (Hightower Ranch/Prime Sites), Filing 1 (formerly Filing 5), S-772-20-20, Z-953-D-472-20
TCHD Case No. 6412

Dear Ms. Wasinger,

Thank you for the opportunity to review and comment on final plat and PUD permit for the creation of 181 residential lots and 7 tracts located at the northeast corner of 88th Avenue and Tower Road, north of the park/school site. Tri-County Health Department (TCHD) staff has reviewed the application for compliance with applicable environmental and public health regulations and principles of healthy community design. After reviewing the application, TCHD has the following comments.

Active Oil and Gas Facilities

The Colorado Oil and Gas Conservation Commission (COGCC) regulates the setback requirements of oil and gas wells and production facilities in order to eliminate, minimize, or mitigate potential adverse impacts to public health. COGCC requires setbacks of five hundred (500) feet to a building and three hundred fifty (350) feet to the boundary of a designated outside activity area from an active well. A “potential” oil and gas well is located within the development, although not within this filing. TCHD recommends the applicant adhere to the setbacks outlined above, at a minimum. More information is available here <https://cogcc.state.co.us/reg.html#/overview>.

The applicant should ensure that the project meets required State and local setbacks from the edge of the proposed oil and gas well pad, rather than the center.

Please feel free to contact me at 720-200-1575 or kboyer@tchd.org if you have any questions about TCHD’s comments.

Sincerely,



Kathy Boyer, REHS
Land Use and Built Environment Specialist III

cc: Sheila Lynch, Monte Deatrich, TCHD

From: GIS

Subject: GIS Approved Subdivisions

Date: 06/09/2022

The city of Commerce City GIS Division has approved the following subdivision address plats.

S-822-22, AN-265-22, Z-984-22, V-94-22 located at 7001 COLORAD BLVD

S-772-20-21 Legato Filing 1

S-771-20-21 Legato Filing 2

These subdivision cases have satisfied the criteria of the Roadway Naming and Addressing Standards for the city of Commerce City. GIS has no further comments on the addresses for these cases. Final approved address plats have been issued.



GIS Division, Information Technology Department

City of Commerce City | 7887 E. 60th Avenue | Commerce City, CO 80022

gis@c3gov.com | www.c3gov.com

Quality Community for a Lifetime



To: Stacy Wasinger

From: GIS

Subject: Case No. S-772-2020, Z-953-D472-20

Status: Not Approved

Date: 08/27/2020

This memo is a response from the GIS Division of the City of Commerce City to a Request for Comment/Review from the Community Development Department of the City of Commerce City for Legato Filing 1, Tract D2.

Are Roadway Names Approved	Y	N	NA
Are Addresses Approved	Y	N	NA
Were Comments from Previous Submittal Acknowledged	Y	N	NA
Are GIS Comments Consistent with PW on this Date	Y	N	NA
Did GIS receive AutoCAD	Y	N	NA

If any items are checked 'N', please see redlines and GIS' memo on: SharePoint -> Address Plats

Review of the plat conformity to the City of Commerce City Roadway Naming and Addressing Standards revealed the plat **IS NOT** compliant with these standards:

ROADWAY NAMING POLICY –

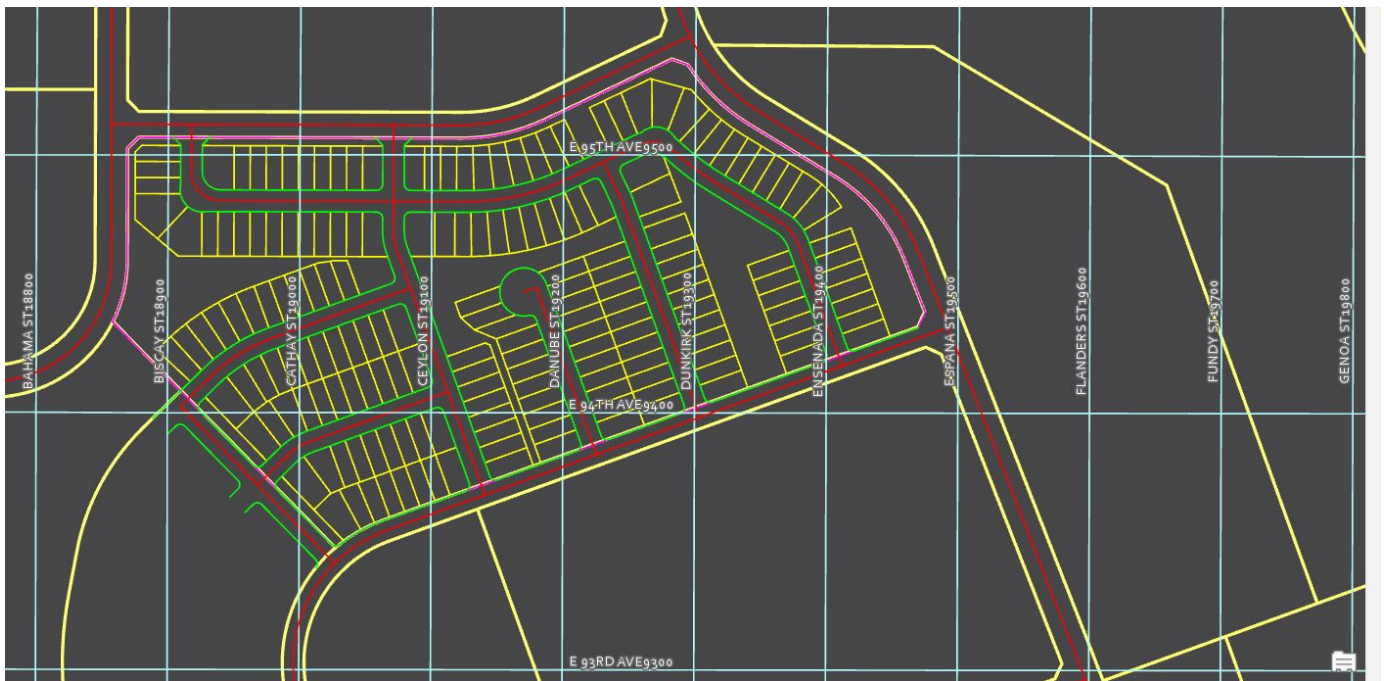
- Please use the Denver 100 grid system to assign roadway names and addresses
- Some roadway choices did not align with Denver grid system
 - Please look at attached picture at the end of the document to see why some roadway names were changed
- Add **BISCAY WAY** in between E 94TH PL and E 95TH AVE
 - Change of roadway orientation ; The numbered roadways should not cross
- Change E 93RD DR to **E 94TH DR**
 - Legato F2 also had a E 93rd DR
- Change E 94TH PL to **BISCAY LN**
 - The numbered roadways should not cross
- Change DANUBE ST to **CEYLON ST**
- Change FLANDERS ST to **DUNKIRK ST**

-
- Change GENOA LN to **DUNKIRK CT**

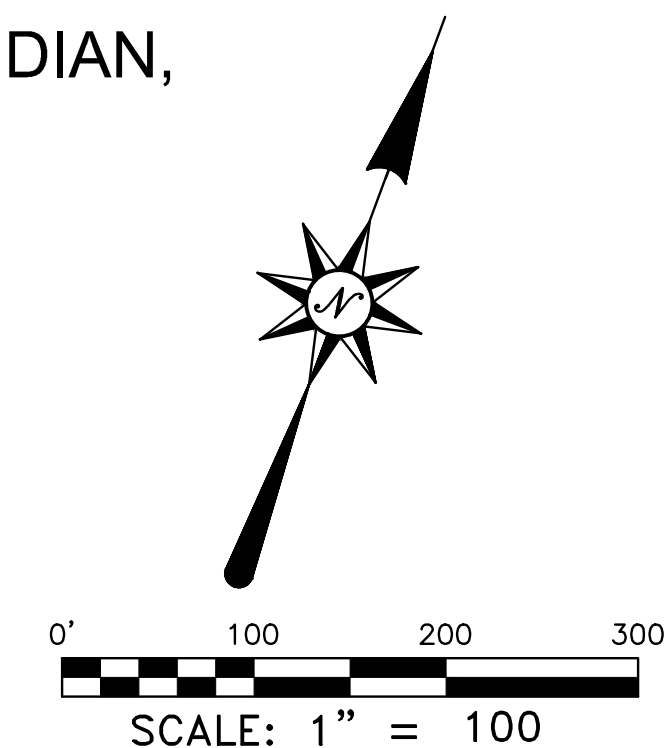
ADDRESSING POLICY –

- Please review attached redlines for more accurate
- Each tract needs an address, they are on the address plat in blue
- The original address plat was sent in 4 pages, but it was a little too difficult to review in four pages, which is why the overall plat was sent back with redlines opposed to the original address plat.

Screen shot of Denver street grid and Legato F1 Lot D2



LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST, OF THE 6TH PRINCIPAL MERIDIAN,
CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO
ADDRESS PLAT



Tract Address Number

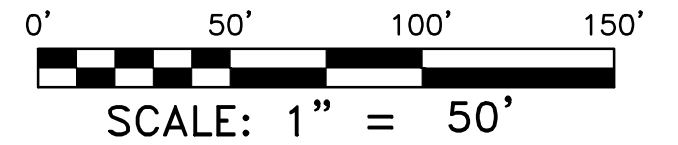
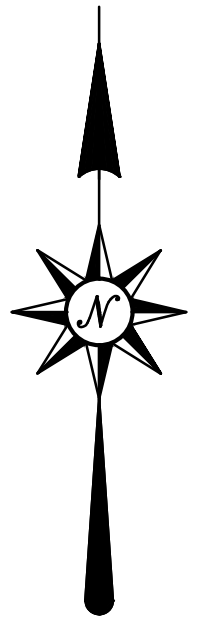
City of Commerce City - GIS
Roadway Naming & Addressing Standards
Not Approved
Date: 08/26/2020 Initials:RW

SHEET
 1
 OF 4
 FILE NO. 19002561 FINAL PLAT
 DATE 08/14/2020
 DRAWN BY TWK
 CHECK BY MLP
 JOB NO. 19002860

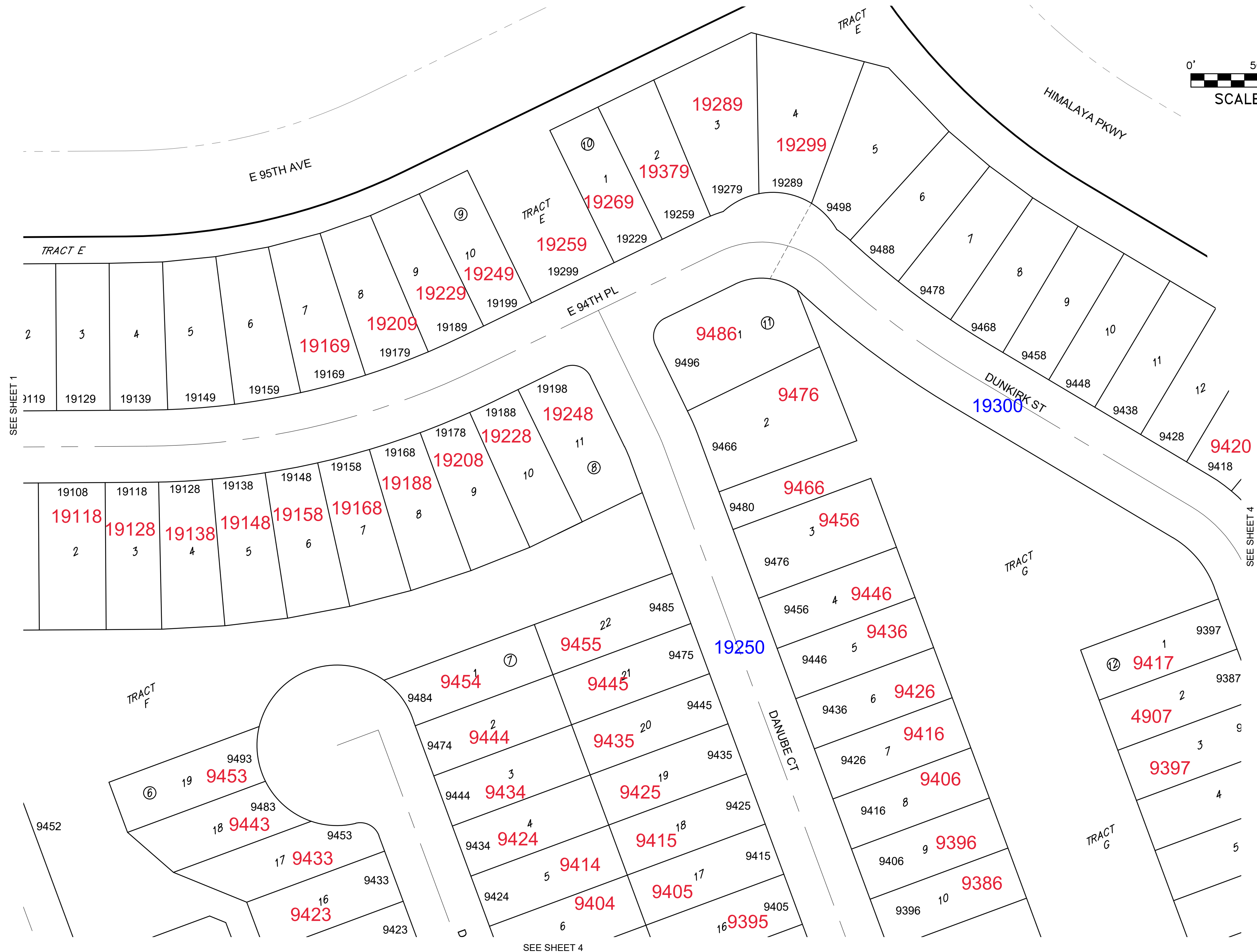
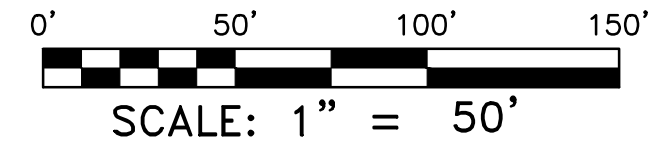
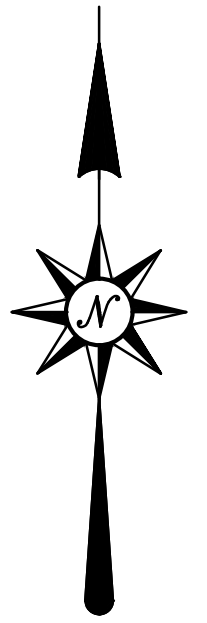
REVISIONS



A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST, OF THE 6TH PRINCIPAL MERIDIAN,
CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO
ADDRESS PLAT

[illegible]

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST, OF THE 6TH PRINCIPAL MERIDIAN,
CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO
ADDRESS PLAT

