June 03, 2025
AVO 37449.004

Ms. Ramie Hammonds
Development Services Director/Building Official
City of Sanger
201 Bolivar Street
P.O. Box 1729
Sanger, Texas 76266

**Re: Lois Road Estates Filing No. 1 Final Plat and No. 1 & 2 Construction Plans - Review #2**

Dear Ms. Hammonds,

Halff was requested by the City of Sanger to review the Final Plat Filing No. 1 and Filings No. 1 & 2 Construction Plans for Lois Road Estates. The submittal was prepared by Atwell, LLC. and was received May 19, 2025.

We have completed our review and offer the following comments:

Please address comments on attached markups and provide annotated responses on markups. Please note, not all comments are written on letter since some comments are easier to show and explain on the markups. Please annotate markup with responses. Please address all Hydrology and Hydraulics comments provided in a separate letter.

**Final Plat Comments**

1. Clearly indicate the Point of Beginning on the plat per Ordinance § 10.104(d)(10)(D)
   Response: The Point of Beginning has been shown on the plat per the ordinance.
   2nd Review: Addressed
2. Show centerline of existing street. Dimensions from centerline to edges of existing and proposed right-of-way on both sides of the centerline per §10.104(d)(10)(H)(iv)
   Response: The plat has been revised to show requested centerlines and dimensions.
   2nd Review: Addressed
3. Show the City limit lines per ordinance § 10.104(d)(10)(Q).
   Response: The City limits are now shown on the plat.
   2nd Review: Addressed
4. Please clearly label all the tracts referred to in the final plat.
   Response: Tract labels have been clearly labeled on the plat.
   2nd Review: Addressed
5. Provide 3" x 3" recording box at the lower right-hand corner per §10.104(d)(10)(N)
   Response: This has been implemented and shown on the cover sheet (page 1).
   2nd Review: Provide Recording Box for all sheets

6. Provide easement for utilities through Tract C
   Response: An easement has been added to Tract C.
   2nd Review: Please provide easements for Utilities in Tract C
7. 2nd Review: Provide ROW acreage in title block on all sheets per §10.104(d)(10)(O)(vi)
8. 2nd Review: Please update block numbers to ensure consistency with plans and overall utility layouts.
9. 2nd Review: Please show pond A layout and easement as part of Filing 1 plat
10. 2nd Review: Review and update drainage easements on Filing 1 plat to match updated grading sheets.

**General Notes and Street Sections Comments**

1. The geotechnical report previously provided does not state pavement thickness, bar sizes and concrete strength. Please confirm that Ordinance § 10.106(b) Street Paving - Concrete requirements are met
   Response: The Client is working with the geotechnical engineer to provide pavement design. It will be provided as soon as available.
   2nd Review: Understood. Please provide and update pavement sections per Geotechnical Report once completed.

**Overall Utility Layout Comments**

1. Provide interim conditions until future phases are developed for Storm Drain outfall on Bexar St
   Response: The storm sewer system has been revised to extend to pond "A" in the interim condition.
   2nd Review: Addressed
2. Dedicate utility easements for storm drain and sanitary sewer utilities through Tract C
   Response: Utilities have been added. These are now labeled on sheet 8 and has been added to the plat.
   2nd Review: Easement not shown on final plat
3. Verify that there is an existing easement for outfalls through Railroad ROW
   Response: This culvert is existing and does not have an easement.
   2nd Review: Addressed
4. Please ensure all fire hydrants within the subdivision do not exceed a maximum of 500 ft along the fire apparatus access roadways/fire lane per § 5.701(b)
   Response: Fire hydrant locations have been revised to meet this requirement.
   2nd Review: Addressed
5. Show sewer and water services to individual lots
   Response: Individual services have been added to each lot.
   2nd Review: Please avoid keeping water and sewer services on top of one another

**Grading Plan Comments**

1. Show grayed out storm drain layout in grading plans
   Response: The storm has been turned on and grayed out on the grading plans.
   2nd Review: Addressed
2. Provide more proposed contours labels for clarity
   Response: Additional contour labels have been added per comment.
   2nd Review: Addressed
3. Surface runoff from residential lots shall cross no more than one additional lot before being directed toward the street or a dedicated drainage system. **When the flow reaches the second lot, side lot swales shall be in place to direct the flows to the street or to a dedicated city drainage system within an easement in the rear yard.** Furthermore, no more than one lot may drain to a second lot before the flow is directed to a street or to a dedicated city drainage system. Where lot to lot drainage occurs, the lot lines shall be aligned, and a dedicated private drainage easement shall be provided per Ordinance § 10.106(d)(12) Grading and Drainage. Please address grading per Ordinance § 10.106(d)(12). Current grading sheet flows water through more than one lot and per ordinance § 10.106(d)(12), **drainage easements are only accepted in the rear yard not the side swales**. Ensure that rear yards grades are limited to a maximum of 4:1 to allow use of lawn mowers and avoid sending flows offsite from the development. Incorporate retaining walls to contain flows on individual lots and direct flows to storm systems through side swales.
   Response: The current lot grading meets the intent of this rule as the equivalent of only one (1) Type "B" lot will drain through the adjoining lot's side lot swale.
   Response (rev 5/29/25): Lot grading has been revised in the areas where Type B lots abut Type A lots. At the direction of the City, swales have been added at the back of the upstream lots to direct drainage to the lot lines of the downstream lots.
   2nd Review: Sheet flow runoff from lots has been addressed. Please ensure that slopes are limited to a maximum slope of 4:1 on lots adjacent to Tract C.
4. Clarify intention for steep side lot grades, is the intent to construct exposed foundations?
   Response: The grading in this area has been revised to be limited to 4:1 max.
   2nd Review: Addressed
5. Provide cross sections for channels in the interim conditions showing 1ft freeboard and ensure 0.5% slope through channel per § 10.106(d)(9) Channels.
   Response: Cross sections for the channel has been added per your request.
   2nd Review: Addressed
6. 2nd Review: Please provide legend for retaining walls and clarify elevations shown.
7. 2nd Review: Please ensure that rear yards of lots south of Bastrop Street drain effectively.

**Paving Plan and Profile Comments**

1. Label all curb inlets and provide flow arrows depicting proposed drainage direction on paving plans

Response: Labels for curb inlets have been added per your request.
2nd Review: Please label inlets on Wood Ln

2. Please revise and update K-value and curve lengths for all vertical curves to meet the requirements of Table 4-12: Minimum K and L as a Function of A of the TxDOT Roadway Design Manual
   Response: K-Values have been updated per your request.
   2nd Review: Please update K-value and length of curve per Table 4-12 on STA 11+81.03 Lois Road
3. Please provide passing spaces that are 60 inches by 60 inches every 200ft for 4 ft wide sidewalks to meet ADA requirements
   Response: These sidewalks are within public right-of-way where ADA guidelines do not apply. PROWAG are the applicable standards in this scenario, and therefore shall be adhered to. The requested 60"x60" passing zones are not required under PROWAG.
   2nd Review: Please refer to R302.3 of PROWAG that states, "Where the clear width of *pedestrian access routes* is less than 60 inches (1525 mm), passing spaces shall be provided at intervals of 200 feet (61 m) maximum. Passing spaces shall be 60 inches (1525 mm) minimum by 60 inches (1525 mm) minimum. Passing spaces and *pedestrian access routes* are permitted to overlap."
4. show valley gutters if any on the knuckles and provide elevations to confirm drainage
   Response: Valley gutters are not needed as drainage flows to and around the curb and gutter. Please refer to the profiles below for curb flowline grades and elevations.
   2nd Review: Addressed
5. Please label slopes before and after match lines
   Response: The requested slope labels have been added.
   2nd Review: Addressed

**Sanitary Sewer Plan and Profile Comments**

1. Ensure that horizontal separation between water and wastewater is atleast 9 ft in all directions to meet TCEQ minimum horizontal separation requirements on Wood Lane
   Response: Horizontal separations have been revised to meet the 9' minimum.
   2nd Review: Addressed
2. In those cases where horizontal curvature must be utilized to serve a particular area, the minimum radius of curvature shall be one hundred feet (100') per § 10.106(f)(1)(D)(i). Please label all curved sewer pipes and ensure they meet the minimum requirements
   Response: The curved sewer pipe has been labeled with a radius of at or greater than 100'.
   2nd Review: Addressed
3. Provide easements for sanitary sewer where necessary as shown in the markups
   Response: Easements have been added as requested.
   2nd Review: Please refer to plat comments

4. Show crossings with other utilities for example storm drains and water lines and maintain 2 ft vertical clearances
   Response: Vertical clearances have been added and updated.
   2nd Review: Please refer to plan markups
5. Please show sewer services to individual lots
   Response: Sewer services have been added to individual lots.
   2nd Review: Please refer to overall utility layout comments
6. 2nd Review: Why is a 12" PVC feeding into an 8" PVC and then a 15" PVC on the intersection of Wood Ln and Warton St? Please upsize 8" to either 12" or 15" PVC on Run 5

**Drainage Area and Hydraulic Computations Comments**

1. Provide existing and proposed drainage area maps
   Response: Existing and proposed drainage maps have been added as requested.
   2nd Review: Please update proposed drainage area map per updated grading plans and provide drainage areas at a scale smaller than 750 for easier visibility
2. Turn on storm drain layout on proposed drainage area maps along with proposed grading to verify proposed drainage areas
   Response: The storm layout is shown on the drainage maps as requested.
   2nd Review: Addressed
3. Tabulate results of inlet calculations and hydraulic computations for proposed storm systems and provide depth of flow at inlet openings column on all inlet calculations
   Response: Hydraulic calcs have been updated as requested.
   2nd Review: Provide Hydraulic calculations for laterals and ensure Maximum velocity in the pipe shall not exceed 12 feet per second per § 10.106(d)(6)(B)(ii)
4. 2nd Review: Please provide legend to define parameters and update C factors per §10.106(d)(2)(D)(i)
5. 2nd Review: Ensure numbers in existing drainage area match with existing drainage area calculations table

**Storm Sewer Plan and Profile Comments**

1. Provide flow boxes showing flows, pipe capacity, friction slope, velocity and velocity head for each pipe segment. Specify partial flow segments as well
   Response: Flow boxes have been added as requested.
   2nd Review: Provide flow table for Run 3-2
2. Provide flow lines every 50ft on the storm profiles
   Response: Flow lines have been added at 50' intervals as requested.
   2nd Review: Repeat Comment. Provide flow lines every 50ft on the storm profiles
3. Provide profiles for all storm laterals and ensure that flow boxes are included on the profiles and HGL shall be not less than 1ft from the existing surface

Response: Storm laterals have been added to the plan set as requested.
2nd Review: Addressed

4. The minimum velocities in conduit shall be 2.5 feet per second and the Maximum velocity in the pipe shall not exceed 12 feet per second in all storm drain pipe segments per §10.106(d)(6)(B)
   Response: Velocities have been shown and meet minimum and maximum criteria.
   2nd Review: Please review and revise pipe segments that do not meet the velocity requirements. Requirements can be achieved through combining drainage areas or increasing slopes as needed.
5. show outfall structures along with energy dissipators in the storm profiles
   Response: Energy dissipation calculations have been added to the set as requested.
   2nd Review: Addressed
6. show storm laterals in profile view clearly
   Response: Storm laterals have been added to the plan set as requested.
   2nd Review: Please show the laterals in the profile view per markup comments
7. Please show and account for minor losses in the HGL through system
   Response: HGLs have been updated to account for minor losses.
   2nd Review: Minor losses are supposed to happen at the bends, junction boxes, wyes and inlets as opposed to in the middle of the pipe segments. Please revise HGL's and hydraulic calculations accordingly
8. Please avoid using curb inlets as manholes. Revise storm alignments and eliminate curb inlets from main lines
   Response: Storm alignments have been updated to remove inlets as junctions as requested.
   2nd Review: Addressed
9. Please verify basis of all starting WSEL's and ensure consistency with pond WSEL's. Recommend using the higher of either pond WSEL or top of pipe for hydraulic calculations
   Response: Hydraulic calculations have been updated as requested.
   2nd Review: Addressed
10. Please show headwater and tail water for culvert across Lois Road and provide energy dissipators at outfall
    Response: Headwater has been shown. We are working to obtain the tailwater depth in the receiving ditch.
    2nd Review: Understood. Please provide tailwater depth in the receiving ditch when information is available.
11. Show all water and sewer line crossings with storm drain and ensure 2ft minimum vertical clearance is observed
    Response: Crossings have been added and shown as requested.
    2nd Review: Please review all crossings per markups and show utility crossings for all laterals
12. Please check all junction box configurations and ensure that proposed pipes will fit in proposed junction boxes depending on alignments.
    Response: Junction boxes have been updated to ensure pipes will fit.

2nd Review: 54" storm can not fit into 48" box on Run 3-2. Please update accordingly

13. 2nd Review: The hydraulic grade line shall in no case be closer to the surface of the ground or street than one (1) foot per § 10.106(d)(6)(D)(ii)
14. 2nd Review: Please provide storm drain pipe sizes and grade labels
15. 2nd Review: Where does the 24" lateral close to the intersection of Lois Rd and Jack St flow to if its flow line is lower than that of the junction box that eventually outfalls into the pond?
16. 2nd Review: Minimum sizes of laterals shall be 18 inches for use with 5-foot inlets, 21-inch laterals with 10-foot, 15 foot, and drop inlets and 24-inch laterals for 20-foot inlets per § 10.106(d)(5)(C)
17. 2nd Review: Provide HGL's for all laterals to confirm there is no surcharge at inlets
18. 2nd Review: Provide flow boxes for all laterals

**Pond Comments**

1. Provide an access ramp or a 10ft recovery ledge at 2% slope around all ponds to facilitate maintenance requirements stipulated in § 10.106(d)(10)(H)
   Response: Access ramps have been added as requested.
   2nd Review: Addressed
2. Provide Pond cross sections and ensure 2ft sediment storage and 1 ft freeboard requirements are met
   Response: Pond cross sections have been added as requested.
   2nd Review: WSE elevation for pond A IS 696.49ft and top of pond is 699 which translates to 2.5 ft difference, please confirm that the 3ft required for both sediment storage and freeboard are met.

If you have any questions or need additional information, please do not hesitate to call me at (817) 764-7498.

Sincerely,

Samson Lotigo, PE
**HALFF**
Firm No. 0312
Attachments: Final Plat and Construction Plan markups

# LOIS ROAD ESTATES SUBDIVISION PLAT FILING NO. 1

**BEING 38.769 ACRES OF LAND (1,688,778 SQUARE FEET)**
**OUT OF THE REUBEN BEBEE SURVEY, ABSTRACT NUMBER 29**
**IN THE CITY OF SANGER, DENTON COUNTY, TEXAS**

## CERTIFICATION OF OWNERSHIP:

STATE OF TEXAS
COUNTY OF DENTON

I (WE), THE UNDERSIGNED, OWNER(S) OF THE LAND SHOWN ON THIS PLAT WITHIN THE AREA DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

Verify

## LEGAL DESCRIPTION:

BEING A 48.189 ACRE TRACT OF LAND (2,099,130 SQUARE FEET), SITUATED IN THE REUBEN BEBEE SURVEY, ABSTRACT NUMBER 29, SITUATED IN THE CITY OF SANGER, DENTON COUNTY, TEXAS, AND BEING A PORTION OF THAT CERTAIN 202.49 ACRE TRACT OF LAND DESCRIBED IN A GENERAL WARRANTY DEED CONVEYED TO JST HOLDINGS 04 BUSINESS, LLC, A NEW MEXICO LIMITED LIABILITY COMPANY, RECORDED IN DOCUMENT NUMBER 2024–74411 OF THE OFFICIAL RECORDS OF DENTON COUNTY, TEXAS; SAID 48.189 ACRE TRACT BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A MAG NAIL FOUND, BEING THE NORTHWESTERN CORNER OF SAID JST HOLDINGS 202.49 ACRE TRACT, BEING ON OR NEAR THE CENTERLINE OF LOIS ROAD EAST AND ON THE EASTERN RIGHT–OF–WAY LINE OF THE GULF COAST AND SANTA FE RAILROAD, (100' RIGHT–OF–WAY WIDTH), FOR THE NORTHWESTERN CORNER AND POINT OF BEGINNING OF THE HEREIN DESCRIBED TRACT;

THENCE, ALONG THE NORTHERN LINE OF SAID JST HOLDINGS 202.49 ACRE TRACT, DEPARTING THE EASTERN RIGHT–OF–WAY LINE OF SAID GULF COAST AND SANTA FE RAILROAD, AND ALONG OR NEAR THE CENTERLINE OF SAID LOIS ROAD EAST, S89°32'19"E, A DISTANCE OF 689.60 FEET TO A MAG NAIL SET, FOR A NORTHERN ANGLE CORNER OF THE HEREIN DESCRIBED TRACT;

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THENCE, CONTINUING ALONG SAID NORTHERN LINE OF JST HOLDINGS 202.49 ACRE TRACT AND ALONG OR NEAR SAID CENTERLINE OF LOIS ROAD EAST, S89°22'38"E, A DISTANCE OF 1420.42 FEET TO MAG NAIL SET, BEING THE SOUTHWESTERN CORNER OF A CALLED 1.798 ACRE TRACT DESCRIBED IN A DEED CONVEYED TO JODY ROBERT, RECORDED IN DOCUMENT NUMBER 2006–17710 OF THE OFFICIAL RECORDS OF DENTON COUNTY, TEXAS, AND ALSO BEING IN THE WESTERN RIGHT–OF–WAY LINE OF MELTON ROAD (30' RIGHT–OF–WAY WIDTH);

THENCE, CONTINUING ALONG SAID NORTHERN LINE OF JST HOLDINGS 202.49 ACRE TRACT AND ALONG OR NEAR SAID CENTERLINE OF LOIS ROAD, S89°07'42"E, A DISTANCE OF 453.34 FEET TO A MAG NAIL SET, BEING THE NORTHEASTERN CORNER OF SAID JST HOLDINGS 202.49 ACRE TRACT, AND ALSO BEING THE NORTHWESTERN CORNER OF A CALLED 15.00 ACRE TRACT DESCRIBED IN A DEED CONVEYED TO MILDRED E. HUNT, RECORDED IN DOCUMENT NUMBER 2019–5766 OF THE OFFICIAL RECORDS OF DENTON COUNTY, TEXAS,FOR THE NORTHEASTERN CORNER OF THE HEREIN DESCRIBED TRACT;

THENCE, ALONG THE EASTERN LINE OF SAID JST HOLDINGS 202.49 ACRE TRACT, AND ALSO BEING THE WESTERN LINE OF SAID HUNT 15.00 ACRE TRACT, S01°11'12"W, A DISTANCE OF 40.00 FEET TO A CALCULATED POINT, FOR A NORTHEASTERN CORNER OF THE HEREIN DESCRIBED TRACT;

THENCE, ALONG THE SOUTHERN RIGHT–OF–WAY LINE OF SAID LOIS ROAD, THE FOLLOWING TWO (2) COURSES AND DISTANCES:

verify

1. N89°07'42"W, A DISTANCE OF 453.04 FEET TO A CALCULATED POINT;
2. N89°22'38"W, A DISTANCE OF 81.66 FEET TO A CALCULATED POINT;

THENCE, CROSSING THROUGH SAID JST HOLDINGS 202.49 ACRE TRACT, THE FOLLOWING THIRTY–FIVE (33) COURSES AND DISTANCES:

1. S45°54'17"W, A DISTANCE OF 20.33 FEET TO A CALCULATED POINT;
2. S01°11'12"W, A DISTANCE OF 701.61 FEET TO A CALCULATED POINT;
3. S43°48'48"E, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
4. S01°11'12"W, A DISTANCE OF 50.00 FEET TO A CALCULATED POINT;
5. N88°48'48"W, A DISTANCE OF 736.00 FEET TO A CALCULATED POINT;
6. S46°11'12"W, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
7. S01°11'12"W, A DISTANCE OF 12.00 FEET TO A CALCULATED POINT;
8. S88°48'48"E, A DISTANCE OF 120.00 FEET TO A CALCULATED POINT;
9. S01°11'12"W, A DISTANCE OF 302.71 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE RIGHT;
10. WITH SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 1045.00 FEET, AN ARC LENGTH OF 198.49 FEET, A CENTRAL ANGLE OF 10°52'58", A CHORD BEARING AND DISTANCE OF S06°37'41"W, 198.19 FEET TO A CALCULATED POINT;
11. N88°48'48"W, A DISTANCE OF 122.49 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE RIGHT;
12. WITH SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 925.00 FEET, AN ARC LENGTH OF 252.99 FEET, A CENTRAL ANGLE OF 15°40'15", A CHORD BEARING AND DISTANCE OF S21°20'15"W, 252.21 FEET TO A CALCULATED POINT;
13. S29°10'22"W, A DISTANCE OF 51.40 FEET TO A CALCULATED POINT;
14. S15°49'38"E, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
15. S29°10'22"W, A DISTANCE OF 50.00 FEET TO A CALCULATED POINT, FOR THE SOUTHERNMOST CORNER OF THE HEREIN DESCRIBED TRACT;
16. N60°49'38"W, A DISTANCE OF 290.00 FEET TO A CALCULATED POINT;
17. S74°10'22"W, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
18. N61°04'15"W, A DISTANCE OF 50.00 FEET TO A CALCULATED POINT;
19. N16°30'14"W, A DISTANCE OF 18.60 FEET TO A CALCULATED POINT;
20. N29°50'40"E, A DISTANCE OF 50.03 FEET TO A CALCULATED POINT;
21. N73°33'27"E, A DISTANCE OF 18.17 FEET TO A CALCULATED POINT;
22. N29°19'49", A DISTANCE OF 4.26 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE LEFT;
23. WITH SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 775.00 FEET, AN ARC LENGTH OF 2.93 FEET, A CENTRAL ANGLE OF 00°12'59", A CHORD BEARING AND DISTANCE OF N29°03'52"E, 2.93 FEET TO A CALCULATED POINT,
24. WITH SAID CURVE TO THE LEFT, HAVING A RADIUS OF 845.00 FEET, AN ARC LENGTH OF 130.34 FEET, A CENTRAL ANGLE OF 08°50'16", A CHORD BEARING AND DISTANCE OF N65°35'08"W, 130.21 FEET TO A CALCULATED POINT;
25. N15°32'17"E, A DISTANCE OF 241.45 FEET TO A CALCULATED POINT;
26. N05°43'32"E, A DISTANCE OF 281.10 FEET TO A CALCULATED POINT;
27. N00°40'28"E, A DISTANCE OF 50.96 FEET TO A CALCULATED POINT;
28. N88°48'48"W, A DISTANCE OF 127.72 FEET TO A CALCULATED POINT;
29. N01°11'12"E, A DISTANCE OF 12.00 FEET TO A CALCULATED POINT;
30. N88°48'48"W, A DISTANCE OF 50.00 FEET TO A CALCULATED POINT;
31. N43°48'48"W, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
32. N88°48'48"W, A DISTANCE OF 34.56 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE LEFT;
33. WITH SAID CURVE TO THE LEFT, HAVING A RADIUS OF 125.00 FEET, AN ARC LENGTH OF 9.78 FEET, A CENTRAL ANGLE OF 04°29'03", A CHORD BEARING AND DISTANCE OF S88°56'41"W, 9.78 FEET TO A CALCULATED POINT;
34. S86°42'09"W, A DISTANCE OF 94.19 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE RIGHT;
35. WITH SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 175.00 FEET, AN ARC LENGTH OF 40.66 FEET, A CENTRAL ANGLE OF 13°18'42", A CHORD BEARING AND DISTANCE OF N86°38'30"W, 40.57 FEET TO A CALCULATED POINT;
36. N79°59'09"W, A DISTANCE OF 394.52 FEET TO A CALCULATED POINT;
37. N10°00'51"E, A DISTANCE OF 75.00 FEET TO A CALCULATED POINT;
38. N79°59'09"W, A DISTANCE OF 165.00 FEET TO A CALCULATED POINT, BEING IN THE WESTERN LINE OF SAID JST HOLDINGS 202.49 ACRE TRACT, AND ALSO BEING IN THE EASTERN LINE OF SAID SANTA FE RAILROAD;

THENCE, ALONG SAID EASTERN LINE OF JST HOLDINGS 202.49 ACRE TRACT AND ALONG SAID EASTERN LINE OF SANTA FE RAILROAD, N10°00'51"E, A DISTANCE OF 651.10 FEET TO THE POINT OF BEGINNING.

CONTAINING 48.189 ACRES (2,099,130 SQUARE FEET), MORE OR LESS.

SAVE & EXCEPT:

BEING A 9.42 ACRE TRACT (410,335 SQUARE FEET) OF LAND, SITUATED IN THE REUBEN BEBEE SURVEY, ABSTRACT NUMBER 29, SITUATED IN THE CITY OF SANGER, DENTON COUNTY, TEXAS, AND BEING A PORTION OF THAT CERTAIN 202.49 ACRE TRACT OF LAND DESCRIBED IN A GENERAL WARRANTY DEED CONVEYED TO JST HOLDINGS 04 BUSINESS, LLC, A NEW MEXICO LIMITED LIABILITY COMPANY, RECORDED IN DOCUMENT NUMBER 2024–74411 OF THE OFFICIAL RECORDS OF DENTON COUNTY, TEXAS; SAID 48.189 ACRE TRACT BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A 1/2 INCH IRON ROD WITH CAP STAMPED "ATWELL LLC" SET IN CONCRETE, BEING IN THE NORTHERN LINE OF SAID 202.49 ACRE TRACT AND ALSO BEING IN THE SOUTHERN RIGHT–OF–WAY LINE OF LOIS ROAD EAST, FOR THE NORTHWESTERN CORNER AND POINT OF BEGINNING OF THE HEREIN DESCRIBED TRACT;

THENCE, CONTINUING ALONG SAID NORTHERN LINE OF 202.49 ACRE TRACT AND SAID SOUTHERN RIGHT–OF–WAY LINE OF LOIS ROAD EAST, S89°22'38"E, A DISTANCE OF 551.33 FEET TO A CALCULATED POINT, FOR THE NORTHEASTERN CORNER OF THE HEREIN DESCRIBED TRACT;

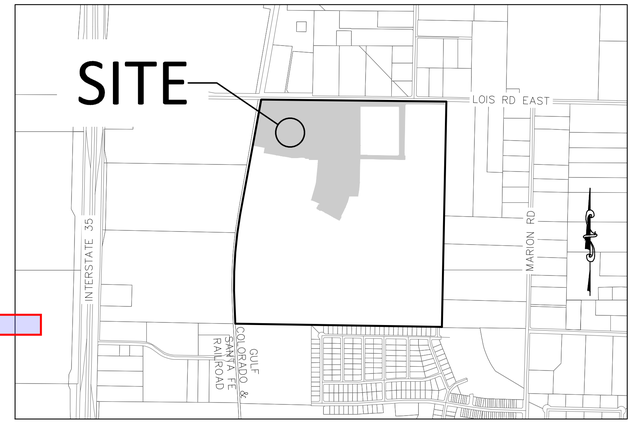
THENCE, CROSSING THROUGH SAID 202.49 ACRE TRACT, THE FOLLOWING FIVE (5) COURSES AND DISTANCES:

1. S44°05'43"E, A DISTANCE OF 20.68 FEET TO A CALCULATED POINT;
2. S01°11'12"W, A DISTANCE OF 700.74 FEET TO A CALCULATED POINT;
3. S46°11'12"E, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
4. N88°48'48"W, A DISTANCE OF 553.00 FEET TO A CALCULATED POINT;
5. N01°11'12"E, A DISTANCE OF 722.86 FEET TO THE POINT OF BEGINNING.

CONTAINING 9.42 ACRES (410,335 SQUARE FEET), MORE OR LESS.

SUBJECT PARCEL NET ACREAGE: 38.769 ACRES (1,688,778 SQUARE FEET), MORE OR LESS.

Please specify what this description is for.




VICINITY MAP
NTS

NOW, THEREFORE, KNOW ALL PERSONS BY THESE PRESENTS: THAT, ACTING HEREIN BY AND THROUGH ITS DULY AUTHORIZED OFFICER, DOES HEREBY ADOPT THIS PLAT DESIGNATING THE HEREIN ABOVE DESCRIBED PROPERTY AS LOIS ROAD ESTATES SUBDIVISION, AN ADDITION TO THE CITY OF SANGER, TEXAS, AND DOES HEREBY DEDICATE TO THE PUBLIC USE FOREVER BY FEE SIMPLE TITLE, FREE AND CLEAR OF ALL LIENS AND ENCUMBRANCES, ALL STREETS, THOROUGHFARES, ALLEYS, FIRE LANES, DRIVE AISLES, PARKS, AND WATERCOURSES, AND TO THE PUBLIC USE FOREVER EASEMENTS FOR SIDEWALKS, STORM DRAINAGE FACILITIES, UTILITIES AND ANY OTHER PROPERTY NECESSARY TO SERVE THE PLAT AND TO IMPLEMENT THE REQUIREMENTS OF THE SUBDIVISION REGULATIONS AND OTHER CITY CODES AND DO HEREBY BIND OURSELVES, OUR HEIRS, SUCCESSORS AND ASSIGNS TO WARRANT AND TO FOREVER DEFEND THE TITLE ON THE LAND SO DEDICATED. FURTHER, THE UNDERSIGNED COVENANTS AND AGREES THAT HE/SHE SHALL MAINTAIN ALL EASEMENTS AND FACILITIES IN A STATE OF GOOD REPAIR AND FUNCTIONAL CONDITION AT ALL TIMES IN ACCORDANCE WITH CITY CODES AND REGULATIONS. NO BUILDINGS, FENCES, TREES, SHRUBS, OR OTHER IMPROVEMENTS OR GROWTHS SHALL BE CONSTRUCTED OR PLACED UPON, OVER, OR ACROSS THE EASEMENTS AS SHOWN, EXCEPT THAT LANDSCAPE IMPROVEMENTS MAY BE INSTALLED, IF APPROVED BY THE CITY OF SANGER. THE CITY OF SANGER AND PUBLIC UTILITY ENTITIES SHALL HAVE THE RIGHT TO ACCESS AND MAINTAIN ALL RESPECTIVE EASEMENTS WITHOUT THE NECESSITY AT ANY TIME OF PROCURING PERMISSION FROM ANYONE.

WITNESS MY HAND THIS DAY OF _____, 20_____,

_____, OWNER

_____, TITLE AND COMPANY

STATE OF TEXAS
COUNTY OF DENTON

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT HE/SHE EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATIONS THEREIN EXPRESSED AND IN THE CAPACITY THEREIN STATED.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS_____ DAY OF_____, 20 _____.

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

_____

TYPE OR PRINT NOTARY'S NAME

MY COMMISSION EXPIRES_____.

## BENCHMARKS AND CONTROLS:

NO. 1 – AN "X" CUT IN CONCRETE LOCATED WITHIN THE INTERSECTION OF LOIS ROAD EAST AND THE GULF COAST AND SANTA FE RAILROAD RIGHTS–OF–WAY, HAVING AN ELEVATION OF 729.3 FEET, A NORTHING COORDINATE VALUE OF 7,192,162.0, AND AN EASTING COORDINATE VALUE OF 2,374,666.1.

NO. 2 – AN MAG NAIL IN ASPHALT LOCATED IN THE NORTHWEST INTERSECTION OF LOIS ROAD EAST AND MELTON ROAD, HAVING AN ELEVATION OF 693.8 FEET, A NORTHING COORDINATE VALUE OF 7,192,151.4, AND AN EASTING COORDINATE VALUE OF 2,376,790.5.

## BASIS OF BEARING:

BEARINGS AND ELEVATIONS SHOWN HEREON ARE BASED ON NAD 83 TEXAS STATE PLANE COORDINATES, NORTH CENTRAL ZONE, NAVD 88.

| SHEET LIST TABLE | |
|---|---|
| SHEET NUMBER | SHEET TITLE |
| 01 | COVER SHEET |
| 02 | OVERALL SHEET |
| 03 | FINAL PLAT |
| 04 | FINAL PLAT |
| 05 | FINAL PLAT |

## PROJECT TEAM

**OWNER/DEVELOPER/APPLICANT:**
KALTER CAPITAL
10268 W, CENTENNIAL RD., UNIT 200 F
LITTLETON, CO 80127
CONTACT: LEE EISENHEIM
PH: 303.324.1771
LEE.EISENHEIM@KALTERCAPITAL.COM

**ENGINEERING & SURVEY:**
ATWELL, LLC
143 UNION BOULEVARD SUITE 700
LAKEWOOD, CO 80228
CONTACT: KEVIN BLUMHARDT
PH: 303.842.9191
KBLUMHARDT@ATWELL.COM

| RESIDENTIAL LOT INFORMAITON | |
|---|---|
| LOT SIZE | NUMBER OF LOTS |
| 50' | 36 |
| 60' | 119 |
| TOTAL | 155 |

| AREA TABLE | | | | |
|---|---|---|---|---|
| TRACT NAME | AREA (SF) | AREA (AC) | LAND USE | OWNER/MAINTENANCE |
| TRACT A | 39525 | 0.91 | OPEN SPACE, DRAINAGE, UTILITIES | OWNER/HOA |
| TRACT B | 34962 | 0.80 | OPEN SPACE | OWNER/HOA |
| TRACT C | 7189 | 0.17 | OPEN SPACE, UTILITIES | OWNER/HOA |
| TRACT D | 5879 | 0.13 | OPEN SPACE | OWNER/HOA |
| TRACT E | 6206 | 0.14 | OPEN SPACE | OWNER/HOA |
| TRACT F | 5831 | 0.13 | OPEN SPACE | OWNER/HOA |
| TRACT G | 4679 | 0.11 | OPEN SPACE | OWNER/HOA |
| TRACT H | 16789 | 0.39 | OPEN SPACE | OWNER/HOA |
| TOTAL | 120,904 | 2.77 | | |

OWNER: JST HOLDINS 04 BUSINESS LLC
HOA: LOIS ROAD ESTATES

## GENERAL NOTES

1. ALL LOTS COMPLY WITH THE MINIMUM SIZE REQUIREMENTS OF THE PLANNED DEVELOPMENT.
2. THIS PROPERTY MAY BE SUBJECT TO CHARGES RELATED TO IMPACT FEES AND THE APPLICANT SHOULD CONTACT THE CITY REGARDING ANY APPLICABLE FEES DUE.
3. ALL COMMON AREAS, DRAINAGE EASEMENTS, AND DETENTION FACILITIES WILL BE OWNED AND MAINTAINED BY THE HOA/POA. ANY COMMON AREA WITHIN THE CITY'S RIGHT–OF–WAY WILL REQUIRE A FACILITIES AGREEMENT, TO BE REVIEWED AND APPROVED BY THE CITY.
4. NOTICE – SELLING A PORTION OF THIS BY METES AND BOUNDS IS A VIOLATION OF CITY ORDINANCE AND STATE LAW AND IS SUBJECT TO FINES AND WITHHOLDING OF UTILITIES AND BUILDING PERMITS.
5. THIS PLAT DOES NOT ALTER OR REMOVE EXISTING DEED RESTRICTIONS, IF ANY, ON THIS PROPERTY.
6. MINIMUM FINISHED FLOOR ELEVATIONS ARE AT LEAST 2 FEET ABOVE THE 100 YEAR FLOOD PLAIN.
7. THE SUBJECT PROPERTY DOES NOT LIE WITHIN A 100 – YEAR FLOODPLAIN ACCORDING TO COMMUNITY PANEL NO. 48121C0070G, DATED APRIL 18, 2011, OF THE NATIONAL FLOOD INSURANCE RATE MAPS FOR DENTON COUNTY, TEXAS.
8. THE PURPOSE OF THIS PLAT IS TO CREATE NEW FOR SALE SINGLE–FAMILY LOTS.
9. BEARINGS ARE BASED ON THE STATE PLANE COORDINATE SYSTEM, TEXAS NORTH CENTRAL ZONE (4202), NORTH AMERICAN DATUM OF 1983 (NAD '83)
10. UTILITIES SERVICE PROVIDED BY
    CITY OF SANGER – WATER & SANITARY SEWER
    ADDRESS: P.O. BOX 1729, SANGER, TEXAS 76266
    CONTACT: JIM BOLZ
    PHONE NUMBER: (940) 458–2571

    COSERV – ELECTRIC AND GAS
    ADDRESS: 202 RAILROAD AVE, SANGER, TEXAS 76266
    PHONE NUMBER: (800) 274–4014

Provide ROW acreage in title block per §10.104(d)(10)(O)(vi)

## SURVEYOR CERTIFICATE

I, RANDALL R. HAGER, A DULY LICENSED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THIS FINAL PLAT REPRESENTS THE RESULT OF A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION AND COMPLETED ACCORDING TO APPLICABLE STATE OF TEXAS REQUIREMENTS.