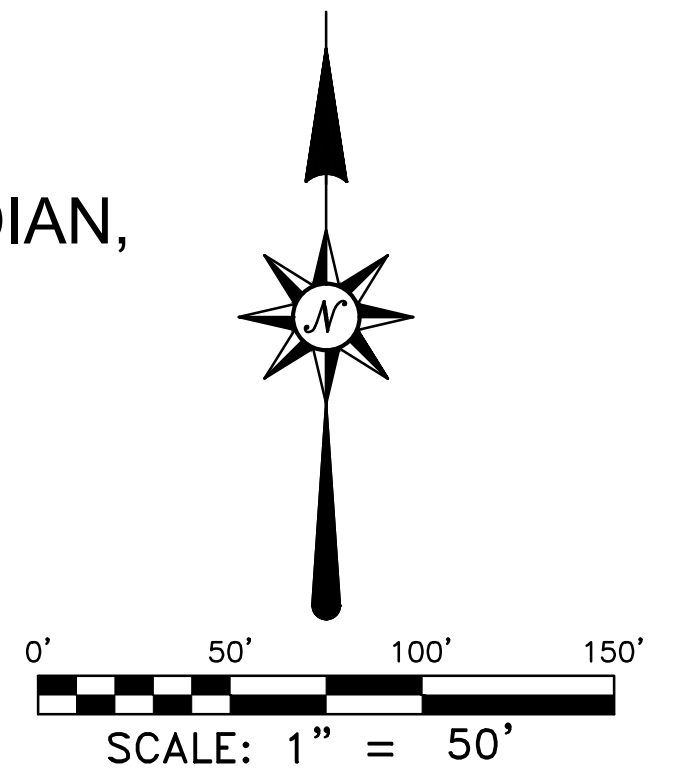
[illegible]

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST, OF THE 6TH PRINCIPAL MERIDIAN,
CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO
ADDRESS PLAT

[illegible]

LEGATO FILING NO. 1

A REPLAT OF TRACT D2, LEGATO WEST
LOCATED IN SECTION 22, TOWNSHIP 2 SOUTH, RANGE 66 WEST, OF THE 6TH PRINCIPAL MERIDIAN,
CITY OF COMMERCE CITY, COUNTY OF ADAMS, STATE OF COLORADO
ADDRESS PLAT



SHEET		4
OF		4
FILE NO.	19002860	TWLP PLAT
DATE	08/14/2020	
DRAWN BY	TWK	
CHECK BY	MLP	
JOB NO.	19002860	

REVISIONS	
REVISED PER CITY OF	COMMERCE CITY 12/22/2020

**ATWELL**

866.850.4200 www.atwell-group.com

143 UNION BOULEVARD, SUITE 700
LAKEWOOD, CO 80228
303.462.1100

Planner: Mercedes Rivas
mrivas@c3gov.com

DATE: April 13, 2022

SUBDIVISION NAME: Legato Filing 1
CASE: S-772-20-22
STATUS:

Dear Mercedes,

A. STUDENT GENERATION (see attached Table 1 for methodology)

Dwelling Units	Total
181 SFD	140.275

(Any discrepancy due to rounding)

**B. LAND DEDICATION/CASH-IN-LIEU REQUIREMENTS
(See attached Table 1 for methodology)**

The land dedication requirement has been satisfied with the dedication of the middle school site.

C. SCHOOL BOUNDARY AREAS

Students from this proposed development would currently attend:

Southlawn ES – 10075 Walden Street, Commerce City
Stuart MS – 15955 E. 101st Way, Commerce City
Prairie View HS – 12909 E. 120th Avenue, Henderson

Southlawn ES – adequate capacity (also possible future charter school in Second Creek Farm)
Stuart MS – adequate capacity - additional capacity available in 2023 due to boundary area changes (also possible future charter school in Second Creek Farm)
Prairie View HS – adequate capacity – additional capacity available in 2023 due to construction of new CTE annex

D. CAPITAL FACILITY FEE FOUNDATION (see attached Table 2 for methodology)

The Capital Facility Fee Foundation is a unique public/private nonprofit organization founded in January 2001 to help fund school expansion or new school construction. This program has been developed in partnership with each of the municipalities in the District, developer and builder representatives, and School District 27J. Funding is provided by builders and developers who have agreed to contribute per residential dwelling unit based on the current fee structure. The current fees negotiated for this program are as follows: \$865 per single family residential unit and \$494 per multi-family unit.

SCHOOL DISTRICT PLANNING COMMENTS AND RECOMMENDATIONS:

- 1. The land dedication requirement has been satisfied with the dedication of the middle school site.**
- 2. Prior to the approval of the final subdivision plat, we recommend that the developer enter into an agreement with the Capital Facility Fee Foundation to mitigate the impact of this development on District school facilities. Given the planned 181 residential dwelling units, the voluntary, tax-deductible capital facility fee contribution is projected to be \$156,565. Fees may be paid in a lump sum or by lot as permits are pulled. The developer is welcome to assign the agreement to builders as they purchase lots.**

We appreciate your continuing cooperation and the opportunity to comment upon issues of interest to both the City and the School District. We look forward to receiving updated referrals on this subdivision. Please let me know if you have questions about these comments.

Sincerely,

Kerrie Monti

Kerrie Monti
Planning Manager

Attachment

Legato Filing 1

School District Enrollment and Site Implications

Dwelling Unit Type	Est Number of DUs	Student Generation Rate	Total Students
SFD	181	0.775	140.275
SFA	0	0.364	0.000
TH/C	0	0.303	0.000
Apartment	0	0.195	0.000
Total	181		140.275
			0.02 acres
Land Dedication Requirement			2.806 acres
Land Dedication Provided			0
Remaining Land Needed			2.806 acres
Land Cost Per Acre per AC			\$101,600
Cash in Lieu of Land Dedication			

Payable prior to construction

Capital Facility Fee Foundation Contributions

Dwelling Unit Type	Number of DUs	Rate per Unit	Total Contribution
SFD	181	\$865.00	\$156,565.00
SFA	0	\$865.00	\$0.00
TH/C	0	\$494.00	\$0.00
Apartment	0	\$494.00	\$0.00
Mobile Home	0	\$865.00	\$0.00
Total	181		\$156,565.00

Payable at time of permit

May be assigned to builders purchasing lots

To: Stacy Wasinger, Planner

From: Traci Ferguson, Parks Planner

Subject: S-772-20-20 & Z-953-D-472-20 Legato Filing 1

Date: September 16, 2020

I have reviewed the above proposal and have the following comments.

- 1.) A park fee will be due for all residential parcels in this development and shall be calculated as follows:

$$\$45,364/\$12,000 \times \$0.09 \times 875,556 = \mathbf{\$297,890.41}$$

- 2.) A credit against the park fee of the overall Legato development will be given for the dedication of the park site, which is a part of the infrastructure plat. That credit shall be calculated as follows:

$$\$45,364 \text{ (average fair market value of 1 acre)} \times 9.99 \text{ acres} = \mathbf{\$453,186.36}$$

- 3.) After Filing 1 a park fee credit of **\$155,295.95** remains.

Please feel free to contact me at 303-227-8788 or tferguson@c3gov.com with any questions.

Wasinger, Stacy - CD

From: Jodell, Kiana - PD
Sent: Thursday, July 30, 2020 10:36 AM
To: Wasinger, Stacy - CD
Subject: FW: Ullom, Alexa - CD is inviting you to collaborate on S-772-20-20, Z-953-D-472-20

Hello Stacy,

The PD has no comments or concerns regarding the attached proposal.

Thank you,



Kiana Jodell

Executive Administrative Supervisor
7887 E. 60th Avenue | Commerce City, CO 80022
Office: 303-289-3632 | Cell: 720-483-2042 | Fax: 303-289-3745
Email: Kjodell@c3gov.com

From: Moon, Dennis - PD <dmoon@c3gov.com>
Sent: Thursday, July 30, 2020 9:30 AM
To: Jodell, Kiana - PD <kjodell@c3gov.com>
Subject: RE: Ullom, Alexa - CD is inviting you to collaborate on S-772-20-20, Z-953-D-472-20

No comments or concerns.

From: Jodell, Kiana - PD <kjodell@c3gov.com>
Sent: Tuesday, July 28, 2020 1:41 PM
To: Moon, Dennis - PD <dmoon@c3gov.com>
Subject: FW: Ullom, Alexa - CD is inviting you to collaborate on S-772-20-20, Z-953-D-472-20

Please review the attached proposal and let me know if there are any comments or concerns.

Thanks

From: Ullom, Alexa - CD <aullom@c3gov.com>
Sent: Tuesday, July 28, 2020 1:32 PM
To: Wonders, Russell - CD <rwonders@c3gov.com>; Claymore, Michelle - CM <mclaymore@c3gov.com>; Ferguson, Traci - PR <tferguson@c3gov.com>; Jodell, Kiana - PD <kjodell@c3gov.com>; Alverson, Lee - PW <lalverson@c3gov.com>; PW_Submittals <pwsbmittals@c3gov.com>; Clawson, Rose - PW <rclawson@c3gov.com>; Hader, Matt - CA <mhader@c3gov.com>; Lowery, Jenna - CM <jlowery@c3gov.com>; submittals <submittals@udfcd.org>; PlanReview <planreview@sacfd.org>; Hilaire, Jeannette - DEN <jeannette.hilaire@flydenver.com>; Peggy Davenport <pdavenport@e-470.com>; Engineering <engineering@rtd-denver.com>; Hockaday, Cody <cody.hockaday@centurylink.com>; Samantha Riblett <sriblett@unitedpower.com>; George, Donna L

September 14, 2020

City of Commerce City & Community Development Department
7887 East 60th Avenue
Commerce City, CO 80022

Re: S-772-20-20 / Z-053-D-472-20 - Legato Filing No. 1

Dear Stacy Wasinger:

On behalf of United Power, Inc., thank you for inviting us to review and comment on the S-772-20-20 / Z-053-D-472-20 - Legato Filing No. 1. After review of the information, we have the following comments:

- Sheet 4 of 8 – We request that the 8' U.E. at block 9 – lot 10 abutting tract E, continue through the piece of land and connect to block 10 – lot 1.
- Sheet 5 of 8 – Please ensure there is an 8' to 10' U.E. around the perimeter of tract B.
- Sheet 6 of 8 – Tract F between block 6 – lots 1-16 – Is it possible to make tract F a blanket easement? It could be less equipment and more cost effective to the developer if we did not have the separation of rear lots with a tract.
- Sheet 7 of 8 – We request that the 8' U.E. at Block 10, lot 14 abutting tract E continues through and connects to Block 13, lot 1.
- Streetlights – When streetlight locations are identified in a subdivision, we will need a 5' wide dry utility easement along one side of the lot closest to the streetlight location. United Power is installation only for streetlights and cannot approve their locations. All streetlights must be approved and signed off by the city/town, etc. Please note, if we do not get these through the platting process, we will have to get individual easements during the design, which will slow United Power's ability to start construction significantly.

Please note, the property owner/developer/contractor must submit an application along with CAD data for new electric service via <https://www.unitedpower.com/construction>. United Power would like to work with these persons early in the construction process on getting an electric design prepared so that we can request any additional easements needed and hopefully have those easements dedicated on the plat rather than obtaining separate document(s). Obtaining easements via a separate document can be time consuming and could cause delays.

As a Reminder: No permanent structures are acceptable within the dry utility easement(s); such as, window wells, wing walls, retaining walls, basement walls, roof overhang, anything affixed to the house like decks, etc. United Power considers any structure that impedes the access, maintenance, and safety of our facilities a permanent structure. No exceptions will be allowed, and any encroachments could result in penalties.

Service will be provided according to the rules, regulations, and policies in effect by United Power at the time service is requested. We look forward to safely and efficiently providing reliable electric power and outstanding service.

Thank you,

A handwritten signature in black ink, appearing to read "Samantha Riblett". The signature is fluid and cursive, with the first name "Samantha" written in a larger, more prominent script than the last name "Riblett".

Samantha Riblett
United Power, Inc.
Right of Way Administrative Assistant
O: 303-637-1324 | Email: platreferral@unitedpower.com

June 14, 2021

City of Commerce City & Community Development Department
7887 East 60th Avenue
Commerce City, CO 80022

Re: S-772-20-20 / Z-053-D-472-20 - Legato Filing No. 1

Dear Julia Friedman:

On behalf of United Power, Inc., thank you for inviting us to review and comment on the S-772-20-20 - Legato Filing No. 1. Thank you for your comments and updates to the plat from our 1st submittal comments. Please see our submittal 2 comments

- United Power cannot determine the location of the subdivision streetlights, we are installation only. The developer will work with the city/town the subdivision is in and they must be approved and signed off by them as well. Once the locations are identified in a subdivision, United Power will need a 5' wide dry utility easement along one side of the lot closest to the streetlight location. Please note, if we do not get these through the platting process, we will have to get individual easements during the design phase, which will slow United Power's ability to start construction significantly.
- Sheet 3 of 9 – Block 2, lot 1 – We request at least a 5' utility easement on the north side of lot 1 abutting track B.
- Sheet 5 or 9 – Tract C & D, abutting lot 1 & 23 and lots 1 & 17 – We request at least an 8' U.E. abutting the track and the lots to complete around the perimeter. This would help in avoiding going around the track and gives the option to cut along the lots instead.
- Sheet 5 of 9 – Block 5, lot 10 and Block 6, lot 8 – There is a labeled dashed line between the lot and the 15' U.T.E. Please ensure the 10' U.T.E. continues through the area and connects to the 15' U.T.E. abutting E 93rd Pl.

Please note, the property owner/developer/contractor must submit an application along with CAD data for new electric service via <https://www.unitedpower.com/construction>. United Power would like to work with these persons early in the construction process on getting an electric design prepared so that we can request any additional easements needed and hopefully have those easements dedicated on the plat rather than obtaining separate document(s). Obtaining easements via a separate document can be time consuming and could cause delays.

As a Reminder: No permanent structures are acceptable within the dry utility easement(s); such as, window wells, wing walls, retaining walls, basement walls, roof overhang, anything affixed to the house

like decks, etc. United Power considers any structure that impedes the access, maintenance, and safety of our facilities a permanent structure. No exceptions will be allowed, and any encroachments could result in penalties.

Service will be provided according to the rules, regulations, and policies in effect by United Power at the time service is requested. We look forward to safely and efficiently providing reliable electric power and outstanding service.

Thank you,

A handwritten signature in black ink, appearing to read "Samantha Riblett". The signature is fluid and cursive, with the first name "Samantha" written in a larger, more prominent script than the last name "Riblett".

Samantha Riblett
United Power, Inc.
Right of Way Administrative Assistant
O: 303-637-1324 | Email: platreferral@unitedpower.com



Right of Way & Permits

1123 West 3rd Avenue
Denver, Colorado 80223
Telephone: **303.571.3306**
Facsimile: 303. 571.3284
donna.l.george@xcelenergy.com

September 10, 2020

City of Commerce City Community Development Department
7887 East 60th Avenue
Commerce City, CO 80022

Attn: Stacy Wasinger

Re: Legato Filing No. 1, Case #s S-772-20-20 and Z-953-D-472-20

Public Service Company of Colorado's (PSCo) Right of Way and Permits Referral Desk has reviewed the documentation for **Legato Filing No. 1** and requests that the following language or plat note is placed on the preliminary and final plats for the subdivision:

Permanent structures, improvements, objects, buildings, wells, and other objects that may interfere with the utility facilities or use thereof (Interfering Objects) shall not be permitted within said utility easements and the utility providers, as grantees, may remove any Interfering Objects at no cost to such grantees, including, without limitation, vegetation. Public Service Company of Colorado (PSCo) and its successors reserve the right to require additional easements and to require the property owner to grant PSCo an easement on its standard form.