_____
RANDALL R. HAGER, RPLS NO. 6471
FOR AND ON BEHALF OF ATWELL, LLC

## APPROVED AND ACCEPTED

CHAIRMAN, PLANNING & ZONING COMMISSION — DATE
CITY OF SANGER, TX

MAYOR — DATE
CITY OF SANGER, TX

ATTESTED BY

CITY SECRETARY — DATE
CITY OF SANGER, TX

RECORDING BOX

ATWELL
866.850.4200 www.atwell.com

OWNER/DEVELOPER/APPLICANT
KALTER CAPITAL
10268 W. CENTENNIAL RD. UNIT 200 F
LITTLETON, CO
303–324–1771
LEE EISENHEIM

**PLAT FILING NO. 1**
**LOIS ROAD ESTATES SUBDIVISION**
**155 RESIDENTIAL LOTS - 6 HOA LOTS**
**REUBEN BEBEE SURVEY, ABST. NO. 29**
**38.769 ACRES - 1,688,778 SQUARE FEET**
**CITY OF SANGER, DENTON COUNTY TEXAS**

DATE 02/28/2025

| | |
|---|---|
| A | 1st SUBMITAL TO CITY OF SANGER 02/28/2025 – KB |
| B | 2nd SUBMITAL TO CITY OF SANGER XX/XX/2025 – KB |

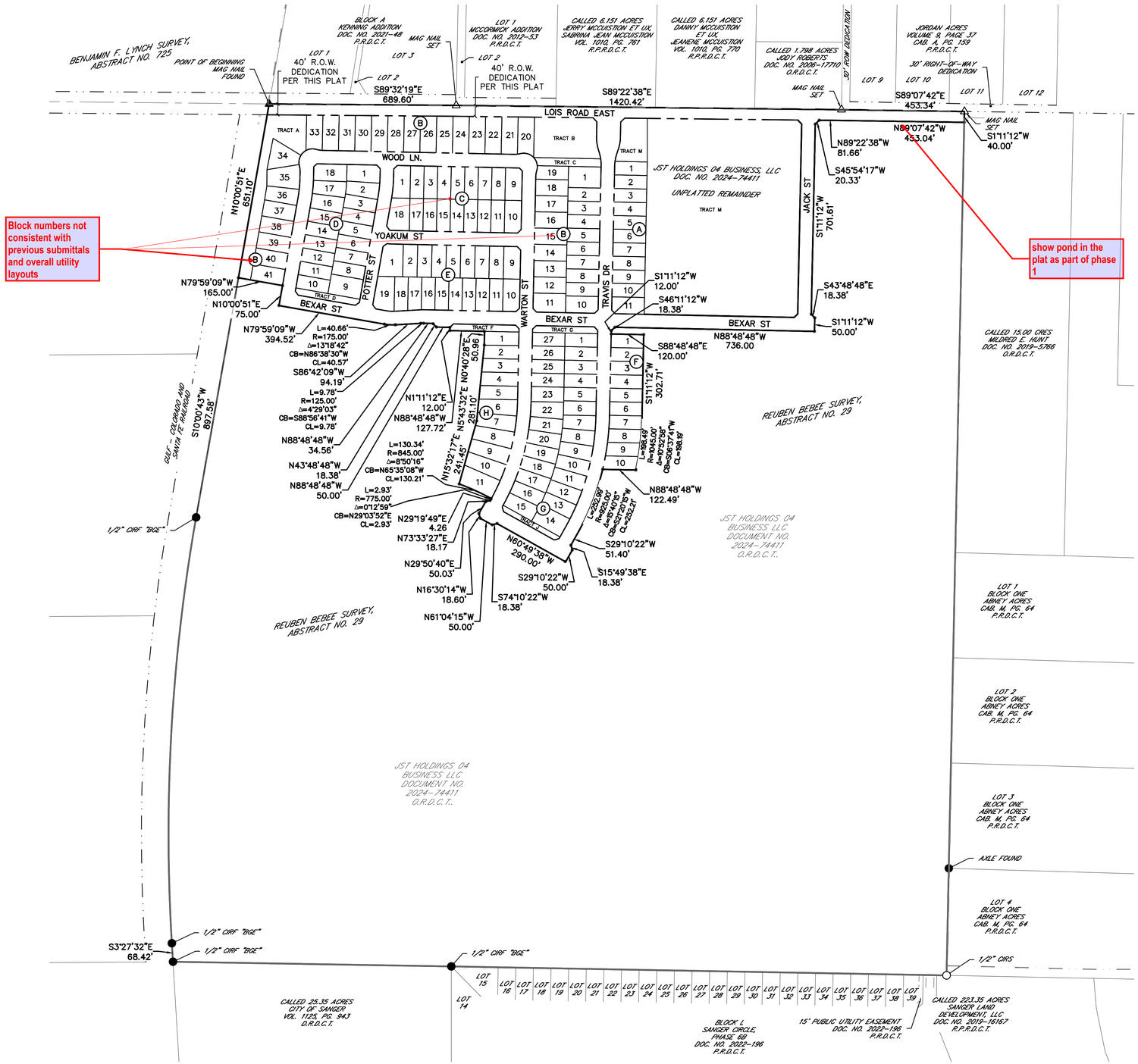
REVISIONS

DR. TN CH. AS
P.M. RG
JOB 24007256

**SHEET 01 OF 5**

# LOIS ROAD ESTATES SUBDIVISION PLAT FILING NO. 1

**BEING 38.769 ACRES OF LAND (1,688,778 SQUARE FEET)**
**OUT OF THE REUBEN BEBEE SURVEY, ABSTRACT NUMBER 29**
**IN THE CITY OF SANGER, DENTON COUNTY, TEXAS**




| LINE TABLE | | |
|---|---|---|
| LINE | LENGTH | BEARING |
| L1 | 20.60' | S43°48'48"E |
| L2 | 20.41' | N46°11'12"E |
| L3 | 15.56' | S43°48'48"E |
| L4 | 18.38' | N46°11'12"E |
| L5 | 18.38' | N43°48'48"W |
| L6 | 15.56' | S46°11'12"W |
| L7 | 18.73' | N36°04'30"W |
| L8 | 15.54' | S54°56'21"W |
| L9 | 18.38' | S46°11'12"W |
| L10 | 18.38' | N43°48'48"W |
| L11 | 18.33' | N43°48'48"W |
| L12 | 18.38' | S46°11'12"W |
| L13 | 18.38' | S43°48'48"E |
| L14 | 18.38' | S46°11'12"W |
| L15 | 18.38' | N43°48'48"W |
| L16 | 18.38' | N46°11'12"E |
| L17 | 18.44' | N43°48'48"W |
| L18 | 18.38' | N46°11'12"E |
| L19 | 18.38' | S46°11'12"W |

| LINE TABLE | | |
|---|---|---|
| LINE | LENGTH | BEARING |
| L20 | 18.38' | N43°48'48"W |
| L21 | 15.56' | S34°59'09"E |
| L22 | 15.56' | N55°00'51"E |
| L23 | 15.56' | S34°59'09"E |
| L24 | 12.00' | S01°11'12"W |
| L25 | 18.38' | S15°49'38"E |
| L26 | 50.00' | S29°10'22"W |
| L27 | 18.38' | S74°10'22"W |
| L28 | 18.60' | N16°30'14"W |
| L29 | 15.56' | S74°10'22"W |
| L30 | 15.56' | N15°49'38"W |
| L31 | 12.00' | N01°11'12"E |
| L32 | 18.38' | S43°48'48"E |
| L33 | 20.68' | S44°05'43"E |
| L34 | 20.33' | S45°54'17"W |
| L35 | 9.79' | N00°40'28"E |
| L36 | 15.00' | S89°32'19"E |
| L37 | 4.31' | S00°40'28"W |

| Curve Table | | | | | |
|---|---|---|---|---|---|
| CURVE # | LENGTH | RADIUS | DELTA | CHORD BEARING | CHORD LENGTH |
| C1 | 22.26' | 80.00' | 15°56'33" | S9°09'29"W | 22.19' |
| C2 | 10.81' | 80.00' | 7°44'22" | N79°06'51"E | 10.80' |
| C3 | 21.47' | 80.00' | 15°22'30" | S80°33'30"E | 21.40' |
| C5 | 34.85' | 150.00' | 13°18'42" | N86°38'30"W | 34.77' |
| C6 | 11.74' | 150.00' | 4°29'03" | S88°56'41"W | 11.74' |
| C7 | 7.19' | 775.00' | 0°31'54" | N29°13'20"E | 7.19' |
| C8 | 23.75' | 150.89' | 9°01'05" | N14°54'51"E | 23.73' |
| C9 | 15.06' | 50.00' | 17°15'21" | S49°18'24"W | 15.00' |
| C10 | 77.03' | 500.00' | 8°49'39" | N5°36'02"E | 76.96' |

200 0 200 400
( IN FEET )
1 inch = 200 ft.

ATWELL
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LEE EISENHEIM

**PLAT FILING NO. 1**
LOIS ROAD ESTATES SUBDIVISION
155 RESIDENTIAL LOTS - 6 HOA LOTS
REUBEN BEBEE SURVEY, ABST. NO. 29
38.769 ACRES - 1,688,778 SQUARE FEET
CITY OF SANGER, DENTON COUNTY TEXAS

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REVISIONS

DR. TN CH. AS
P.M. RG
JOB 24007256

**SHEET 02 OF 5**

# LOIS ROAD ESTATES SUBDIVISION PLAT FILING NO. 1

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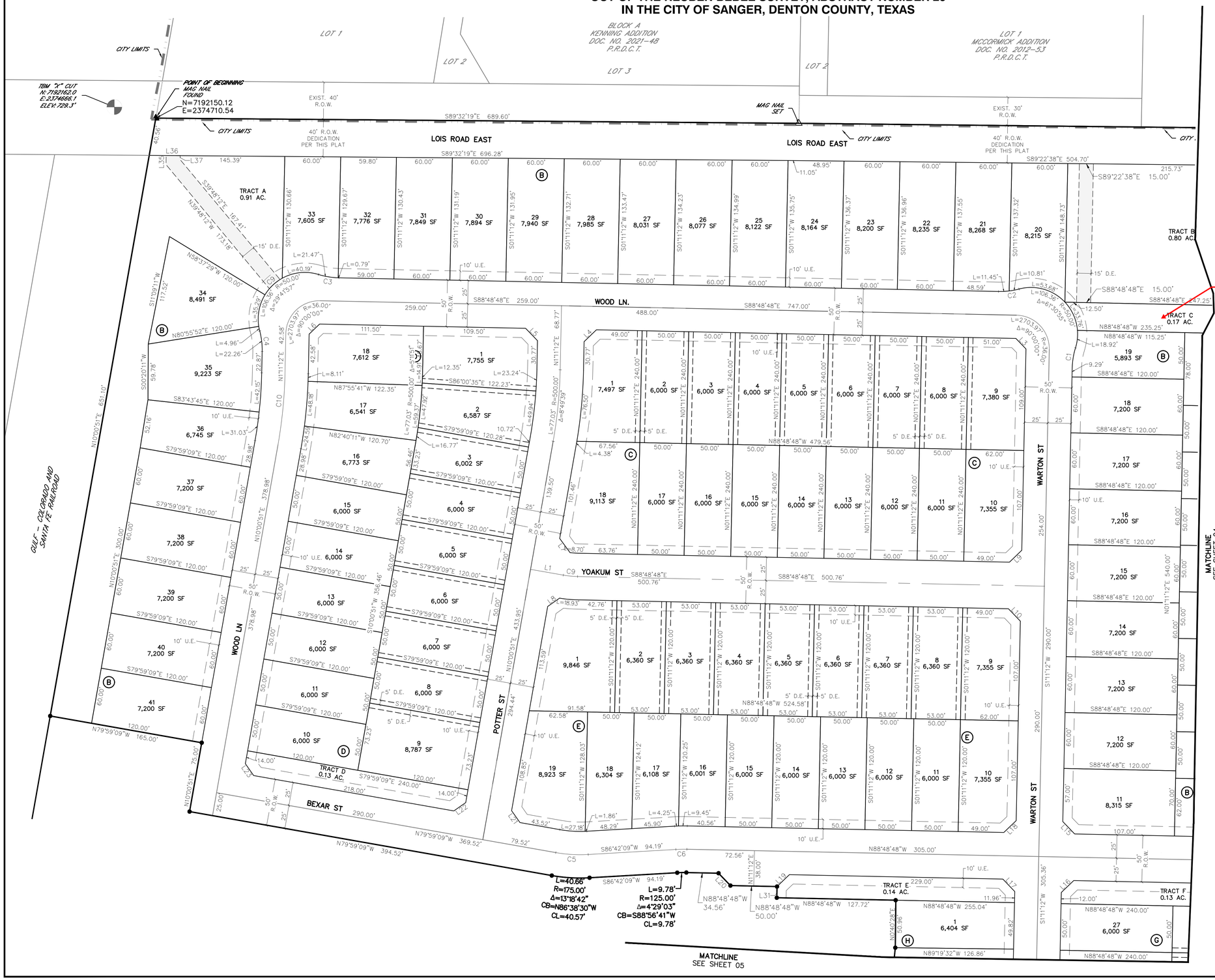


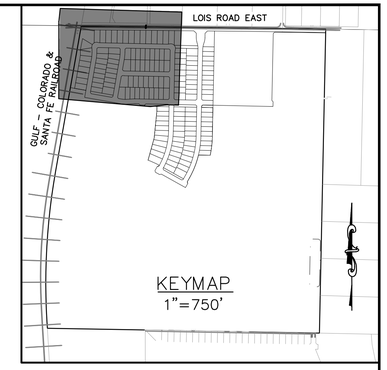


50 0 50 100
( IN FEET )
1 inch = 50 ft.

## LEGEND

| | |
|---|---|
| ○ | FOUND MONUMENT, AS NOTED |
| ● | SET 1/2" IRON ROD WITH PLASTIC CAP STAMPED "ATWELL LLC" |
| ▲ | MAG NAIL FOUND |
| △ | MAG NAIL SET |
| | SECTION CORNER, AS NOTED |
| 1 | LOT NUMBER |
| Ⓐ | BLOCK LETTER |
| TMB | TEMPORARY BENCH MARK |
| D.E. | DRAINAGE EASEMENT |
| U.E. | UTILITY EASEMENT |
| | SUBJECT PARCEL BOUNDARY LINE |
| | SECTION LINE |
| | SUBDIVISION LOT LINE |
| | LOT SETBACK |
| | ADJACENT PROPERTY LINE |
| | EASEMENT LINE, AS NOTED |
| | RIGHT-OF-WAY LINE |
| | OFFSET / TIE LINE |


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155 RESIDENTIAL LOTS - 6 HOA LOTS
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REVISIONS

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**SHEET 03 OF 5**

# LOIS ROAD ESTATES SUBDIVISION PLAT FILING NO. 1

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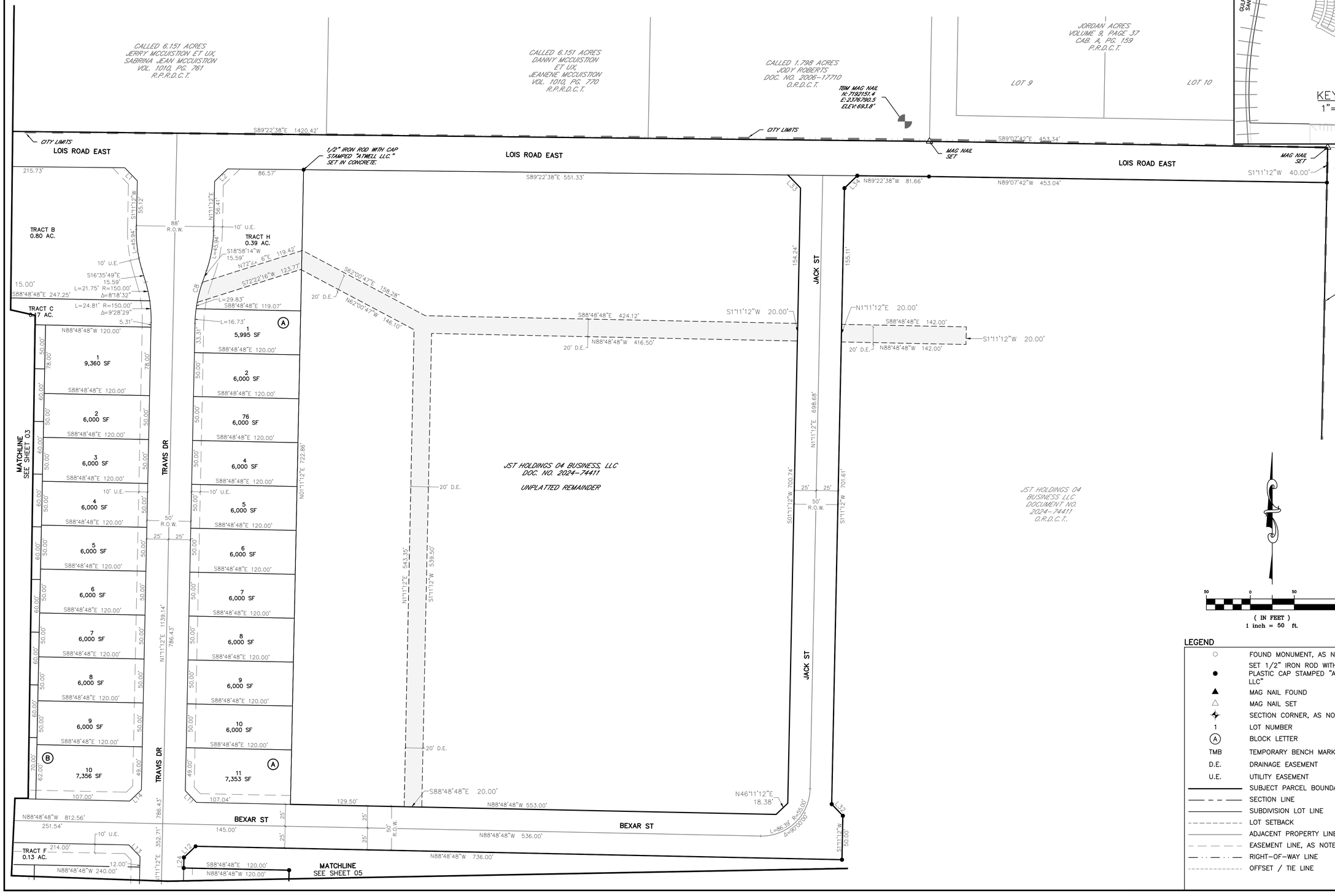


## LEGEND

| | |
|---|---|
| ○ | FOUND MONUMENT, AS NOTED |
| ● | SET 1/2" IRON ROD WITH PLASTIC CAP STAMPED "ATWELL LLC" |
| ▲ | MAG NAIL FOUND |
| △ | MAG NAIL SET |
| ✦ | SECTION CORNER, AS NOTED |
| 1 | LOT NUMBER |
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| — — — | SECTION LINE |
| ——— | SUBDIVISION LOT LINE |
| - - - - - | LOT SETBACK |
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| — — — — | EASEMENT LINE, AS NOTED |
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**SHEET 04 OF 5**

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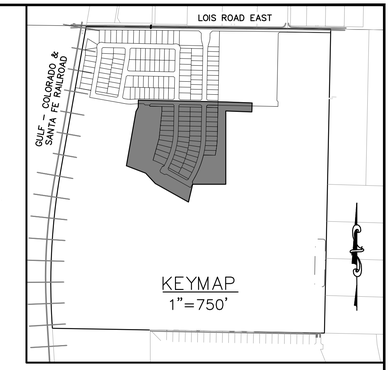


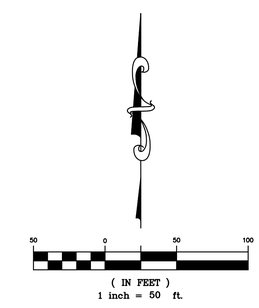


## LEGEND

| | |
|---|---|
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| ● | SET 1/2" IRON ROD WITH PLASTIC CAP STAMPED "ATWELL LLC" |
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| △ | MAG NAIL SET |
| | SECTION CORNER, AS NOTED |
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REVISIONS

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JOB 24007256

**SHEET 05 OF 5**

# LOIS ROAD ESTATES - FILING NOS. 1 & 2

SITUATED IN THE

CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS

# CONSTRUCTION PLANS

## LOIS ROAD ESTATES SUBDIVISION PLAT FILING NO. 1 LEGAL DESCRIPTION:

BEGINNING AT A MAG NAIL FOUND, BEING THE NORTHWESTERN CORNER OF SAID JST HOLDINGS 202.49 ACRE TRACT, BEING ON OR NEAR THE CENTERLINE OF LOIS ROAD EAST AND ON THE EASTERN RIGHT–OF–WAY LINE OF THE GULF COAST AND SANTA FE RAILROAD, (100' RIGHT–OF–WAY WIDTH), FOR THE NORTHWESTERN CORNER AND POINT OF BEGINNING OF THE HEREIN DESCRIBED TRACT;

THENCE, ALONG THE NORTHERN LINE OF SAID JST HOLDINGS 202.49 ACRE TRACT, DEPARTING THE EASTERN RIGHT–OF–WAY LINE OF SAID GULF COAST AND SANTA FE RAILROAD, AND ALONG OR NEAR THE CENTERLINE OF SAID LOIS ROAD EAST, S89°32'19"E, A DISTANCE OF 689.60 FEET TO A MAG NAIL SET, FOR A NORTHERN ANGLE CORNER OF THE HEREIN DESCRIBED TRACT;

THENCE, CONTINUING ALONG SAID NORTHERN LINE OF JST HOLDINGS 202.49 ACRE TRACT AND ALONG OR NEAR SAID CENTERLINE OF LOIS ROAD EAST, S89°22'38"E, A DISTANCE OF 1420.42 FEET TO MAG NAIL SET, BEING THE SOUTHWESTERN CORNER OF A CALLED 1.798 ACRE TRACT DESCRIBED IN A DEED CONVEYED TO JODY ROBERT, RECORDED IN DOCUMENT NUMBER 2006–17710 OF THE OFFICIAL RECORDS OF DENTON COUNTY, TEXAS, AND ALSO BEING IN THE WESTERN RIGHT–OF–WAY LINE OF MELTON ROAD (30' RIGHT–OF–WAY WIDTH);

THENCE, CONTINUING ALONG SAID NORTHERN LINE OF JST HOLDINGS 202.49 ACRE TRACT AND ALONG OR NEAR SAID CENTERLINE OF LOIS ROAD, S89°07'42"E, A DISTANCE OF 453.34 FEET TO A MAG NAIL SET, BEING THE NORTHEASTERN CORNER OF SAID JST HOLDINGS 202.49 ACRE TRACT, AND ALSO BEING THE NORTHWESTERN CORNER OF A CALLED 15.00 ACRE TRACT DESCRIBED IN A DEED CONVEYED TO MILDRED E. HUNT, RECORDED IN DOCUMENT NUMBER 2019–5766 OF THE OFFICIAL RECORDS OF DENTON COUNTY, TEXAS,FOR THE NORTHEASTERN CORNER OF THE HEREIN DESCRIBED TRACT;

THENCE, ALONG THE EASTERN LINE OF SAID JST HOLDINGS 202.49 ACRE TRACT, AND ALSO BEING THE WESTERN LINE OF SAID HUNT 15.00 ACRE TRACT, S01°11'12"W, A DISTANCE OF 40.00 FEET TO A CALCULATED POINT, FOR A NORTHEASTERN CORNER OF THE HEREIN DESCRIBED TRACT;

THENCE, ALONG THE SOUTHERN RIGHT–OF–WAY LINE OF SAID LOIS ROAD, THE FOLLOWING TWO (2) COURSES AND DISTANCES:

1. N89°07'42"W, A DISTANCE OF 453.04 FEET TO A CALCULATED POINT;
2. N89°22'38"W, A DISTANCE OF 81.66 FEET TO A CALCULATED POINT;

THENCE, CROSSING THROUGH SAID JST HOLDINGS 202.49 ACRE TRACT, THE FOLLOWING THIRTY–FIVE (33) COURSES AND DISTANCES:

1. S45°54'17"W, A DISTANCE OF 20.33 FEET TO A CALCULATED POINT;
2. S01°11'12"W, A DISTANCE OF 701.61 FEET TO A CALCULATED POINT;
3. S43°48'48"E, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
4. S01°11'12"W, A DISTANCE OF 50.00 FEET TO A CALCULATED POINT;
5. N88°48'48"W, A DISTANCE OF 736.00 FEET TO A CALCULATED POINT;
6. S46°11'12"W, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
7. S01°11'12"W, A DISTANCE OF 12.00 FEET TO A CALCULATED POINT;
8. S88°48'48"E, A DISTANCE OF 120.00 FEET TO A CALCULATED POINT;
9. S01°11'12"W, A DISTANCE OF 302.71 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE RIGHT;
10. WITH SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 1045.00 FEET, AN ARC LENGTH OF 198.49 FEET, A CENTRAL ANGLE OF 10°52'58", A CHORD BEARING AND DISTANCE OF S06°37'41"W, 198.19 FEET TO A CALCULATED POINT;
11. N88°48'48"W, A DISTANCE OF 122.49 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE RIGHT;
12. WITH SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 925.00 FEET, AN ARC LENGTH OF 252.99 FEET, A CENTRAL ANGLE OF 15°40'15", A CHORD BEARING AND DISTANCE OF S21°20'15"W, 252.21 FEET TO A CALCULATED POINT;
13. S29°10'22"W, A DISTANCE OF 51.40 FEET TO A CALCULATED POINT;
14. S15°49'38"E, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
15. S29°10'22"W, A DISTANCE OF 50.00 FEET TO A CALCULATED POINT, FOR THE SOUTHERNMOST CORNER OF THE HEREIN DESCRIBED TRACT;
16. N60°49'38"W, A DISTANCE OF 290.00 FEET TO A CALCULATED POINT;
17. S74°10'22"W, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
18. N61°04'15"W, A DISTANCE OF 50.00 FEET TO A CALCULATED POINT;
19. N16°30'14"W, A DISTANCE OF 18.60 FEET TO A CALCULATED POINT;
20. N29°50'40"E, A DISTANCE OF 50.03 FEET TO A CALCULATED POINT;
21. N73°33'27"E, A DISTANCE OF 18.17 FEET TO A CALCULATED POINT;
22. N29°19'49", A DISTANCE OF 4.26 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE LEFT;
23. WITH SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 775.00 FEET, AN ARC LENGTH OF 2.93 FEET, A CENTRAL ANGLE OF 00°12'59", A CHORD BEARING AND DISTANCE OF N29°03'52"E, 2.93 FEET TO A CALCULATED POINT,
24. WITH SAID CURVE TO THE LEFT, HAVING A RADIUS OF 845.00 FEET, AN ARC LENGTH OF 130.34 FEET, A CENTRAL ANGLE OF 08°50'16", A CHORD BEARING AND DISTANCE OF N65°35'08"W, 130.21 FEET TO A CALCULATED POINT;
25. N15°32'17"E, A DISTANCE OF 241.45 FEET TO A CALCULATED POINT;
26. N05°43'32"E, A DISTANCE OF 281.10 FEET TO A CALCULATED POINT;
27. N00°40'28"E, A DISTANCE OF 50.96 FEET TO A CALCULATED POINT;
28. N88°48'48"W, A DISTANCE OF 127.72 FEET TO A CALCULATED POINT;
29. N01°11'12"E, A DISTANCE OF 12.00 FEET TO A CALCULATED POINT;
30. N88°48'48"W, A DISTANCE OF 50.00 FEET TO A CALCULATED POINT;
31. N43°48'48"W, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
32. N88°48'48"W, A DISTANCE OF 34.56 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE LEFT;
33. WITH SAID CURVE TO THE LEFT, HAVING A RADIUS OF 125.00 FEET, AN ARC LENGTH OF 9.78 FEET, A CENTRAL ANGLE OF 04°29'03", A CHORD BEARING AND DISTANCE OF S88°56'41"W, 9.78 FEET TO A CALCULATED POINT;
34. S86°42'09"W, A DISTANCE OF 94.19 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE RIGHT;
35. WITH SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 175.00 FEET, AN ARC LENGTH OF 40.66 FEET, A CENTRAL ANGLE OF 13°18'42", A CHORD BEARING AND DISTANCE OF N86°38'30"W, 40.57 FEET TO A CALCULATED POINT;
36. N79°59'09"W, A DISTANCE OF 394.52 FEET TO A CALCULATED POINT;
37. N10°00'51"E, A DISTANCE OF 75.00 FEET TO A CALCULATED POINT;
38. N79°59'09"W, A DISTANCE OF 165.00 FEET TO A CALCULATED POINT, BEING IN THE WESTERN LINE OF SAID JST HOLDINGS 202.49 ACRE TRACT, AND ALSO BEING IN THE EASTERN LINE OF SAID SANTA FE RAILROAD;

THENCE, ALONG SAID EASTERN LINE OF JST HOLDINGS 202.49 ACRE TRACT AND ALONG SAID EASTERN LINE OF SANTA FE RAILROAD, N10°00'51"E, A DISTANCE OF 651.10 FEET TO THE POINT OF BEGINNING.

CONTAINING 48.189 ACRES (2,099,130 SQUARE FEET), MORE OR LESS.

SAVE & EXCEPT:

BEING A 9.42 ACRE TRACT (410,335 SQUARE FEET) OF LAND, SITUATED IN THE REUBEN BEBEE SURVEY, ABSTRACT NUMBER 29, SITUATED IN THE CITY OF SANGER, DENTON COUNTY, TEXAS, AND BEING A PORTION OF THAT CERTAIN 202.49 ACRE TRACT OF LAND DESCRIBED IN A GENERAL WARRANTY DEED CONVEYED TO JST HOLDINGS 04 BUSINESS, LLC, A NEW MEXICO LIMITED LIABILITY COMPANY, RECORDED IN DOCUMENT NUMBER 2024–74411 OF THE OFFICIAL RECORDS OF DENTON COUNTY, TEXAS; SAID 48.189 ACRE TRACT BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A 1/2 INCH IRON ROD WITH CAP STAMPED "ATWELL LLC" SET IN CONCRETE, BEING IN THE NORTHERN LINE OF SAID 202.49 ACRE TRACT AND ALSO BEING IN THE SOUTHERN RIGHT–OF–WAY LINE OF LOIS ROAD EAST, FOR THE NORTHWESTERN CORNER AND POINT OF BEGINNING OF THE HEREIN DESCRIBED TRACT;

THENCE, CONTINUING ALONG SAID NORTHERN LINE OF 202.49 ACRE TRACT AND SAID SOUTHERN RIGHT–OF–WAY LINE OF LOIS ROAD EAST, S89°22'38'E, A DISTANCE OF 551.33 FEET TO A CALCULATED POINT, FOR THE NORTHEASTERN CORNER OF THE HEREIN DESCRIBED TRACT;

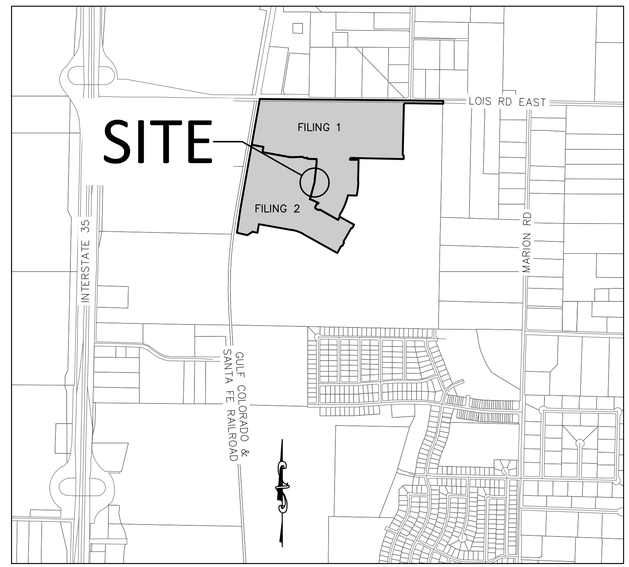
THENCE, CROSSING THROUGH SAID 202.49 ACRE TRACT, THE FOLLOWING FIVE (5) COURSES AND DISTANCES:

1. S44°05'43"E, A DISTANCE OF 20.68 FEET TO A CALCULATED POINT;
2. S01°11'12"W, A DISTANCE OF 700.74 FEET TO A CALCULATED POINT;
3. S46°11'12"E, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
4. N88°48'48"W, A DISTANCE OF 553.00 FEET TO A CALCULATED POINT;
5. N01°11'12"E, A DISTANCE OF 722.86 FEET TO THE POINT OF BEGINNING.

CONTAINING 9.42 ACRES (410,335 SQUARE FEET), MORE OR LESS.

SUBJECT PARCEL NET ACREAGE: 38.769 ACRES (1,688,778 SQUARE FEET), MORE OR LESS.

(SEE SHEET 02 FOR FILING 2 LEGAL DESCRIPTION)




VICINITY MAP
SCALE 1"=1,000'

Please refer to Filing No. 1 Plat comments

## PROJECT TEAM

**OWNER/DEVELOPER/APPLICANT:**
KALTER CAPITAL
10268 W. CENTENNIAL RD. UNIT 200 F
LITTLETON, CO 80127
CONTACT: LEE EISENHEIM
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LEE.EISENHEIM@KALTERCAPITAL.COM

**ENGINEERING & SURVEY:**
ATWELL, LLC
143 UNION BOULEVARD SUITE 700
LAKEWOOD, CO 80228
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KBLUMHARDT@ATWELL–GROUP.COM

**LANDSCAPE ARCHITECT & PLANNER:**
NORRIS DESIGN
208 NORTH MARKET STREET
SUITE 250
DALLAS, TX 75202
CONTACT: JONATHAN WEST, PLA
PH. 972.232.4181
JWEST@NORRIS–DESIGN.COM


| SHEET INDEX | |
|---|---|
| SHEET NUMBER | SHEET TITLE |
| GENERAL NOTES & PLANS | |
| 01 | COVER SHEET |
| 02 | NOTES |
| 03 | NOTE & STREET SECTIONS |
| 04 | EXISTING CONDITIONS |
| OVERALL UTILTIY PLANS | |
| 05 | OVERALL |
| 06 | OFFSITE |
| 07 | AREA–01 |
| 08 | AREA–02 |
| 09 | AREA–03 |
| 10 | AREA–04 |
| 11 | AREA–05 |
| 12 | AREA–06 |
| 13 | AREA–07 |
| OVERALL GRADING | |
| 14 | OVERALL |
| 15 | AREA–01 |
| 16 | AREA–02 |
| 17 | AREA–03 |
| 18 | AREA–04 |
| 19 | AREA–05 |
| 20 | AREA–06 |
| 21 | AREA–07 |
| STREET PLAN & PROFILES | |
| 22 | LOIS ROAD |
| 23 | LOIS ROAD |
| 24 | TRAVIS DR |
| 25 | TRAVIS DR |
| 26 | BEXAR ST |
| 27 | BEXAR ST |
| 28 | BEXAR ST |
| 29 | AUSTIN LN |
| 30 | AUSTIN LN |
| 31 | COLLIN DR |
| 32 | BASTROP ST |
| 33 | BASTROP ST |
| 34 | WOOD LN |
| 35 | WOOD LN |
| 36 | WOOD LN. |
| 37 | POTTER ST |
| 38 | YOAKUM ST |
| 39 | WARTON ST |
| 40 | WARTON ST |
| 41 | TERRELL ST |
| 42 | HUNTER DR |
| 43 | JACK ST |
| 44 | FIELD ST |
| 45 | (KNUCKLES) BASTROP ST – WOOD LN & WOOD LN – WOOD LN. |
| 46 | (KNUCKLES) WOOD LN. – WARTON ST |

| SANITARY SEWER PLAN & PROFILES | |
|---|---|
| 47 | RUN 1–1 |
| 48 | RUN 1–2 |
| 49 | RUN 2 |
| 50 | RUN 3 |
| 51 | RUN 4 |
| 52 | RUN 5 |
| 53 | RUN 6–1 |
| 54 | RUN 6–2 |
| 55 | RUN 7–1 |
| 56 | RUN 7–2 |
| 57 | RUN 8 |
| 58 | RUN 9 |
| 59 | RUN 10 |
| 60 | RUN 11–1 |
| 61 | RUN 11–2 |
| 62 | RUN 12–1 |
| 63 | RUN 12–2 |
| 64 | RUN 13 |
| STORM SEWER PLAN & PROFILES | |
| 65 | RUN 1 |
| 66 | RUN 1–1 |
| 67 | RUN 2–1 |
| 68 | RUN 2–2 |
| 69 | RUN 2.1 |
| 70 | RUN 3–1 |
| 71 | RUN 3–2 |
| 72 | RUN 4 |
| 73 | RUN 5 |
| 74 | RUN 6 |
| 75 | RUN 7 |
| 76 | RUN 8 |
| 77 | RUN 9 |
| 78 | POND A OUTFALL |
| 79 | LATERALS 1 |
| 80 | LATERALS 2 |
| POND PLAN & DETAILS | |
| 81 | POND A |
| 82 | POND A SECTIONS |
| 83 | POND B |
| 84 | POND B SECTIONS |
| 85 | EXISTING DRAIANGE MAP |
| 86 | PROPOSED DRAINAGE MAP |
| 87 | RATIONAL CALCS |
| 88 | INLET CALCS 1 |
| 89 | HGL CALCS |
| 90 | RIPRAP CALCS |
| CONSTRUCTION DETAILS | |
| 91 | STREET DETAILS |
| 92 | STREET DETAILS |
| 93 | SANITARY SEWER DETAILS |
| 94 | STORM SEWER DETAILS |
| 95 | STORM SEWER DETAILS |
| 96 | WATER DETAILS |
| 97 | WATER DETAILS |
| 98 | WATER DETAILS |
| STORM WATER POLLUTION PREVENTION PLAN | |
| 99 | SWPPP–1 |
| 100 | SWPPP–2 |
| 101 | SWPPP–3 |
| 102 | SWPPP–4 |
| 103 | SWPPP–5 |
| 104 | SWPPP–6 |
| 105 | SWPPP DETAILS |


**BENCHMARK:**
AN "X" CUT IN CONCRETE LOCATED WITHIN THE INTERSECTION OF LOIS ROAD EAST AND THE GULF COAST AND SANTA FE RAILROAD RIGHTS–OF–WAY, HAVING AN ELEVATION OF 729.3 FEET, A NORTHING COORDINATE VALUE OF 7,192,162.0, AND AN EASTING COORDINATE VALUE OF 2,374,666.1.

BEARINGS AND ELEVATIONS SHOWN HEREON ARE BASED ON NAD 83 TEXAS STATE PLANE COORDINATES, NORTH CENTRAL ZONE, NAVD 88.