The property owner/developer/contractor must complete the application process for any new natural gas service via xcelenergy.com/InstallAndConnect. It is then the responsibility of the developer to contact the Designer assigned to the project for approval of design details. Additional easements may need to be acquired by separate document for new facilities.

Donna George
Right of Way and Permits
Public Service Company of Colorado dba Xcel Energy
Office: 303-571-3306 – Email: donna.l.george@xcelenergy.com

Wasinger, Stacy - CD

From: Hilaire, Jeannette - DEN <Jeannette.Hilaire@flydenver.com>
Sent: Wednesday, September 09, 2020 5:50 PM
To: Wasinger, Stacy - CD
Cc: Brenninkmeyer, Elise - DEN; Marion, Rachel - DEN; #DIA-Operations - USDA Wildlife; Levi Hodson; Hohlacov, George - DEN
Subject: FW: Case No S-751-19-20, Z-953-D-461-20
Attachments: Noise DNL White Paper.docx; FAA AC 150-5200-33C Hazardous Wildlife Attractant.pdf; Vmap.pdf; DRT referral 1.pdf

Dear Ms. Wasinger,

Denver International Airport received your request for review/comment for Legato Referral, Case # S-772-20-20, Z-953-D-472-20. We appreciate the opportunity to continue to review the Legato West neighborhood development and stress following comments:

- The proposed southeast edge of the development site is located approximately ~10,000 ft. slightly northwest of the west end of existing Runway 7/25 and ~8,000 from future Runway 15/33.
- Although this development falls outside of the 55 DNL noise contour range at full airport build-out, this development will be subject to heavy departure traffic at altitudes ranging from about 1,600' Above Ground Level (AGL) to 2,600' AGL (see attached white paper on DNL).
- The proposed development is within both the *DEN 10,000' Critical Space and the 5-Mile 'Known-attractant' Separation Area* for the final build-out of future DEN Runways, as defined by the Federal Aviation Administration (FAA). The USDA Wildlife Biologists assigned to DEN, assist in implementing DEN's Wildlife Hazard Management Plan. They have requested coordination as this project progresses. USDA and DEN will provide assistance with the requirements outlined in the current version of FAA Advisory Circular 150/5200-33C (see attached). DEN also requests that the landscape plan include maintenance of trees and grasses to reduce attractants for wildlife such as raptor species, blackbirds/starlings, and geese. Fruit-producing trees and shrubs should be avoided. Water quality ponds/detention structures must be designed to meet a 40-hour drain time following a 100-year event.
- The site is found within/under the navigable airspace associated with DEN, as promulgated and regulated by the Federal Aviation Administration (FAA) under 14 CFR Part 77, Objects Affecting the Navigable Airspace. Based on Part 77 and the development site location, the proponent is required to file notice with the FAA, via the FAA Form 7460-1 process (Notice of Proposed Construction or Alteration), of any structure or temporary construction equipment (e.g., cranes) that penetrate Part 77 surfaces. The FAA website from which the need for the 7460 process can be determined ("Notice Criteria Tool") and/or the filing can be initiated is: <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>.

Thank you for the opportunity to provide comment.

K/r

<image001.gif> **JEANNETTE HILAIRE, PMP, CM**
MANAGER OF STRATEGIC PLANNING

Denver International Airport

Planning + Design

Airport Office Building | 7th Floor

8500 Peña Boulevard | Denver, CO 80249-6340

(303) 342-2713

JEANNETTE.HILAIRE@FLYDENVER.COM | WWW.FLYDENVER.COM

[Click here](#) to visit DEN on social media



DNL White Paper

DNL (sometimes also called Ldn) is a metric used to quantify noise exposure from aircraft in areas surrounding airports. DNL describes the average noise level over a period of time, usually expressed as an annual average, but can extend over any time period of at least 24 hours. In addition to capturing average noise over time, DNL also applies an additional 10 decibel weighting factor to all aircraft noise that occurs between 10:00 pm and 7:00 am, as it is considered more disturbing primarily due to potential sleep disturbance. DNL is generally depicted on a map via contour lines that enclose geographic areas that are exposed to similar noise levels.

Within Part 150 of the Federal Aviation Regulations (FAR Part 150), the Federal Aviation Administration (FAA) specifies various land uses that it deems either compatible or incompatible with certain DNL noise levels. With respect to residential land uses, FAR Part 150 prohibits residential uses within the 65 DNL noise contour. Properties located within the 65 DNL contour would be exposed to average annual aircraft noise levels of 65 decibels, or higher.

In addition to the FAA's prohibition against residential uses within 65 DNL, DEN encourages all surrounding jurisdictions to prohibit residential uses within the 60 DNL contour. This contour extends farther from the airport than the 65 DNL, providing additional protection against incompatible land use.

While keeping residential uses outside these DNL contours ensures a certain level of protection against incompatible land use, it is still possible for residential development in some locations outside the contours to result in residents of those areas experiencing high levels of aircraft overflight activity. This can lead to noise complaints and community pressure to restrict DEN operations. It is therefore strongly recommended that developers and/or planning departments considering residential construction near DEN, even if it appears to be located outside the 65 and 60 or even 55 DNL contours, to contact DEN for evaluation of any potential noise impacts.

For additional information, please refer to 14 CFR Part 150, "Airport Noise Compatibility Planning", and/or to the 1988 Intergovernmental Agreement on a New Airport, available from DEN and surrounding planning departments.



U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory Circular

Subject: Hazardous Wildlife Attractants on or
near Airports

Date: 02/21/2020

AC No: 150/5200-33C

Initiated By: AAS-300

Change:

1 **Purpose.**

This Advisory Circular (AC) provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports. It also discusses airport development projects (including airport construction, expansion, and renovation) affecting aircraft movement near hazardous wildlife attractants. Appendix 1 provides definitions of terms used in this AC.

2 **Cancellation.**

This AC cancels AC 150/5200-33B, *Hazardous Wildlife Attractants on or near Airports*, dated August 28, 2007.

3 **Application.**

The Federal Aviation Administration recommends the guidance in this AC for land uses that have the potential to attract hazardous wildlife on or near public-use airports. This AC does not constitute a regulation, is not mandatory, and is not legally binding in its own right. It will not be relied upon as a separate basis by the FAA for affirmative enforcement action or other administrative penalty. Conformity with this AC is voluntary, and nonconformity will not affect rights and obligations under existing statutes and regulations, except as follows:

1. Airports that hold Airport Operating Certificates issued under Title 14, Code of Federal Regulations (CFR), Part 139, Certification of Airports, Subpart D, may use the standards, practices and recommendations contained in this AC as one, but not the only, acceptable means of compliance with the wildlife hazard management requirements of Part 139.
2. The FAA recommends the guidance in this AC for airports that receive funding under Federal grant assistance programs, including the Airport Improvement Program. See Grant Assurance #34.

3. The FAA recommends the guidance in this AC for projects funded by the Passenger Facility Charge program. See PFC Assurance #9.
4. The FAA recommends the guidance in this AC for land-use planners and developers of projects, facilities, and activities on or near airports.

4 **Principal Changes.**

Changes are marked with vertical bars in the margin. Change in this AC include:

1. Clarification by the FAA that non-certificated airports are recommended to conduct a Wildlife Hazard Assessment (Assessment) or a Wildlife Hazard Site Visit (Site Visit);
2. Table 1, Ranking of Hazardous Species, has been moved to Advisory Circular 150/5200-32, *Reporting Wildlife Aircraft Strikes* (5/31/2013);
3. Consolidation and reorganization of discussion on land uses of concern; and updated procedures for evaluation and mitigation. Discussion addresses off-airport hazardous wildlife attractants, followed by discussion of on-airport attractants. It also clarifies language regarding the applicability of the AC.

5 **Background.**

1. Information about the risks posed to aircraft by certain wildlife species has increased a great deal in recent years. Improved reporting, studies, documentation, and statistics clearly show that aircraft collisions with birds and other wildlife are a serious economic and public safety problem. While many species of wildlife can pose a risk¹ to aircraft safety, they are not equally hazardous². These hazard rankings can help focus hazardous wildlife management efforts on those species or groups that represent the greatest risk to safe air and ground operations in the airport environment. Used in conjunction with a site-specific Assessment that will determine the relative abundance and use patterns of wildlife species, these rankings combined with a systematic risk analysis can help airport operators better understand the general threat level (and consequences) of certain wildlife species. Also, the rankings can assist with the creation of a “high risk” list of hazardous species that warrant immediate attention.
2. Most public-use airports have large tracts of open, undeveloped land that provide added margins of safety and noise mitigation. These areas can also present potential hazards to aviation if they encourage wildlife to enter an airport’s approach or departure airspace or aircraft operations area. Constructed or natural areas— such as

¹ Risk is the relationship between the severity and probability of a threat. It is the product of hazard level and abundance in the critical airspace, and is thus defined as the probability of a damaging strike with a given species.

² Hazardous wildlife are species of wildlife (birds, mammals, reptiles), including feral and domesticated animals, not under control that may pose a direct hazard to aviation (i.e., strike risk to aircraft) or an indirect hazard such as an attractant to other wildlife that pose a strike hazard or are causing structural damage to airport facilities (e.g., burrowing, nesting, perching).

poorly drained locations, detention/retention ponds, roosting habitats on buildings, landscaping, odor-causing rotting organic matter (putrescible waste) disposal operations, wastewater treatment plants, agricultural or aquaculture activities, surface mining, wetlands, or some conservation-based land uses — can provide wildlife with ideal locations for feeding, loafing, reproduction, and escape. Even small facilities, such as fast food restaurants, taxicab staging areas, rental car facilities, aircraft viewing areas, and public parks, can produce substantial attractions for hazardous wildlife.

3. During the past century, wildlife-aircraft strikes have resulted in the loss of hundreds of lives worldwide, as well as billions of dollars in aircraft damage. Hazardous wildlife attractants on and near airports can jeopardize future airport expansion, making proper community land-use planning essential. This AC provides airport operators and those parties with whom they cooperate with the guidance they need to assess and address potentially hazardous wildlife attractants when locating new facilities and implementing certain land-use practices on or near public-use airports.

6 **Memorandum of Agreement Between Federal Resource Agencies.**

The FAA, the U.S. Air Force, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the U.S. Department of Agriculture - Wildlife Services signed a Memorandum of Agreement (MOA) to acknowledge their respective missions in protecting aviation from wildlife hazards. Through the MOA, the agencies established procedures necessary to coordinate their missions to address more effectively existing and future environmental conditions contributing to collisions between wildlife and aircraft (wildlife strikes) throughout the United States. These efforts are intended to minimize wildlife risks to aviation and human safety while protecting the Nation's valuable environmental resources.

7 **Feedback on this AC.**

If you have suggestions for improving this AC, you may use the Advisory Circular Feedback form at the end of this AC.



John R. Dermody
Director of Airport Safety and Standards

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CHAPTER 1. GENERAL SEPARATION CRITERIA FOR HAZARDOUS WILDLIFE ATTRACTANTS ON OR NEAR AIRPORTS

1.1 Introduction.

- 1.1.1 Airport operators should maintain an appropriate environment for the safe and efficient operation of aircraft, which entails mitigating wildlife strike hazards by fencing, modifying the landscape in order to deter wildlife or by hazing or removing wildlife hazardous to aircraft from congregating on airports. When considering proposed land uses, operators and sponsors of airports certificated under Part 139, local planners, and developers must take into account whether the proposed land uses, including new development projects, will increase wildlife hazards. Land-use practices that attract or sustain hazardous wildlife populations on or near airports, specifically those listed in Chapter 2, can significantly increase the potential for wildlife strikes.
- 1.1.2 The FAA urges regulatory agencies and planning and zoning agencies to evaluate proposed new land uses within the separation criteria and prevent the creation of land uses that attract or sustain hazardous wildlife within the separation distances.
- 1.1.3 The FAA recommends the use of minimum separation criteria outlined below for land-use practices that attract hazardous wildlife to the vicinity of airports. Please note that FAA criteria include land uses that cause movement of hazardous wildlife onto, into, or across the airport's approach or departure airspace or aircraft operations area. (See the discussion of the synergistic effects of surrounding land uses in Paragraph 2.8 of this AC.). For the purpose of evaluating distance criteria, the delineation of the aircraft operations area may also consider future airport development plans depicted on the Airport Layout Plan (e.g., planned runway extension).
- 1.1.4 The separation distances are based on (1) flight patterns and performance criteria of piston-powered aircraft and turbine-powered aircraft, (2) the altitude at which most strikes happen (78 percent occur under 1,000 feet and 90 percent occur under 3,000 feet above ground level), and (3) National Transportation Safety Board recommendations.

1.2 Airports Serving Piston-Powered Aircraft.

Airports that do not sell Jet-A fuel normally serve piston-powered aircraft. Notwithstanding more stringent requirements for specific land uses, the FAA recommends a separation distance of 5,000 feet from these airports for any of the hazardous wildlife attractants discussed in Chapter 2 or for new airport development projects meant to accommodate aircraft movement. This distance is to be maintained between the closest point of the airport's aircraft operations area and the hazardous wildlife attractant. Figure 1 depicts an example of the 5,000-foot separation distance measured from the nearest aircraft operations area.

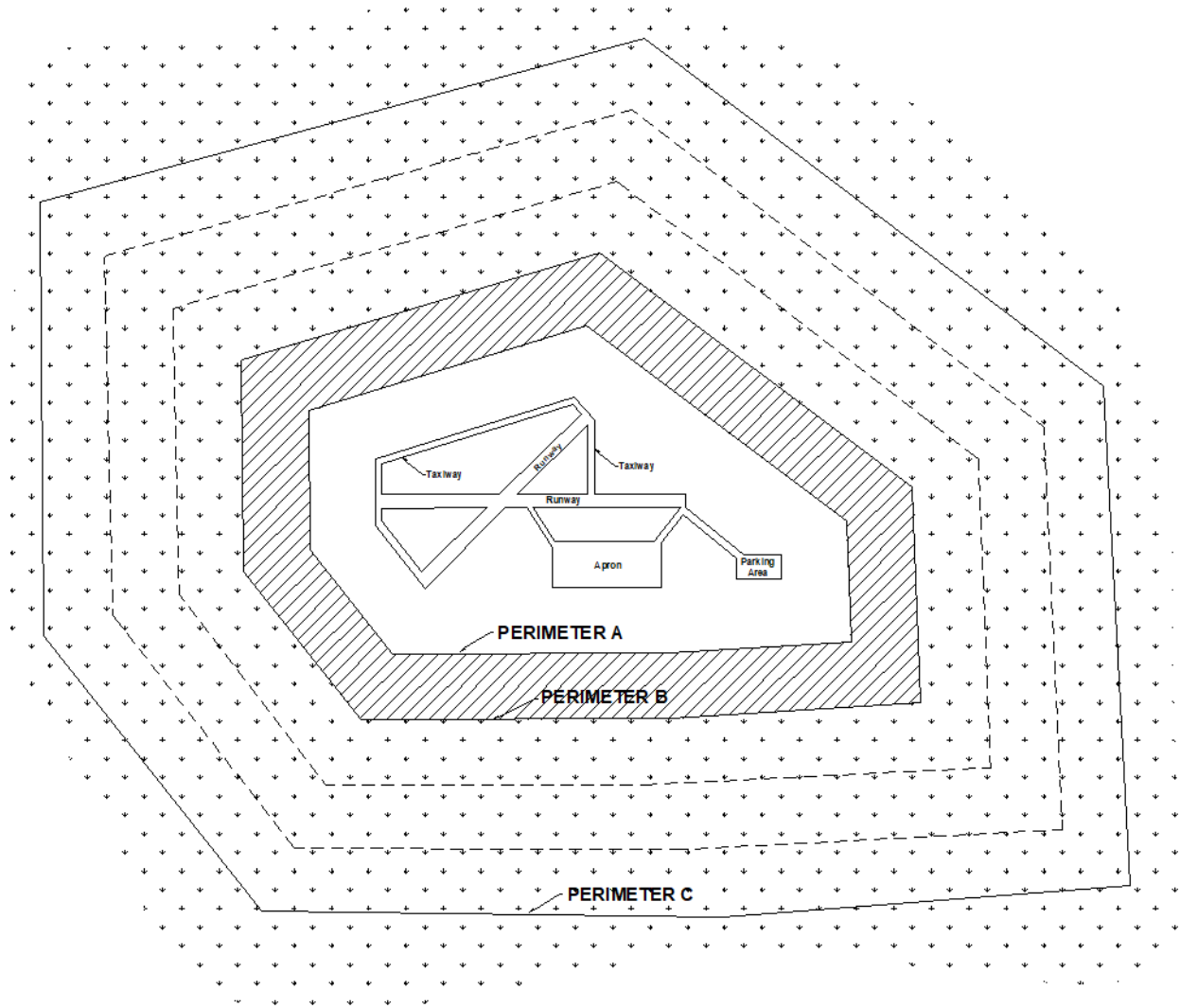
1.3 Airports Serving Turbine-Powered Aircraft.

For airports serving turbine-powered aircraft, the FAA recommends a separation distance of 10,000 feet from these airports for any of the hazardous wildlife attractants discussed in Chapter 2 or for new airport development projects meant to accommodate aircraft movement. This distance is to be maintained between the closest point of the airport's aircraft operations area and the hazardous wildlife attractant. Figure 1 depicts an example of the 10,000-foot separation distance from the nearest aircraft movement areas.

1.4 Protection of Approach, Departure, and Circling Airspace.

For all airports, the FAA recommends a distance of 5 miles between the closest point of the airport's aircraft operations area and the hazardous wildlife attractant. Special attention should be given to hazardous wildlife attractants that could cause hazardous wildlife movement into or across the approach or departure airspace. Figure 1 depicts an example of the 5-mile separation distance measured from the nearest aircraft operations area.

Figure 1. Example of recommended separation distances described in Chapter 1 within which hazardous wildlife attractants should be avoided, eliminated, or mitigated.



PERIMETER A: For airports serving piston-powered aircraft, it is recommended hazardous wildlife attractants be 5,000 feet from the nearest aircraft operations area.

PERIMETER B: For airports serving turbine-powered aircraft, it is recommended hazardous wildlife attractants be 10,000 feet from the nearest aircraft operations area.

PERIMETER C: Recommended for all airports, 5-mile range to protect approach, departure and circling airspace.

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CHAPTER 2. LAND-USE PRACTICES ON OR NEAR AIRPORTS THAT POTENTIALLY ATTRACT HAZARDOUS WILDLIFE

2.1 General.

- 2.1.1 Many types of vegetation, habitats and land use practices can provide an attractant to animals that pose a risk to aviation safety. Hazardous wildlife use the natural or artificial habitats on or near an airport for food, water or cover. The wildlife species and the size of the populations attracted to the airport environment vary considerably, depending on several factors, including land-use practices on or near the airport. In addition to the specific considerations outlined below, airport operators should refer to *Wildlife Hazard Management at Airports* manual, prepared by FAA and U.S. Department of Agriculture (USDA) staff. (This manual is available in English, Spanish, and French). This manual, as well as other helpful resources can be viewed and downloaded free of charge from the Wildlife Strike Resources section of the FAA's wildlife hazard mitigation web site:
http://www.FAA.gov/airports/airport_safety/wildlife).
- 2.1.1.1 The USDA / Animal and Plant Health Inspection Service (APHIS) / Wildlife Services developed a new publication series on wildlife damage management and is available online. The Wildlife Damage Management Technical Series highlights wildlife species or groups of wildlife species that cause damage to agriculture, property and natural resources, and/or impact aviation and human health and safety. The publications can be found at:
https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/sa_reports/ct_wildlife+damage+management+technical+series.
- 2.1.1.2 Additional resources have been provided by the USDA / APHIS / Wildlife Services National Wildlife Research Center (NWRC) at:
https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/programs/nwrc/sa_publications/ct_research_gateway. The NWRC Research Gateway contains research articles, reports, factsheets, technical notes, data and other materials on wildlife hazard mitigation, risk reduction, animal ecology, habitats, and advanced technologies and methodologies.
- 2.1.2 This section discusses land-use practices having the potential to attract hazardous wildlife and threaten aviation safety. The FAA has determined that the land uses listed below are generally not compatible with safe airport operations when they are located within the separation distances provided in Paragraphs 1.2 through 1.4.
- 2.1.3 As a reminder, these types of land uses or facilities often require permits from the appropriate permitting agency. The FAA may work with the permitting agency to include conditions for monitoring and mitigation measures, if necessary. Ultimately, the permittee is responsible for compliance to these conditions and the permitting agency is responsible for tracking compliance.

2.2 Waste Disposal Operations.

Municipal solid waste landfills (municipal landfills) are known to attract large numbers of hazardous wildlife, particularly birds. Because of this, these operations, when located within the separations identified in the siting criteria in Paragraphs 1.2 through 1.4, are considered incompatible with safe airport operations.

2.2.1 Siting for New Municipal Solid Waste Landfills Subject to AIR 21.

- 2.2.1.1 Section 503 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (P. L. 106-181) (AIR 21), 49 U.S.C. § 44718(d), prohibits the construction or establishment of a new municipal landfill within 6 miles of certain public-use airports. Before these prohibitions apply, both the airport and the landfill must meet the very specific conditions described below. These restrictions do not apply to airports or landfills located within the state of Alaska.
- 2.2.1.2 The airport must (1) have received a Federal grant(s) under 49 U.S.C. § 47101, et. seq.; (2) be under control of a public agency; (3) serve some scheduled air carrier operations conducted in aircraft with less than 60 seats; and (4) have total annual enplanements consisting of at least 51 percent of scheduled air carrier enplanements conducted in aircraft with less than 60 passenger seats.
- 2.2.1.3 The proposed municipal landfill must (1) be within 6 miles of the airport, as measured from airport property line to the landfill property line, and (2) have started construction or establishment on or after April 5, 2001. Section 44718(d) only limits the construction or establishment of some new landfills. It does not limit the expansion, either vertical or horizontal, of existing landfills.
- 2.2.1.4 Regarding existing municipal landfills and lateral expansions of landfills, 40 CFR § 258.10 requires owners or operators of a landfill units located within the separation distances provided in Paragraphs 1.2 through 1.4 to demonstrate that the unit is designed and operated so that it does not pose a bird hazard to aircraft. To accomplish this, follow the instructions provided in Paragraphs 3.2 and 3.3, document the wildlife monitoring and mitigation procedures that are cooperatively developed, and place this documentation in the operating permit of the facility.

2.2.2 Siting for New Municipal Landfills Not Subject to AIR 21.

If an airport and a municipal landfill do not meet the criteria of § 44718(d), then FAA recommends against locating the landfill within the separation distances identified in Paragraphs 1.2 through 1.4. In determining this distance separation, measurements should be made from the closest point of the airport property boundary to the closest point of the landfill property boundary.

2.2.3 Considerations for Existing Waste Disposal Facilities Within the Limits of Separation Criteria.

The FAA recommends against airport development projects that would increase the number of aircraft operations or accommodate larger or faster aircraft near landfill operations located within the separations identified in Paragraphs 1.2 through 1.4. In addition, in accordance with 40 CFR § 258.10, owners or operators of existing landfill units that are located within the separations listed in Paragraphs 1.2 through 1.4 must demonstrate that the unit is designed and operated so it does not pose a bird hazard to aircraft. (See Paragraph 4.3.2 of this AC for a discussion of this demonstration requirement.)

2.2.4 Enclosed Trash Transfer Stations.

Enclosed waste-handling facilities that receive garbage behind closed doors; process it via compaction, incineration, or similar manner; and remove all residue by enclosed vehicles generally are compatible with safe airport operations, provided they are constructed and operated properly and are not located on airport property or within the Runway Protection Zone. These facilities should not handle or store putrescible waste outside or in a partially enclosed structure accessible to hazardous wildlife. Trash transfer facilities that are open on one or more sides; or store uncovered quantities of municipal solid waste outside, even if only for a short time; or use semi-trailers that leak or have trash clinging to the outside; or do not control odors by ventilation and filtration systems (odor masking is not acceptable) do not meet the FAA's definition of fully enclosed trash transfer stations. The FAA considers fully enclosed waste-handling facilities constructed or operated incorrectly incompatible with safe airport operations if they are located closer than the separation distances specified in Paragraphs 1.2 through 1.4.

2.2.5 Composting Operations on or near Airport Property.

Composting operations that accept only yard waste (e.g., leaves, lawn clippings, or branches) generally do not attract hazardous wildlife. Sewage sludge, woodchips, and similar material are not municipal solid wastes and may be used as compost bulking agents. The compost, however, must never include food or other municipal solid waste. Composting operations should not be located on airport property unless effective, risk-reducing mitigations are in place. Off-airport property composting operations should be located no closer than the greater of the following distances: 1,200 feet from any aircraft operations area or the distance called for by airport design requirements (see AC 150/5300-13, *Airport Design*). This spacing should prevent material, personnel, or equipment from penetrating any Object Free Area, Obstacle Free Zone, Threshold Siting Surface, or Clearway. Airport operators should monitor composting operations located in proximity to the airport to ensure that steam or thermal rise does not adversely affect air traffic.

2.2.6 Underwater Waste Discharges.

The FAA recommends against the underwater discharge of any food waste (e.g., fish processing offal) within the separations identified in Paragraphs 1.2 through 1.4 because it could attract scavenging hazardous wildlife.

2.2.7 Recycling Centers.

Recycling centers that accept previously sorted non-food items, such as glass, newspaper, cardboard, aluminum, electronic, and household wastes such as paint, batteries, and oil, are, in most cases, not attractive to hazardous wildlife and are acceptable.

2.2.8 Construction and Demolition Debris Facilities.

2.2.8.1 Construction and demolition landfills generally do not attract hazardous wildlife and are acceptable if maintained in an orderly manner, admit no putrescible waste, and are not co-located with other waste disposal operations. However, construction and demolition landfills have similar visual and operational characteristics to putrescible waste disposal sites. When co-located with putrescible waste disposal operations, construction and demolition landfills are more likely to attract hazardous wildlife because of the similarities between these disposal facilities.

2.2.8.2 Therefore, a construction and demolition landfill co-located with another waste disposal operation should be located outside of the separations identified in Paragraphs 1.2 through 1.4.

2.2.8.3 Airport operators should be aware that on-site storage of construction and maintenance debris, as well as out-of-service aircraft or aircraft components, may provide an attractant for hazardous species (e.g., nesting or perching locations). The FAA recommends these on-site areas be monitored and/or mitigated, if necessary.

2.2.9 Fly Ash Disposal.

2.2.9.1 The incinerated residue from resource recovery power/heat-generating facilities that are fired by municipal solid waste, coal, or wood is generally not a wildlife attractant because it no longer contains putrescible matter. Landfills accepting only fly ash are generally not considered to be wildlife attractants and are acceptable as long as they admit no putrescible waste of any kind, and are not co-located with other disposal operations that attract hazardous wildlife.

2.2.9.2 Since varying degrees of waste consumption are associated with general incineration (not resource recovery power/heat-generating facilities), the FAA considers the ash from general incinerators a regular waste disposal by-product and, therefore, a hazardous wildlife attractant if disposed of within the separation criteria outlined in Paragraphs 1.2 through 1.4.

2.3 **Water Management Facilities.**

Drinking water intake and treatment facilities, storm water and wastewater treatment facilities, associated retention and settling ponds, ponds built for recreational use, ponds

and fountains for ornamental purposes, and ponds that result from mining activities often attract large numbers of potentially hazardous wildlife. Development of new open water facilities within the separation criteria identified in Paragraphs 1.2 through 1.4 should be avoided to prevent wildlife attractants. If necessary, land-use developers and airport operators may need to develop management plans, in compliance with local and state regulations, to support the operation of storm water management facilities on or near all public-use airports to ensure a safe airport environment. The FAA recommends these plans be developed in consultation with a Qualified Airport Wildlife Biologist³, to minimize hazardous wildlife attractants.

2.3.1 Existing Stormwater Management Facilities.

- 2.3.1.1 On-airport stormwater management facilities allow the quick removal of surface water, including discharges related to aircraft deicing, from impervious surfaces, such as pavement and terminal/hangar building roofs. Existing on-airport detention ponds collect stormwater, protect water quality, and control runoff. Because they slowly release water after storms, they may create standing bodies of water that can attract hazardous wildlife. Where the airport has developed a Wildlife Hazard Management Plan, Part 139 regulations require the immediate correction of any wildlife hazards arising from existing stormwater facilities located on or near airports using appropriate wildlife hazard mitigation techniques. Airport operators should develop measures to minimize hazardous wildlife attraction in consultation with a Qualified Airport Wildlife Biologist.
- 2.3.1.2 Where possible, airport operators should modify stormwater detention ponds to allow a maximum 48-hour detention period for the design storm. The combination of open water and vegetation is particularly attractive to waterfowl and other hazardous wildlife. Water management facilities holding water longer than 48 hours should be maintained in a manner that keeps them free of both emergent and submergent vegetation. The FAA recommends that airport operators avoid or remove retention ponds and detention ponds featuring dead storage to eliminate standing water. Detention basins should remain totally dry between rainfalls. Where constant flow of water is anticipated through the basin, or where any portion of the basin bottom may remain wet, the detention facility should include a concrete or paved pad and/or ditch/swale in the bottom to prevent vegetation that may provide nesting habitat. Drainage basins with a concrete or paved pad should be maintained to prevent or remove any sediment build-up to prevent vegetation growth.
- 2.3.1.3 When it is not possible to drain a large detention pond completely, airport operators may use physical barriers, such as bird balls, wire grids, pillows,

³ See Advisory Circular 150/5200-36, *Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports.*

or netting, to deter birds and other hazardous wildlife. When physical barriers are proposed, airport operators must evaluate their use, effectiveness and maintenance requirements. Airport operators must also ensure physical barriers will not adversely affect water rescue. Before installing any physical barriers over detention ponds on Part 139 airports, airport operators must get approval from the appropriate FAA Regional Airports Division Office.