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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303.801.7333
MICHAEL PRYOR

CLIENT
KALTER CAPITAL
LOIS ROAD ESTATES – FILING NOS. 1 & 2
CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS
GENERAL NOTES & PLANS
COVER SHEET

DATE 4/7/2025

| | |
|---|---|
| A | 1st SUBMITTAL TO JURISDICTION 4/7/2025 – KMB |
| B | 2nd SUBMITTAL TO JURISDICTION 5/12/2025 – KMB |

REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 01

CAD FILE: 24007256–PH1–CVR.DWG

## LOIS ROAD ESTATES SUBDIVISION PLAT FILING NO. 2 LEGAL DESCRIPTION:

COMMENCING AT A MAG NAIL FOUND, BEING THE NORTHWESTERN CORNER OF SAID JST HOLDINGS 202.49 ACRE TRACT, BEING ON OR NEAR THE CENTERLINE OF LOIS ROAD EAST AND ON THE EASTERN RIGHT-OF-WAY LINE OF THE GULF COAST AND SANTA FE RAILROAD, (100' RIGHT-OF-WAY WIDTH);

THENCE, ALONG THE WESTERN LINE OF SAID JST HOLDINGS 202.49 ACRE TRACT AND ALONG THE EASTERN LINE OF SANTA FE RAILROAD, S10°00'55"W, A DISTANCE OF 651.07 FEET TO A CALCULATED POINT, FOR THE NORTHERNMOST CORNER AND POINT OF BEGINNING OF THE HEREIN DESCRIBED TRACT;

THENCE, CROSSING THROUGH SAID JST HOLDINGS 202.49 ACRE TRACT, THE FOLLOWING THIRTY-NINE (39) COURSES AND DISTANCES:

1. S79°59'09"E, A DISTANCE OF 164.98 FEET TO A CALCULATED POINT;
2. S10°00'51"W, A DISTANCE OF 75.00 FEET TO A CALCULATED POINT;
3. S79°59'09"E, A DISTANCE OF 394.52 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE RIGHT;
4. WITH SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 175.00 FEET, AN ARC LENGTH OF 40.66 FEET, A CENTRAL ANGLE OF 13°18'42", A CHORD BEARING AND DISTANCE OF S86°39'30"E, 40.57 FEET TO A CALCULATED POINT;
5. N86°42'09"E, A DISTANCE OF 94.19 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE LEFT;
6. WITH SAID CURVE TO THE LEFT, HAVING A RADIUS OF 125.00 FEET, AN ARC LENGTH OF 9.78 FEET, A CENTRAL ANGLE OF 04°29'03", A CHORD BEARING AND DISTANCE OF N88°56'41"E, 9.78 FEET TO A CALCULATED POINT;
7. S88°48'48"E, A DISTANCE OF 34.56 FEET TO A CALCULATED POINT;
8. S43°48'48"E, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
9. S88°48'48"E, A DISTANCE OF 50.00 FEET TO A CALCULATED POINT;
10. S01°11'12"W, A DISTANCE OF 12.00 FEET TO A CALCULATED POINT;
11. S88°48'48"E, A DISTANCE OF 127.72 FEET TO A CALCULATED POINT;
12. S00°40'28"W, A DISTANCE OF 50.96 FEET TO A CALCULATED POINT;
13. S05°43'32"W, A DISTANCE OF 281.10 FEET TO A CALCULATED POINT;
14. S15°32'17"W, A DISTANCE OF 241.45 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE RIGHT;
15. WITH SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 845.00 FEET, AN ARC LENGTH OF 130.34 FEET, A CENTRAL ANGLE OF 08°50'16", A CHORD BEARING AND DISTANCE OF S65°35'08"E, 130.21 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE RIGHT;
16. WITH SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 775.00 FEET, AN ARC LENGTH OF 2.93 FEET, A CENTRAL ANGLE OF 00°12'59", A CHORD BEARING AND DISTANCE OF N29°03'52"E, 2.93 FEET TO A CALCULATED POINT;
17. S29°19'49"W, A DISTANCE OF 4.26 FEET TO A CALCULATED POINT;
18. S73°33'27"W, A DISTANCE OF 18.19 FEET TO A CALCULATED POINT;
19. S29°50'40"W, A DISTANCE OF 50.03 FEET TO A CALCULATED POINT;
20. S16°30'14"E, A DISTANCE OF 18.60 FEET TO A CALCULATED POINT;
21. S61°04'15"E, A DISTANCE OF 50.00 FEET TO A CALCULATED POINT;
22. N74°10'22"E, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
23. S60°49'38"E, A DISTANCE OF 290.00 FEET TO A CALCULATED POINT,;
24. N29°10'22"E, A DISTANCE OF 50.00 FEET TO A CALCULATED POINT;
25. S60°49'38"E, A DISTANCE OF 230.01 FEET TO A CALCULATED POINT, FOR THE EASTERNMOST CORNER OF THE HEREIN DESCRIBED TRACT;
26. S29°11'06"W, A DISTANCE OF 50.00 FEET TO A CALCULATED POINT;
27. S74°10'22"W, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
28. S29°10'22"W, A DISTANCE OF 214.00 FEET TO A CALCULATED POINT;
29. S15°49'38"E, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
30. S29°10'22"W, A DISTANCE OF 50.00 FEET TO A CALCULATED POINT;
31. S74°10'22"W, A DISTANCE OF 18.38 FEET TO A CALCULATED POINT;
32. S29°10'22"W, A DISTANCE OF 107.00 FEET TO A CALCULATED POINT, FOR THE SOUTHERNMOST CORNER OF THE HEREIN DESCRIBED TRACT;
33. N60°49'38"W, A DISTANCE OF 542.22 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE RIGHT;
34. WITH SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 500.00 FEET, AN ARC LENGTH OF 167.19 FEET, A CENTRAL ANGLE OF 19°09'31", A CHORD BEARING AND DISTANCE OF N70°24'23"W, 166.41 FEET TO A CALCULATED POINT;
35. N79°59'09"W, A DISTANCE OF 471.33 FEET TO A CALCULATED POINT;
36. S10°00'51"W, A DISTANCE OF 120.00 FEET TO A CALCULATED POINT;
37. N79°59'09"W, A DISTANCE OF 49.00 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE LEFT;
38. WITH SAID CURVE TO THE LEFT, HAVING A RADIUS OF 70.00 FEET, AN ARC LENGTH OF 20.28 FEET, A CENTRAL ANGLE OF 16°35'52", A CHORD BEARING AND DISTANCE OF N71°41'13"W, 20.21 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE RIGHT;
39. WITH SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 50.00 FEET, AN ARC LENGTH OF 104.90 FEET, A CENTRAL ANGLE OF 120°12'14", A CHORD BEARING AND DISTANCE OF S56°30'37"W, 86.69 FEET TO A CALCULATED POINT;
40. N77°38'37"W, A DISTANCE OF 151.94 FEET TO A CALCULATED POINT, AT A POINT OF CURVATURE TO THE RIGHT, RETURNING TO THE WESTERN LINE OF SAID JST HOLDINGS 202.49 ACRE TRACT, AND ALSO BEING THE EASTERN LINE OF SANTA FE RAILROAD, FOR THE WESTERNMOST CORNER OF THE HEREIN DESCRIBED TRACT;

THENCE, ALONG SAID WESTERN LINE OF JST HOLDINGS 202.49 ACRE TRACT AND SAID EASTERN LINE OF SANTA FE RAILROAD, THE FOLLOWING TWO (2) COURSES AND DISTANCES:

1. WITH SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 6737.93 FEET, AN ARC LENGTH OF 348.24 FEET, A CENTRAL ANGLE OF 02°57'40", A CHORD BEARING AND DISTANCE OF N08°28'56"E, 348.20 FEET TO A 1/2 INCH CAPPED IRON ROD FOUND WITH PLASTIC CAP STAMPED "BGE";
2. N10°00'55"E, A DISTANCE OF 897.48 FEET TO THE POINT OF BEGINNING.

CONTAINING 29.228 ACRES (1,273,156 SQUARE FEET), MORE OR LESS.

## GENERAL NOTES:

1. SITE TOPOGRAPHIC INFORMATION WAS TAKEN FROM A SURVEY PREPARED BY EAGLE SURVEYING, LLC, DATED 05/01/2024.

2. THE PLANS SHOW SUBSURFACE STRUCTURES, ABOVE GROUND STRUCTURES AND/OR UTILITIES FROM FIELD LOCATION AND RECORD MAPPING, EXACT LOCATION OF WHICH MAY VARY FROM THE LOCATIONS INDICATED. IN PARTICULAR, THE CONTRACTOR IS WARNED THAT THE EXACT OR EVEN APPROXIMATE LOCATION OF SUCH PIPELINES, SUBSURFACE STRUCTURES AND/OR UTILITIES IN THE AREA MAY BE DIFFERENT FROM THAT SHOWN OR MAY NOT BE SHOWN, AND IT SHALL BE HIS RESPONSIBILITY TO PROCEED WITH GREAT CARE IN EXECUTING ANY WORK. 48 HOURS BEFORE YOU DIG, DRILL, OR BLAST, CALL TEXAS 811.

3. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY CONDITIONS THAT VARY FROM THOSE SHOWN ON THE PLANS. THE CONTRACTOR'S WORK SHALL NOT VARY FROM THE PLANS WITHOUT THE EXPRESSED APPROVAL OF THE ENGINEER.

4. THE CONTRACTOR IS INSTRUCTED TO COOPERATE WITH ANY AND ALL OTHER CONTRACTORS PERFORMING WORK ON THIS JOB SITE DURING THE PERFORMANCE OF THIS CONTRACT.

5. THE CONTRACTOR SHALL RESTORE LAWNS, DRIVEWAYS, CULVERTS, SIGNS AND OTHER PUBLIC OR PRIVATE PROPERTY DAMAGED OR REMOVED TO AT LEAST AS GOOD A CONDITION AS BEFORE BEING DISTURBED AS DETERMINED BY THE ENGINEER. ANY DAMAGED TREES, SHRUBS, AND/OR HEDGES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

6. PRIOR TO COMMENCEMENT OF STORM AND/OR SANITARY SEWER CONSTRUCTION, CONTRACTOR IS TO VERIFY BOTH HORIZONTAL AND VERTICAL POSITION OF EXISTING SEWER AT CONNECTION POINT. CONTRACTOR IS TO CONSTRUCT GRAVITY LINES PROGRESSIVELY FROM DOWNSTREAM TO UPSTREAM; ANY EXCEPTIONS TO THIS MUST BE APPROVED BY THE ENGINEER. ANY GRADE DISCREPANCIES MUST BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND INCURRING THE COST OF AL REQUIRED PERMITS, INSPECTIONS, CERTIFICATES, ETC. AND SHALL COMPLY WITH ALL REQUIRED PERMITS.

8. ALL WORK SHALL BE DONE IN STRICT COMPLIANCE WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES, STANDARDS, ORDINANCES, RULES, AND REGULATIONS.

9. ALL PROPOSED UTILITIES AND APPURTENANCES TO BE CONSTRUCTED IN COMPLIANCE WITH THE LOCAL MUNICIPALITIES' CODES AND REGULATIONS GOVERNING THE INSTALLATION OF SUCH UTILITIES.

10. ALL PLANS SHALL COMPLY WITH LOCAL AND/OR NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION), OR BEST PRACTICES.

11. FIELD VERIFICATION AND ADJUSTMENTS ARE PERMISSIBLE WITH THE ENGINEER'S WRITTEN APPROVAL.

12. THE ENGINEER RESERVES THE RIGHT TO EXAMINE ANY WORK DONE ON THIS PROJECT AT ANY TIME TO DETERMINE THE CONFORMANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS OF THIS PROJECT, AS INTENDED AND INTERPRETED BY THE ENGINEER.

13. MISCELLANEOUS WORK NOT SPECIFICALLY SHOWN ON THE CONTRACT DRAWINGS SUCH AS PATCHING, BLOCKING TRIMMING, ETC., SHALL BE PERFORMED AS REQUIRED TO MAKE THE WORK COMPLETE.

14. THE CONTRACTOR SHALL PROTECT EXISTING PROPERTY LINE MONUMENTATION. ANY MONUMENTATION DISTURBED OR DESTROYED, AS JUDGED BY THE ENGINEER OR OWNER, SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE UNDER THE SUPERVISION OF A TEXAS LICENSED LAND SURVEYOR.

15. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLAN SHEETS AND COORDINATE WORK WITH ALL OTHER CONTRACTS FOR THE SITE.

16. THE CONTRACTOR SHALL:

A. VERIFY ALL CONDITIONS IN THE FIELD PRIOR TO COMMENCEMENT OF WORK AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

B. EXAMINE THE SITE AND INCLUDE IN HIS WORK THE EFFECT OF ALL EXISTING CONDITIONS ON THE WORK.

C. PROVIDE AND INSTALL ALL MATERIALS AND PERFORM ALL WORK IN ACCORDANCE WITH RECOGNIZED GOOD STANDARD PRACTICE.

D. HOLD THE OWNER HARMLESS AGAINST AND AND ALL CLAIMS ARISING FROM WORK DONE BY THE CONTRACTOR ON THE SITE.

17. ALL TRENCH EXCAVATION AND ANY REQUIRED SHEETING AND SHORING SHALL BE DONE IN ACCORDANCE WITH THE LATEST REVISIONS OF OSHA REGULATIONS FOR CONSTRUCTION. SHEET PILING SHALL BE DESIGNED AND SEALED BY A LICENSED TEXAS PROFESSIONAL ENGINEER.

18. CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING AND THE MAINTENANCE OF SURFACE DRAINAGE DURING THE COURSE OF WORK AND SHALL SUBMIT A DEWATERING PLAN DESIGNED AND SEALED BY A LICENSED TEXAS PROFESSIONAL ENGINEER. CONTRACTOR SHALL MAINTAIN EXISTING SITE DRAINAGE PATTERNS THROUGHOUT CONSTRUCTION UNLESS OTHERWISE SHOWN ON PLANS.

19. ALL UTILITY WORK INVOLVING CONNECTIONS TO EXISTING SYSTEMS SHALL BE COORDINATED WITH THE UTILITY OWNER. NOTIFY THE UTILITY OWNER 72 HOURS BEFORE EACH AND EVERY CONNECTION TO EXISTING SYSTEMS IS MADE.

20. CONSTRUCTION OF ALL PROPOSED UTILITIES MUST BEGIN AT ITS POINT OF CONNECTION TO THE EXISTING UTILITY OR AT THE LOWEST POINT IN THE SYSTEM. RIMS, GRATES, INVERTS, CLEARANCES, AND LOCATION AT CROSSINGS MUST BE VERIFIED PRIOR TO THE BEGINNING OF CONSTRUCTION.

21. MAINTAIN FLOW FOR ALL EXISTING UTILITIES.

22. ALL FRAMES/COVERS WITHIN PAVED AREAS SHALL HAVE THE TOPS SET FLUSH WITH THE EXISTING PAVEMENT GRADE. IN LANDSCAPED AREAS, ALL FRAMES SHALL BE 0.1' ABOVE GRADE.

23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL FIELD LAYOUT. THE CONTRACTOR SHALL TAKE TIES TO ALL UTILITY CONNECTIONS AND PROVIDE MARKED-UP AS-BUILT PLANS FOR ALL UTILITIES SHOWING TIES TO CONNECTIONS, BENDS, VALVES, LENGTHS OF LINES, AND INVERTS. AS-BUILT PLANS SHOWING ALL UNDERGROUND UTILITIES INSTALLED OR ENCOUNTERED SHALL BE REVIEWED BY THE OWNER AND HIS REPRESENTATIVES. THE CONTRACTOR SHALL PROVIDE ANY CORRECTION OR ADMISSIONS TO THE SATISFACTION OF THE OWNER AND HIS REPRESENTATIVES BEFORE UTILITIES WILL BE ACCEPTED.

24. TEMPORARY PAVEMENT SHALL BE PLACED WITHIN 48HRS OF COMPLETION OF EXCAVATION AND BACKFILL OPERATIONS WITHIN THE EXISTING PAVEMENT LIMITS.

25. CONTRACTOR SHALL MAINTAIN ALL TRAFFIC IN ALL AREAS IN ACCORDANCE WITH THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

26. ALL EXCAVATIONS SHALL BE BACKFILLED TO EXISTING GRADE AT THE END OF EACH WORK DAY.

27. CONTRACTOR SHALL TAKE CARE TO PREVENT DAMAGE TO EXISTING UTILITES. DAMAGED UTILITIES SHALL BE IMMEDIATELY REPAIRED BY CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

## CONSTRUCTION NOTES:

1. BUILDING SILL ELEVATIONS AND SEWER INVERTS ARE APPROXIMATE AND SHOULD BE CONFIRMED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORK.

2. THE MINIMUM SLOPE FOR SANITARY SEWER LATERALS SHALL BE 0.010 FT/FT

3. PROGRESSION OF WORK: IN GENERAL WORK SHALL PROCEED FROM THE DOWNSTREAM END OF A SEWER LINE SEGMENT TO THE UPSTREAM END OF THE SEGMENT.

4. THE MAXIMUM LENGTH OF OPEN TRENCH SHALL BE LIMITED TO NO MORE THAN THREE PIPE LENGTHS IN A SEWER SEGMENT.

5. THE MINIMUM TRENCH WIDTH SHALL BE NO LESS THAN 24 INCHES OR ONE FOOT GREATER THAN OUTSIDE DIAMETER OF THE PIPE, WHICHEVER IS GREATER.

6. THE MINIMUM DEPTH OF COVER ABOVE THE TOP OF PIPE FOR WATER LINE INSTALLATIONS SHALL BE 4 FEET.

7. WATER MAINS AND SERVICES: LOCATIONS SHOWN ARE APPROXIMATE AND ARE INDICATED FOR GENERAL REFERENCE ONLY UNLESS OTHERWISE NOTED.

8. ALL EXISTING UNDERGROUND FEATURES SUCH AS SEPTIC TANKS, LEACH FIELDS, SANITARY SEWERS, ETC. ARE APPROXIMATE ONLY AND ARE INDICATED FOR GENERAL REFERENCE AND DESIGN UNLESS OTHERWISE NOTED.

9. WORK IN PRIVATE PROPERTY: THE CONTRACTOR SHALL OBTAIN WRITTEN AUTHORIZATION FROM THE OWNER PRIOR TO BEGINNING WORK IN ANY PRIVATELY OWNED AREAS WITH CHILL REQUIRE EASEMENTS FOR CONSTRUCTION.

## SOIL PREPARATION AND GRADING NOTES:

1. THE SOIL BENEATH THE PAVEMENT SHALL BE TREATED AS FOLLOWS:

A. REMOVE ALL VEGETATION, ORGANIC MATERIAL OR OTHER DELETERIOUS MATERIALS.
B. PERFORM ANY CUT OPERATIONS AS NEEDED AND PROOF ROLL THE PAVEMENT AREAS WITH A FULLY LOADED TANDEM AXLE DUMP TRUCK. ANY AREAS WHICH RUT EXCESSIVELY OR PUMP SHALL BE UNDERCUT AND REPLACED WITH COMPACT FILL.
C. PERFORM ALL FILL OPERATIONS. ALL FILL SHALL BE INSTALLED IN MAXIMUM 8 INCH LIFTS AND COMPACTED TO AT LEAST 93% OF THE MAXIMUM DENSITY AND AS DETERMINED BY ASTM D 698 (STANDARD PROCTOR). AND TO AT LEAST +3 PERCENTAGE POINTS OF ITS OPTIMUM MOISTURE CONTENT.
D. DO NOT USE ANY SAND AS FILL UNDER THE PAVEMENT.
E. ANY IMPORTED FILL SHALL BE SIMILAR TO THE ON SITE SOILS AND APPROVED BY EVA PITMAN, P.E. OF TERRADYNE ENGINEERING, INC.

2. SITE SHALL BE GRADED TO ASSURE DRAINAGE OF SURFACE WATER FROM BUILDINGS.

3. REMOVE EXCESS SOILS FROM THE SITE AND LEGALLY DISPOSE OF THE SOILS.

4. GRADES NOT OTHERWISE INDICATED ON THESE PLANS SHALL BE UNIFORM LEVELS OR SLOPES BETWEEN POINTS WERE ELEVATIONS ARE GIVEN. ABRUPT CHANGES IN SLOPES SHALL BE WELL ROUNDED. THE CONTRACTOR IS RESPONSIBLE FOR POSITIVE SITE DRAINAGE.

5. ALL SITE EXCAVATION SHALL BE CONSIDERED UNCLASSIFIED EXCAVATION.

6. THE EXISTING GRADES AND CONTOURS SHOWN IN THESE PLANS REPRESENT THE ELEVATIONS AS INDICATED ON THE TOPOGRAPHIC SURVEY BY EAGLE SURVEYING, LLC ON 5/1/2024. DUE TO MANY FACTORS INCLUDING POSSIBLE DISTURBANCE OF THE SOIL OR BENCHMARKS BY OTHER PARTIES AND THE EXPANSIVE/SHRINKAGE NATURE OF THE SOIL, THE ELEVATIONS MAY BE SIGNIFICANTLY DIFFERENT IN THE FUTURE (INCLUDING THE BENCHMARKS). NORMAL EQUIPMENT AND MEASUREMENT ACCURACIES SHOULD BE TAKEN INTO ACCOUNT WHEN USING THESE ELEVATIONS. REFER TO THE GEOTECHNICAL INVESTIGATION FOR THE GEOTECHNICAL RAMIFICATIONS.

7. ALL SLOPES IN UNPAVED AREAS SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.

8. REFER TO THE GEOTECHNICAL REPORT FOR COMPLETE INFORMATION ON SOIL CHARACTERISTICS AND ANY OTHER RECOMMENDATIONS NOT CONTAINED HEREIN.

## PAVING NOTES:

1. REFER TO GRADING PLAN FOR SOIL PREPARATION SPECIFICATIONS UNDER PAVEMENT.

2. CONCRETE FOR THE CONCRETE PAVEMENT SHALL HAVE A 28 DAY DESIGN COMPRESSIVE STRENGTH OF 4,000 PSI, A MINIMUM OF 5.5 SACKS OF 5.5 SACKS OF PORTLAND CEMENT PER CUBIC YARD, 20% CLASS C FLYASH, 4% TO 6% AIR CONTENT USING AIR ENTRAINING AGENT AS REQUIRED, MID RANGE WATER REDUCING AGENT AND A 5-6" SLUMP.

3. CONCRETE FOR PRIVATE SIDEWALKS, CURBS, GUTTERS, AND DRAINAGE STRUCTURES SHALL HAVE A 28 DAY DESIGN COMPRESSIVE STRENGTH OF 3,000 PSI, A MINIMUM OF 5 SACKS OF CEMENT PER CUBIC YARD, 4% TO 6% AIR CONTENT USING AIR ENTRAINING AGENT AS REQUIRED, 20% CLASS C FLYASH AND A 5-6" SLUMP.

4. THE MID RANGE WATER REDUCING AGENT ADMIXTURE CONFORMING TO ASTMC-494, TYPE A OR D SHALL BE CHOSEN FROM ONE OF THE FOLLOWING (OR APPROVED EQUAL):
   EUCON X-20 OR EUCON MR BY EUCLID
   SIKAMENT NL BY SIKA
   PLASTIMIX MR BY PROMIX TECHNOLOGIES
   MIRA 85 BY W.R.GRACE AND CO.
   POLYHEED 1020 BY DEGUSSA ADMIXTURES

   THE AMOUNT OF MID RANGE WATER REDUCER SHALL BE AS RECOMMENDED BY THE ADMIXTURE SUPPLIER TO INCREASE THE SLUMP OF THE CONCRETE BY 50 PERCENT OVER THE SLUMP WITHOUT THE ADMIXTURE. THE SLUMP GIVEN IN CONCRETE NOTES ARE AT THE POINT OF DISCHARGE.

5. IF THE AIR TEMPERATURE IS GREATER THAN 90 DEGREES WITHIN 24 HOURS AFTER PLACEMENT, HOT WEATHER CONCRETE PROCEDURE SHALL BE USED. THE CONTRACTOR SHALL SUBMIT A PROCEDURE TO THE ENGINEER FOR APPROVAL. THESE PROCEDURES MAY INCLUDE THE FOLLOWING:
A. PLACING THE CONCRETE IN THE EARLY MORNING HOURS.
B. THE USE OF EVAPORATION REDUCER (SEE BELOW)
C. THE USE OF MISTING AS A CURING METHOD
D. THE USE OF WET BLANKETS AS A CURING METHOD
E. THE USE OF A RETARDING ADMIXTURE (NOT PREFERABLE)

6. ANY CONCRETE TO BE PLACED FURTHER THAN 16 FEET FROM THE END OF A CONCRETE TRUCK SHALL BE PUMPED WITH A COMMERCIAL CONCRETE PUMPING TRUCK OR OTHER PLACEMENT METHOD APPROVED BY THE ENGINEER. THE CONCRETE TRUCK SHALL NOT BE ALLOWED TO DRIVE OVER THE SUBGRADE OR THE PAVEMENT REINFORCEMENT UNLESS APPROVED BY THE ENGINEER.

7. REINFORCING STEEL SHALL BE NEW DOMESTIC DEFORMED BILLET STEEL CONFORMING TO ASTM A-615 GRADE 60.

8. REINFORCING BARS, BAR SUPPORTS, AND SPACERS SHALL BE DETAILED AND PROVIDED IN ACCORDANCE WITH THE A.C.I. DETAILING MANUAL. CHAIRS SHALL NOT BE PLACED FURTHER THAN 4 FEET APART. BAR SUPPORTS SHALL BE DAYTON/RICHMOND PRODUCTS (80-745-3703) OR EQUAL:
A. AT CONCRETE PAVEMENT: (CONCRETE THICKNESS MINUS 1 1/2 INCHES) HIGH, TYPE R21, OR TYPE BBP.

9. MASTER BUILDS CONFILM OR EUCOBAR EVAPORATION REDUCERS SHALL BE USED AFTER EACH FINISHING OPERATION ON THE CAST-IN-PLACE CONCRETE PAVEMENT UNLESS PRIOR APPROVAL FROM THE ENGINEER HAS BEEN OBTAINED TO NOT USED THIS PRODUCT.

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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:
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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LOIS ROAD ESTATES – FILING NOS. 1 & 2
CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS
GENERAL NOTES & PLANS NOTES

DATE 4/7/2025

| | |
|---|---|
| A | 1st SUBMITTAL TO JURISDICTION 4/7/2025 – KMB |
| B | 2nd SUBMITTAL TO JURISDICTION 5/12/2025 – KMB |

REVISIONS

DR. TN | CH. KB
P.M. JF
JOB 24007256
SHEET NO. 02

CAD FILE: 24007256-PH1-NOTES.DWG

10. SAWCUTS IN CONCRETE PAVEMENT SHALL BE MADE AS SOON AS THE CONCRETE IS OF SUFFICIENT STRENGTH TO SAW WITHOUT RAVELING THE AGGREGATE. ANY TIME LAPSE GREATER THAN 8 HOURS AFTER PLACING THE CONCRETE SHALL BE PERMITTED ONLY IF APPROVED BY THE ENGINEER.

11. NO PIPING OR CONDUITS SHALL BE INSTALLED IN ANY CONCRETE WITHOUT THE APPROVAL OF THE ENGINEER.

12. PAVING CONTRACTOR IS RESPONSIBLE FOR ALL LAY DOWN CURBS AT INTERSECTIONS WHERE BARRIER FREE RAMPS ARE TO BE CONSTRUCTED.

13. THE CONTRACTOR SHALL PROVIDE, CONSTRUCT AND MAINTAIN BARRICADES AND SIGNS IN ACCORDANCE WITH THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

14. SAWCUTS SHALL HAVE A MAXIMUM SPACING OF 15' EACH WAY.

15. EXPANSION JOINTS SHALL BE SMOOTH DOWEL JOINTS WITH THE PAVEMENT THICKNESS INCREASED BY 25%. ONE END OF DOWELS TO BE GREASED AND CAPPED AND USE 1" EXPANSION JOINT MATERIAL IN THE JOINT. REDWOOD OR OTHER RIGID MATERIAL SHOULD BE AVOIDED. SPACE EXPANSION JOINTS BETWEEN 80' AND 100' APART AND ALL LOCATIONS IN WHICH LARGE PAVEMENT SECTIONS INTERSECT SMALLER SECTIONS.

16. ALL JOINTS & SAWCUTS MUST BE SEALED WITH A BITUMINOUS JOINT SEALANT OR APPROVED EQUAL.

17. IT WILL BE THE CONTRACTORS RESPONSIBILITY TO ACQUIRE ALL NECESSARY PERMITS FROM THE CITY OF SANGER AND TXDOT BEFORE CONSTRUCTION WITHIN CITY RIGHT-OF-WAY.

18. ALL DIMENSIONS ARE TO BACK OF CURB, UNLESS OTHERWISE NOTED.

19. GREASE TRAPS, MANHOLES, AND VALVE COVERS IN PAVED AREAS SHALL BE TRAFFIC BEARING AND RIM ELEVATIONS SHALL MATCH FINAL PAVING ELEVATION.

## SITE UTILITY NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON THE INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPEARANCES OBSERVED IN THE FIELD.THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA; AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATIONS OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

2. ALL UTILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF SANGER PUBLIC WORKS SPECIFICATIONS AND/OR NCTCOG STANDARDS.

3. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL THE MATERIALS AND APPURTENANCES NECESSARY FOR THE COMPLETE INSTALLATION OF UTILITIES. ALL PIPE AND FITTINGS SHALL BE INSPECTED BY THE CITY INSPECTOR PRIOR TO BEING COVERED.

4. ALL WORK SHALL COMPLY WITH ALL APPLICABLE CODES, REGULATIONS, AND/OR LOCAL STANDARDS AND REQUIREMENTS.

5. THE SITE UTILITY CONTRACTOR SHALL MAKE ARRANGEMENTS WITH THE UTILITY OWNER FOR THE CONNECTIONS TO THE EXISTING WATER MAIN.

6. THE CONTRACTOR SHALL ADJUST THE LOCATION OF THE PROPOSED WATER LINES AS REQUIRED TO AVOID CONFLICTS WITH THE OTHER UTILITIES.

7. THRUST BLOCKS SHALL BE PROVIDED AT ALL TEES, ELBOWS, AND BENDS, AND WILL BE OF SUFFICIENT SIZE TO COMPLY WITH CITY STANDARDS FOR EXISTING SOIL CONDITIONS.

8. ALL FIRE PROTECTIONS MATERIAL SHALL BE U.L. LISTED, FACTORY MUTUAL APPROVED, AND NFPA STANDARDS, UNLESS OTHERWISE DIRECTED BY THE PROJECT MANAGER.

9. THE LOCATION (HORIZONTAL & VERTICAL) OF ALL UTILITY LEAD-INS TO THE BUILDINGS SHALL BE VERIFIED WITH THE BUILDING MECHANICAL PLANS.

10. MATCH ALL MANHOLES AND VAULTS WITH PROPOSED GROUND ELEVATIONS.

11. UNDERGROUND TELEPHONE LINE SHALL BE WITHIN 3" OF CONDUIT, BURIED A MINIMUM OF 24", AND TERMINATING AT RIGHT-OF-WAY WITH PULL STRING AND FLAG.

12. CONTRACTOR SHALL NOTIFY THE UTILITY AUTHORITIES INSPECTORS 72 HOURS BEFORE CONNECTING TO ANY EXISTING LINE.

13. ALL FILL MATERIAL IS TO BE IN PLACE AND COMPACTED BEFORE INSTALLATION OF PROPOSED UTILITIES.

14. WATER & SANITARY SEWER UTILITIES SHALL BE KEPT 10' APART (PARALLEL) OR WHEN CROSSING 24" VERTICAL CLEARANCE (OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE, UNLESS OTHERWISE NOTED.)

15. LINES UNDERGROUND SHALL BE INSTALLED, INSPECTED, AND APPROVED BEFORE BACKFILLING.

16. TOPS OF EXISTING MANHOLES SHALL BE RAISED AS NECESSARY TO BE FLUSH WITH PROPOSED PAVEMENT ELEVATIONS., AND TO BE ONE FOOT ABOVE FINISHED GROUND WITH WATER TIGHT LIDS.

17. ALL CONCRETE FOR ENCASEMENT SHALL HAVE A MINIMUM 28-DAY COMPRESSION STRENGTH AT 3,000 P.S.I.

18. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 48" COVER BELOW FINISHED GRADE ON ALL WATERLINES.

19. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE IN POSSESSION BEFORE THE FINAL CONNECTION OF SERVICE.

20. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES FOR INSTALLATION REQUIREMENTS AND SPECIFICATIONS.

21. IN THE EVENT OF VERTICAL CONFLICT BETWEEN WATERLINES, SANITARY LINES, STORM LINES, AND GAS LINES (EXISTING AND PROPOSED), THE SANITARY LINE SHALL BE DUCTILE IRON PIPE WITH MECHANICAL JOINTS AT LEAST 10' ON BOTH SIDES OF CROSSING. THE WATERLINE SHALL HAVE MECHANICAL JOINTS WITH APPROPRIATE THRUST BLOCKING AS REQUIRED TO PROVIDE A MINIMUM OF 24" CLEARANCE. MEETING REQUIREMENTS OF ANSI A21.10 OR A21.11 (AWWA C-151) (CLASS 50).

22. OWNER/CONTRACTOR SHALL COORDINATE WITH THE CITY FIRE MARSHALL TO PROVIDE ANY ADDITIONAL FIRE SAFETY FEATURES, INCLUDING FIRE HYDRANTS, NOT SHOWN AND NOTIFY ENGINEER OF CHANGES.

## EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON THE INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPEARANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA; AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATIONS OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

2. EROSION CONTROL MEASURES MAY ONLY BE PLACES IN FRONT OF INLETS, OR IN CHANNELS, DRAINAGEWAYS OR BORROW DITCHES AT RISK OF CONTRACTOR. CONTRACTOR SHALL REMAIN LIABLE FOR ANY DAMAGE CAUSED BY THE MEASURES INCLUDING FLOODING DAMAGE, WHICH MAY OCCUR DUE TO BLOCKED DRAINAGE. AT THE CONCLUSION OF ANY PROJECT, ALL CHANNELS, DRAINAGEWAYS AND BORROW DITCHES IN THE WORK ZONE SHALL BE DREDGED OF ANY SEDIMENT GENERATED BY THE PROJECT OR DEPOSITED AS A RESULT OF EROSION CONTROL MEASURES.

3. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY GOVERNING AUTHORITIES (INCLUDING STORM WATER POLLUTION PREVENTION PLAN.) THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE APPROVED TPDES SWPPP DRAWINGS DURING CONSTRUCTION OPERATIONS.

4. PRIOR TO COMMENCING ANY CONSTRUCTION, A CONSTRUCTION ENTRANCE AND PERIMETER SILT FENCE SHALL BE INSTALLED AT THE LOCATIONS SHOWN, OR AS DESCRIBED IN THE SWPPP.

5. THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL THE EROSION CONTROL MEASURES SHOWN ON THE PLANS. THE EROSION CONTROL SYSTEM DESCRIBED WITHIN THE CONSTRUCTION DOCUMENTS SHOULD BE CONSIDERED TO REPRESENT THE MINIMUM ACCEPTABLE STANDARDS FOR THIS PROJECT. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED DEPENDENT UPON THE STAGE OF CONSTRUCTION, THE SEVERITY OF THE RAINFALL EVENT AND/OR AS DEEMED NECESSARY AS A RESULT OF ON-SITE INSPECTIONS BY THE OWNER, THEIR REPRESENTATIVES OR THE JURISDICTIONAL AUTHORITIES. THESE ADDITIONAL MEASURES SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE OWNER. IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO ASSURE THAT THE STORM WATER DISCHARGE FROM THE SITE DOES NOT EXCEED TOLERANCES ESTABLISHED BY ANY OF THE JURISDICTIONAL AUTHORITIES.

6. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.

7. AS INLETS ARE COMPLETED, TEMPORARY SEDIMENT BARRIERS SHALL BE INSTALLED.

8. AT THE COMPLETION OF THE PAVING AND FINAL GRADING, THE DISTURBED AREA(S) SHALL BE RE-VEGETATED IN ACCORDANCE WITH THE SWPPP.

9. THE SPECIFIC PLANT MATERIALS PROPOSED TO PROTECT FILL AND EXCAVATED SLOPES SHALL BE AS INDICATED WITHIN THE SWPPP. PLANT MATERIALS MUST BE SUITABLE FOR USE UNDER LOCAL CLIMATE AND SOIL CONDITIONS. IN GENERAL, HYDROSEEDING OR SODDING BERMUDA GRASS IS ACCEPTABLE DURING THE SUMMER MONTHS (MAY 1 TO AUGUST 30). WINTER RYE OR FESCUE GRASS MAY BE PLANTED DURING TIMES OTHER THAN THE SUMMER MONTHS AS A TEMPORARY MEASURE UNTIL SUCHTIME AS THE PERMANENT PLANTING CAN BE MADE.

10. SILT FENCE AND INLET SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL RE-VEGETATION HAS BEEN COMPLETED.

11. DISTURBED AREAS THAT ARE SEEDED OR SODDED SHALL BE CHECKED PERIODICALLY TO SEE THAT GRASS COVERAGE IS PROPERLY MAINTAINED. DISTURBED AREAS SHALL BE WATERED, FERTILIZED, AND RESEEDED OF RESODDED, IF NECESSARY. GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.

12. SEDIMENT SHALL BE REMOVED FROM SEDIMENT BASIN BEFORE IT IS 50% FULL, IF IMPLEMENTED BY THE SWPPP.

13. FREQUENT INSPECTIONS OF THE SILT FENCE SHALL BE MADE. ALL REPAIRS OR REPLACEMENTS SHALL BE MADE IMMEDIATELY.

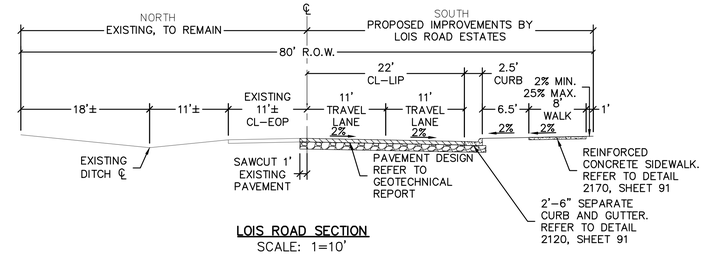
14. THE CONTRACTOR SHALL INSPECT HIS STABILIZATION AND EROSION CONTROL MEASURES AT MINIMUM OF ONCE EVERY 14 DAYS, AND WITHIN 24 HOURS OF ANY STORM EVENT GREATER THAN 0.5 INCHES. THE CONTRACTOR SHALL REPAIR INADEQUACIES REVEALED BY THE INSPECTION BEFORE THE NEXT STORM EVENT AND SHALL MODIFY HIS SWP3 WITHIN 7 DAYS OF THE INSPECTION. ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF WHEN IT REACHES A DEPTH OF SIX (6) INCHES.

15. CONTRACTOR SHOULD ATTAIN A 75% BERMUDA COVERING BY SEEDING OR SODDING OVER ALL AFFECTED CONSTRUCTION AREAS BEFORE EROSION CONTROL CAN BE REMOVED.

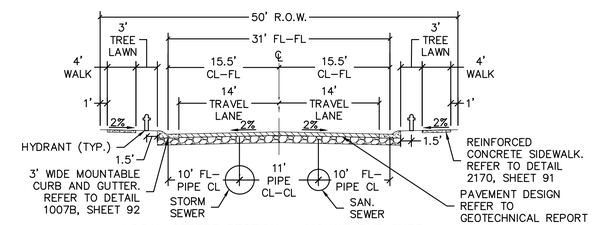
16. CONTRACTOR IS RESPONSIBLE FOR PREPARING, FILING, & MAINTAINING THE SWPPP & THE NOI.

17. WHERE THE SILT FENCE CAN NOT BE USED, THE CONTRACTOR MAY SUBSTITUTE WITH THE FOLLOWING:
   - TRIANGULAR SEDIMENT FILTER DIKE PER NCTCOG SPEC 1050A
   - "TEXAS POWER MULCH" MULCH FILLED FILTER SOCK

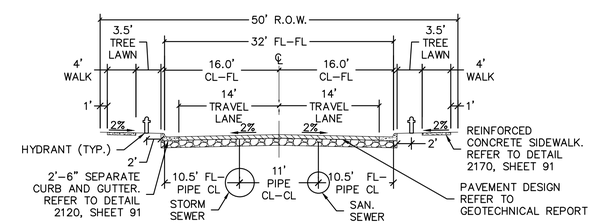
18. THE CONTRACTOR SHALL REFER TO EROSION CONTROL NARRATIVE AND SWPPP COORDINATION/INVESTIGATION DOCUMENTATION PROVIDED BY OTHERS FOR APPROPRIATE EROSION CONTROL MEASURES AND PROCEDURES FOR THIS PROJECT.