- 2.3.1.4 The FAA recommends that airport operators encourage off-airport stormwater treatment facility operators to incorporate appropriate wildlife hazard mitigation techniques into stormwater treatment facility operating practices when their facility is located within the separation criteria specified in Paragraphs 1.2 through 1.4.

2.3.2 New Stormwater Management Facilities.

The FAA recommends that storm water management systems located within the separations identified in Paragraphs 1.2 through 1.4 be designed and operated so as not to create above-ground standing water. Stormwater detention ponds should be designed, engineered, constructed, and maintained for a maximum 48-hour detention period after the design storm and to remain completely dry between storms. To facilitate the control of hazardous wildlife, the FAA recommends the use of steep-sided, rip-rap or concrete lined, narrow, linear-shaped water detention basins. When it is not possible to place these ponds away from an airport's aircraft operations area (but still on airport property), airport operators may use physical barriers, such as bird balls, wire grids, floating covers, vegetation barriers (bottom liners), or netting, to prevent access of hazardous wildlife to open water and minimize aircraft-wildlife interactions. Caution is advised when nets or wire grids are used for deterring birds from attractants. Mesh size should be < 5 cm (2") to avoid entangling and killing birds and should not be made of a monofilament material. Grids installed above and across water to deter hazardous birds (e.g., waterfowl, cormorants, etc.) are different than using a small mesh covering but also provides an effective deterrent. Grid material, size, pattern and height above water may differ on a case-by-case basis. When physical barriers are used, airport operators must evaluate their use and ensure they will not adversely affect water rescue. Before installing any physical barriers over detention ponds on Part 139 airports, a review by a Qualified Airport Wildlife Biologist should be conducted, prior to approval from the appropriate FAA Regional Airports Division Office. All vegetation in or around detention basins that provide food or cover for hazardous wildlife should be eliminated. If soil conditions and other requirements allow, the FAA encourages the use of underground storm water infiltration systems because they are less attractive to wildlife.

2.3.3 Existing Wastewater Treatment Facilities.

- 2.3.3.1 The FAA recommends that airport operators immediately correct any wildlife hazards arising from existing wastewater treatment facilities located on or near the airport.

2.3.3.2 Where required, a wildlife management plan will outline appropriate wildlife hazard mitigation techniques. Accordingly, airport operators should encourage wastewater treatment facility operators to incorporate measures, developed in consultation with a Qualified Airport Wildlife Biologist, to minimize hazardous wildlife attractants. Airport operators should also encourage those wastewater treatment facility operators to incorporate these mitigation techniques into their standard operating practices. In addition, airport operators should consider the existence of wastewater treatment facilities when evaluating proposed sites for new airport development projects and avoid such sites when practicable.

2.3.4 New Wastewater Treatment Facilities.

The FAA recommends against the construction of new wastewater treatment facilities or associated settling ponds within the separations identified in Paragraphs 1.2 through 1.4. Appendix 1 defines wastewater treatment facility as “any devices and/or systems used to store, treat, recycle, or reclaim municipal sewage or liquid industrial wastes.” The definition includes any pretreatment involving the reduction or elimination of pollutants prior to introducing such pollutants into a treatment facility. When a wastewater treatment facility is proposed within the separation criteria, the airport operator, project proponent, and local jurisdiction should discuss the proposed project location with regard to its location near the airport and the separation distances identified in Paragraphs 1.2 through 1.4. If possible, a more suitable location for the proposed facility should be identified. If no other suitable location exists, FAA recommends that the proposed facility plans be reviewed by a Qualified Airport Wildlife Biologist to identify measures to avoid or reduce the facility’s potential to attract hazardous wildlife. If appropriate measures cannot be incorporated to reduce potential wildlife hazards, airport operators should document their opposition in a letter to the local jurisdiction.

2.3.5 Artificial Marshes.

In warmer climates, wastewater treatment facilities sometimes employ artificial marshes and use submergent and emergent aquatic vegetation as natural filters. These artificial marshes may be used by some species of flocking birds, such as blackbirds and waterfowl, for breeding or roosting activities. The FAA recommends against establishing artificial marshes within the separations identified in Paragraphs 1.2 through 1.4.

2.3.6 Wastewater Discharge and Sludge Disposal.

The FAA recommends careful consideration regarding the discharge of wastewater or biosolids (i.e., secondarily treated sewage sludge) on airport property. Such discharges might improve soil moisture and quality on unpaved areas and lead to improved turf growth. Depending on the airfield plant communities and habitats present, this can be an attractive food source for many species of animals or, conversely, could result in limited attractiveness to hazardous wildlife. Also, improved turf requires more frequent mowing and could attract geese. Airports should improve their turf with the goal of a monoculture of turf that is least attractive to wildlife. Wastewater or biosolids

applications might assist in achieving this goal. Caution should be exercised when discharges saturate airfield areas adjacent to paved surfaces. The resultant soft, muddy conditions could restrict or prevent emergency vehicles from reaching accident sites in a timely manner.

2.4 Wetlands.

Wetlands provide a variety of functions and can be regulated by local, state, and Federal laws. Wetlands can be attractive to many types of wildlife, including many which rank high on the list of hazardous wildlife species (Table 1 - AC 150/5200-32). Some types of wetlands are not as attractive to wildlife as others and they should be reviewed on a case-by-case basis to determine the likelihood of proposed wetlands increasing the numbers of hazardous wildlife at the airport. Factors such as size, shape, location, canopy cover and vegetative composition among other things should be considered when determining compatibility.

Note: If questions exist as to whether an area qualifies as a wetland, contact the District Office of the U.S. Army Corps of Engineers, the Natural Resources Conservation Service, or a wetland consultant qualified to delineate wetlands.

2.4.1 Existing Wetlands on or near Airport Property.

If wetlands are located on or near airport property, airport operators should be alert to any wildlife use or habitat changes in these areas that could affect safe aircraft operations. At public-use airports, the FAA recommends immediately correcting, in cooperation with local, state, and Federal regulatory agencies, any wildlife hazards arising from existing wetlands located on or near airports within 5 miles of the aircraft operations area. Where required, a wildlife management plan will outline appropriate wildlife hazard mitigation techniques. Accordingly, airport operators should develop measures to minimize hazardous wildlife attraction in consultation with a FAA Qualified Airport Wildlife Biologist.

2.4.2 New Airport Development.

Whenever possible, the FAA recommends locating new airports using the separations from wetlands identified in Paragraphs 1.2 through 1.4. Where alternative sites are not practicable, or when airport operators are expanding an existing airport into or near wetlands, a Qualified Airport Wildlife Biologist, in coordination with the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and the state wildlife management agency should evaluate the wildlife hazards and prepare a wildlife management plan that indicates methods of minimizing the hazards.

2.4.3 Mitigation for Wetland Impacts from Airport Projects.

Wetland mitigation may be necessary when unavoidable wetland disturbances result from new airport development projects or projects required to correct wildlife hazards from wetlands. Wetland mitigation must be designed so it does not create a wildlife hazard. The FAA recommends that wetland mitigation projects that may attract hazardous wildlife be sited outside of the separations identified in Paragraphs 1.2 through 1.4.

2.4.3.1 Onsite Mitigation of Wetland Functions.

Wetland mitigation/conservation easements must not inhibit the airport operator's ability to effectively control hazardous wildlife on or near the mitigation site or effectively maintain other aspects of safe airport operations. Enhancing such mitigation areas to attract hazardous wildlife must be avoided. The FAA will review any onsite mitigation proposals to determine compatibility with safe airport operations and grant assurance compliance. Early coordination with the FAA is encouraged for any proposal to use airport land for wetland mitigation. A Qualified Airport Wildlife Biologist should evaluate any wetland mitigation projects that are needed to protect unique wetland functions and that must be located in the separation criteria in Paragraphs 1.2 through 1.4 before the mitigation is implemented. A wildlife management plan should be developed to reduce the wildlife hazards.

2.4.3.2 Offsite Mitigation of Wetland Functions.

- 2.4.3.2.1 The FAA recommends that wetland mitigation projects that may attract hazardous wildlife be sited outside of the separations identified in Paragraphs 1.2 through 1.4 unless they provide unique functions that must remain onsite (see 2.4.3.1). Agencies that regulate impacts to or around wetlands recognize that it may be necessary to split wetland functions in mitigation schemes. Therefore, regulatory agencies may, under certain circumstances, allow portions of mitigation to take place in different locations.
- 2.4.3.2.2 The FAA encourages landowners or communities supporting the restoration or enhancement of wetlands to do so only after critically analyzing how those activities would affect aviation safety. To do so, landowners or communities should contact the affected airport sponsor, FAA, and/or a Qualified Airport Wildlife Biologist.
- 2.4.3.2.3 Those parties should work cooperatively to develop restoration or enhancement plans that would not worsen existing wildlife hazards or create such hazards. See Paragraphs 4.1.1 – 4.1.3 for land-use modifications evaluation criteria.
- 2.4.3.2.4 If parties develop a mutually acceptable restoration or enhancement plan, the landowner or community proposing the restoration or enhancement must monitor the restored or enhanced site. This monitoring must verify that efforts have not worsened or created hazardous wildlife attraction or activity. If such attraction or activity occurs, the landowner or community should work with the airport sponsor, or a Qualified Airport Wildlife Biologist to reduce the hazard to aviation.

2.4.3.3 Mitigation Banking.

Wetland mitigation banking is the creation or restoration of wetlands in order to provide mitigation credits that can be used to offset permitted wetland losses. Mitigation banking benefits wetland resources by providing advance replacement for permitted wetland losses; consolidating small projects into larger, better-designed and managed units; and encouraging integration of wetland mitigation projects with watershed planning. This last benefit is most helpful for airport projects, as wetland impacts mitigated outside of the separations identified in Paragraphs 1.2 through 1.4 can still be located within the same watershed. Wetland mitigation banks meeting the separation criteria offer an ecologically sound approach to mitigation in these situations. Airport operators should work with local watershed management agencies or organizations to develop mitigation banking for wetland impacts on airport property.

2.5 Dredge Spoil Containment Areas.

The FAA recommends against locating dredge spoil containment areas (also known as Confined Disposal Facilities) within the separations identified in Paragraphs 1.2 through 1.4 if the containment area or the spoils contain material that would attract hazardous wildlife. Proposals for new dredge spoil containment areas located within the separation distances should be reviewed on a case-by-case basis to determine the likelihood of resulting in an increase in hazardous wildlife. The FAA recommends that airport sponsors work with a Qualified Airport Wildlife Biologist and/or the FAA to review proposals for dredge spoil containment areas located within separation criteria.

2.6 Agricultural Activities.

Many agricultural crops can attract hazardous wildlife and should not be planted within the separations identified in Paragraphs 1.2 through 1.4. Corn, wheat, and other small grains in particular should be avoided. If the airport has no financial alternative to agricultural crops to produce the income necessary to maintain the viability of the airport, then the airport should consider growing crops that hold little food value for hazardous wildlife, such as grass hay. Attractiveness to hazardous wildlife species during all phases of production, from planting through harvest and fallow periods, should be considered when contemplating the use of airport property for agricultural production. Where agriculture is present, crop residue (e.g., waste grain) should not be left in the field following harvest. Also, airports should consult AC 150/5300-13, *Airport Design*, to ensure that agricultural crops do not create airfield obstructions or other safety hazards. Before planning or initiating any agricultural practices on airport property, operators should get approval from the appropriate FAA regional Airports Division Office and demonstrate that the additional cost of wildlife control and potential accidents is offset by revenue generated by agricultural leases. Annual review of the Airport Certification Manual by the Certification Inspector does not constitute approval and is insufficient to meet this requirement.

2.6.1 Livestock Production.

Confined livestock operations (i.e., feedlots, dairy operations, hog or chicken production facilities, or egg laying operations) often attract flocking birds, such as blackbirds, starlings, or pigeons that pose a hazard to aviation. Therefore, the FAA recommends against such facilities within the separations identified in Paragraphs 1.2 through 1.4. The airport operator should be aware of any wildlife hazards that appear to be attracted to off-site livestock operations and consider working with a Qualified Airport Wildlife Biologist to identify reasonable and feasible measures that may be proposed to landowners to reduce the attractiveness of the site to the potentially hazardous wildlife species.

2.6.1.1 In exceptional circumstances, and following FAA review and approval, livestock may be grazed on airport property as long as they are off the airfield and separated behind fencing where they cannot pose a hazard to aircraft. The livestock should be fed and watered as far away from the airfield and approach/departure space as possible because the feed and water may attract birds. The wildlife management plan should include monitoring and wildlife mitigation for any areas where the livestock and their feed/water is located in case a wildlife hazard is detected. Airports without wildlife management plans should equally consider monitoring and mitigation protocols to identify and address any wildlife hazards associated with livestock and their feeding operations.

2.6.2 Alternative Uses of Agricultural Land.

2.6.2.1 Habitat modification both on and surrounding an airfield is one of the best and most economical long term mitigation strategies to decrease risk that wildlife pose to flight safety. Alternative land uses (e.g., solar and biofuel) at airports could help mitigate many of the challenges for the airport operator, developers, and conservationists. However, careful planning must first determine that proposed alternative energy production at airports does not create wildlife attractants or other hazards.

2.6.2.2 Some airports are surrounded by vast areas of farmed land within the distances specified in Paragraphs 1.2 through 1.4. Seasonal uses of agricultural land for activities such as hunting can create a hazardous wildlife situation. In some areas, farmers will rent their land for hunting purposes. Rice farmers, among others, flood their land to attract waterfowl or for conservation efforts. This is often done during waterfowl hunting season to obtain additional revenue by renting out duck blinds.

2.6.2.3 The waterfowl hunters then use decoys and call in hundreds, if not thousands, of birds, creating a threat to aircraft safety. It is recommended that a Qualified Airport Wildlife Biologist review, in coordination with local farmers and producers, these types of seasonal land uses and incorporate mitigating measures into the wildlife management plan, when possible.

2.7 Aquaculture.

Aquaculture is the breeding, rearing, and harvesting of fish, shellfish, and plants in all types of water environments including ponds, rivers, lakes, and the ocean. Aquaculture is used to produce food fish, sport fish, bait fish, ornamental fish, and to support restoration activities. Aquacultured species are grown in a range of facilities including tanks, cages, ponds, and raceways. When an aquaculture facility is proposed within the separation criteria, the airport operator, project proponent, and local jurisdiction should discuss the proposed project location with regard to its attraction to hazardous species, location near the airport and the separation distances identified in Paragraphs 1.2 through 1.4. If a facility is identified as a possible significant attraction, a more suitable location for the proposed facility should be identified. If no other suitable location exists, it is recommended that the proposed facility plans be reviewed by a Qualified Airport Wildlife Biologist to identify measures to avoid or reduce the facility's potential to attract hazardous wildlife.

2.7.1 Freshwater Aquaculture.

2.7.1.1 Freshwater aquaculture activities (e.g., catfish, tilapia, trout or bass production) are typically conducted outside of fully enclosed buildings in constructed ponds or tanks and are inherently attractive to a wide variety of birds and therefore pose a significant risk to airport safety when within the separation distances specified in Paragraphs 1.2 through 1.4. Freshwater aquaculture should only be considered if extensive mitigation measures have been incorporated to eliminate attraction to hazardous birds. Examples of such mitigation include:

1. Netting or other material to exclude hazardous birds (e.g., eagles, osprey, gulls, cormorants);
2. Acoustic hazing including pyrotechnics, propane cannons, directional sonic/hailing devices and other similar technologies;
3. Feeding procedure cleanliness, exclusion techniques prohibiting birds from perching or accessing food; efficiency of feeding operation procedures that reduce fish food attraction to hazardous birds;
4. Operation procedure efficiency transferring live fish to and from enclosures or removal of dead fish; maintenance and upkeep of facility;
5. Monitoring, mitigation and communication protocols with nearby airports as a proactive safety feature in response to specific hazardous species in the event they are identified at the facility in unacceptable numbers.

2.7.2 Marine Aquaculture.

Marine aquaculture (Mariculture) refers to the culturing of species that live in the ocean. When appropriately managed and mitigated as necessary, mariculture facilities do not pose a significant risk to airport safety.

2.7.2.1 **Finfish Mariculture.**

2.7.2.1.1 U.S. finfish mariculture primarily produces salmon and steelhead trout as well as lesser amounts of cod, moi, yellowtail, barramundi, seabass, and seabream. Maricultures use rigid and non-rigid enclosures (e.g., cages) at the surface or submerged in the water column. These enclosures may be fully enclosed, or be open at the top or covered with netted material to negate losses from depredation by birds or other predators. Different facilities employ different designs and operational protocols.

2.7.2.1.2 While mariculture operations typically do not pose a significant attractant to hazardous birds, design and operational features can be incorporated as permit conditions to mitigate attraction and effectively reduce this risk. Examples of such mitigation include:

1. Fully enclosed cages using netting or other material to exclude hazardous birds (e.g., gulls, cormorants, pelicans) and to insure retention of fish;
2. Submerged enclosures to reduce attraction to hazardous birds;
3. Feed barge cleanliness, exclusion techniques prohibiting birds from perching or accessing food; efficiency of feeding operation procedures that reduce fish food attraction to hazardous birds;
4. Operation procedure efficiency transferring live fish to and from enclosures or removal of dead fish; maintenance and upkeep of facility;
5. Monitoring, mitigation and communication protocols with nearby airports as a proactive safety feature in response to specific hazardous species in the event they are identified at the facility in unacceptable numbers.

2.7.2.2 **Shellfish Mariculture.**

U.S. shellfish mariculture primarily produces oysters, clams, mussels, lobster and shrimp. Shellfish may be grown directly on the bottom, in submerged cages or bags, or on suspended lines. These types of mariculture operations do not typically present a significant attractant to hazardous birds. For those operations that are found to pose a significant risk, design and operation features that diminish possible attraction to hazardous bird species (e.g., reducing areas for perching or feeding) can effectively reduce this risk.

2.7.2.3 **Plant Mariculture.**

2.7.2.3.1 Microalgae, also referred to as phytoplankton, microphytes, or planktonic algae constitute the majority of cultivated algae. Macroalgae, commonly known as seaweed, also have many commercial and industrial uses.

- 2.7.2.3.2 While few commercial seaweed farms exist, the sector is growing. These types of mariculture operations do not typically present an attractant to hazardous birds.

2.8 **Golf Courses, Landscaping, Structures and Other Land-Use Considerations.**

2.8.1 Golf Courses.

The large grassy areas and open water found on most golf courses are attractive to hazardous wildlife, particularly Canada geese and some species of gulls. These species can pose a threat to aviation safety. If golf courses are located on or near airport property, airport operators should be alert to any wildlife use or habitat changes in these areas that could affect safe aircraft operations. Accordingly, airport operators should develop, at a minimum, onsite measures to minimize hazardous wildlife attraction in consultation with a Qualified Airport Wildlife Biologist. Existing golf courses located within these separations that have been documented to attract hazardous wildlife are encouraged to develop a program to reduce the attractiveness of the sites to species that are hazardous to aviation safety. The FAA recommends against construction of new golf courses within the separations identified in Paragraphs 1.2 through 1.4 if determined that the new facility would create a significant wildlife hazard attractant by a Qualified Airport Wildlife Biologist. Airport operators should ensure these golf courses are monitored on a continuing basis for the presence of hazardous wildlife. If hazardous wildlife is detected, corrective actions should be immediately implemented.

2.8.2 Landscaping and Landscape Maintenance.

2.8.2.1 Depending on its geographic location, landscaping can attract hazardous wildlife. The FAA recommends that airport operators approach landscaping with caution and confine it to airport areas not associated with aircraft movements. Vegetation that produces seeds, fruits, or berries, or that provides dense roosting or nesting cover should not be used. Airports should develop a landscape plan to include approved and prohibited plants. The landscape plan should consider the watering needs of mature plants. A Qualified Airport Wildlife Biologist should review all landscaping plans. Airport operators should also monitor all landscaped areas on a continuing basis for the presence of hazardous wildlife. If hazardous wildlife is detected, corrective actions should be immediately implemented.

2.8.2.2 Turf grass areas on airports have the potential to be highly attractive to a variety of hazardous wildlife species. Research conducted by the USDA Wildlife Services' National Wildlife Research Center has shown that no one airfield vegetation management regimen will deter all species of hazardous wildlife in all situations. The composition and height of airfield grasslands should be properly managed to reduce their attractiveness to hazardous wildlife. In many situations, an intermediate height, monoculture turf grass might be most favorable. In cooperation with a

Qualified Airport Wildlife Biologist, airport operators should develop airport turf grass management plans on a prescription basis, including cultivar selection during reseeding efforts, that is specific to the airport's geographic location, climatic conditions, and the type of hazardous wildlife likely to frequent the airport.

- 2.8.2.3 Airport operators should ensure that plant varieties attractive to hazardous wildlife are not used on the airport. Disturbed areas or areas in need of re-vegetating should not be planted with seed mixtures containing millet or any other large-seed producing grass. For airport property already planted with seed mixtures containing millet, rye grass, or other large-seed producing grasses, the FAA recommends disking, plowing, or another suitable agricultural practice to prevent plant maturation and seed head production. Plantings should follow the specific recommendations for grass management and seed and plant selection made by the State University Cooperative Extension Service, the local office of Wildlife Services, or a Qualified Airport Wildlife Biologist. Airport operators should also consider developing and implementing a preferred/prohibited plant species list, reviewed by a Qualified Airport Wildlife Biologist, which has been designed for the geographic location to reduce the attractiveness to hazardous wildlife for landscaping airport property.

2.8.3 Structures.

- 2.8.3.1 Certain structures attract birds for loafing and nesting. Flat rooftops can be attractive to many species of gulls for nesting, hangars provide roosting / nesting opportunities for rock doves, towers, light posts and navigation aids can provide loafing / hunting perches for raptors and aircraft can provide loafing / nesting sites for European starlings, blackbirds and other species. These structures should be monitored and mitigated, if located on-site. Off-site structural attractions may require additional coordination to effectively mitigate their use by hazardous species.

- 2.8.3.2 Cellular communications towers are becoming increasingly more attractive to large birds (e.g., osprey, eagles, herons, vultures) for nesting and rearing their young. This problem is a growing concern because once the young fledge from nests built on manmade structures they are more likely to return to these kinds of sites to reproduce in future years.

2.8.4 Other Hazardous Wildlife Attractants.

Other land uses (e.g., conservation easements, parks, wildlife management areas) or activities not addressed in this AC may have the potential to attract hazardous wildlife. Regardless of the source of the attraction, when hazardous wildlife is noted on a public-use airport, each certificate holder must take prompt remedial action(s) to protect aviation safety and all non-certificated airports should take prompt remedial action(s) to protect aviation safety.

2.9 **Habitat for State and Federally Listed Species on Airports.**

An airport's air operations area is an artificial environment that has been created and maintained for aircraft operations. Because an aircraft operations area can be markedly different from the surrounding native landscapes, it may attract wildlife species that do not normally occur, or that occur only in low numbers in the area. Some of the grassland species attracted to an airport's aircraft operations area are at the edge of their natural ranges, but are attracted to habitat features found in the airport environment. Also, some wildlife species may occur on the airport in higher numbers than occur naturally in the region because the airport offers habitat features the species prefer. Some of these wildlife species are Federal or state-listed threatened and endangered species or have been designated by state resource agencies as species of special concern.

2.9.1 State-Listed Species Habitat Concerns.

- 2.9.1.1 Many state wildlife agencies have requested that airport operators facilitate and encourage habitat on airports for state-listed threatened and endangered species or species of special concern. Airport operators should exercise caution in adopting new management techniques because they may increase wildlife hazards and be inconsistent with safe airport operations. Managing the on-airport environment to facilitate or encourage the presence of hazardous wildlife species can create conditions that are incompatible with, or pose a threat to, aviation safety.
- 2.9.1.2 Not all state-listed threatened and endangered species or species of concern pose a direct threat to aviation safety. However, these species may pose an indirect threat and be hazardous because they attract other wildlife species or support prey species attractive to other species that are directly hazardous. Also, the habitat management practices that benefit these state-listed threatened and endangered species and species of special concern may attract other hazardous wildlife species. On-airport habitat and wildlife management practices designed to benefit wildlife that directly or indirectly create safety hazard where none existed before are incompatible with safe airport operations.

2.9.2 Federally Listed Species Habitat Concerns.

- 2.9.2.1 The FAA supports efforts to protect threatened and endangered species, as a matter of principle and consistent with the Endangered Species Act of 1973. The FAA must balance these requirements with our requirements and mission to maintain a safe and efficient airport system. Requests to enhance or create habitat for threatened and endangered species often conflict with the safety of the traveling public and may place the protected species at risk of mortality by aircraft collisions. The FAA does not support the creation, conservation or enhancement of habitat or refuges to attract endangered species on airports. If endangered species are present on an airport, specific obligations may apply under the Endangered

Species Act, 16 U.S.C. § 1531 et seq. and the airport operator should contact the Airports District Office Environmental Protection Specialist.

- 2.9.2.2 The designation of critical habitat for listed species under the Endangered Species Act on airport lands may be an incompatible land use in conflict with the intended and dedicated purpose of airport lands and may limit or preclude the ability of the airport to develop new infrastructure and growth capacity to meet future air carrier service demand. In addition, depending on the listed species (primarily but not limited to avian species), the designation of critical habitat within the separation distances provided in paragraphs 1.2 - 1.4 can represent a hazardous wildlife attractant in conflict with 14 CFR Part 139.337.

2.10 Synergistic Effects of Surrounding Land Uses.

There may be circumstances where two or more different land uses would not, by themselves, be considered hazardous wildlife attractants or are located outside of the separations identified in Paragraphs 1.2 through 1.4 but collectively may create a wildlife corridor directly through the airport and/or surrounding airspace. An example involves a lake located outside of the separation criteria on the east side of an airport and a large hayfield on the west side of an airport. These two land uses, taken together, could create a flyway for Canada geese directly across the airspace of the airport. Airport operators must consider the entire surrounding landscape and community when developing the wildlife management plan.

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CHAPTER 3. PROCEDURES FOR WILDLIFE HAZARD MANAGEMENT BY OPERATORS OF PUBLIC-USE AIRPORTS AND CONDITIONS FOR NON-CERTIFICATED AIRPORTS TO CONDUCT WILDLIFE HAZARD ASSESSMENTS AND WILDLIFE HAZARD SITE VISITS

3.1 Introduction.

In recognition of the increased risk of serious aircraft damage or the loss of human life that can result from a wildlife strike, the FAA recommends all airports conduct a Wildlife Hazard Site Visit or Wildlife Hazard Assessment unless otherwise mandated after an initial triggering events defined in Part 139 Section 139.337. After the airport has completed the site visit or assessment and implemented a wildlife management plan, investigations should be conducted following subsequent triggering events to determine if the original assessment and plan adequately address the situation or if conditions have changed that would warrant an update to the plan. In this section, airports that are certificated under 14 C.F.R. § 139.337 are referred to as “certificated airports” and all others are referred to as “non-certificated airports.” When a statement refers to both certificated and non-certificated airports, “airport” or “all airports” is used.

3.2 Coordination with Qualified Airport Wildlife Biologists.

Hazardous wildlife management is a complex discipline and conditions vary widely across the United States. Therefore, only airport wildlife biologists meeting the qualification requirements in Advisory Circular 150/5200-36, *Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports*, can conduct Site Visits and Assessments. Airports must maintain documentation that the Qualified Airport Wildlife Biologist meets the qualification requirements in Advisory Circular 150/5200-36.

3.3 Wildlife Hazard Management at Airports: A Manual For Airport Personnel.

- 3.3.1 The Wildlife Hazard Management at Airports manual, prepared by FAA and USDA Wildlife Services staff, contains a compilation of information to assist airport personnel in the development, implementation, and evaluation of wildlife management plans at airports. The manual includes specific information on the nature of wildlife strikes, legal authority, regulations, wildlife management techniques, Assessments, Plans, and sources of help and information. The manual is available in three languages: English, Spanish, and French. It can be viewed and downloaded free of charge from the FAA’s wildlife hazard mitigation web site: https://www.faa.gov/airports/airport_safety/wildlife. This manual only provides a starting point for addressing wildlife hazard issues at airports. FAA recommends that airports consult with a Qualified Airport Wildlife Biologists to assist with development of a wildlife management plan and the implementation of management actions by airport personnel.

- 3.3.2 There are many other resources complementary to this manual for use in developing and implementing wildlife management plans. Several are listed in the manual's bibliography or on the FAA Wildlife Mitigation website:
https://www.faa.gov/airports/airport_safety/wildlife

3.4 Wildlife Hazard Site Visits and Wildlife Hazard Assessments.

- 3.4.1 Operators of certificated airports are encouraged to conduct an initial assessment regardless of whether the airport has experienced one of the triggering events. Doing so would allow the airport to take proactive action and mitigate the wildlife risk before experiencing an incident. All other airports are encouraged to conduct an assessment or site visit (as defined in FAA Advisory Circular 150/5200-38) conducted by a Qualified Airport Wildlife Biologist (as defined in FAA Advisory Circular 150/5200-36). Part 139 certificated airports are currently required to ensure that an assessment is conducted consistent with 14 C.F.R. § 139.337.
- 3.4.2 The intent of a site visit is to provide an abbreviated analysis of an airport's wildlife hazards and to provide timely information that allows the airport to expedite the mitigation of these hazards. The FAA also recommends that airports conduct an assessment or site visit as soon as practicable in order to identify any immediate wildlife hazards and/or mitigation measures.
- 3.4.3 Non-certificated airports should submit the results of the site visit or assessment to the FAA for review. The FAA will review the submitted site visit or assessment and make a recommendation regarding the development of a wildlife management plan. A wildlife management plan can be developed based on a site visit and will be required if the non-certificated airport is going to request federal grants for the purpose of mitigating wildlife hazards.