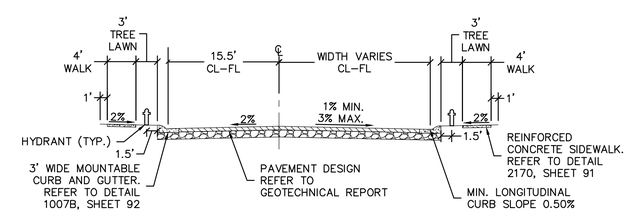

LOIS ROAD SECTION
SCALE: 1=10'




LOCAL STREET SECTION – MOUNTABLE CURB
SCALE: 1=10'




LOCAL STREET SECTION – VERTICAL CURB
SCALE: 1=10'




TYPICAL KNUCKLE SECTION
SCALE: 1=10'

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STATE OF TEXAS

GENERAL NOTES & PLANS
NOTE & STREET SECTIONS

DATE 4/7/2025

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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 03

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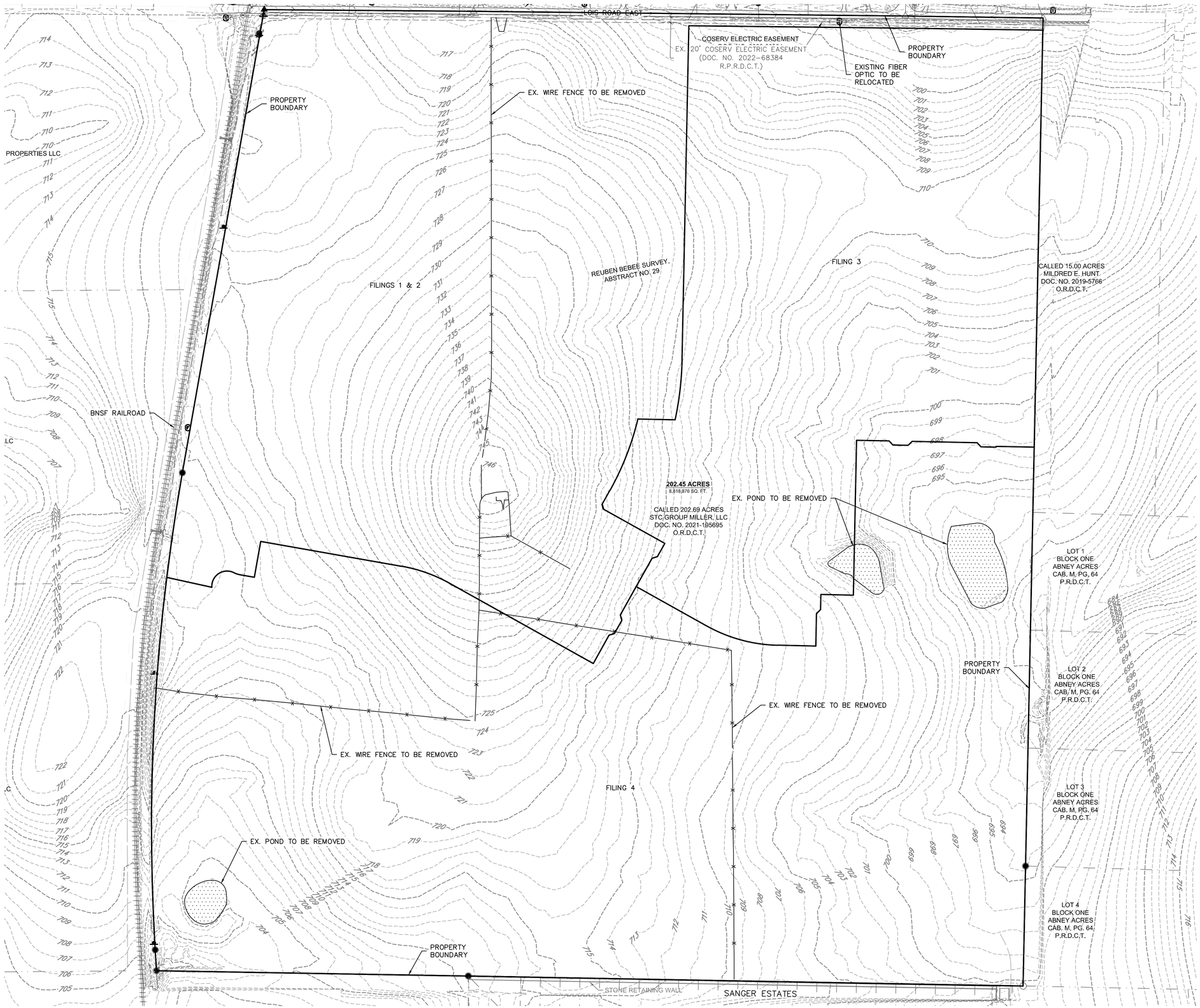


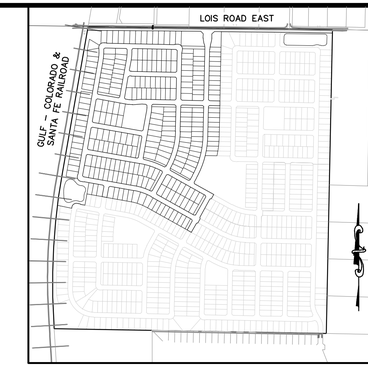


KEYMAP
1"=750'

( IN FEET )
1 inch = 150 ft.

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STATE OF TEXAS
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EXISTING CONDITIONS

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DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 04

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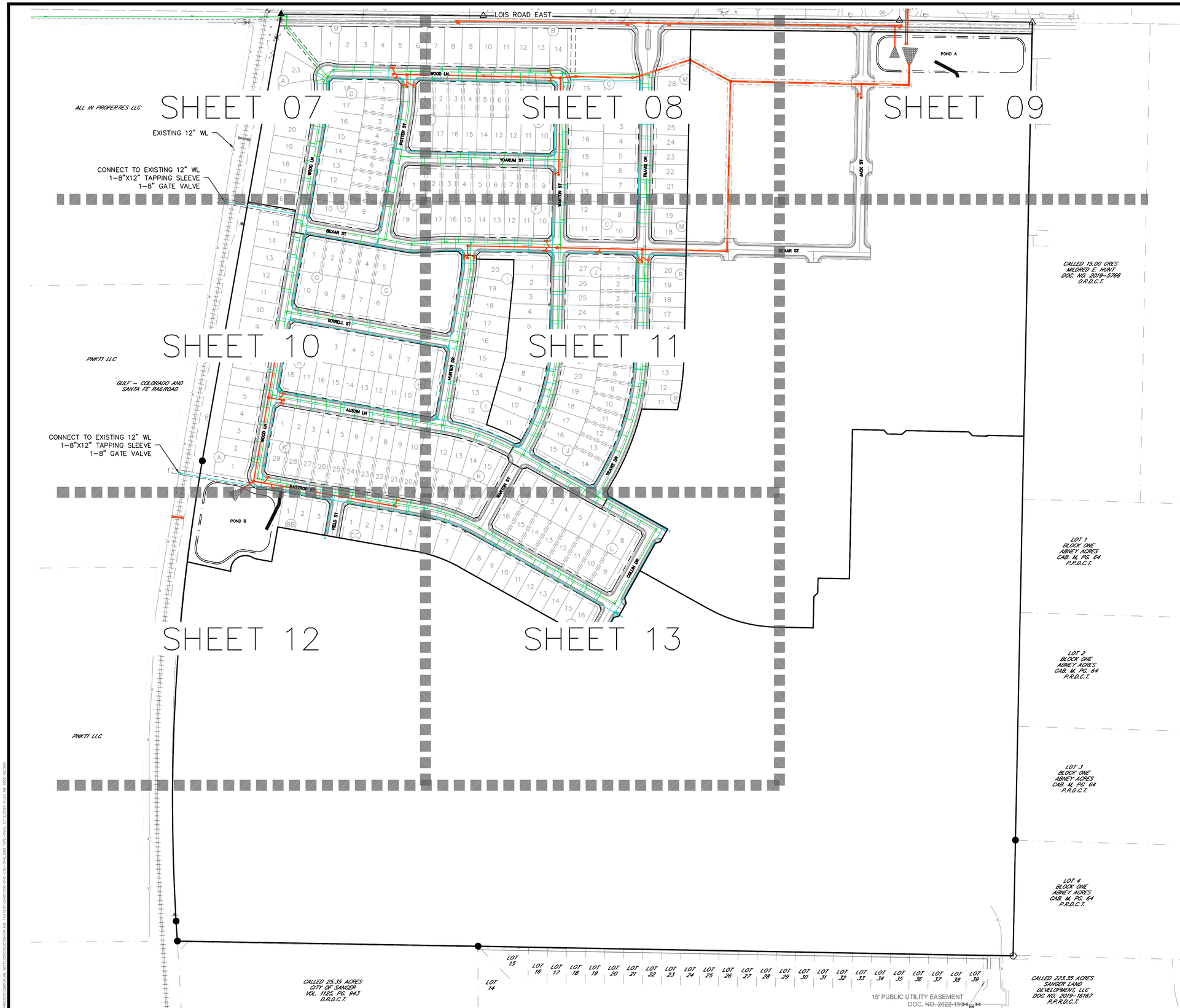


## LEGEND

- PROPERTY BOUNDARY
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
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- PROPOSED HYDRANT
- PROPOSED WATER VALVE

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STATE OF TEXAS
OVERALL UTILTIY PLANS
OVERALL

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P.M. JF
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SHEET NO. 05

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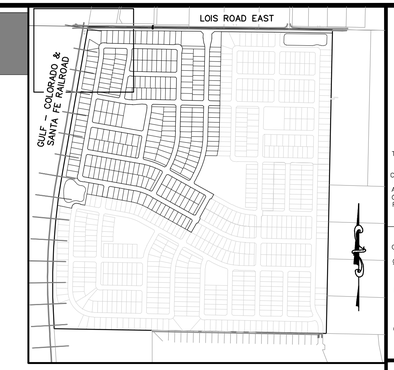


KEYMAP
1"=750'

LEGEND

- PROPERTY BOUNDARY
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED EASEMENT
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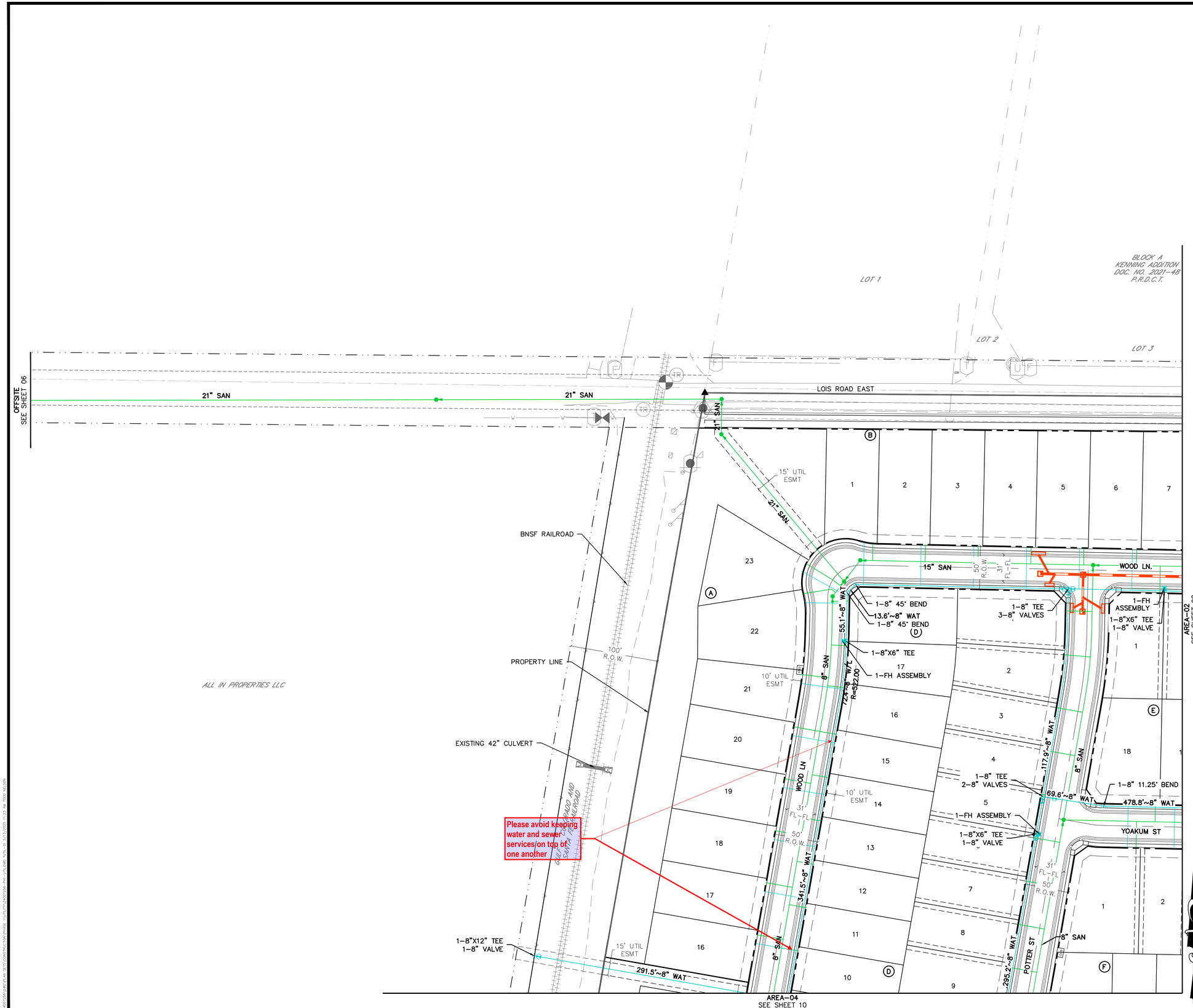


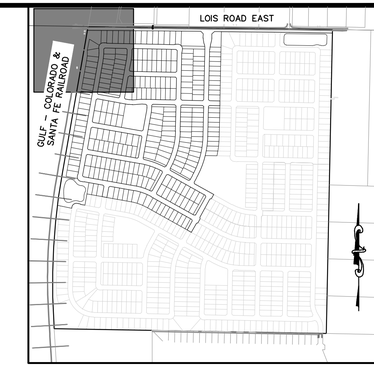


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## LEGEND

- PROPERTY BOUNDARY
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REVISIONS

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SHEET NO. 07

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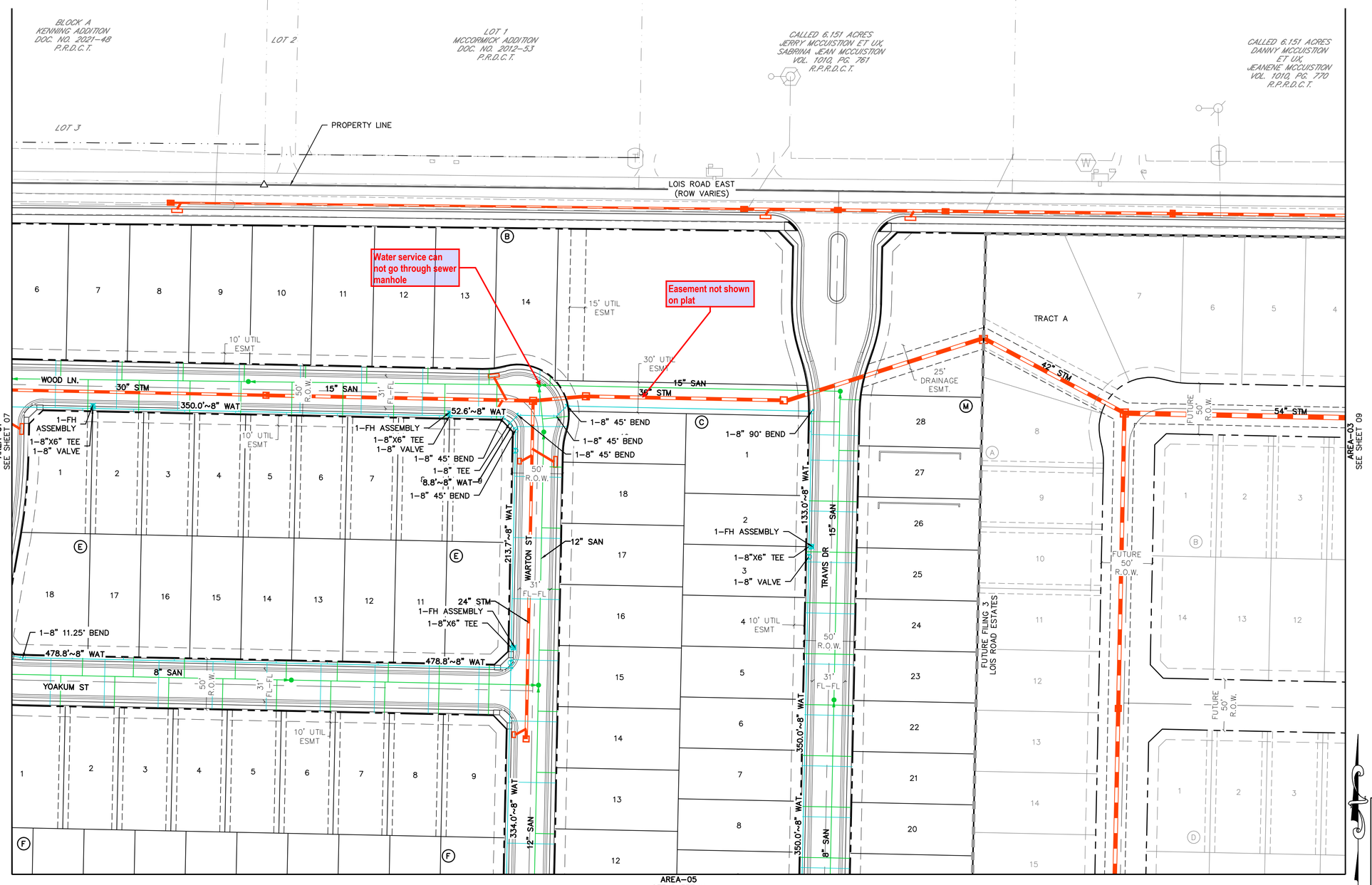


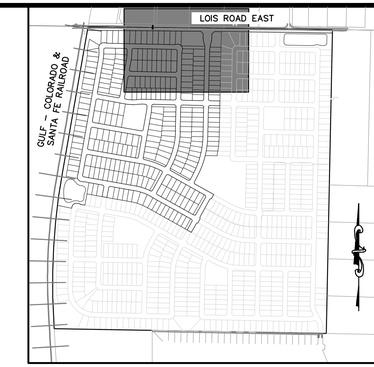


KEYMAP
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OVERALL UTILTIY PLANS
AREA-02

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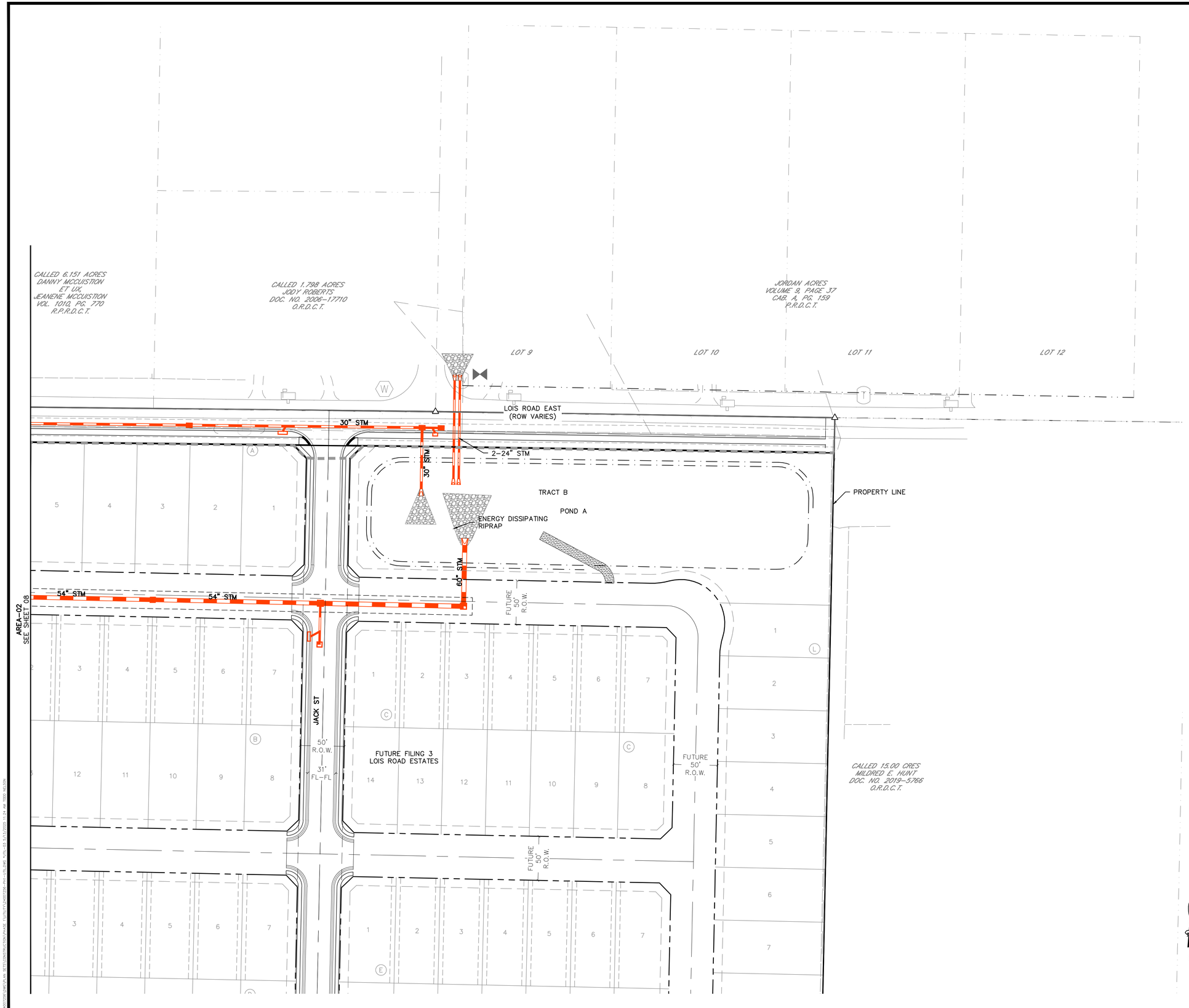


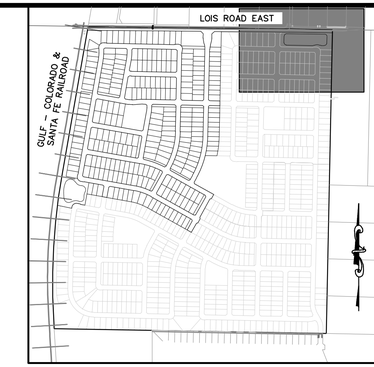


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AREA-03

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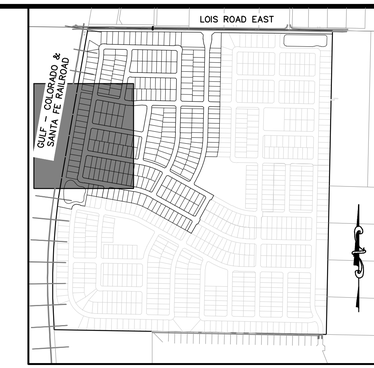


KEYMAP
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P.M. JF
JOB 24007256
SHEET NO. 10

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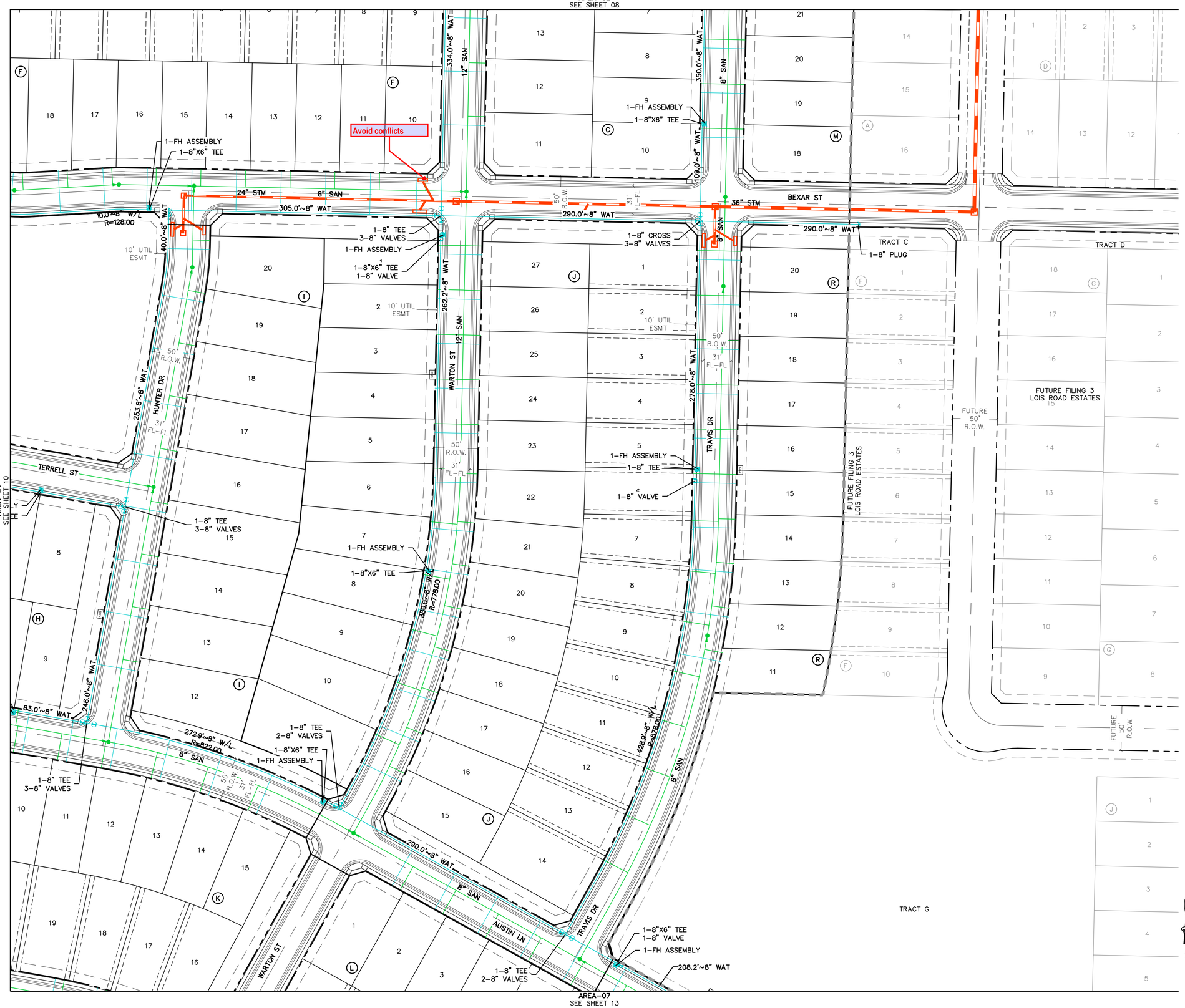


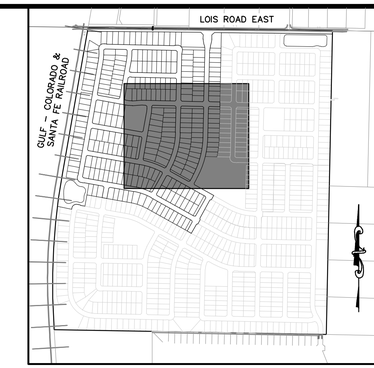


KEYMAP
1"=750'

LEGEND

- PROPERTY BOUNDARY
- PROPOSED RIGHT–OF–WAY
- EXISTING RIGHT–OF–WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED WATER
- EXISTING WATER
- PROPOSED HYDRANT
- PROPOSED WATER VALVE

( IN FEET )
1 inch = 50 ft.

**BENCHMARK:**
AN "X" CUT IN CONCRETE LOCATED WITHIN THE INTERSECTION OF LOIS ROAD EAST AND THE GULF COAST AND SANTA FE RAILROAD RIGHTS–OF–WAY, HAVING AN ELEVATION OF 729.3 FEET, A NORTHING COORDINATE VALUE OF 7,192,162.0, AND AN EASTING COORDINATE VALUE OF 2,374,666.1.

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STATE OF TEXAS
OVERALL UTILTIY PLANS
AREA–05

DATE 4/7/2025

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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 11

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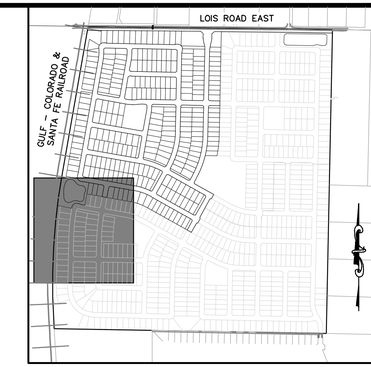


KEYMAP
1"=750'

LEGEND

- PROPERTY BOUNDARY
- PROPOSED RIGHT–OF–WAY
- EXISTING RIGHT–OF–WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED WATER
- EXISTING WATER
- PROPOSED HYDRANT
- PROPOSED WATER VALVE

50 0 50 100
( IN FEET )
1 inch = 50 ft.

**BENCHMARK:**
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CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS
OVERALL UTILTIY PLANS
AREA–06

DATE 4/7/2025

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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 12

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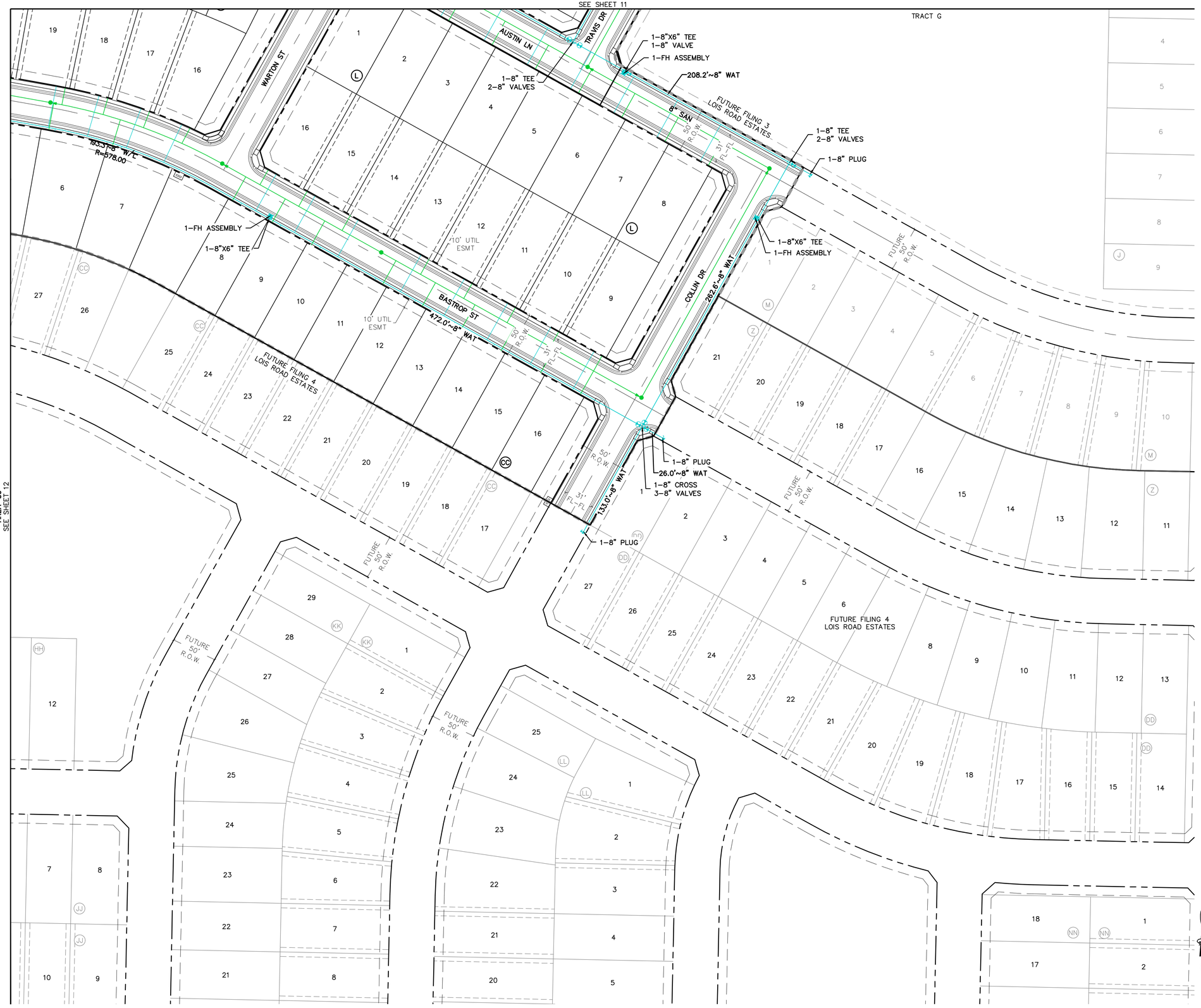


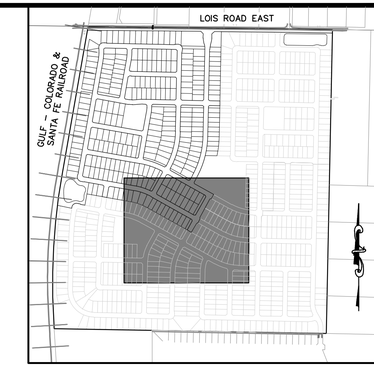


KEYMAP
1"=750'

LEGEND

- PROPERTY BOUNDARY
- PROPOSED RIGHT–OF–WAY
- EXISTING RIGHT–OF–WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED WATER
- EXISTING WATER
- PROPOSED HYDRANT
- PROPOSED WATER VALVE

( IN FEET )
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STATE OF TEXAS
OVERALL UTILTIY PLANS
AREA–07

DATE 4/7/2025

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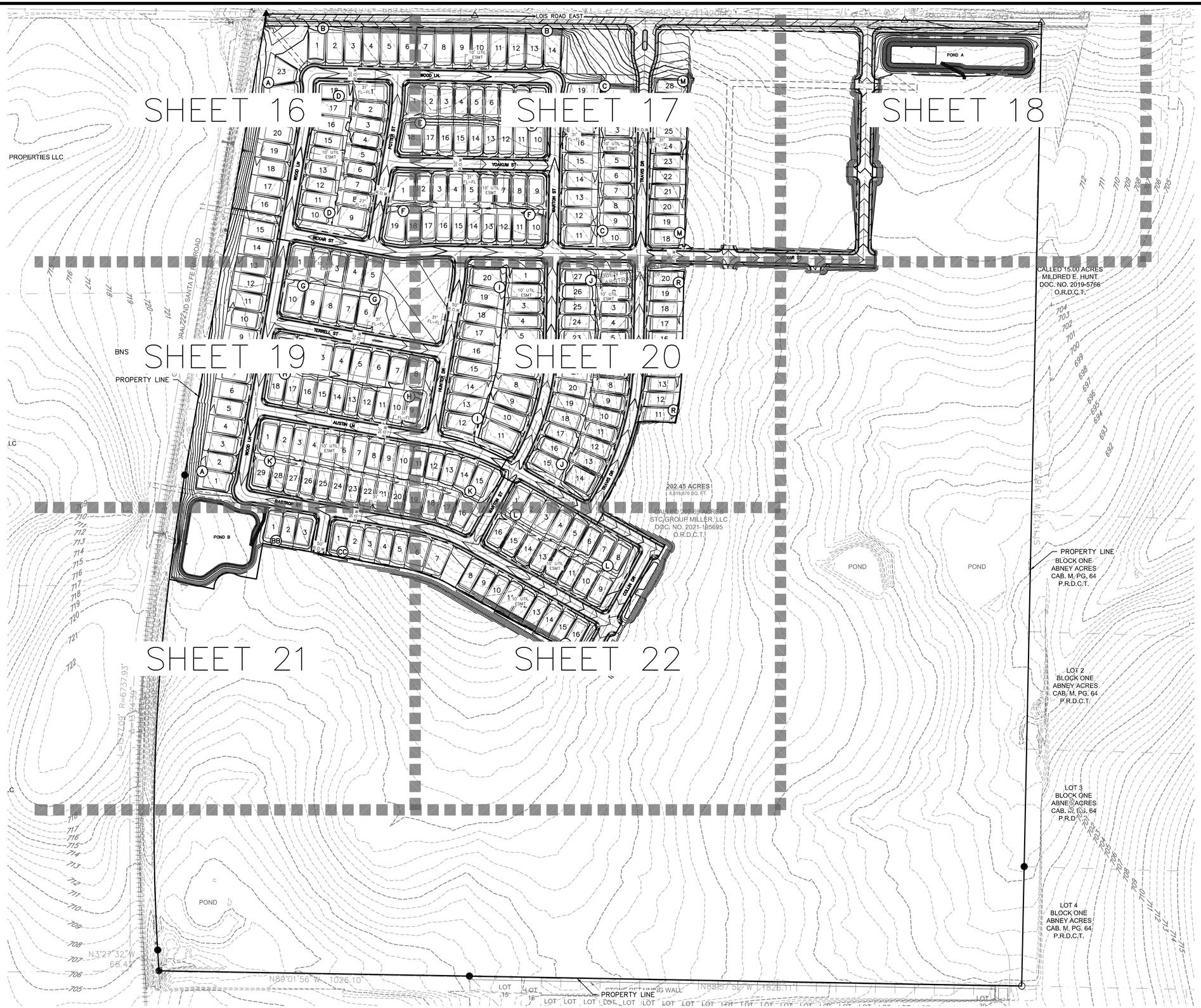
REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 13

CAD FILE: 24007256-PHI-UTIL.DWG




## LEGEND

- PROPERTY BOUNDARY
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED CATCH CURB & GUTTER
- PROPOSED SPILL CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED SIDEWALK
- EXISTING SIDEWALK
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOURS
- EXISTING CONTOURS

Update sheet numbers accordingly

150 0 150 300

( IN FEET )
1 inch = 150 ft.

**BENCHMARK:**

AN "X" CUT IN CONCRETE LOCATED WITHIN THE INTERSECTION OF LOIS ROAD EAST AND THE GULF COAST AND SANTA FE RAILROAD RIGHTS-OF-WAY, HAVING AN ELEVATION OF 729.3 FEET, A NORTHING COORDINATE VALUE OF 7,192,162.0, AND AN EASTING COORDINATE VALUE OF 2,374,666.1.