3.5 Wildlife Hazard Management Plan.

- 3.5.1 The FAA will consider the results of the assessment, along with the aeronautical activity at the airport and the views of the airport operator and airport users, in determining whether a wildlife management plan is needed for certificated airports, or recommended for non-certificated airports.
- 3.5.2 If the FAA determines that a wildlife management plan is needed for a certificated airport, the airport operator must formulate a plan, using the assessment as its basis and submit to the FAA for approval. If the FAA recommends that a non-certificated airport develop a plan, either an assessment or a site visit can be used as the basis for the wildlife management plan. Airports should consult AC 150/5200-38, *Protocol for the Conduct and Review of Wildlife Hazard Site Visits, Wildlife Hazard Assessments, and Wildlife Hazard Management Plans*, for further information on preparation and implementation requirements for their wildlife management plan.

- 3.5.3 The goal of an airport's wildlife management plan is to minimize the risk to aviation safety, airport structures or equipment, or human health posed by populations of hazardous wildlife on and around the airport. For wildlife management plans to effectively reduce wildlife hazards on and near airports, accurate and consistent wildlife strike reporting is essential. Airports should consult AC 150/5200-32, *Reporting Wildlife Aircraft Strikes*, for further information on responsibilities and recommendations concerning wildlife strikes.
- 3.5.4 The wildlife management plan must identify hazardous wildlife attractants on or near the airport and the appropriate wildlife management techniques to minimize the wildlife hazard. It must also prioritize the management measures.

3.6 Local Coordination.

The FAA recommends establishing a Wildlife Hazards Working Group to facilitate the communication, cooperation, and coordination of the airport and its surrounding community necessary to ensure the effectiveness of the wildlife management plan. The cooperation of the airport community is essential to prevent incompatible development in the airport vicinity. Whether on or off the airport, input from all involved parties must be considered when a potentially hazardous wildlife attractant is being proposed. Based on available resources, airport operators should undertake public education activities with the local planning agencies because some activities in the vicinity of an airport, while harmless under normal conditions, can attract wildlife and present a danger to aircraft (see Paragraphs 4.5 to 4.8). For example, if public trails are planned near wetlands or in parks adjoining airport property, the public should know that feeding birds and other wildlife in the area may pose a risk to aircraft.

3.7 Operational Notifications of Wildlife Hazards.

- 3.7.1 Operational notifications include active correspondence addressing wildlife issues on or near an airport, notifications and alerts. If an existing land-use practice creates a wildlife hazard and the land-use practice or wildlife hazard cannot be immediately eliminated, airport operators must issue a Notice to Airmen (NOTAM) and encourage the land owner or manager to take steps to control the wildlife hazard and minimize further attraction. Permanent attractions that cannot be eliminated or mitigated may be noted in the Airport/Facility Directory. NOTAMS and Airport/Facility Directory notifications are not appropriate for short-term or immediate advisories that can be relayed via Pilot Reports, direct air traffic control voice communications, or temporary Automated Terminal Advisory System alerts. Care should be given to avoid the continual broadcast of general warnings for extended periods of time. General warnings such as "birds in the vicinity of the aerodrome" offer little timely information to aid pilots and eventually may be ignored if not updated.
- 3.7.2 The Automated Terminal Advisory System (ATIS) is a continuous broadcast of recorded aeronautical information for aerodromes and their immediate surroundings. ATIS broadcasts contain essential information, such as current weather information,

active runways, available approaches, wildlife hazards and any other information required by the pilots. They indicate significant (moderate or severe) wildlife activity, as reported by an approved agency that presents temporary hazards on the ATIS broadcast. Pilots take notice of available ATIS broadcasts before contacting the local control unit, which reduces the controllers' workload and relieves frequency congestion. The recording is updated in fixed intervals or when there is a significant change in the information. Although ATIS broadcasts involving wildlife should be timely and specific, pilots do not need to know species-specific information. General descriptive information detailing size and number of animals, locations and timing of occurrence provides useful, actionable information for pilots.

- 3.7.3 A pilot report (PIREP) is reported by a pilot to indicate encounters of hazardous weather (e.g., icing or turbulence) and hazardous wildlife. Pilot reports are short-lived warnings providing immediate information on pilot observations that are transmitted in real-time to air traffic control. Large animals near active surfaces, soaring vultures and raptors within approach/ departure corridors and waterfowl such as geese feeding in grassy areas next to runways are all examples of pilot reports generated by pilots.

3.8 Federal and State Depredation Permits.

The FAA recommends that airports maintain federal and state depredation permits to allow mitigation and/ or removal of hazardous species. All protected species require special permits for lethal mitigation or capture and relocation procedures. Similarly, endangered or threatened species mitigation also requires special permits. The FAA recommends that airports work closely with a Qualified Airport Wildlife Biologist during the U.S. Fish and Wildlife Service consultation and permitting process. The following Orders can help airports reduce risks from hazardous species by allowing private citizens to control hazardous species off airport properties without the need for a Federal depredation permit.

3.8.1 Standing Depredation Orders.

- 3.8.1.1 Federal law allows people to protect themselves and their property from damage caused by migratory birds. Provided no effort is made to kill or capture the birds, a depredation permit is not required to merely scare or herd depredating migratory birds other than endangered or threatened species or bald or golden eagles (50 CFR 21.41).
- 3.8.1.2 In addition, certain species of migratory birds may be mitigated without a federal permit under specific circumstances, many of which relate to agricultural situations. The following Standing Depredation Orders have applicability near airports:
- 50 CFR § 21.49- Control Order for Resident Canada Geese at Airports and Military Airfields.
 - 50 CFR § 21.50- Depredation Order for Resident Canada Geese Nests and Eggs.

- 50 CFR § 21.43 - Depredation Order for Blackbirds, Cowbirds, Crows, Grackles, and Magpies.
- 50 CFR § 21.54 - Control Order for Muscovy Ducks in the United States.
- 50 CFR § 21.55 - Control Order for Invasive Migratory Birds in Hawaii.

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CHAPTER 4. RECOMMENDED PROCEDURES FOR THE FAA, AIRPORT OPERATORS AND OTHER GOVERNMENT ENTITIES REGARDING OFF-AIRPORT ATTRACTANTS

4.1 FAA Notification and Review of Proposed Land-Use Practice Changes in the Vicinity of Public-Use Airports.

4.1.1 For projects that are located within 5 miles of the airport's aircraft operations area, the FAA may review development plans, proposed land-use changes, operational changes, major federal actions or wetland mitigation plans to determine if such changes increase risk to airport safety by attracting hazardous wildlife on and around airports. The FAA is not a permitting agency for land use modifications that occur off airport properties, therefore, such reviews are typically initiated by state or federal permitting agencies seeking FAA input on new or revised permits. Each of the land uses listed in Chapter 2 of this AC has the potential to pose a risk to airport operations when they are located within the separation distances provided in Paragraphs 1.2 through 1.4.

4.1.2 Off-site land use modifications near airports may include an assessment of risk for facilities and land-use changes and, if necessary, mitigation strategies that may reduce risk to an acceptable level. However, the FAA recognizes that individual facilities or land-use modifications may present a range of attractants to different species, resulting in varying levels of risk. Therefore, the FAA considers each proposal on a case-by-case basis.

4.1.3 The FAA analyzes each land-use modification or new facility proposal prior to its establishment or any significant planned changes to design or operations that may increase the risk level. As part of a review, the FAA considers several factors that include, but are not limited to:

1. Type of attractant;
2. Size of attractant;
3. Location/distance of attractant from airport;
4. Design (e.g., construction, material, mitigation techniques employed into design);
5. Operation (e.g., cleanliness, constancy/ volume of use, seasonality, time of day);
6. Monitoring protocols (e.g., frequency, documentation, evaluation, species identification and number thresholds that trigger actions of communication or mitigation, baseline wildlife data);
7. Mitigation protocols (e.g., responsibilities, methods, intensity, pre-determined objectives, documentation, evaluation); and
8. Communication protocols to airport and/ or air traffic control tower;

4.1.4 The review of these factors may result in FAA recommended additions or modifications to a conditional use permit that allows the permitting agency to track compliance with the permittee obligations. Such conditions placed within a permit

may involve a comprehensive outline and recognition of individuals responsible for monitoring, communication, and mitigation measures if certain action thresholds are met. Action thresholds are defined in this instance as those pre-determined parameters (e.g., number, location, behavior, time of day) of specific hazardous species that would trigger a mitigation response. Additionally, baseline data should be used to determine the effect, if any, on wildlife populations at the proposed off-site location and/or at the airport.

- 4.1.5 Baseline data may need to be collected, depending on the existence of useful data and timeline for site modification. If, after taking into account the factors above, FAA determines that a facility poses a significant risk to airport safety, FAA will object to its establishment or renewal.
- 4.1.6 For projects that are located within 5 miles of the airport's aircraft operations area, the FAA Airport District Office may review development plans, proposed land-use changes, operational changes, major federal actions or wetland mitigation plans to determine if such changes present potential wildlife hazards to aircraft operations. The FAA considers sensitive airport areas as those that lie under or next to approach or departure airspace. This brief examination should indicate if further investigation is warranted.
- 4.1.7 Where a Qualified Airport Wildlife Biologist has conducted a further study to evaluate a site's compatibility with airport operations, the FAA may use the study results to make a determination.

4.2 Waste Management Facilities.

4.2.1 Notification of New/Expanded Project Proposal.

- 4.2.1.1 49 U.S.C. § 44718(d), prohibits the construction or establishment of new municipal landfills within 6 miles of certain public-use airports, when both the airport and the landfill meet specific conditions. See Paragraph 2.2 of this guidance for a more detailed discussion of these restrictions.
- 4.2.1.2 The Environmental Protection Agency (EPA) requires any landfill operator proposing a new or expanded waste disposal operation within 5 miles of a runway end to notify the appropriate FAA Regional Airports Division Office and the airport operator of the proposal. See 40 CFR § 258, *Criteria for Municipal Solid Waste Landfills*, Section 258.10, *Airport Safety*. The EPA also requires owners or operators of new landfill units, or lateral expansions of existing MSWLF landfill units, that are located within 10,000 feet of any airport runway end used by turbine-powered aircraft, or within 5,000 feet of any airport runway end used only by piston-type aircraft, to demonstrate successfully that such units are not hazards to aircraft. (See 4.3.2 below.)

- 4.2.1.3 When new or expanded municipal landfills are being proposed near airports, landfill operators must notify the airport operator and the FAA of the proposal as early as possible pursuant to 40 CFR § 258.
- 4.2.1.4 The FAA discourages the development of waste disposal and other facilities, discussed in Chapter 2, located within the separation criteria specified in Paragraphs 1.2 through 1.4. To show that a waste-handling facility sited within the separations identified in Paragraphs 1.2 through 1.4 does not attract hazardous wildlife and does not threaten aviation, the developer must establish the facility will not handle putrescible material other than that as outlined in 2.2.4. The FAA recommends against any facility other than those outlined in 2.2.4 (enclosed transfer stations). The FAA will use this information to determine if the facility will be a hazard to aviation.

4.3 Other Land-Use Practice Changes.

- 4.3.1 The FAA encourages operators of public-use airports who become aware of proposed land use practice changes that may attract hazardous wildlife within 5 miles of their airports to notify their assigned Airport Certification Safety Inspector or Airports District Office Program Manager. The FAA also encourages proponents of such land use changes to notify the FAA as early in the planning process as possible. Advanced notice affords the FAA an opportunity (1) to evaluate the effect of a particular land-use change on aviation safety and (2) to support efforts by the airport sponsor to restrict the use of land next to or near the airport to uses that are compatible with the airport.
- 4.3.2 The airport operator, project proponent, or land-use operator may use FAA Form 7460-1, Notice of Proposed Construction or Alteration, or other suitable documents similar to FAA Form 7460-1 to notify the appropriate FAA Regional Airports Division Office. Project proponents can contact the appropriate FAA Regional Airports Division Office for assistance with the notification process prior to submitting Form 7460-1.
- 4.3.3 It is helpful if the notification includes a 15-minute quadrangle map of the area identifying the location of the proposed activity. The land-use operator or project proponent should also forward specific details of the proposed land-use change or operational change or expansion. In the case of solid waste landfills, the information should include the type of waste to be handled, how the waste will be processed, and final disposal methods.
- 4.3.4 Airports that have Received Federal Assistance.
Airports that have received Federal assistance are required under their grant assurances to take appropriate actions to restrict the use of land next to or near the airport to uses that are compatible with normal airport operations. See Grant Assurance 21. The FAA recommends that airport operators oppose off-airport land-use changes or practices, to

the extent practicable, within the separations identified in Paragraphs 1.2 through 1.4, which may attract hazardous wildlife. Failure to do so may lead to noncompliance with applicable grant assurances. The FAA will not approve the placement of airport development projects pertaining to aircraft movement in the vicinity of hazardous wildlife attractants without appropriate mitigating measures. Increasing the intensity of wildlife control efforts is not a substitute for preventing, eliminating or reducing a proposed wildlife hazard. Airport operators should identify hazardous wildlife attractants and any associated wildlife hazards during any planning process for airport development projects.

4.4 Coordination to Prevent Creation of New Off-Airport Hazardous Wildlife Attractants.

Airport operators should work with local and regional planning and zoning boards to be aware of proposed land-use changes, or modification of existing land uses, that could create hazardous wildlife attractants within the separations identified in Paragraphs 1.2 through 1.4. Pay particular attention to proposed land uses involving creation or expansion of wastewater treatment facilities, development of wetland mitigation sites, or development or expansion of dredge spoil containment areas. At the very least, it is recommended that airport operators are on the notification list of the local planning board or equivalent review entity for all communities located within 5 miles of the airport, so they will receive notification of any proposed project and have the opportunity to review it for attractiveness to hazardous wildlife. This may be accomplished through one or more of the following:

4.4.1 Site-specific Criteria.

The airport should establish site-specific criteria for assessment of land uses attractive to hazardous wildlife and locations that would be of concern based on wildlife strikes and on wildlife abundance and activity at the airport and in the local area. These criteria may be more selective, but should not be less restrictive than this guidance.

4.4.2 Outreach.

Airports should actively seek to provide educational information and/ or provide input regarding local development, natural resource modification or wildlife-related concerns that affect wildlife hazards and safe air travel.