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CITY OF SANGER, COUNTY OF DENTON,
STATE OF TEXAS

OVERALL GRADING
OVERALL

DATE 4/7/2025

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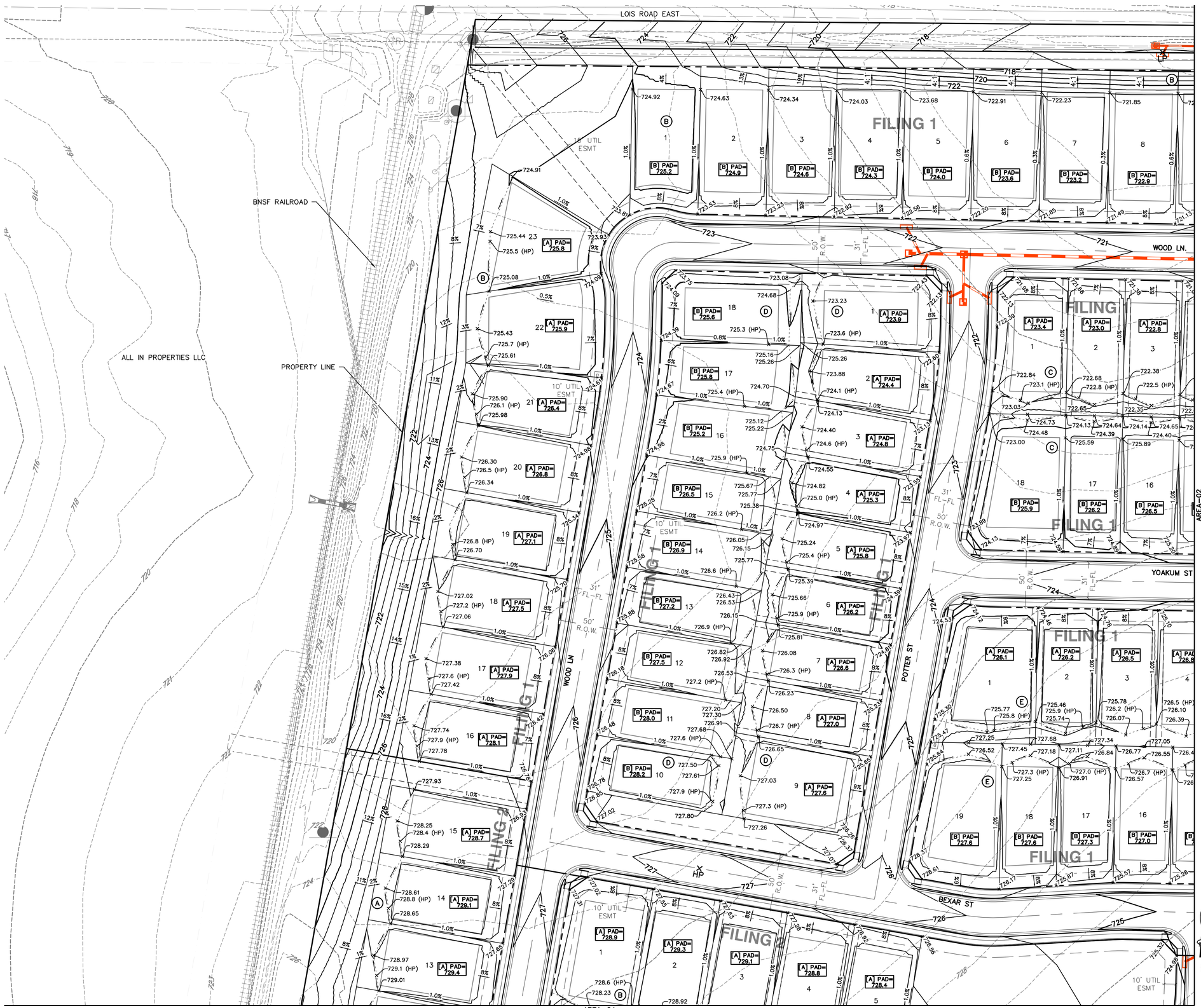
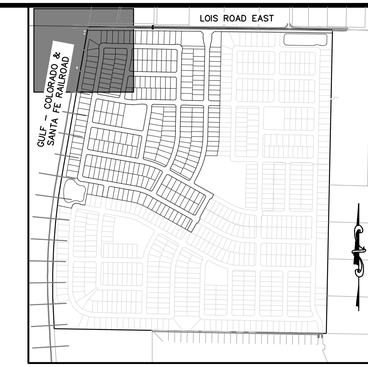
REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 15

CAD FILE: 24007256-PH1-GRAD-OVAL.DWG




KEYMAP
1"=750'

LEGEND

- PROPERTY BOUNDARY
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED CATCH CURB & GUTTER
- PROPOSED SPILL CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED SIDEWALK
- EXISTING SIDEWALK
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOURS
- EXISTING CONTOURS

( IN FEET )
1 inch = 40 ft.

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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 16

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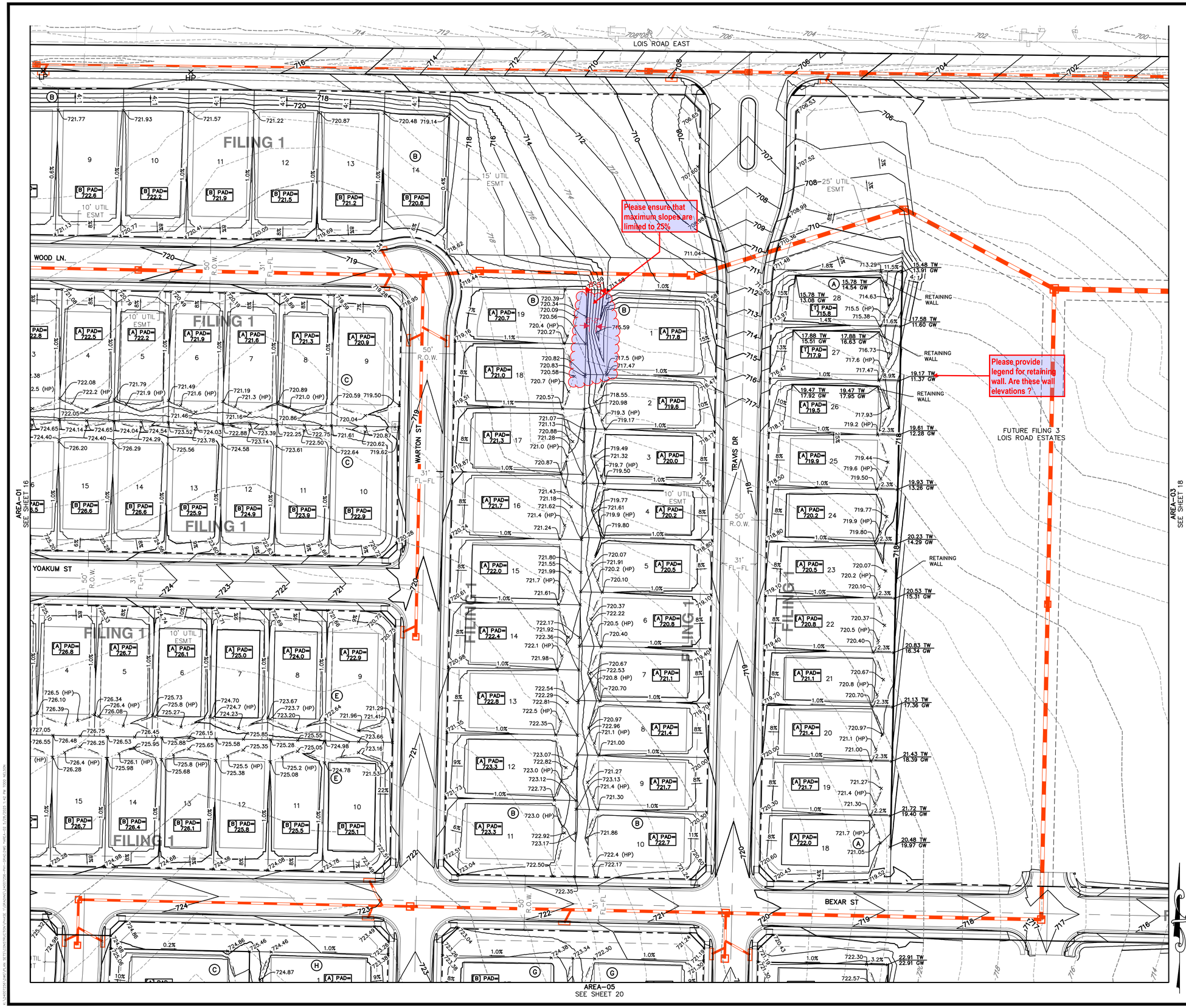


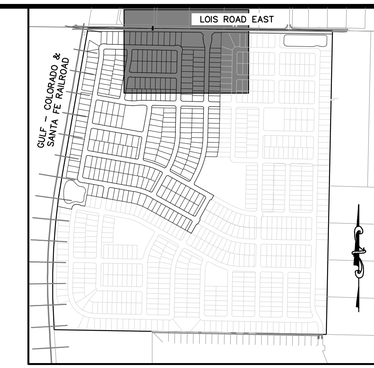


KEYMAP
1"=750'

**LEGEND**

- PROPERTY BOUNDARY
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED CATCH CURB & GUTTER
- PROPOSED SPILL CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED SIDEWALK
- EXISTING SIDEWALK
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
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STATE OF TEXAS
OVERALL GRADING
AREA-02

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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 17

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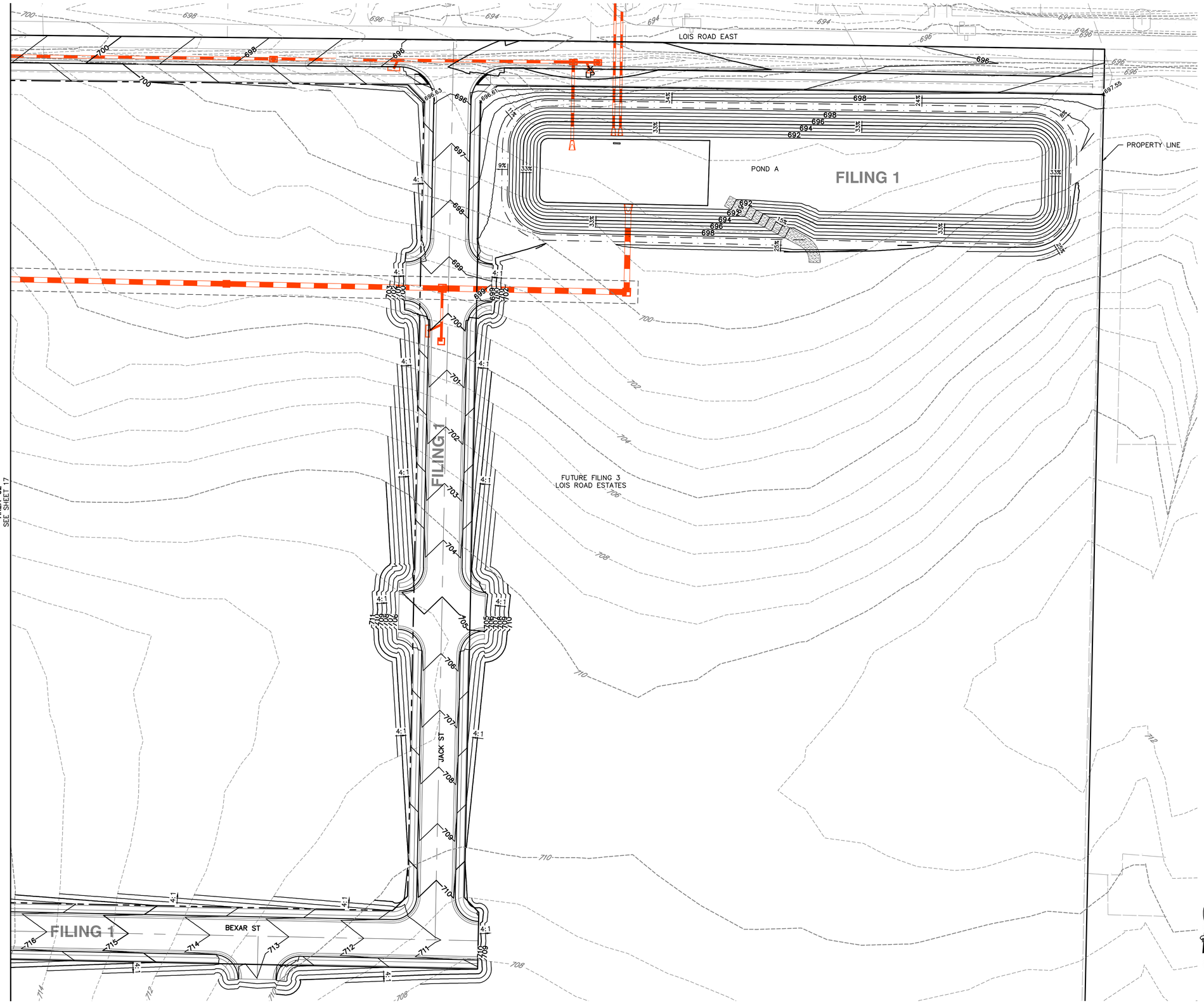


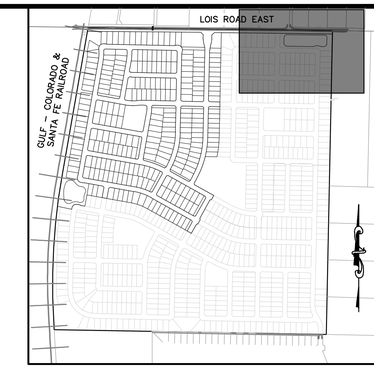


KEYMAP
1"=750'

**LEGEND**

- PROPERTY BOUNDARY
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
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- PROPOSED SPILL CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED SIDEWALK
- EXISTING SIDEWALK
- EXISTING SECTION LINE
- PROPOSED EASEMENT
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40 0 40 80
( IN FEET )
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CITY OF SANGER, COUNTY OF DENTON,
STATE OF TEXAS
OVERALL GRADING
AREA-03

DATE 4/7/2025

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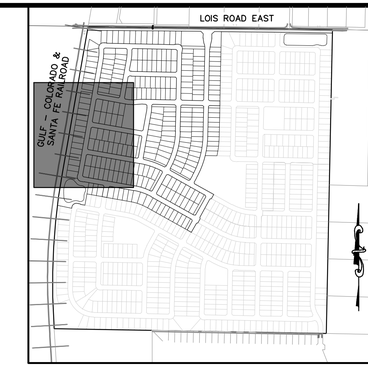
REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 18

CAD FILE: 24007256-PH1-GRAD.DWG




KEYMAP
1"=750'

LEGEND

- PROPERTY BOUNDARY
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED CATCH CURB & GUTTER
- PROPOSED SPILL CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED SIDEWALK
- EXISTING SIDEWALK
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOURS
- EXISTING CONTOURS

( IN FEET )
1 inch = 40 ft.

**BENCHMARK:**

AN "X" CUT IN CONCRETE LOCATED WITHIN THE INTERSECTION OF LOIS ROAD EAST AND THE GULF COAST AND SANTA FE RAILROAD RIGHTS-OF-WAY, HAVING AN ELEVATION OF 729.3 FEET, A NORTHING COORDINATE VALUE OF 7,192,162.0, AND AN EASTING COORDINATE VALUE OF 2,374,666.1.

BEARINGS AND ELEVATIONS SHOWN HEREON ARE BASED ON NAD 83 TEXAS STATE PLANE COORDINATES, NORTH CENTRAL ZONE, NAVD 88.

811
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CITY OF SANGER, COUNTY OF DENTON,
STATE OF TEXAS

# OVERALL GRADING AREA-04

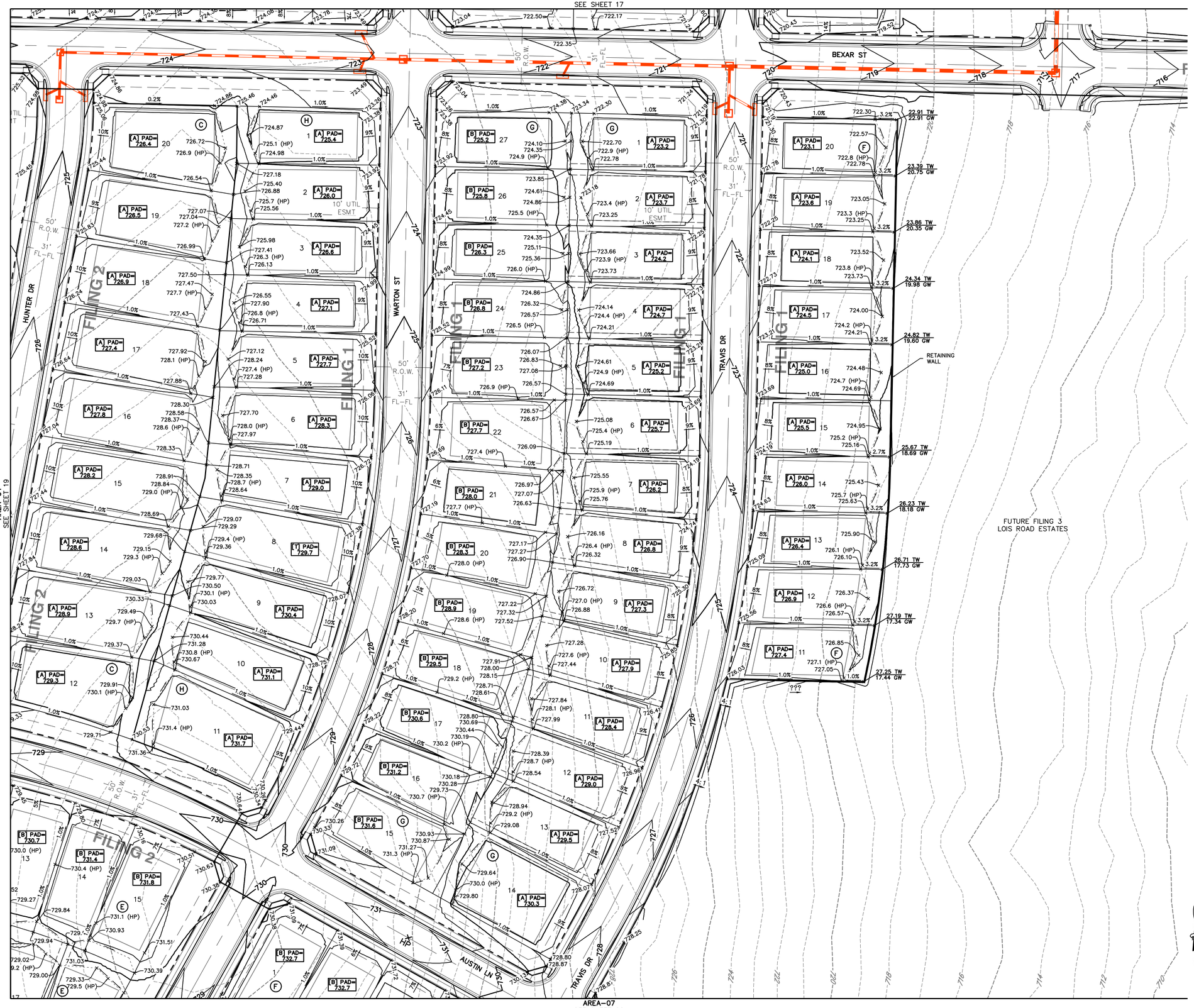
DATE 4/7/2025

| | |
|---|---|
| A | 1st SUBMITTAL TO JURISDICTION 4/7/2025 – KMR |
| B | 2nd SUBMITTAL TO JURISDICTION 5/12/2025 – KMR |

REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 19

CAD FILE: 24007256-PHI-GRAD.DWG



KEYMAP
1"=750'

**LEGEND**

- PROPERTY BOUNDARY
- PROPOSED RIGHT–OF–WAY
- EXISTING RIGHT–OF–WAY
- PROPOSED LOT LINE
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- PROPOSED CATCH CURB & GUTTER
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STATE OF TEXAS
OVERALL GRADING
AREA–05

DATE 4/7/2025

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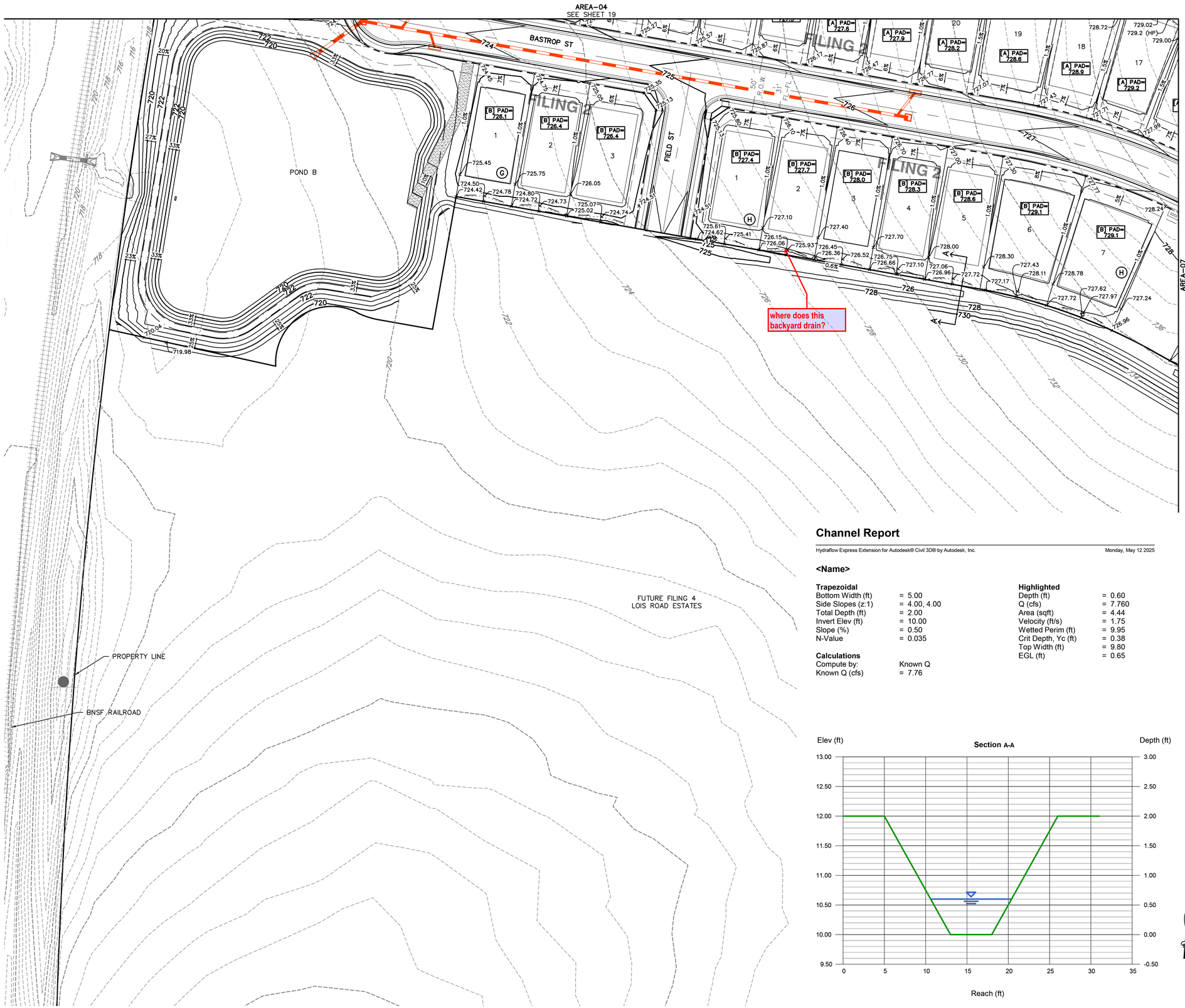
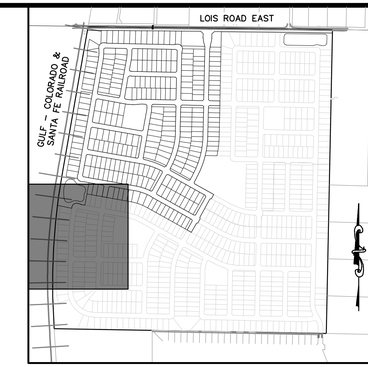
|---|---|
| A | 1st SUBMITTAL TO JURISDICTION 4/7/2025 – KMB |
| B | 2nd SUBMITTAL TO JURISDICTION 5/12/2025 – KMB |

REVISIONS

| | | | |
|---|---|---|---|
| DR. | TN | CH. | KB |
| P.M. | JF | | |
| JOB | 24007256 | | |
| SHEET NO. | 20 | | |

CAD FILE: 24007256-PH1-GRAD.DWG

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- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOURS
- EXISTING CONTOURS

## Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, May 12 2025

**<Name>**

| **Trapezoidal** | | **Highlighted** | |
|---|---|---|---|
| Bottom Width (ft) | = 5.00 | Depth (ft) | = 0.60 |
| Side Slopes (z:1) | = 4.00, 4.00 | Q (cfs) | = 7.760 |
| Total Depth (ft) | = 2.00 | Area (sqft) | = 4.44 |
| Invert Elev (ft) | = 10.00 | Velocity (ft/s) | = 1.75 |
| Slope (%) | = 0.50 | Wetted Perim (ft) | = 9.95 |
| N-Value | = 0.035 | Crit Depth, Yc (ft) | = 0.38 |
| | | Top Width (ft) | = 9.80 |
| **Calculations** | | EGL (ft) | = 0.65 |
| Compute by: | Known Q | | |
| Known Q (cfs) | = 7.76 | | |




40 0 40 80
( IN FEET )
1 inch = 40 ft.

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STATE OF TEXAS
OVERALL GRADING
AREA-06

DATE 4/7/2025

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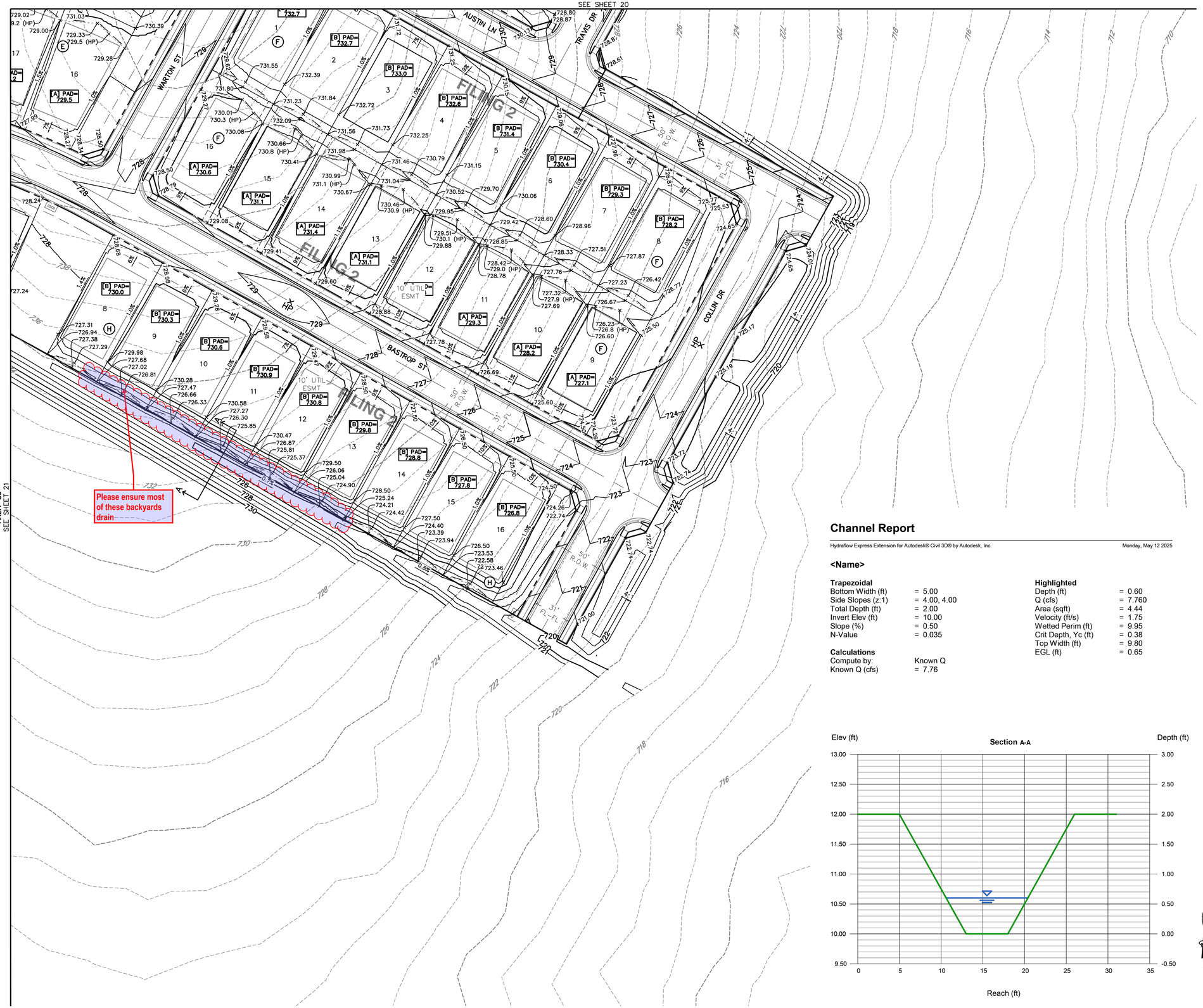
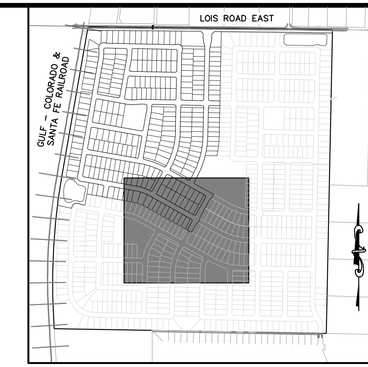
REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 21

CAD FILE: 24007256-PH1-GRAD.DWG

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## Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, May 12 2025

### <Name>

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| | |
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| Bottom Width (ft) | = 5.00 |
| Side Slopes (z:1) | = 4.00, 4.00 |
| Total Depth (ft) | = 2.00 |
| Invert Elev (ft) | = 10.00 |
| Slope (%) | = 0.50 |
| N-Value | = 0.035 |

**Calculations**

| | |
|---|---|
| Compute by: | Known Q |
| Known Q (cfs) | = 7.76 |

**Highlighted**

| | |
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| Depth (ft) | = 0.60 |
| Q (cfs) | = 7.760 |
| Area (sqft) | = 4.44 |
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AREA–07

DATE 4/7/2025

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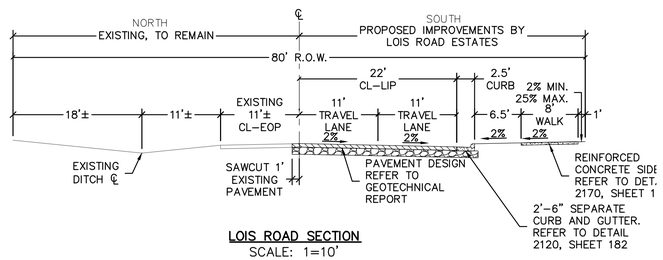
REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 22

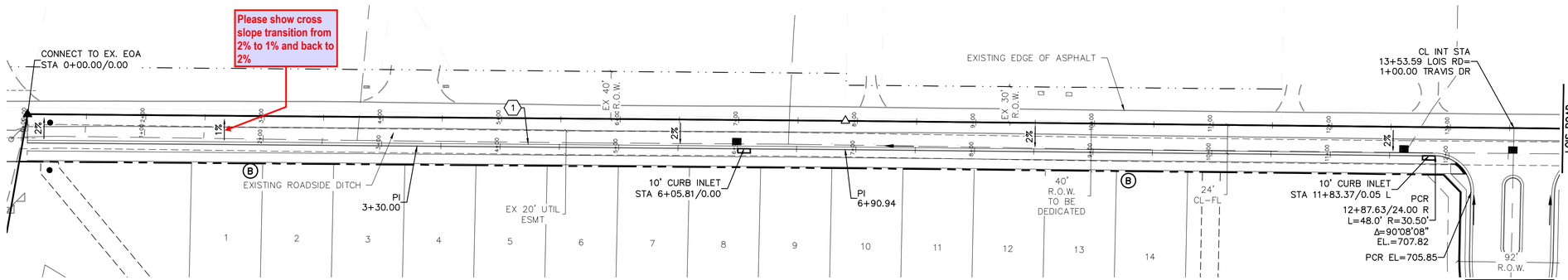
CAD FILE: 24007256-PH1-GRAD.DWG

## ROADWAY CONSTRUCTION NOTES

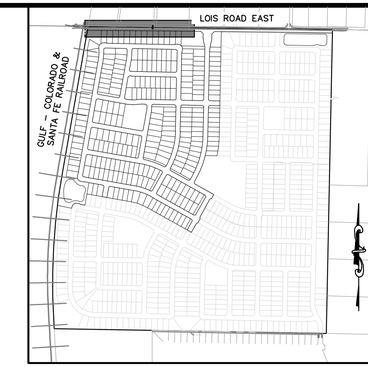
1. CONSTRUCT SEPARATE CURB & GUTTER. SEE DETAIL 2102, SHEET 182.
2. CONSTRUCT MOUNTABLE CURB AND GUTTER. SEE DETAIL 1007B, SHEET 182.
3. CONSTRUCT 10' CURB TRANSITION.




**LOIS ROAD SECTION**
SCALE: 1=10'




# LOIS ROAD

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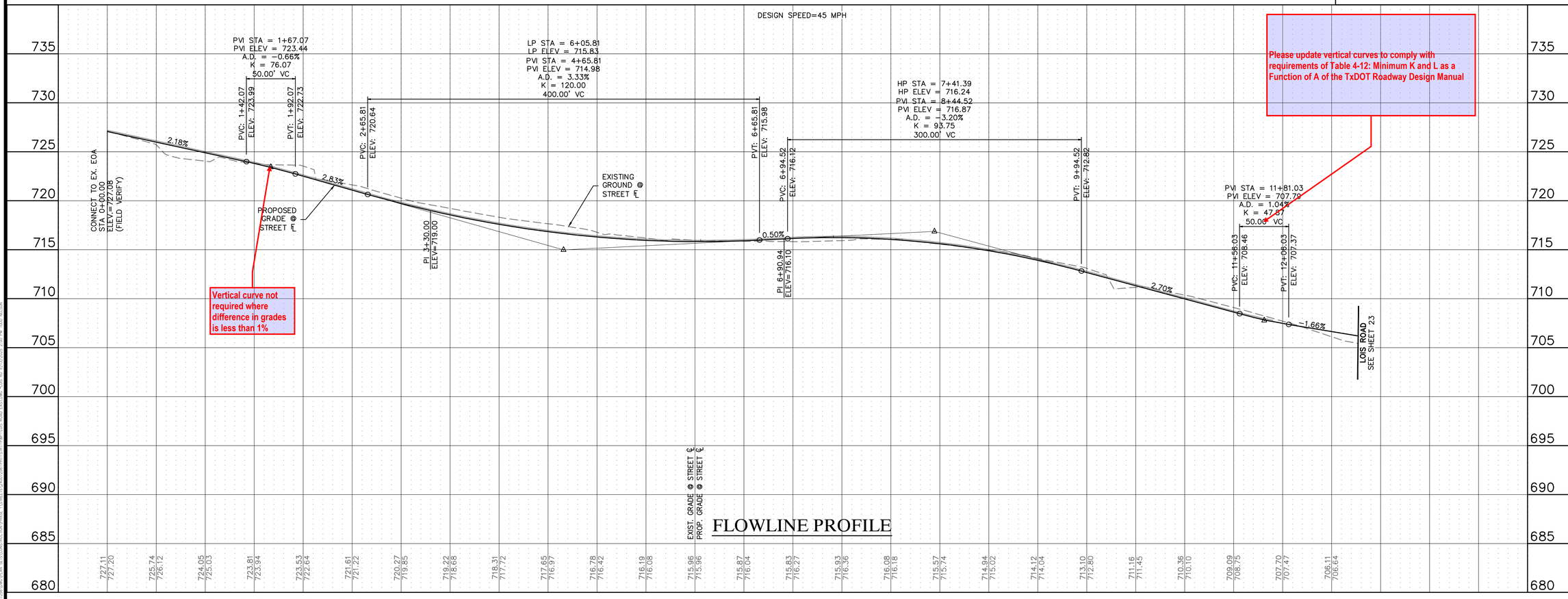


# FLOWLINE PROFILE


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CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS
STREET PLAN & PROFILES
LOIS ROAD

DATE 4/7/2025

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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 22

CAD FILE: 24007256-PH1-STR1-P&P-LOIS ROAD EASTDWG

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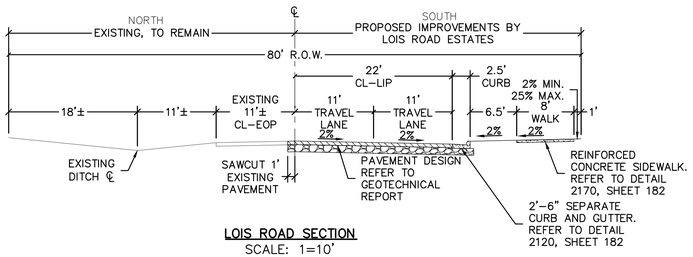
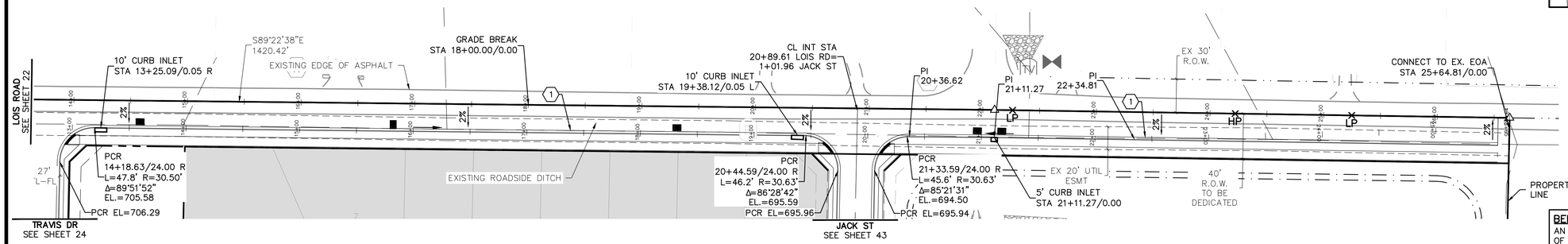
3. CONSTRUCT 10' CURB TRANSITION.