4.4.2.1 External Outreach.

Airport operators and a Qualified Airport Wildlife Biologist should consider outreach to local planning and zoning organizations on land uses of concern or to local organizations responsible for natural resource management (including wildlife, wetlands, and parks.) Airports should also consider developing and distributing position letters and educational materials on airport-specific concerns regarding wildlife hazards, wildlife activity and attraction. Finally, airports should provide formal comments on local procedures, laws, ordinances, plans, and regulatory actions such as permits related to land uses of concern.

4.4.2.2 **Internal Outreach.**

Airports should consider developing and distributing position letters and educational materials on airport-specific concerns regarding species identification and mitigation procedures, wildlife hazards, wildlife activity and attraction to employees and personnel with access to the aircraft operations area.

4.5 **Coordination on Existing Off-Airport Hazardous Wildlife Attractants.**

Airports are encouraged to work with landowners and managers to cooperatively develop procedures to monitor and manage hazardous wildlife attraction. If applicable, these procedures may include:

1. Conducting a wildlife hazard site visit by a wildlife biologist meeting the qualification requirements of Advisory Circular 150/5200-36, *Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports*
2. Conducting regular, standardized, wildlife monitoring surveys;⁴
3. Establishing threshold numbers of wildlife which would trigger certain actions and/or communications;
4. Establishment of procedures to deter or remove hazardous wildlife.

4.6 **Prompt Remedial Action.**

For attractants found on and off airport property, and with landowner or manager cooperation, Part 139 certificated airports must take immediate action in accordance with their Airport Certification Manual and the requirements of Part 139.337, to alleviate wildlife hazards whenever they are detected. It is also recommended that non-certificated airports take immediate action to alleviate wildlife hazards whenever they are detected. In addition, airports should take prompt action to identify the source of attraction and cooperatively develop procedures to mitigate and monitor the attractant. **For Part 139 Certificated airports, immediate actions are required in accordance with 139.337(a).**

4.7 **FAA Assistance.**

If there is a question on the implementation of any of the guidance in this section, contact the FAA Regional Airports Division for assistance.

⁴ Recommended survey protocols can be found in AC 150/5200-38, *Protocol for the Conduct and Review of Wildlife Hazard Site Visits, Wildlife Hazard Assessments, and Wildlife Hazard Management Plans*, and DeVault, T.L., B.F. Blackwell, and J.L. Belant, eds. 2013. *Wildlife in Airport Environments: Preventing Animal–Aircraft Collisions through Science-Based Management*. Johns Hopkins University Press, Baltimore, MD, USA. 181 pp.

4.7.1 Airport Documentation Procedures.

Airports should document on-site and off-site wildlife attractants as part of their “Wildlife Hazard Management Plan Annual Review,” “Wildlife Hazard Management Plan Review Following a Triggering Event,” and the airport’s Continual Monitoring Annual Report (as outlined in FAA Advisory Circular 150/5200-38). As a best management practice, airports may choose to keep a log to track contacts from landowners or managers, permitting agencies, or other entities concerning land uses near the airport.

APPENDIX A. DEFINITIONS OF TERMS USED IN THIS ADVISORY CIRCULAR

A.1 General.

This appendix provides definitions of terms used throughout this AC.

1. **Air operations area.** Any area of an airport used or intended to be used for landing, takeoff, or surface maneuvering of aircraft. An air operations area includes such paved areas or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiways, or apron.
2. **Airport operator.** The operator (private or public) or sponsor of a public-use airport.
3. **Approach or departure airspace.** The airspace, within 5 statute miles of an airport, through which aircraft move during landing or takeoff.
4. **Bird balls.** High-density plastic floating balls that can be used to cover ponds and prevent birds from using the sites.
5. **Certificate holder.** The holder of an Airport Operating Certificate issued under 14 C.F.R. Part 139.
6. **Construct a new municipal landfill.** To begin to excavate, grade land, or raise structures to prepare a municipal solid waste landfill as permitted by the appropriate regulatory or permitting agency.
7. **Detention ponds.** Storm water management ponds that hold storm water for short periods of time, a few hours to a few days.
8. **Establish a new municipal landfill.** When the first load of putrescible waste is received on-site for placement in a prepared municipal solid waste landfill.
9. **Fly ash.** The fine, sand-like residue resulting from the complete incineration of an organic fuel source. Fly ash typically results from the combustion of coal or waste used to operate a power generating plant.
10. **General aviation aircraft.** Any civil aviation aircraft operating under 14 CFR Part 91.
11. **Hazardous wildlife.** Species of wildlife (birds, mammals, reptiles), including feral and domesticated animals, not under control that may pose a direct hazard to aviation (i.e., strike risk to aircraft) or an indirect hazard such as an attractant to other wildlife that pose a strike hazard or are causing structural damage to airport facilities (e.g., burrowing, nesting, perching).
12. **Municipal Landfill.** A publicly or privately owned discrete area of land or an excavation that receives household waste and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 CFR § 257.2. A municipal landfill may receive other types wastes, such as commercial solid waste, non-hazardous sludge, small-quantity generator waste, and

industrial solid waste, as defined under 40 CFR § 258.2. A municipal landfill can consist of either a stand-alone unit or several cells that receive household waste.

13. **New municipal landfill.** A municipal solid waste landfill that was established or constructed after April 5, 2001.
14. **Piston-powered aircraft.** Fixed-wing aircraft powered by piston engines.
15. **Piston-use airport.** Any airport that does not sell Jet-A fuel for fixed-wing turbine-powered aircraft, and primarily serves fixed-wing, piston-powered aircraft. Incidental use of the airport by turbine-powered, fixed-wing aircraft would not affect this designation. However, such aircraft should not be based at the airport.
16. **Public agency.** A state or political subdivision of a state, a tax-supported organization, or an Indian tribe or pueblo (49 U.S.C. § 47102(19)).
17. **Public airport.** An airport used or intended to be used for public purposes that is under the control of a public agency; and of which the area used or intended to be used for landing, taking off, or surface maneuvering of aircraft is publicly owned (49 U.S.C. § 47102(20)).
18. **Public-use airport.** An airport used or intended to be used for public purposes where the area used or intended to be used for landing, taking off, or surface maneuvering of aircraft may be under the control of a public agency or privately owned and used for public purposes (49 U.S.C. § 47102(21)).
19. **Putrescible waste.** Solid waste that contains organic matter capable of being decomposed by micro-organisms and of such a character and proportion as to be capable of attracting or providing food for birds (40 CFR §257.3-8).
20. **Putrescible-waste disposal operation.** Landfills, garbage dumps, underwater waste discharges, or similar facilities where activities include processing, burying, storing, or otherwise disposing of putrescible material, trash, and refuse.
21. **Retention ponds.** Storm water management ponds that hold water for more than 48 hours.
22. **Risk.** Risk is the relationship between the severity and probability of a threat. It is the product of hazard level and abundance in the critical airspace, and is thus defined as the probability of a damaging strike with a given species.
23. **Runway protection zone.** An area off the runway end to enhance the protection of people and property on the ground (see AC 150/5300-13). The dimensions of this zone vary with the airport design, aircraft, type of operation, and visibility minimum.
24. **Scheduled air carrier operation.** Any common carriage passenger-carrying operation for compensation or hire conducted by an air carrier or commercial operator for which the air carrier, commercial operator, or their representative offers in advance the departure location, departure time, and arrival location. It does not include any operation that is conducted as a supplemental operation under 14 CFR Part 119 or as a public charter operation under 14 CFR Part 380 (14 CFR § 119.3).

25. **Sewage sludge.** Any solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works. (40 CFR § 257.2)
26. **Sludge.** Any solid, semi-solid, or liquid waste generated from a municipal, commercial or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effect. (40 CFR § 257.2).
27. **Solid waste.** Any garbage, refuse, sludge, from a waste treatment plant, water supply treatment plant or air pollution control facility and other discarded material, including, solid liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage, or solid or dissolved material in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Clean Water Act, or source, special nuclear, or by product material as defined by the Atomic Energy Act of 1954.(40 CFR § 257.2).
28. **Turbine-powered aircraft.** Aircraft powered by turbine engines including turbojets and turboprops but excluding turbo-shaft rotary-wing aircraft.
29. **Turbine-use airport.** Any airport that sells fuel for fixed-wing turbine-powered aircraft.
30. **Wastewater treatment facility.** Any devices and/or systems used to store, treat, recycle, or reclaim municipal sewage or liquid industrial wastes, including publicly owned treatment works, as defined by Section 212 of the Clean Water Act. This definition includes any pretreatment involving the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a publicly owned treatment system. (See 40 CFR § 403.3 (q), (r), & (s)).
31. **Wildlife.** Any wild animal, including without limitation any wild mammal, bird, reptile, fish, amphibian, mollusk, crustacean, arthropod, coelenterate, or other invertebrate, including any part, product, egg, or offspring thereof. 50 CFR § 10.12. As used in this AC, wildlife includes feral animals and domestic animals out of the control of their owners (14 CFR Part 139, Certification of Airports).
32. **Wildlife attractants.** Any human-made structure, land-use practice, or human-made or natural geographic feature that can attract or sustain hazardous wildlife within the landing or departure airspace or the airport's aircraft operations area. These attractants can include architectural features, landscaping, waste disposal sites, wastewater treatment facilities, agricultural or aquaculture activities, surface mining, or wetlands.

33. **Wildlife hazard.** A potential for a damaging aircraft collision with wildlife on or near an airport.
34. **Wildlife strike.** A wildlife strike is deemed to have occurred when:
- a. A strike between wildlife and aircraft has been witnessed;
 - b. Evidence or damage from a strike has been identified on an aircraft;
 - c. Bird or other wildlife remains, whether in whole or in part, are found:
 - i. Within 250 feet of a runway centerline or within 1,000 feet of a runway end unless another reason for the animal's death is identified or suspected, unless another reason for the animal's death is identified or;
 - ii. On a taxiway or anywhere else on or off airport that there is reason to believe was the result of a strike with an aircraft.
 - d. The presence of birds or other wildlife on or off the airport had a significant negative effect on a flight (i.e., aborted takeoff, aborted landing, high-speed emergency stop, aircraft left pavement area to avoid collision with animal).

APPENDIX B. ADDITIONAL RESOURCES

B.1 Regulations

- 14 CFR § 139.337, *Wildlife Hazard Management*
- 40 CFR § 258, *Criteria for Municipal Solid Waste Landfills*

B.2 Advisory Circulars

- AC 150/5200-32, *Reporting Wildlife Aircraft Strikes*
- AC 150/5200-33, *Hazard Wildlife Attractants on or Near Airports*
- AC 150/5200-34, *Construction or Establishment of New Landfills Near Public Airports*
- AC 150/5200-36, *Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculum for Airport Personnel Involved in Controlling Wildlife Hazards on Airports*
- AC 150/5200-38, *Protocol for the Conduct and Review of Wildlife Hazard Site Visits, Wildlife Hazard Assessments, and Wildlife Hazard Management Plans*
- AC 150/5220-25, *Airport Avian Radar Systems*
- AC 150/5210-24, *Airport Foreign Object Debris (FOD) Management*

B.3 Certification Alerts

- Certalert No. 97-09, *Wildlife Hazard Management Plan Outline* (11/17/1997)
- Certalert No. 98-05, *Grasses Attractive To Hazardous Wildlife* (9/21/1998)
- Certalert No. 06-07, *Requests by State Wildlife Agencies to Facilitate and Encourage Habitat for State Listed Threatened and Endangered Species and Species of Special Concern on Airports* (11/21/2006)
- Certalert No. 13-01, *Federal and State Depredation Permit Assistance* (1/30/2013)
- Certalert No. 14-01, *Seasonal Mitigation of Hazardous Species at Airports: Attention to Snowy Owls* (2/26/2014)
- Certalert No. 16-03, *Recommended Wildlife Exclusion Fencing* (8/2016)

B.4 **Airport Cooperative Research Program Reports**

These, and other wildlife / aviation reports, are available from the Transportation Research Board of the National Academies (TRB) at

<http://www.trb.org/Publications/Publications.aspx>.

- ACRP Research Report 198: Wetland Mitigation, Volume 2, A Guidebook for Airports (2019)
- ACRP Synthesis 92: Airport Waste Management and Recycling Practices (2018)
- ACRP Research Report 174: Guidebook and Primer (2018)
- ACRP Report 122: Innovative Airport Responses to Threatened / Endangered Species (2015)
- ACRP Report 125: Balancing Airport Stormwater and Bird Hazard Management (2015)
- ACRP Report 145: Applying an SMS Approach to Wildlife Hazard Management (2015)
- ACRP Synthesis 39 Report: Airport Wildlife Population Management (2013)
- ACRP Synthesis 52 Report: Habitat Management to Deter Wildlife at Airports (2014)
- ACRP Synthesis 23 Report: Bird Harassment, Repellent, and Deterrent Techniques for Use on and Near Airports (2011)
- ACRP Report 32: Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports (2010)

B.5 **Manuals**

- Wildlife Hazard Management at Airports - A Manual for Airport Personnel (2005)

B.6 **Orders**

- 50 CFR § 21.49, Control Order for Resident Canada Geese at Airports and Military Airfields
- 50 CFR § 21.50, Depredation Order for Resident Canada Geese Nests and Eggs
- 50 CFR § 21.43, Depredation Order for Blackbirds, Cowbirds, Crows, Grackles, and Magpies
- 50 CFR § 21.54, Control Order for Muscovy Ducks in the United States
- 50 CFR § 21.55, Control Order for Invasive Migratory Birds in Hawaii

Advisory Circular Feedback

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Safety and Operations Division, Federal Aviation Administration ATTN: AAS-300, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of AAS-300 at (202) 267-5257.

Subject: AC 150/5200-33C

Date: _____

Please check all appropriate line items:

- ☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.
- ☐ Recommend paragraph _____ on page _____ be changed as follows:
- _____
- _____
- _____
- ☐ In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)
- _____
- _____
- _____
- ☐ Other comments:
- _____
- _____
- _____
- ☐ I would like to discuss the above. Please contact me at (phone number, email address).

Submitted by: _____

Date: _____

Wasinger, Stacy - CD

From: Peggy Davenport <pdavenp@e-470.com>
Sent: Wednesday, August 26, 2020 7:04 AM
To: Wasinger, Stacy - CD
Subject: Z-772-20-20, Z-953-D-472-20 Legato Filing 1 NEC 88th Ave -Tower Rd DUE 09.14.20 swasinger

Thank you for allowing the E-470 Public Highway Authority the opportunity to review and respond to the Z-772-20-20, Z-953-D-472-20 Legato Filing 1 NEC 88th Ave -Tower Rd DUE 09.14.20 swasinger.

For any question concerning the comments listed below please contact the reviewing engineer Chuck Weiss at 303.537.3420 or cweiss@E-470.com.

At this time E-470 Public Highway Authority has No Comments

Please advise if we can be of further assistance.

Thank you

Peggy Davenport
Administrative Assistant/Document Control
E-470 Public Highway Authority
22470 E Stephen D Hogan Parkway
O: 303.537.3727
C: 720.765.1276
pdavenp@E-470.com
Please note: In the office M-W working remotely TH-F
Please allow additional time for responses.
Contact my mobile if you need to speak to me directly.

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