**LOIS ROAD SECTION**
SCALE: 1=10'

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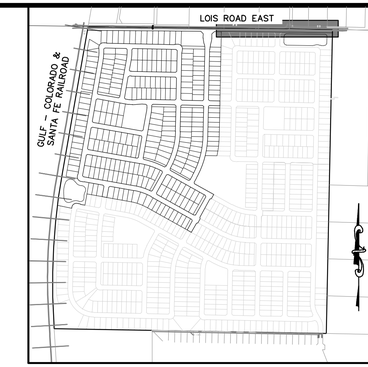


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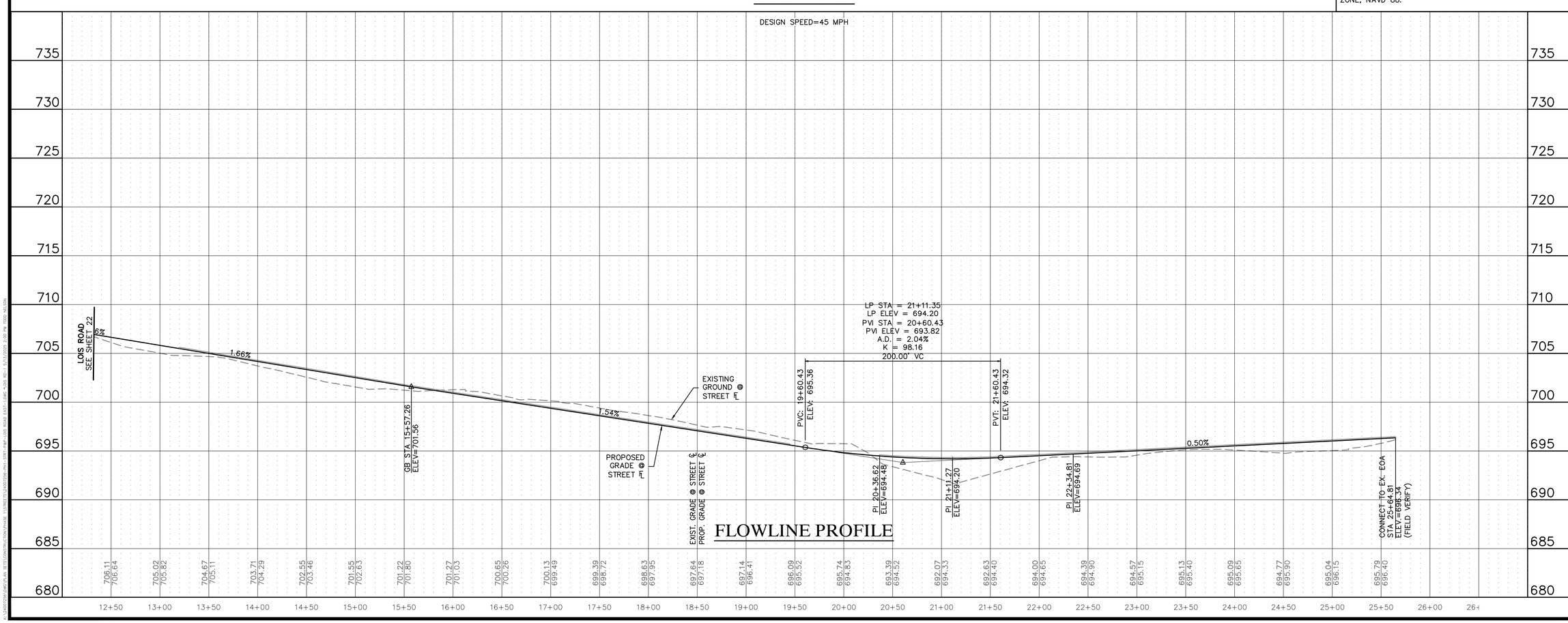


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STREET PLAN & PROFILES
LOIS ROAD

DATE 4/7/2025

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| B | 2nd SUBMITTAL TO JURISDICTION | 5/12/2025 – KMB |

REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 23

CAD FILE: 24007256-PH1-STRT-PAP-LOIS ROAD EAST-1.DWG

## ROADWAY CONSTRUCTION NOTES

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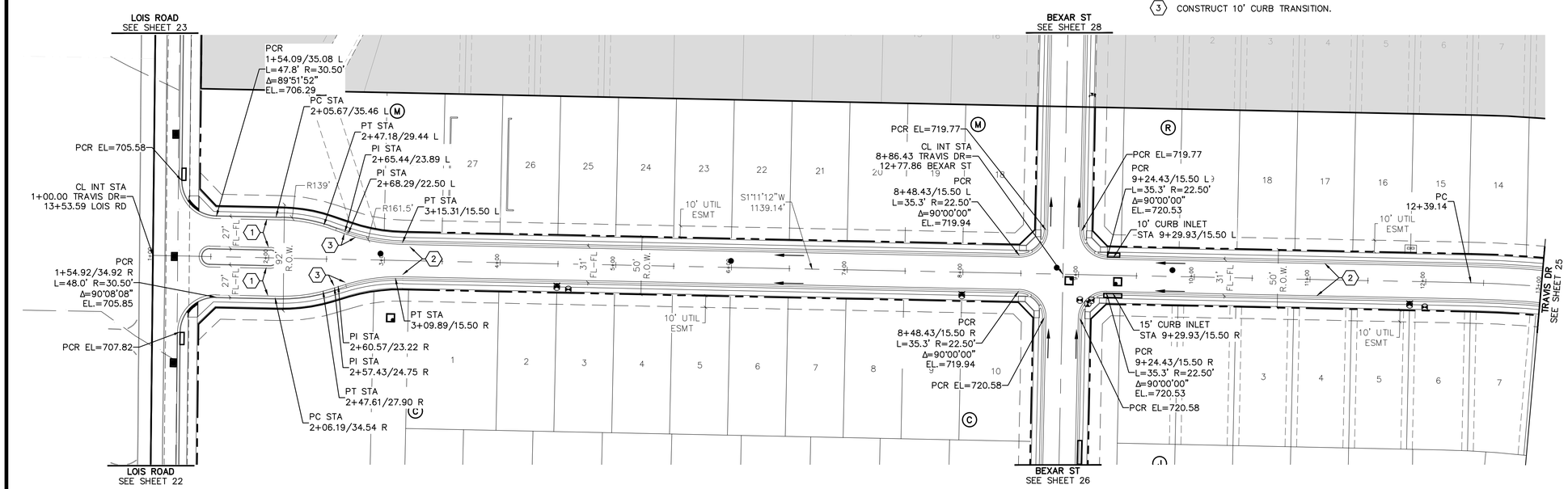


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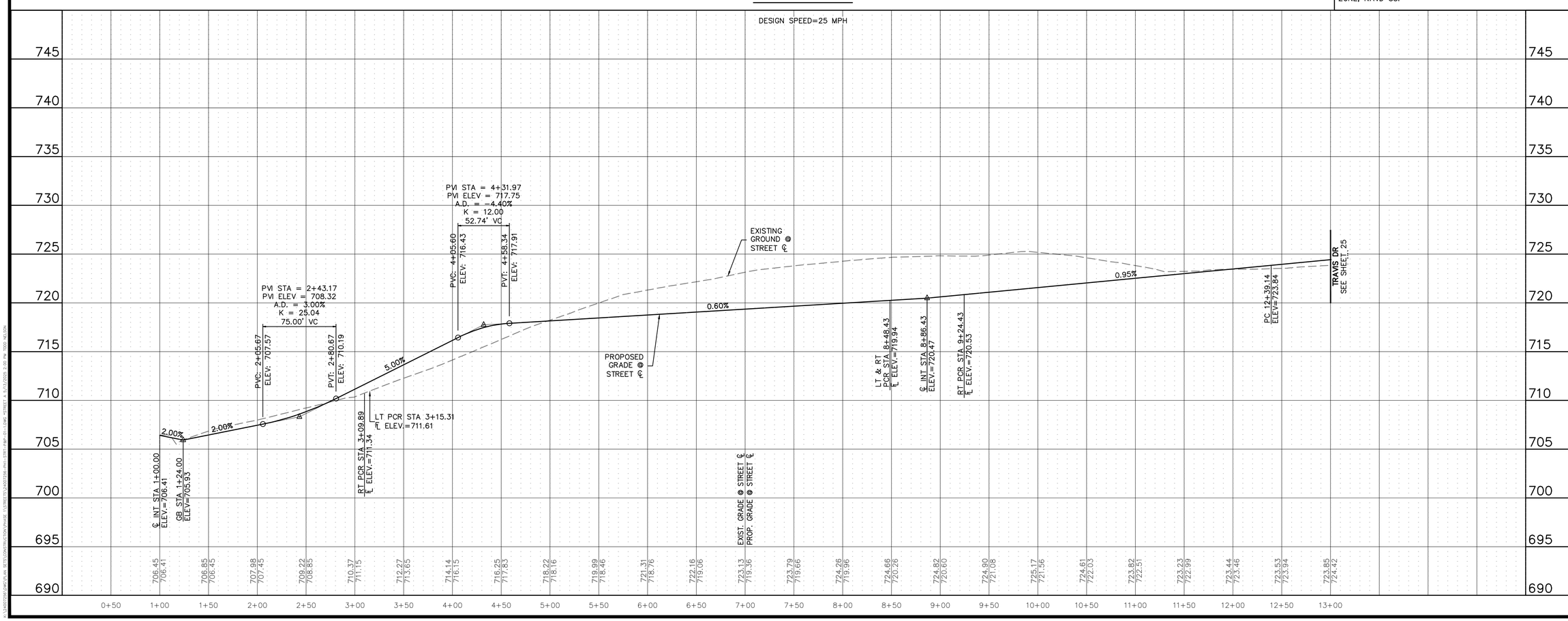


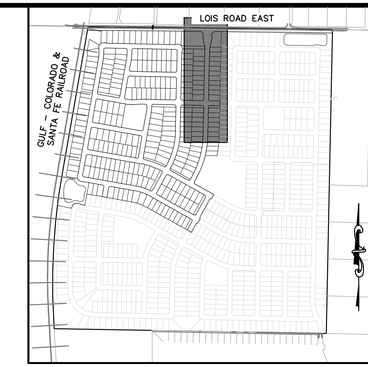


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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 24

CAD FILE: 24007256-PH1-STRT-P&P-01-1.DWG

## ROADWAY CONSTRUCTION NOTES

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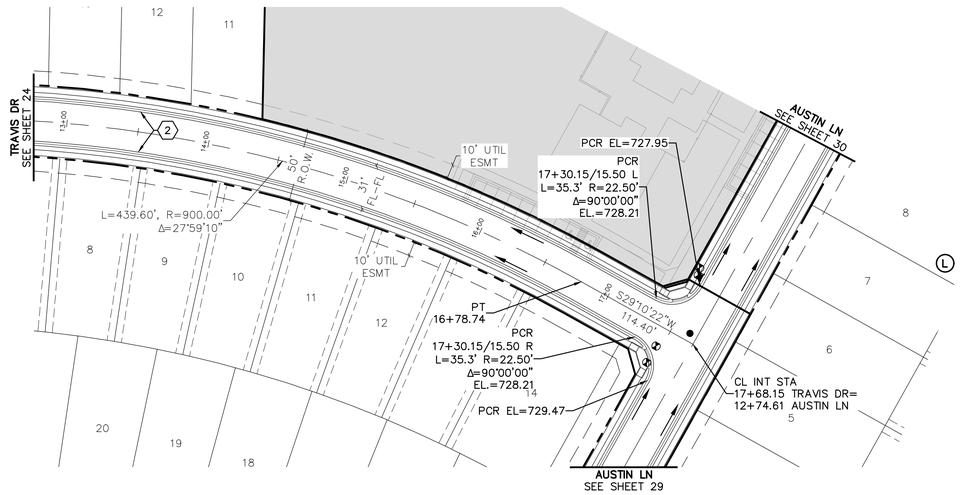


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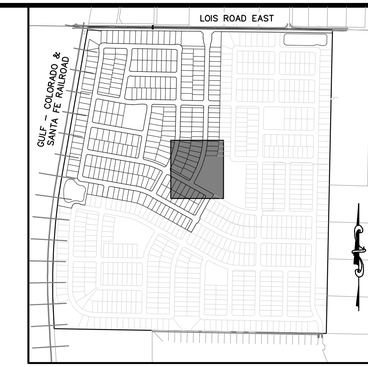


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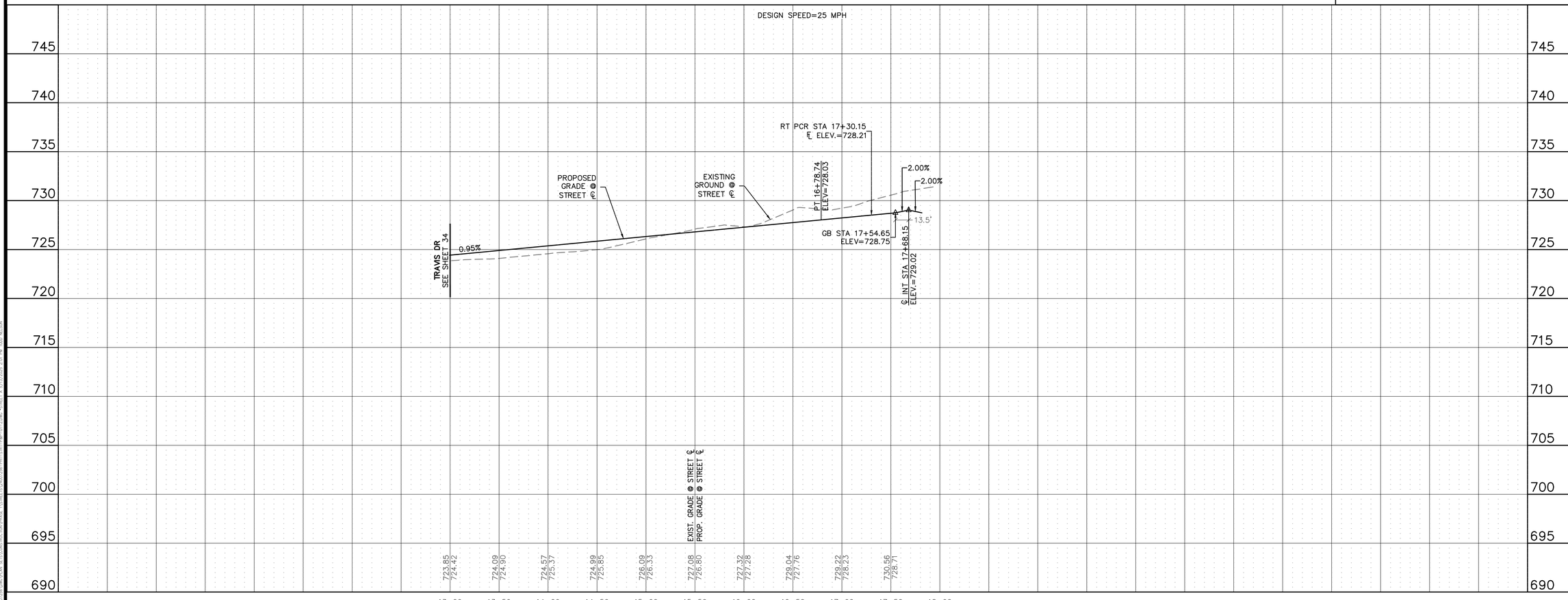



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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 25

CAD FILE: 24007256-PH1-STRT-PA&P-01-2.DWG

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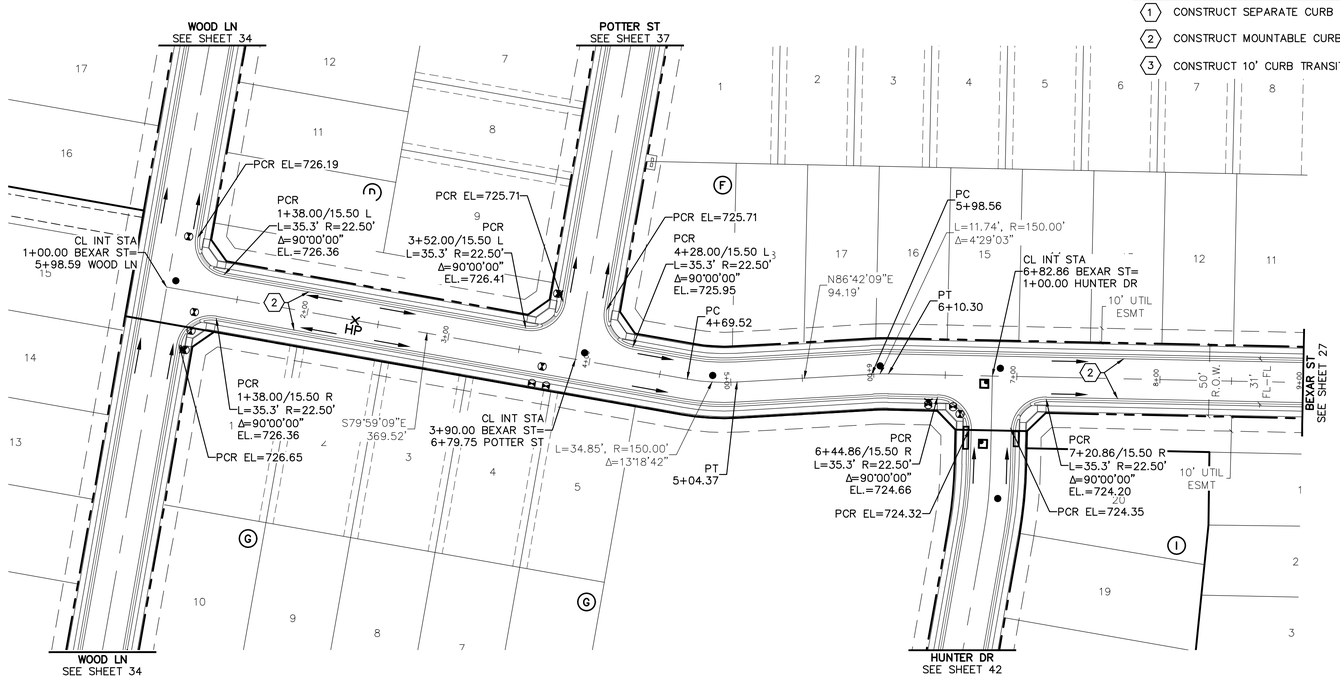
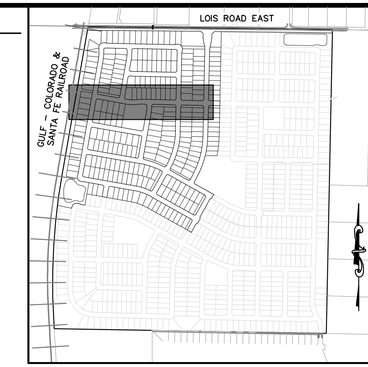



# BEXAR ST

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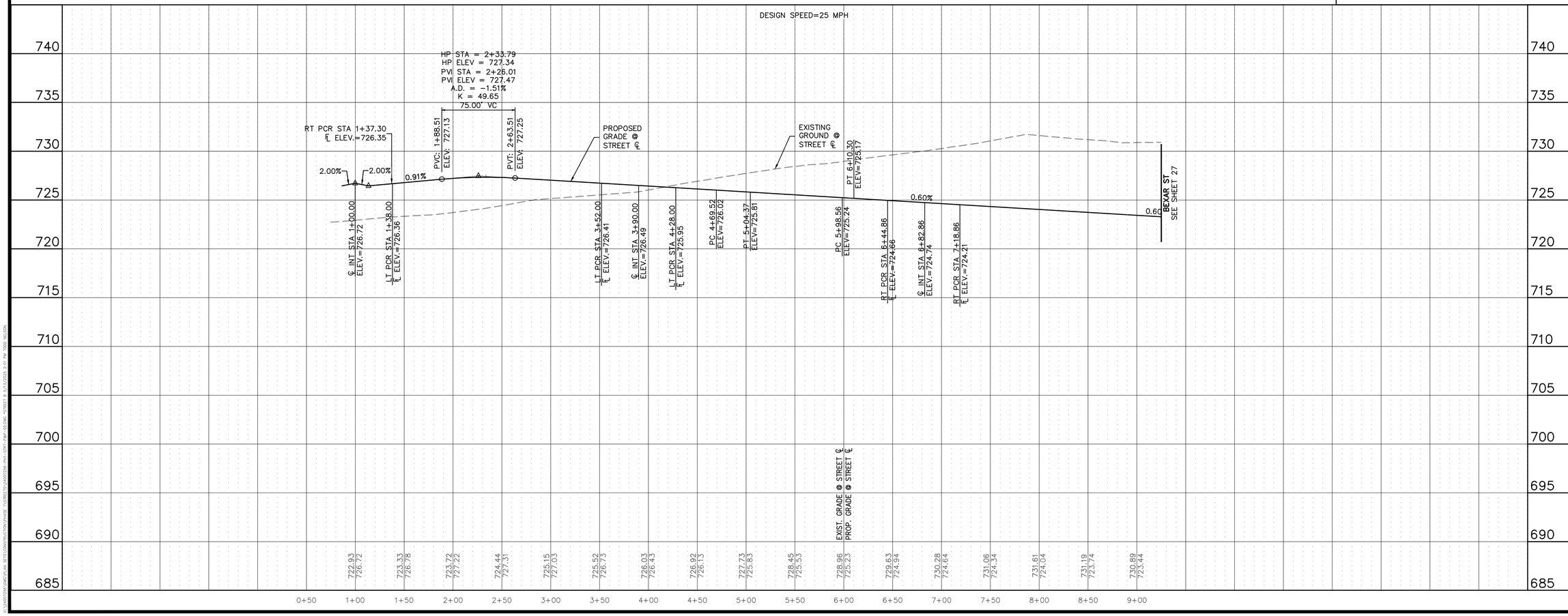


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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 26

CAD FILE: 24007256-PH1-STRT-PA&P-02.DWG

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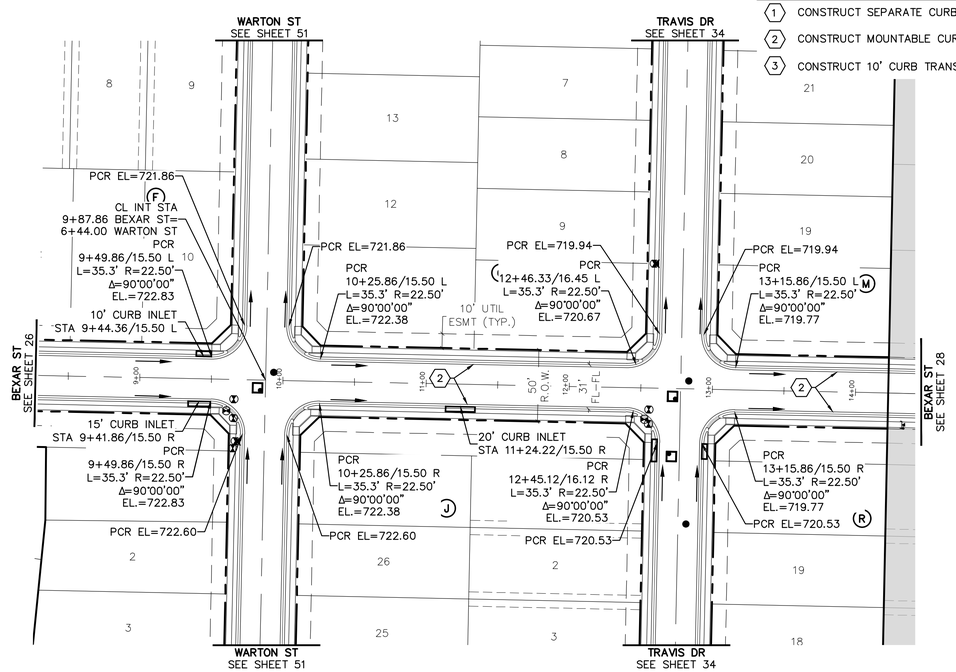


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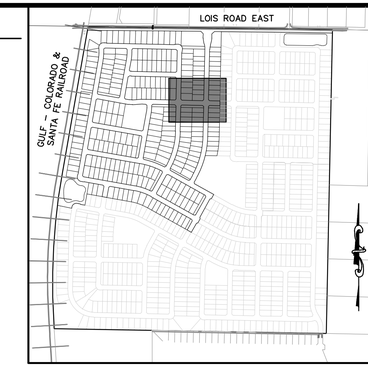


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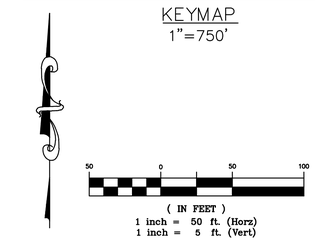


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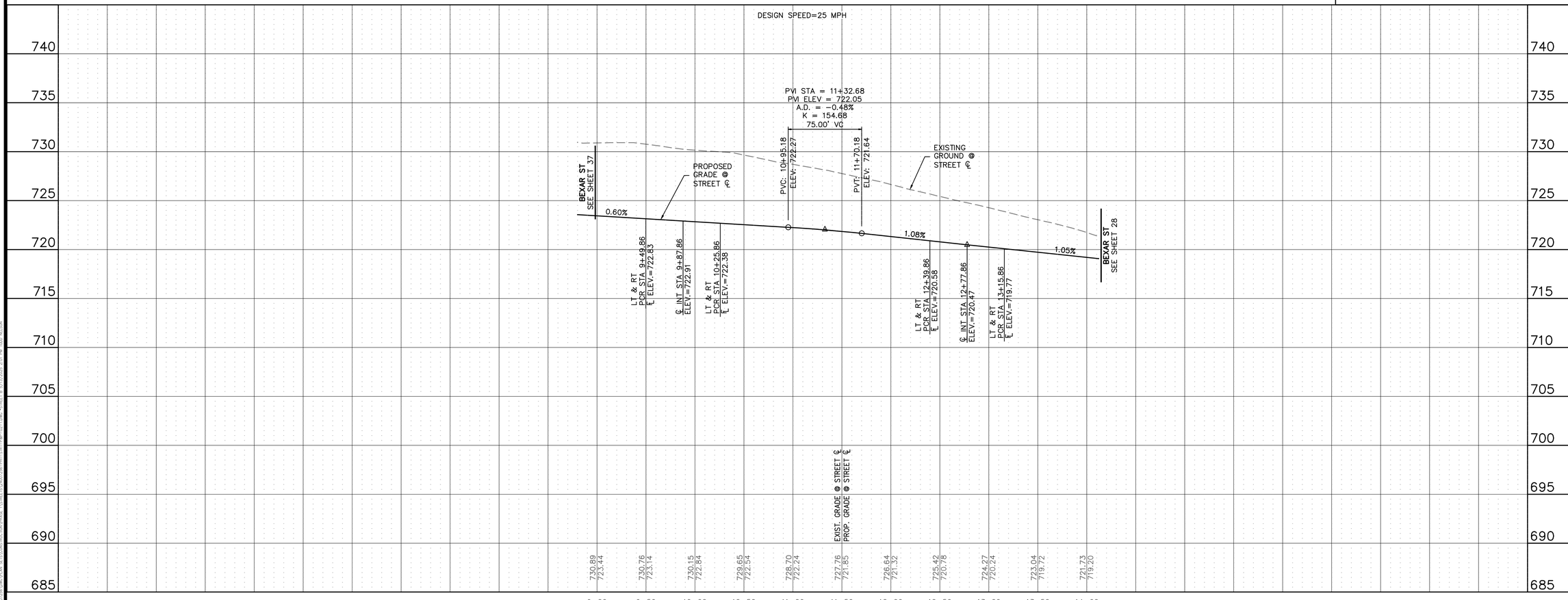


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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 27

CAD FILE: 24007256-PH1-STRT-PAP-02-1.DWG

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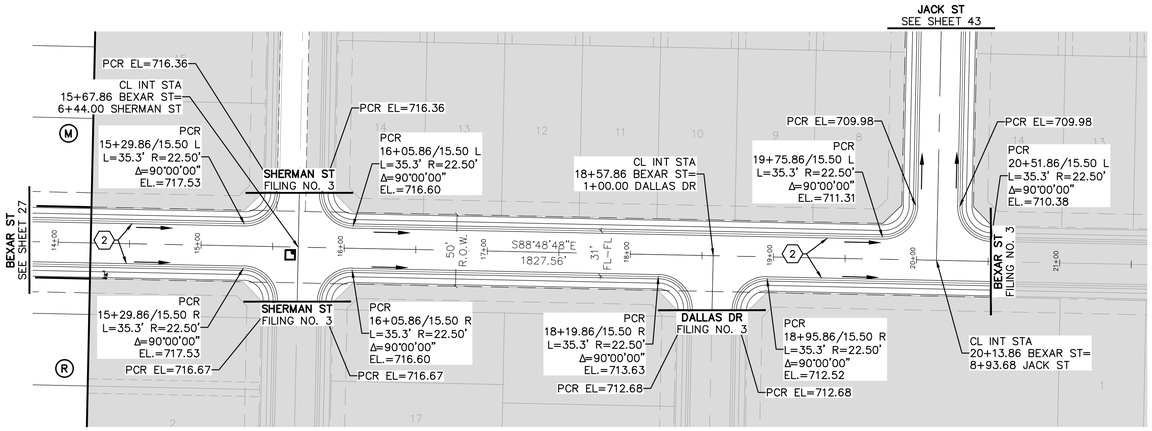


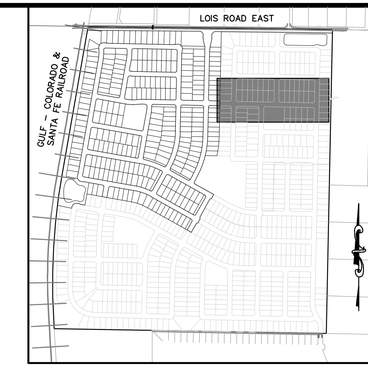


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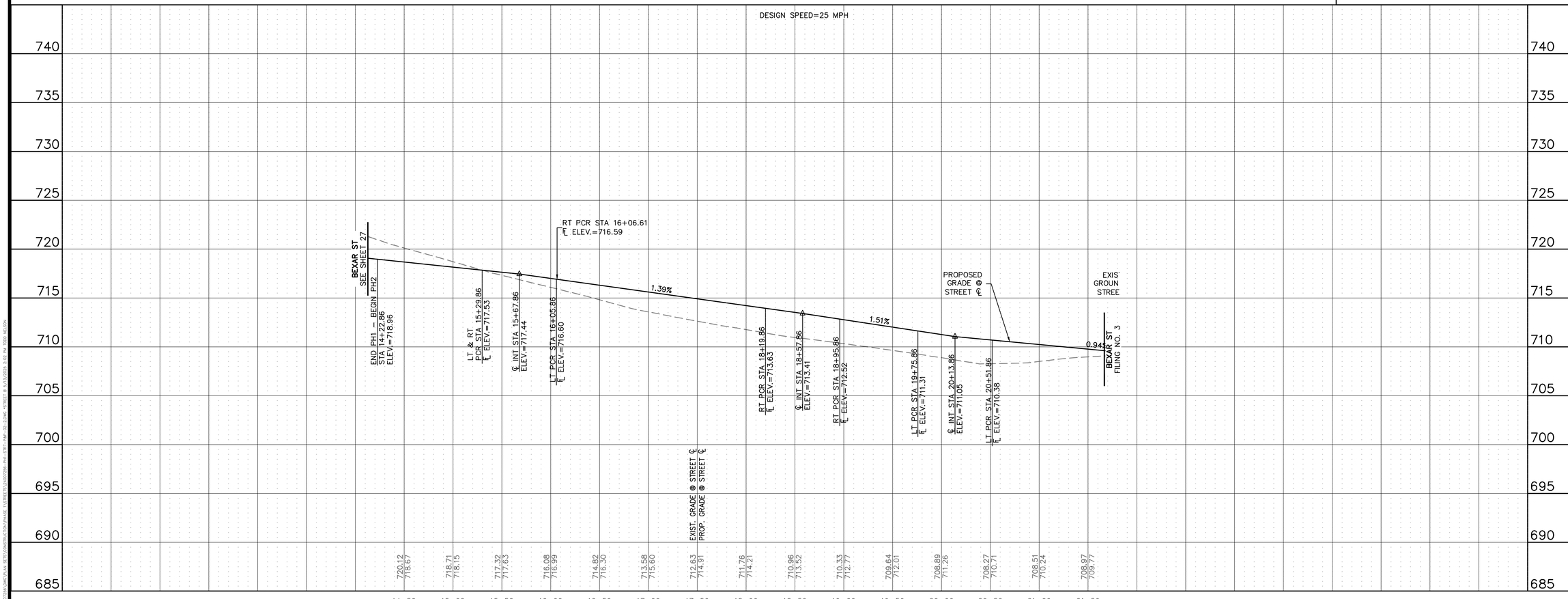


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DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 28

CAD FILE: 24007256-PH1-STRT-PA&P-02-2.DWG

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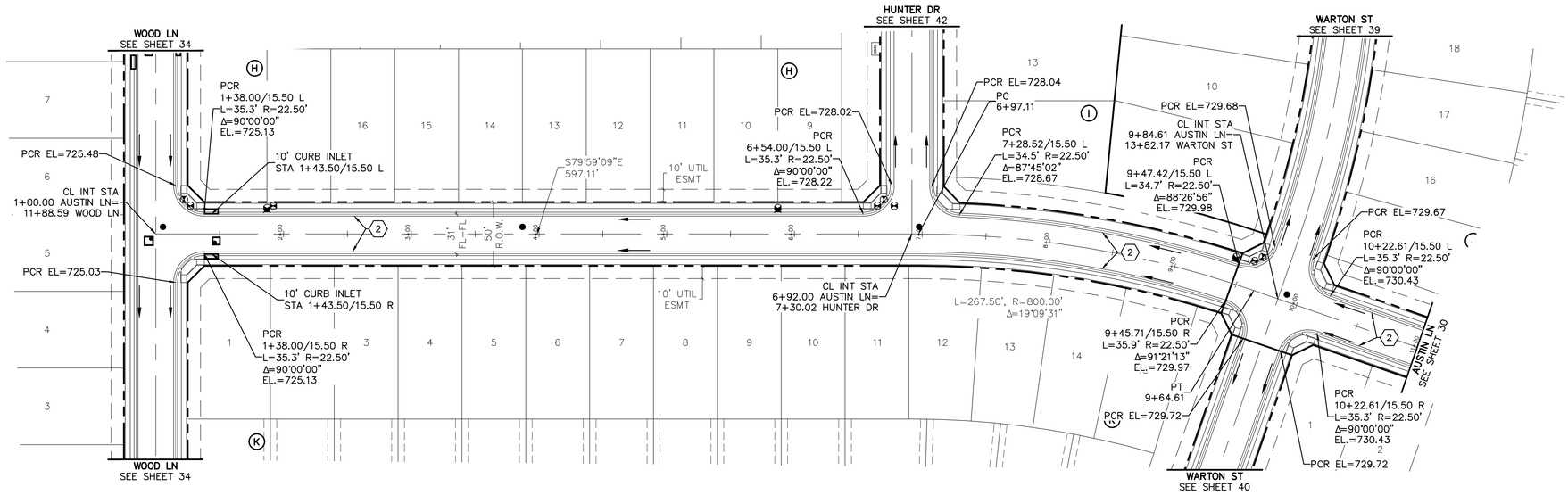


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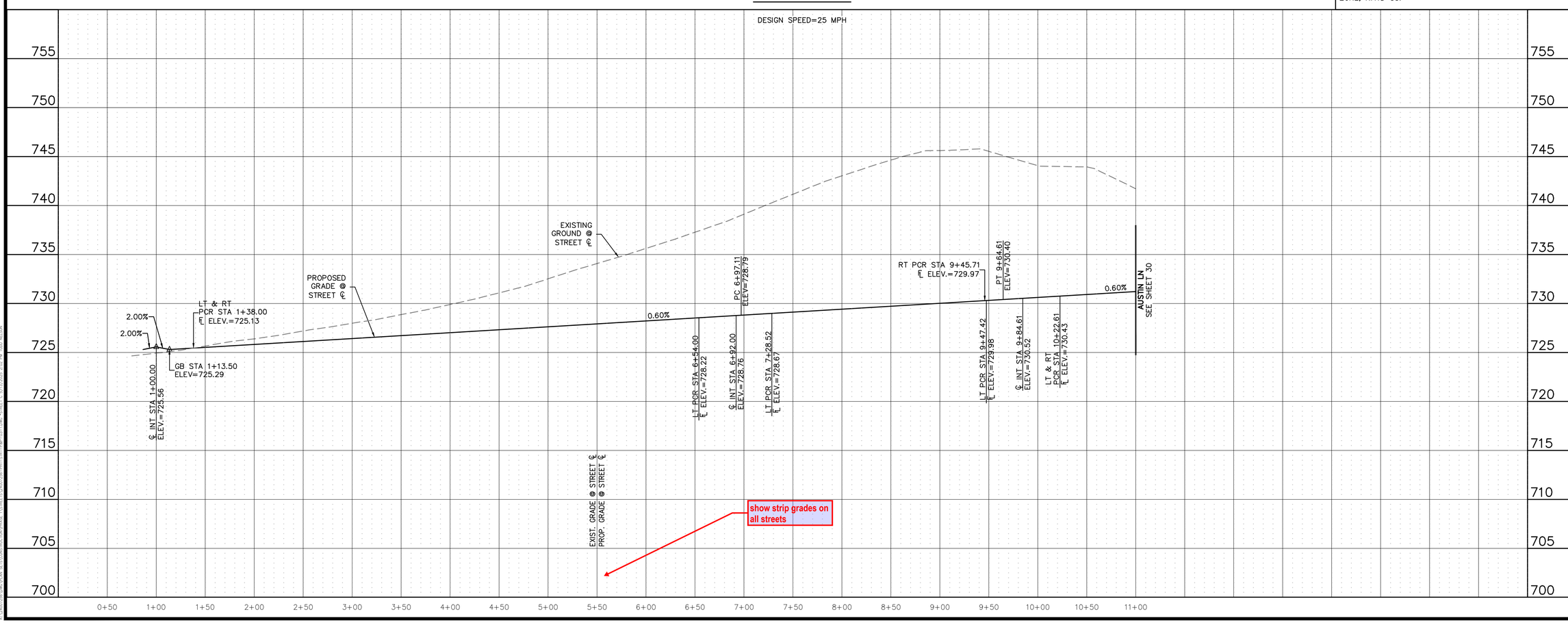


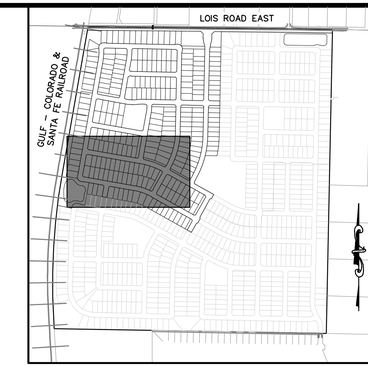


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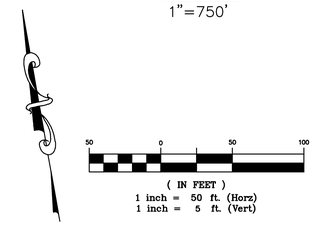


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REVISIONS

DR. TN CH. KB
P.M. JF
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SHEET NO. 29

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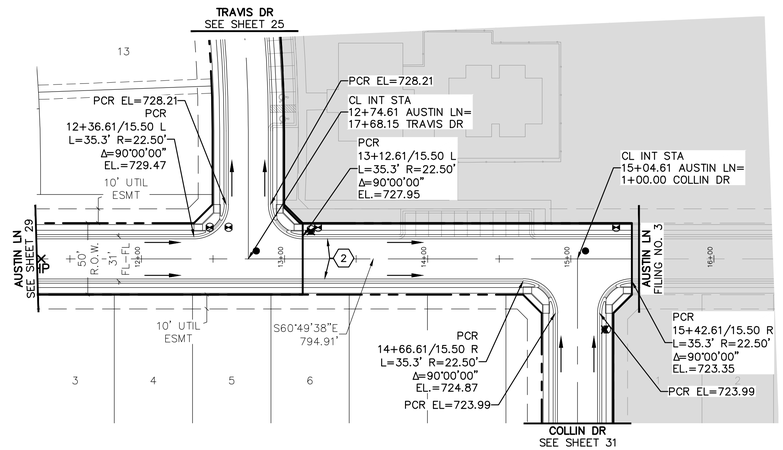
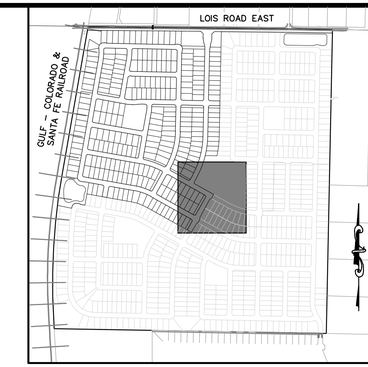
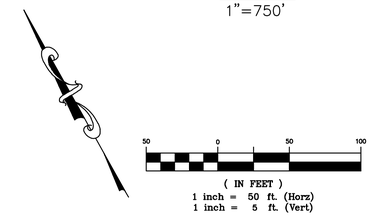



KEYMAP
1"=750'

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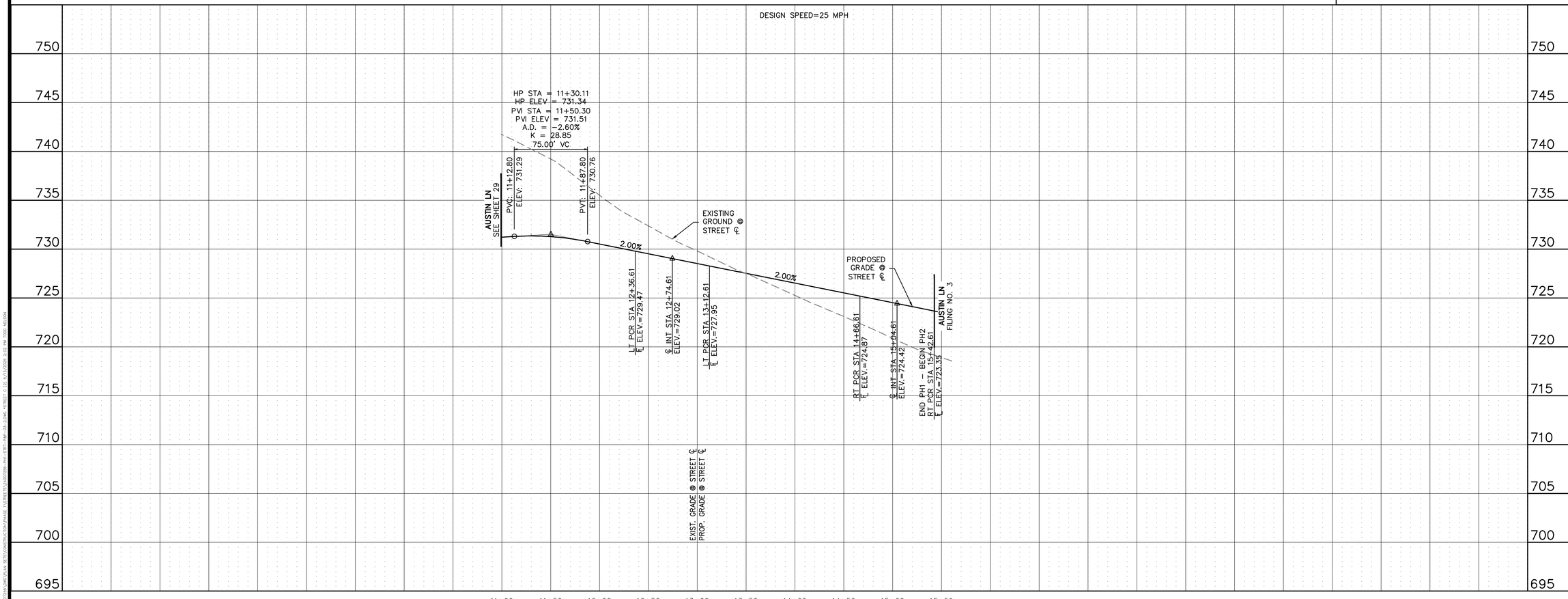
# AUSTIN LN





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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 30

CAD FILE: 24007256-PH1-STRT-PA&P-03-2.DWG

## ROADWAY CONSTRUCTION NOTES

1. CONSTRUCT SEPARATE CURB & GUTTER. SEE DETAIL 2102, SHEET 91.
2. CONSTRUCT MOUNTABLE CURB AND GUTTER. SEE DETAIL 1007B, SHEET 92.
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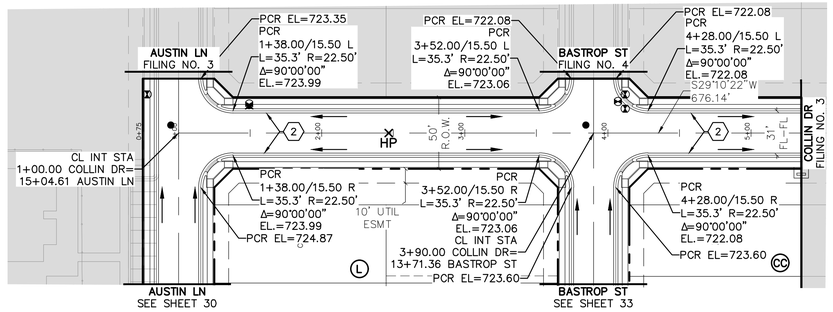
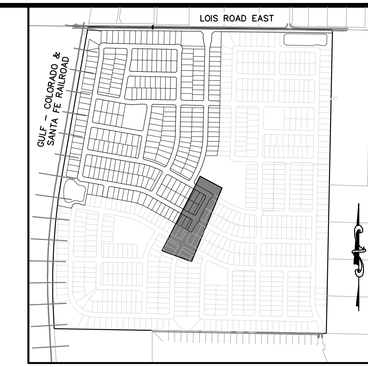
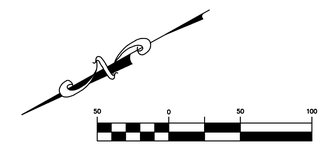



KEYMAP
1"=750'

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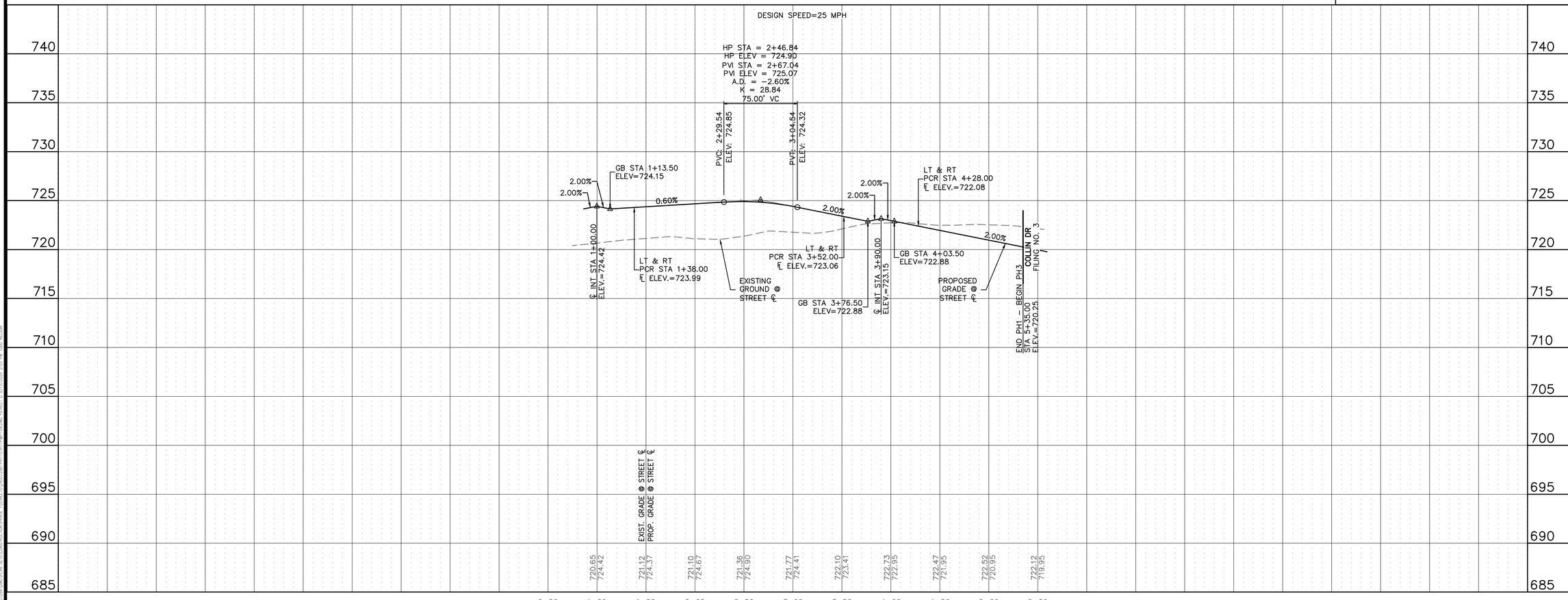
# COLLIN DR





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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 31

CAD FILE: 24007256-PH1-STRT-PA&P-04.DWG

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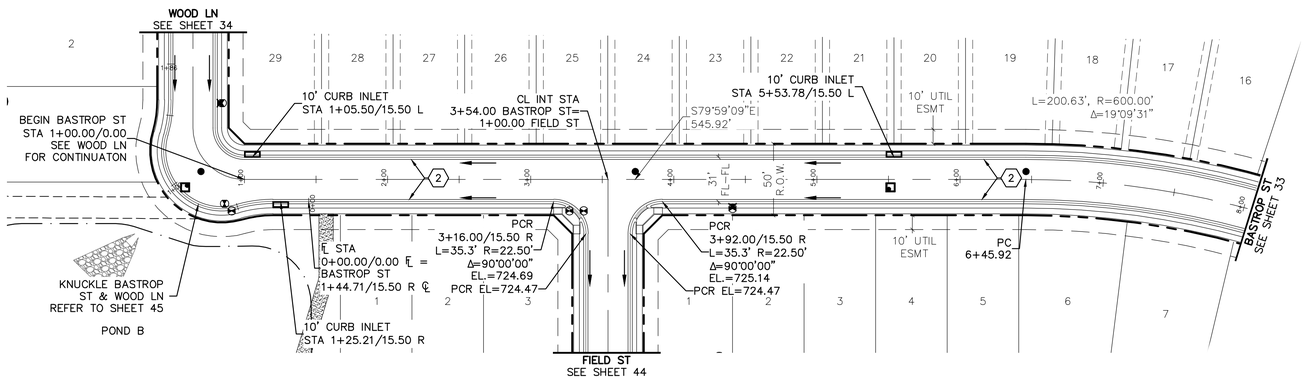


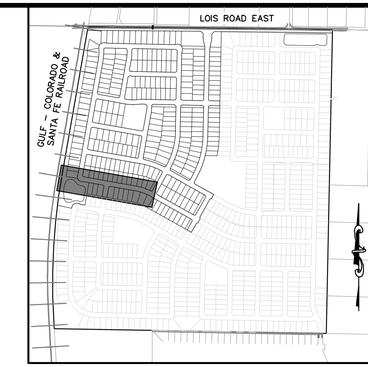


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50 0 50 100
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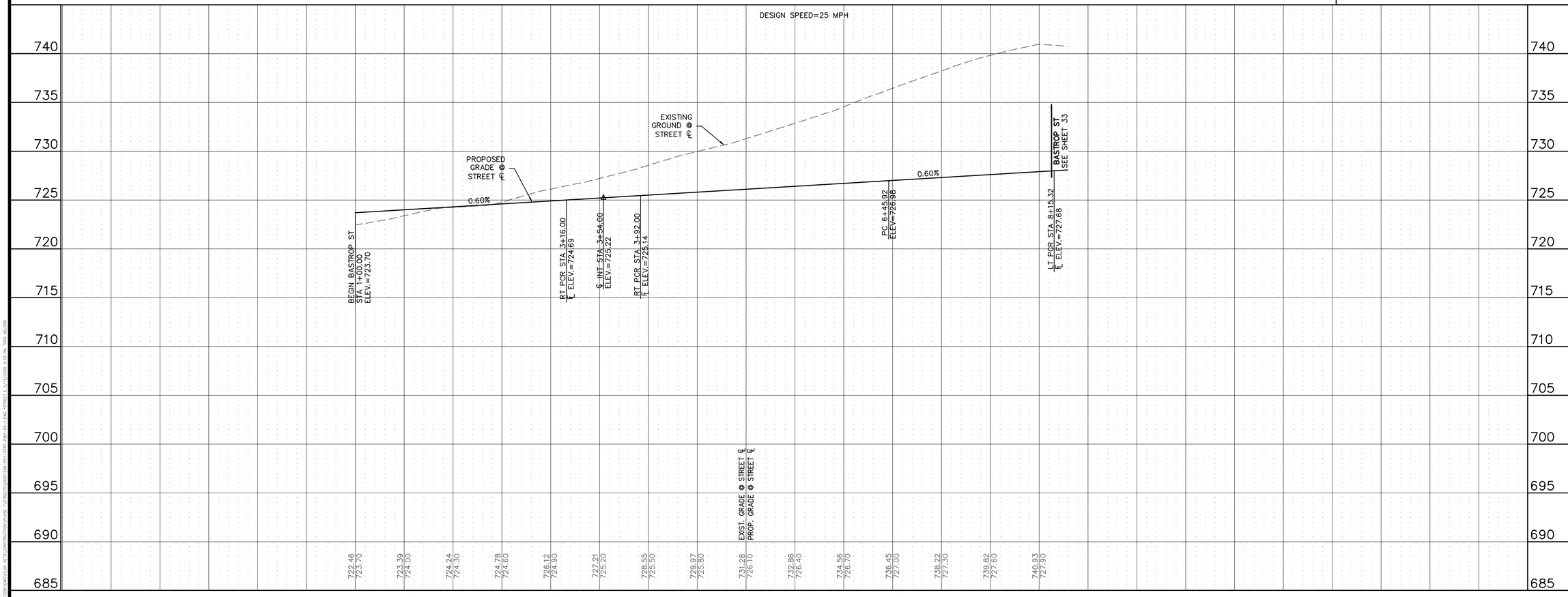
# BASTROP ST





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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 32

CAD FILE: 24007256-PH1-STRT-PAP-05-1.DWG

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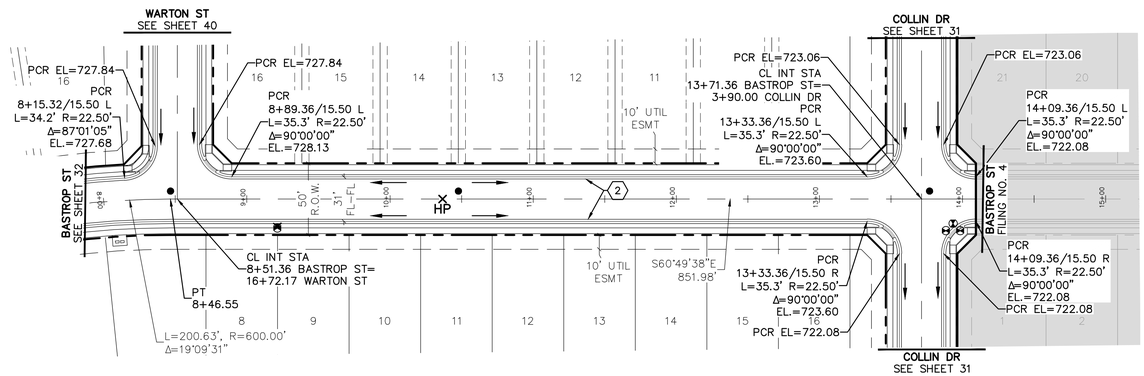


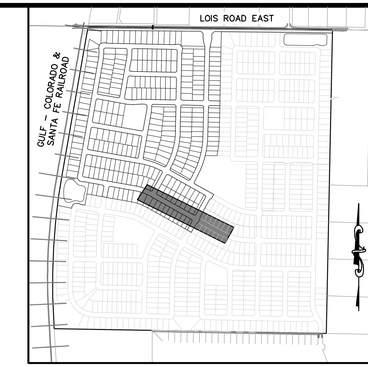


KEYMAP
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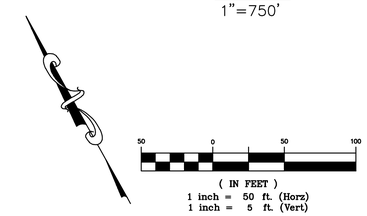


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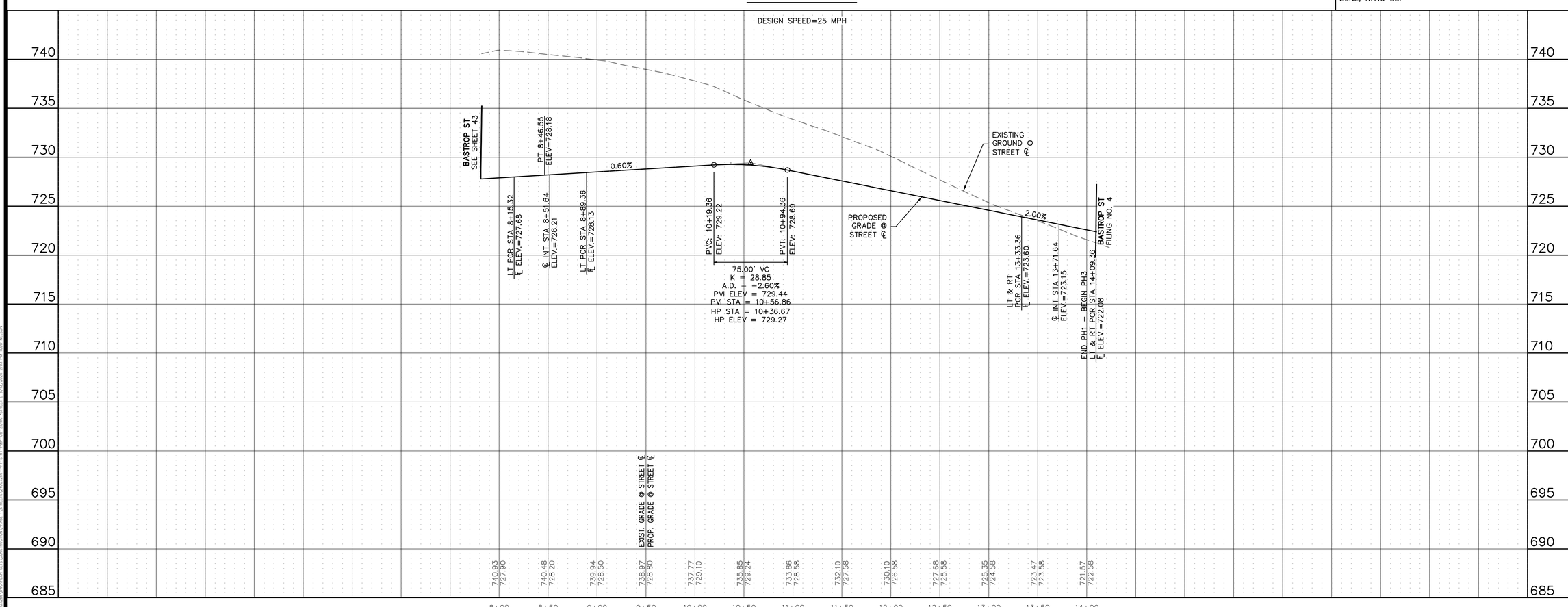


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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 33

CAD FILE: 24007256-PH1-STRT-PA&P-05-2.DWG

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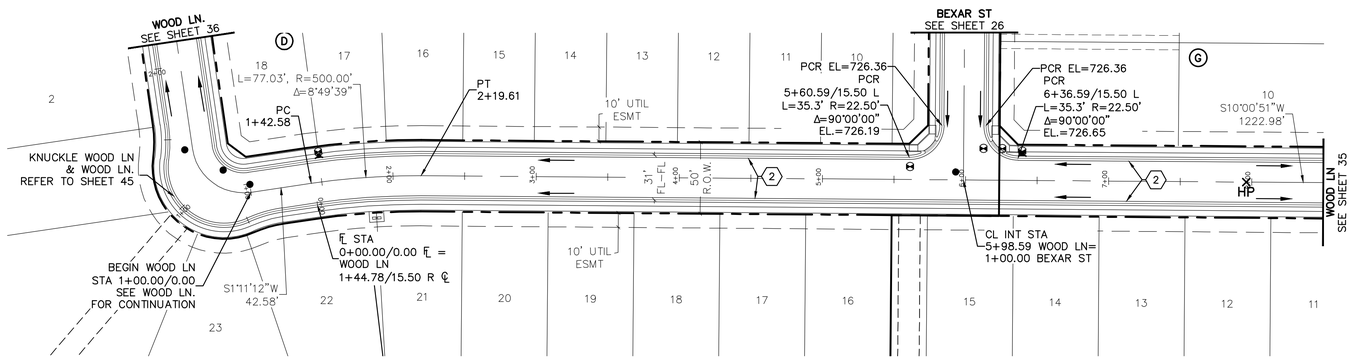
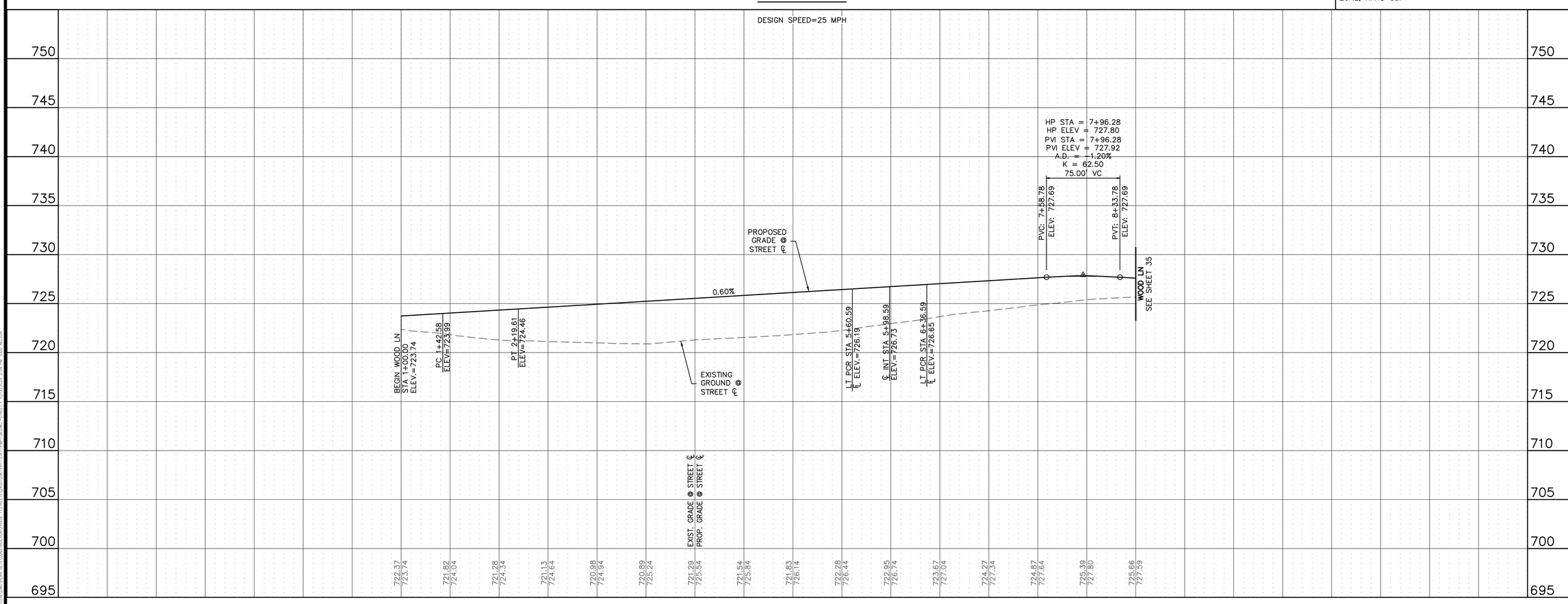
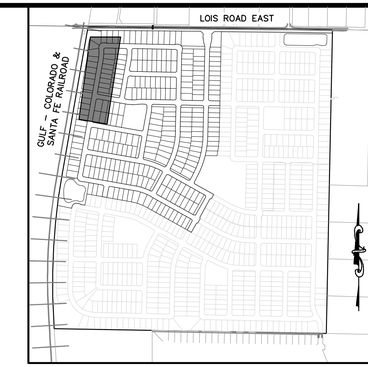



# WOOD LN

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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 34

CAD FILE: 24007256-PH1-STRT-PA&P-06.DWG

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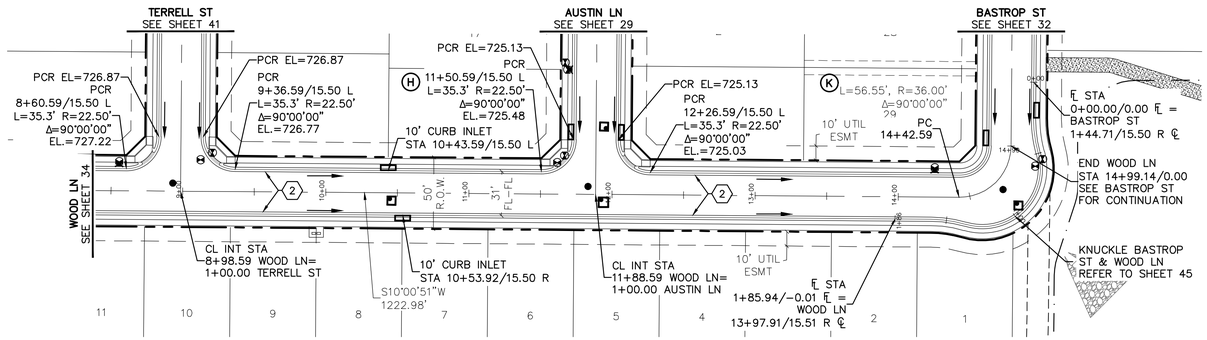


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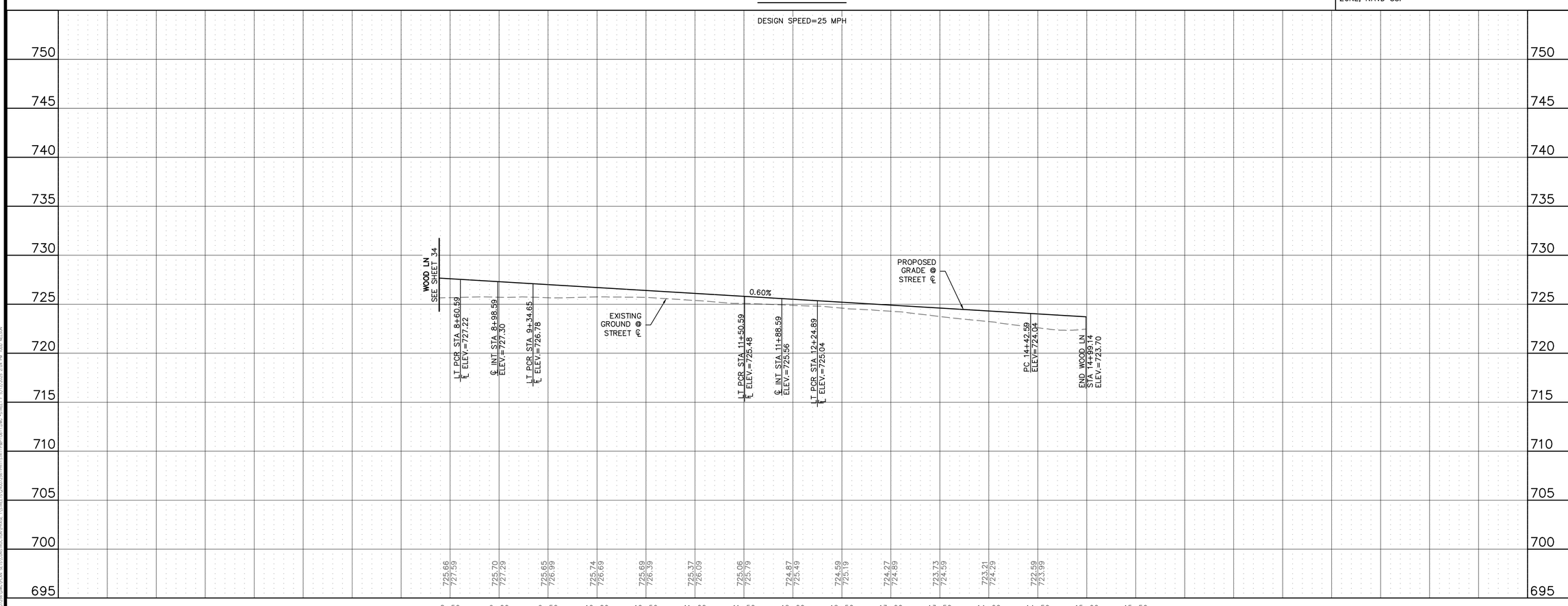


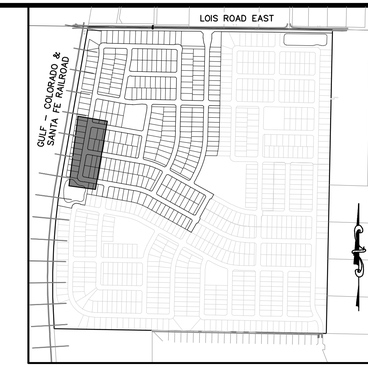


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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 35

CAD FILE: 24007256-PH1-STRT-PA&P-08-1.DWG

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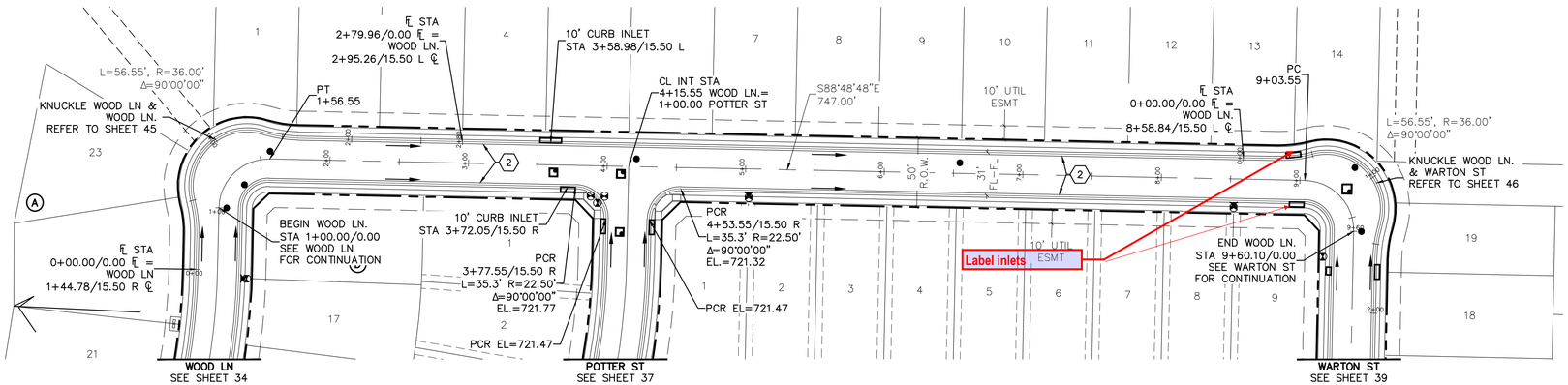
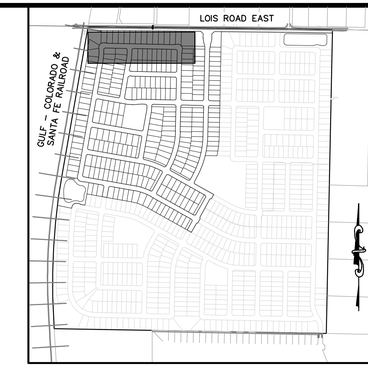
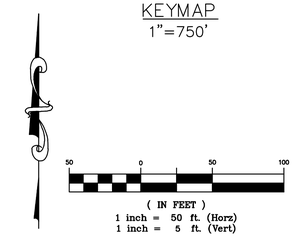



KEYMAP
1"=750'

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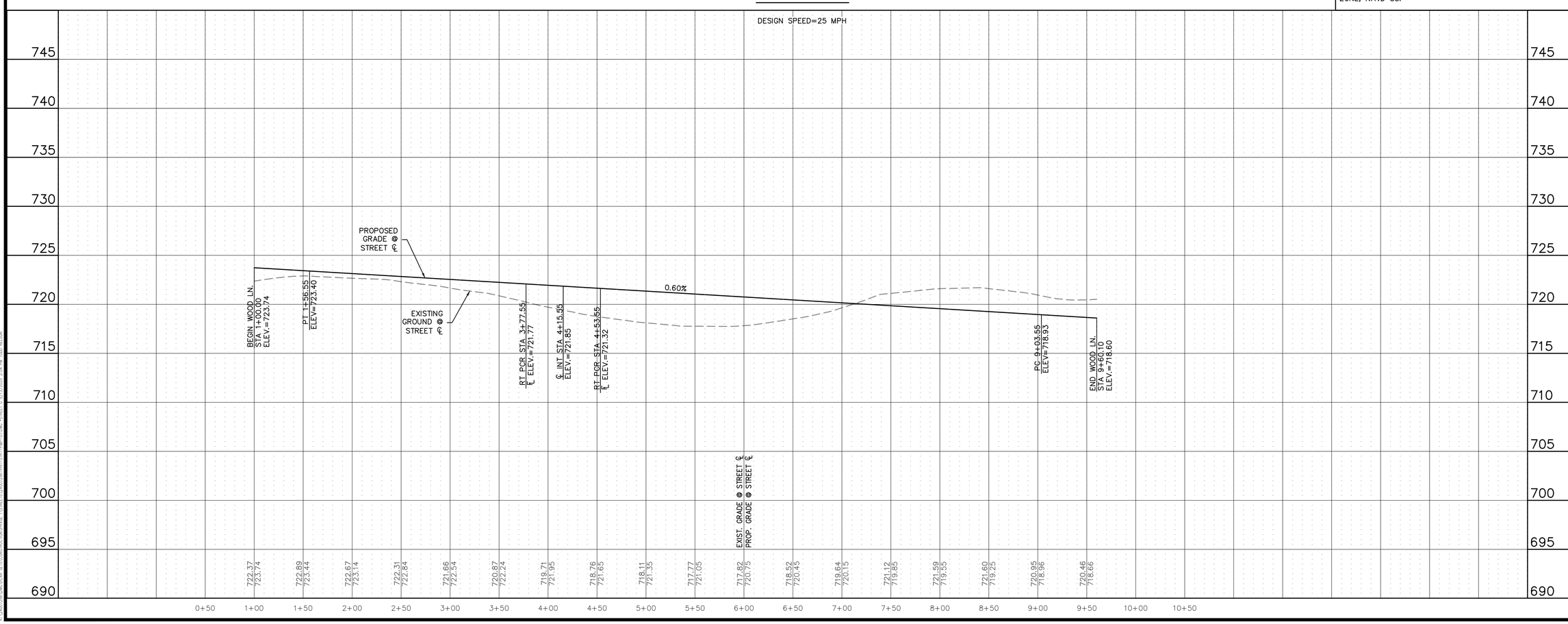
# WOOD LN.

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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 36

CAD FILE: 24007256-PH1-STRT-PA&P-07.DWG

## ROADWAY CONSTRUCTION NOTES

1. CONSTRUCT SEPARATE CURB & GUTTER. SEE DETAIL 2102, SHEET 91.
2. CONSTRUCT MOUNTABLE CURB AND GUTTER. SEE DETAIL 1007B, SHEET 92.
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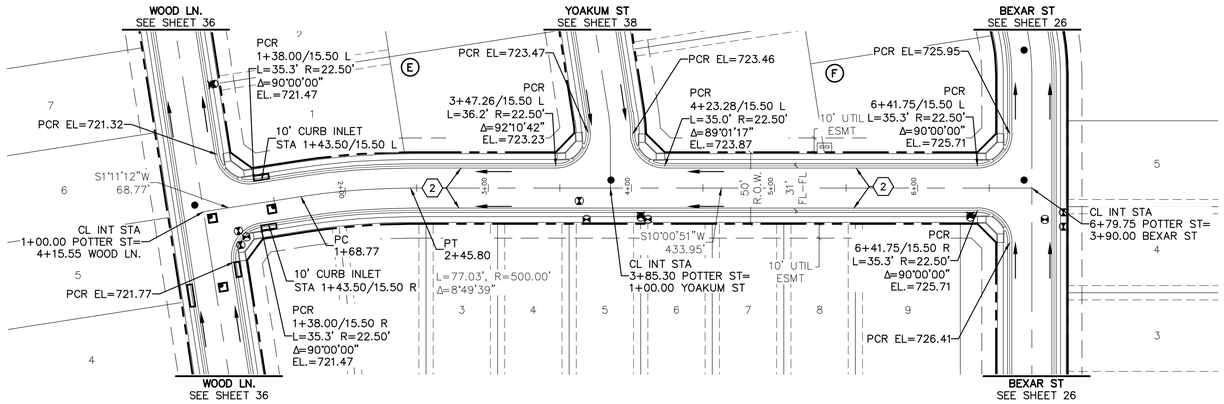


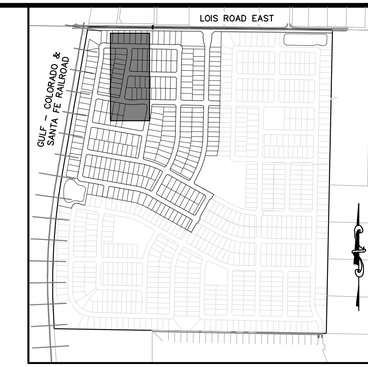


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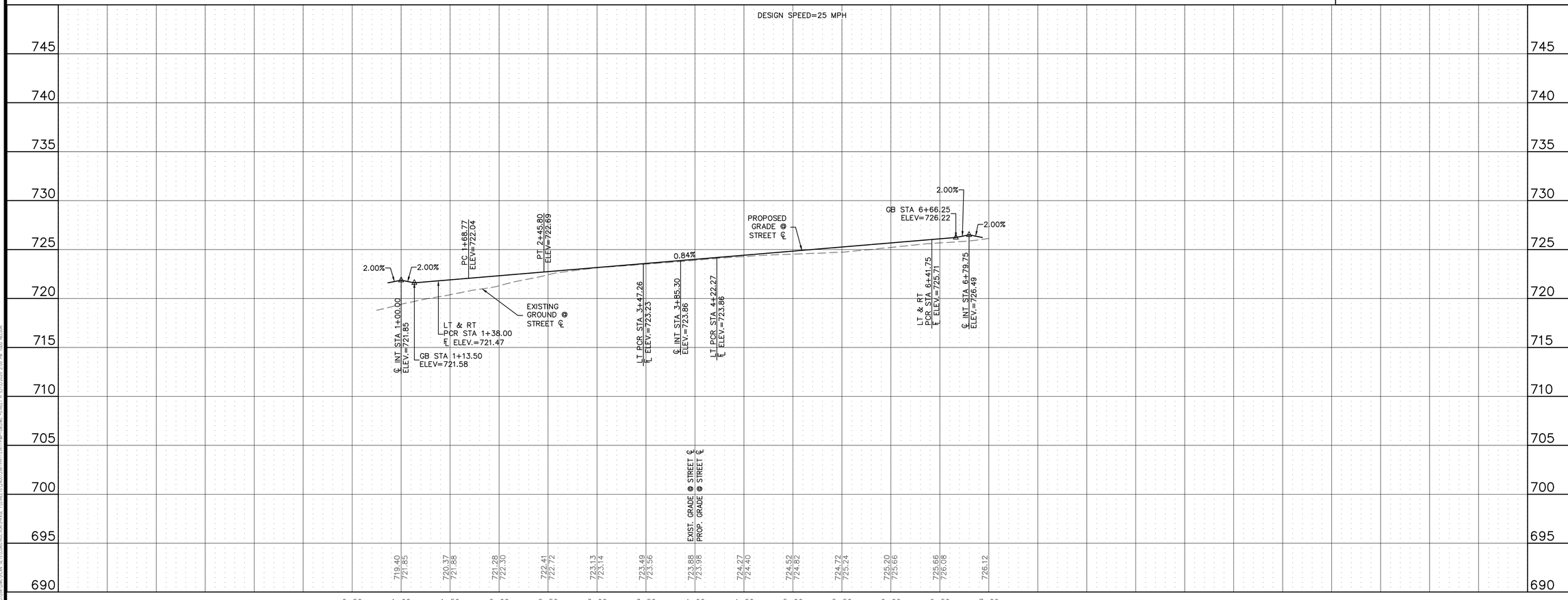
# POTTER ST

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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 37

CAD FILE: 24007256-PH1-STRT-PA&P-08.DWG

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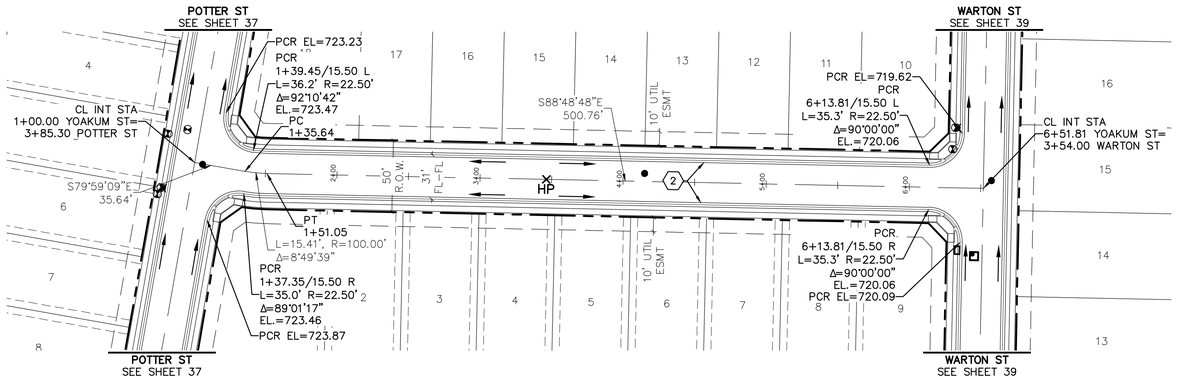


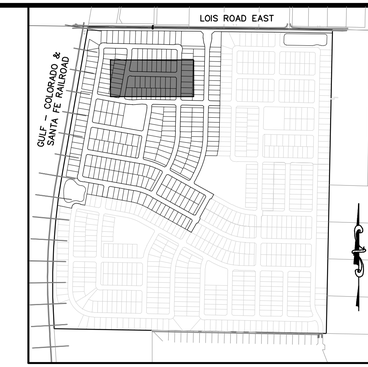


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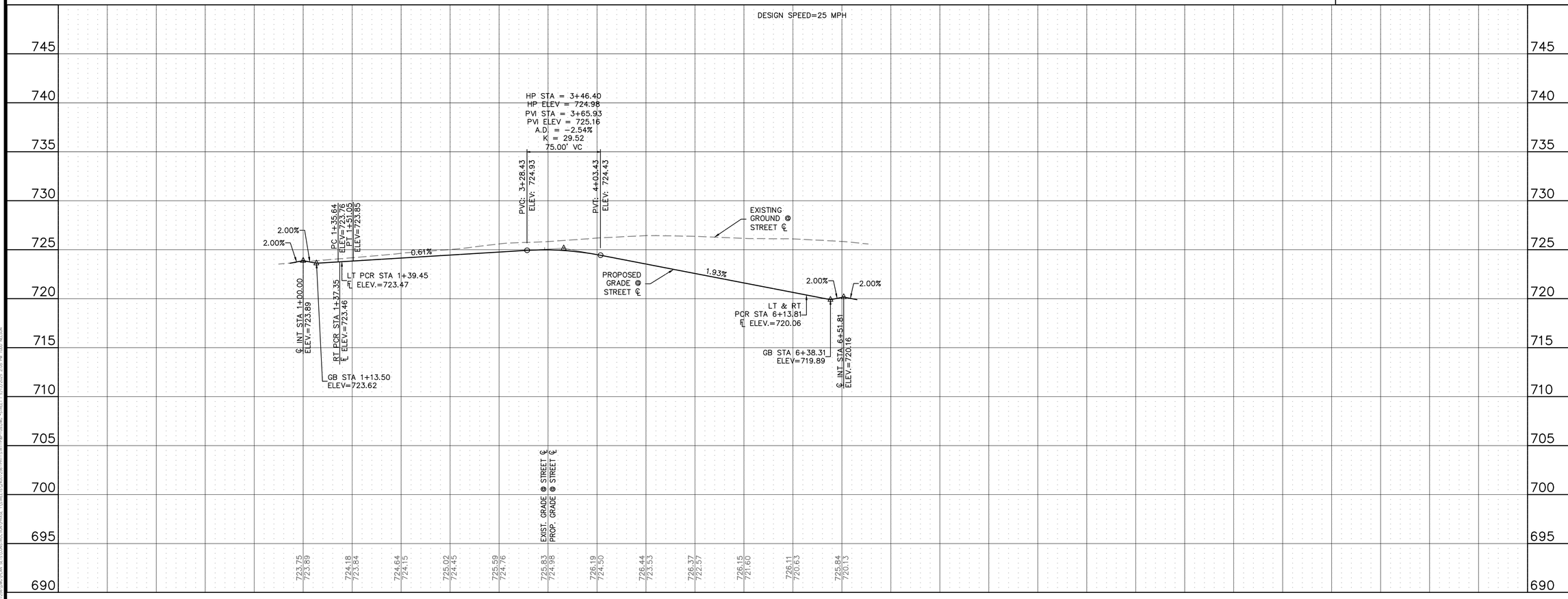
# YOAKUM ST

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YOAKUM ST

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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 38

CAD FILE: 24007256-PH1-STRT-PA&P-09.DWG

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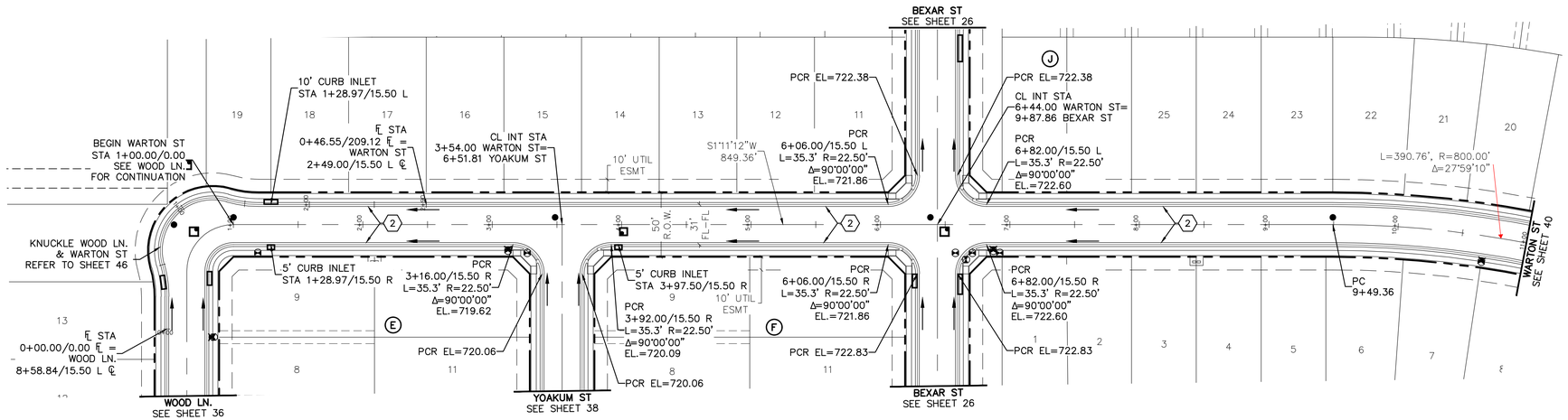


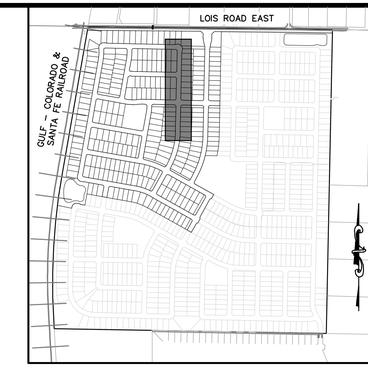


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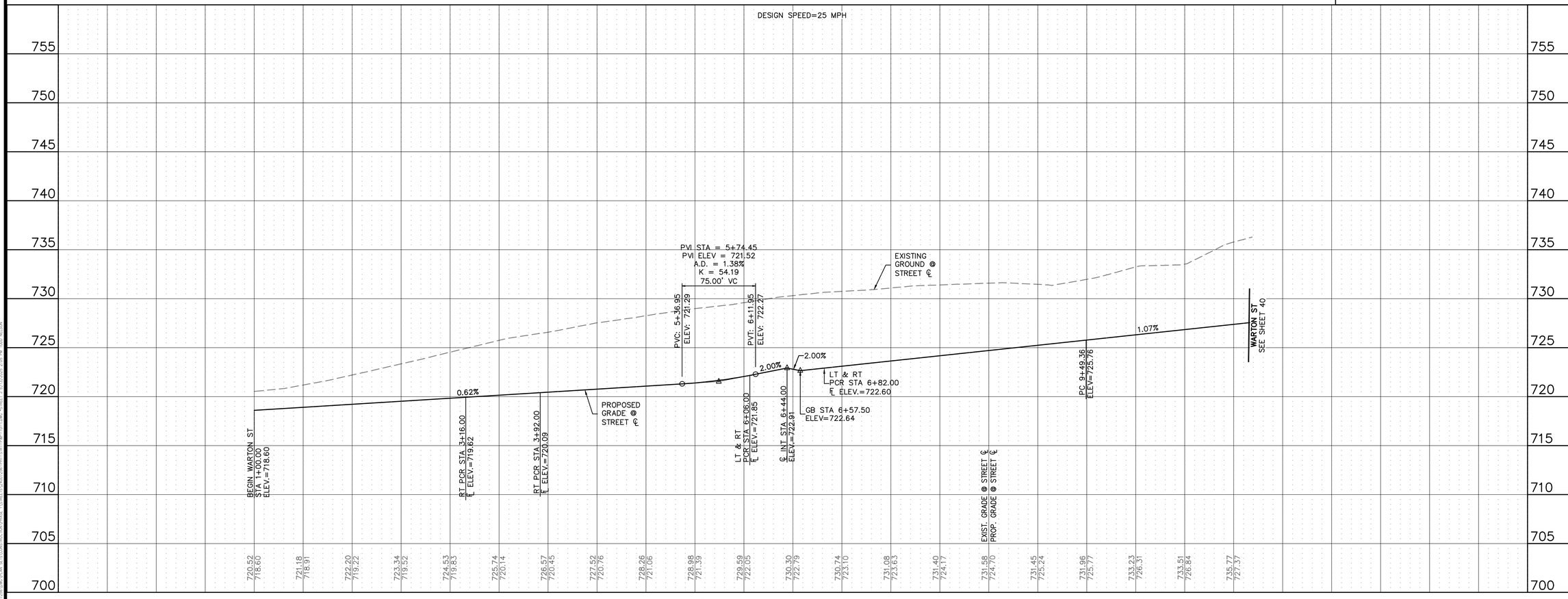



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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 39

CAD FILE: 24007256-PH1-STRT-P&P-10-1.DWG

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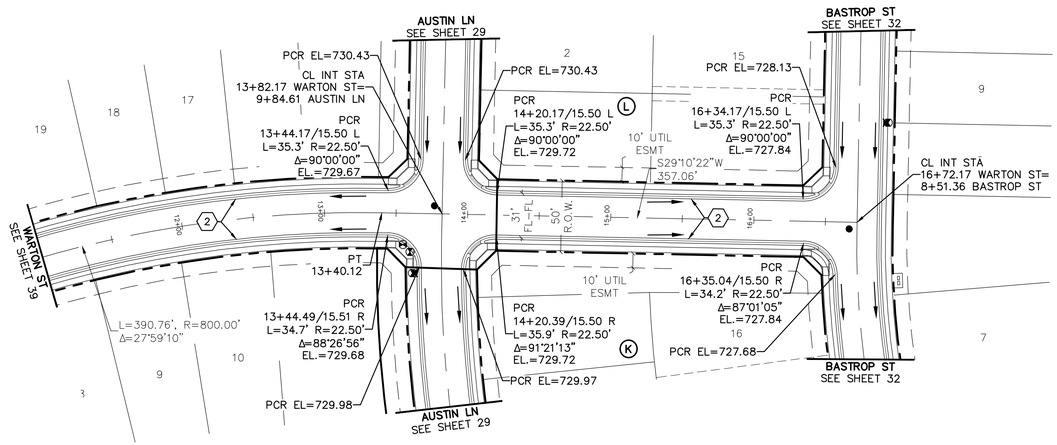


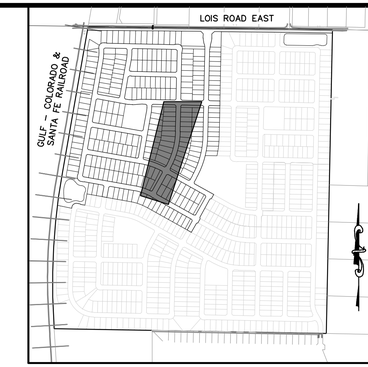


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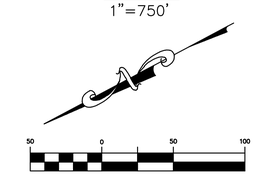


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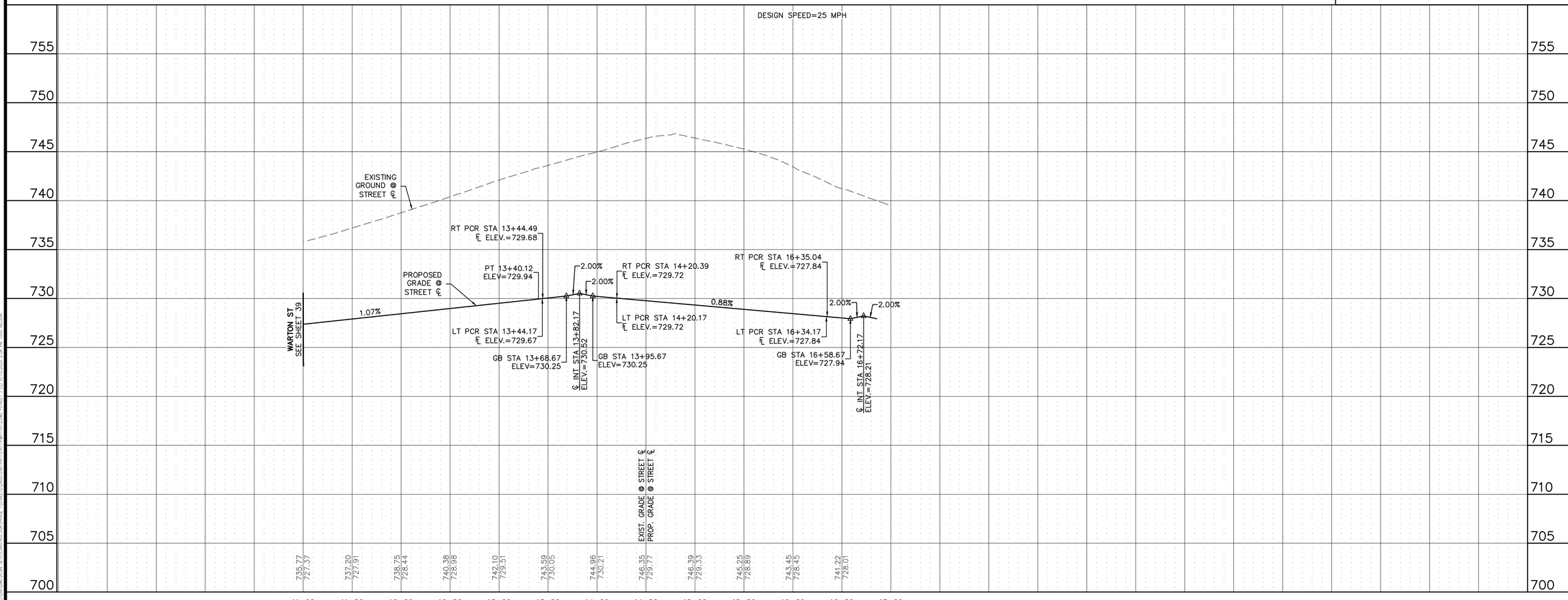
# WARTON ST

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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 40

CAD FILE: 24007256-PH1-STRT-PAP-10-2.DWG

## ROADWAY CONSTRUCTION NOTES

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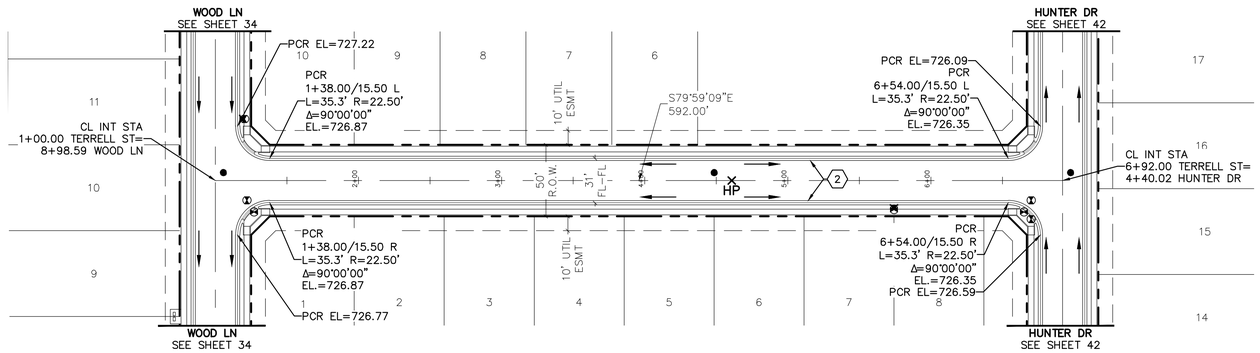


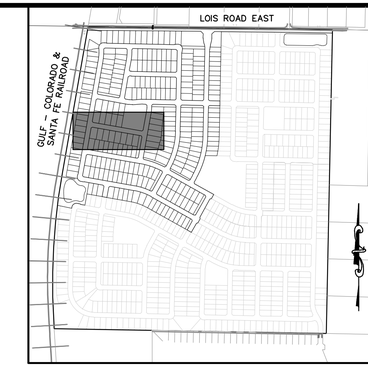


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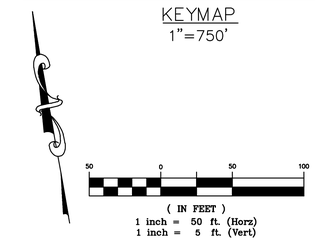


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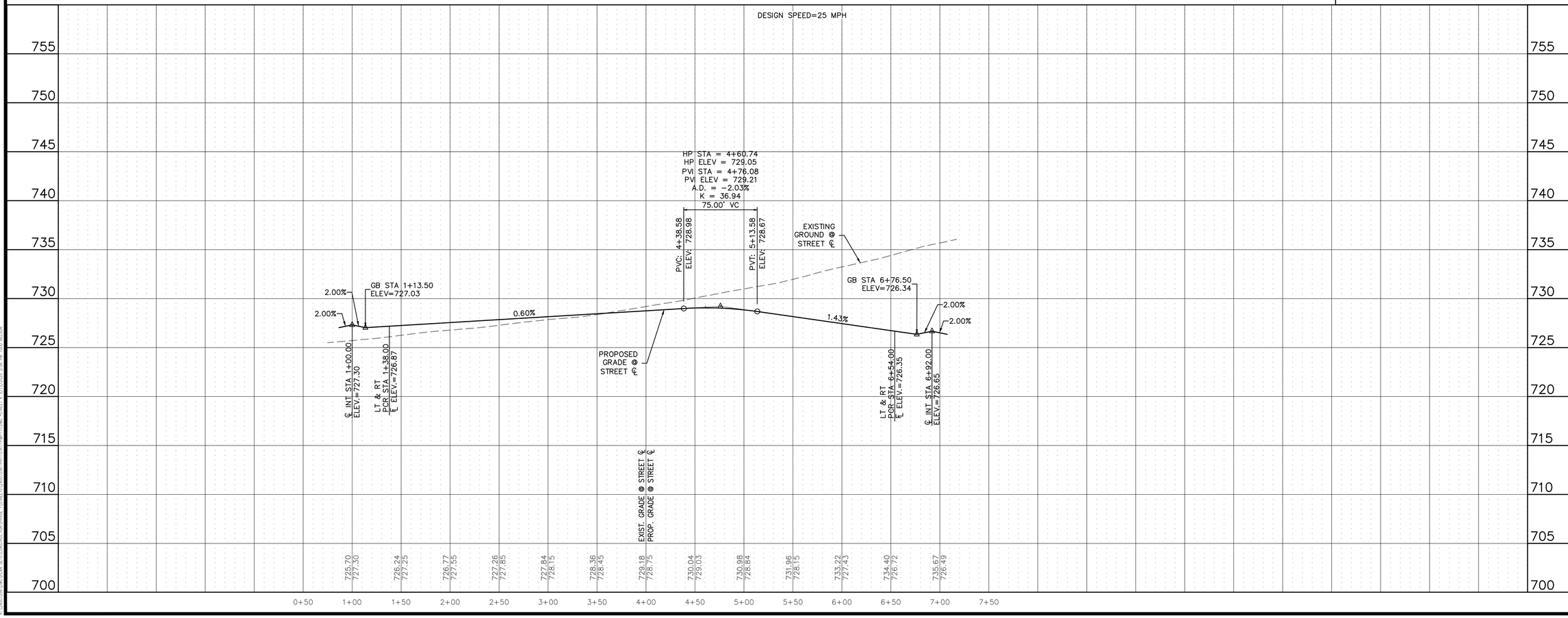


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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 41

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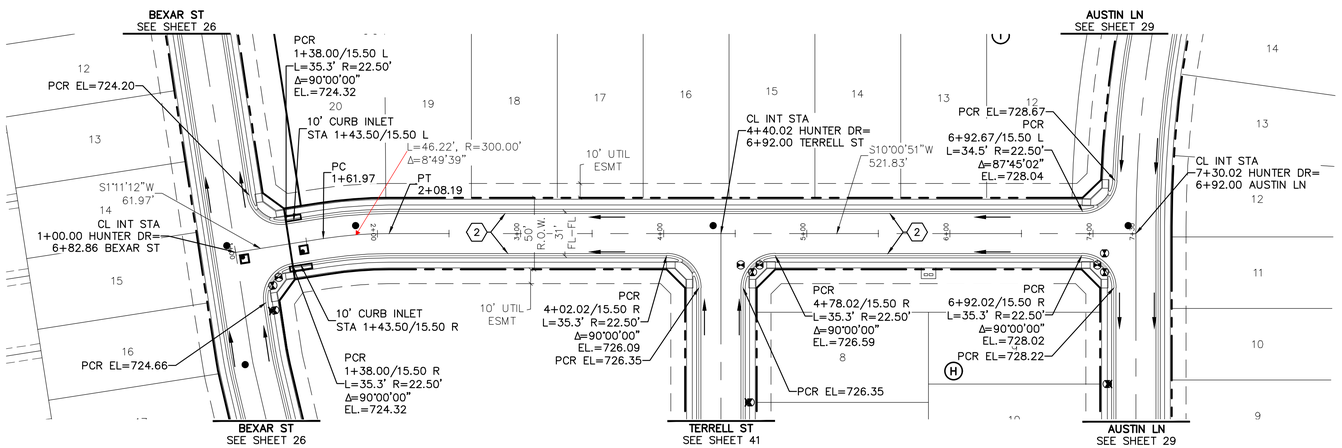


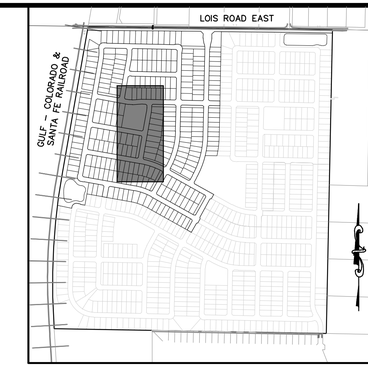


KEYMAP
1"=750'

( IN FEET )
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

**BENCHMARK:**
AN "X" CUT IN CONCRETE LOCATED WITHIN THE INTERSECTION OF LOIS ROAD EAST AND THE GULF COAST AND SANTA FE RAILROAD RIGHTS-OF-WAY, HAVING AN ELEVATION OF 729.3 FEET, A NORTHING COORDINATE VALUE OF 7,192,162.0, AND AN EASTING COORDINATE VALUE OF 2,374,666.1.

BEARINGS AND ELEVATIONS SHOWN HEREON ARE BASED ON NAD 83 TEXAS STATE PLANE COORDINATES, NORTH CENTRAL ZONE, NAVD 88.

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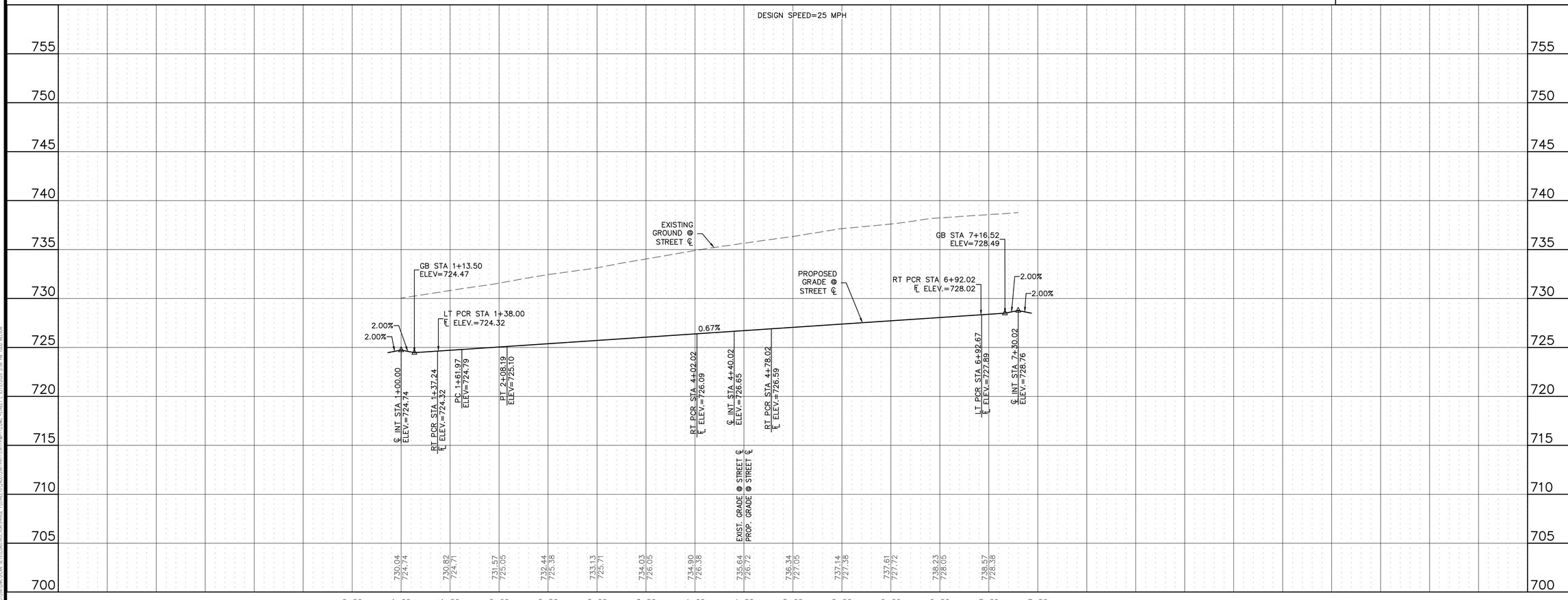
# HUNTER DR

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LOIS ROAD ESTATES – FILING NOS. 1 & 2
CITY OF SANGER, COUNTY OF DENTON,
STATE OF TEXAS

STREET PLAN & PROFILES
HUNTER DR

DATE 4/7/2025

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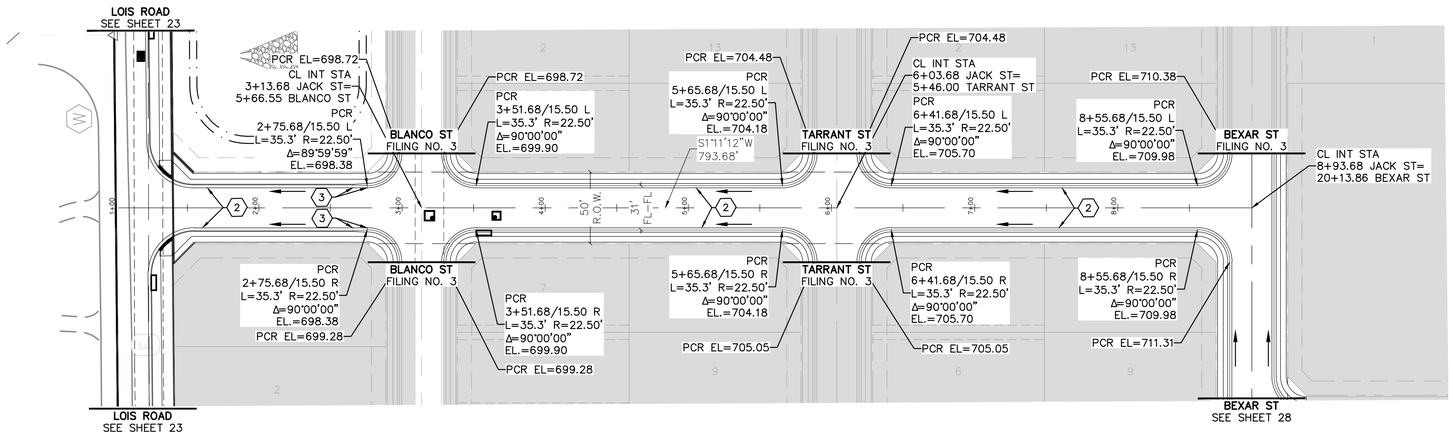
REVISIONS

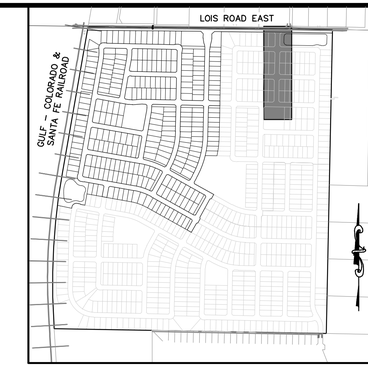
DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 42

CAD FILE: 24007256-PH1-STRT-PRF-12.DWG

## ROADWAY CONSTRUCTION NOTES

1. CONSTRUCT SEPARATE CURB & GUTTER. SEE DETAIL 2102, SHEET 91.
2. CONSTRUCT MOUNTABLE CURB AND GUTTER. SEE DETAIL 1007B, SHEET 92.
3. CONSTRUCT 10' CURB TRANSITION.

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50 0 50 100
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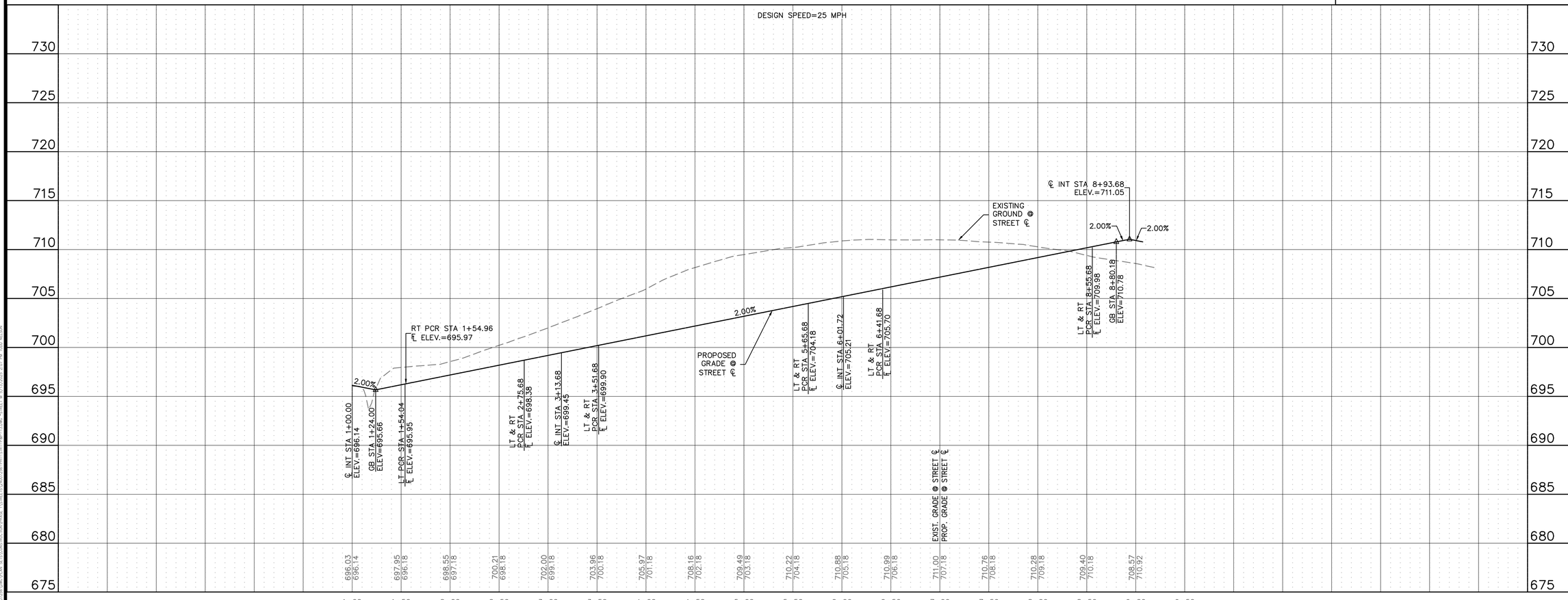
# JACK ST

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CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS
STREET PLAN & PROFILES
JACK ST

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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 43

CAD FILE: 24007256-PH1-STRT-PAP-13.DWG

## ROADWAY CONSTRUCTION NOTES

1. CONSTRUCT SEPARATE CURB & GUTTER. SEE DETAIL 2102, SHEET 91.
2. CONSTRUCT MOUNTABLE CURB AND GUTTER. SEE DETAIL 1007B, SHEET 92.
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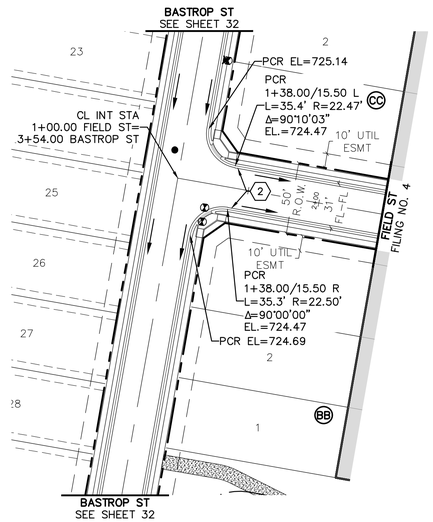


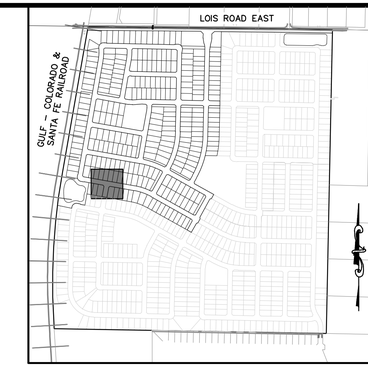


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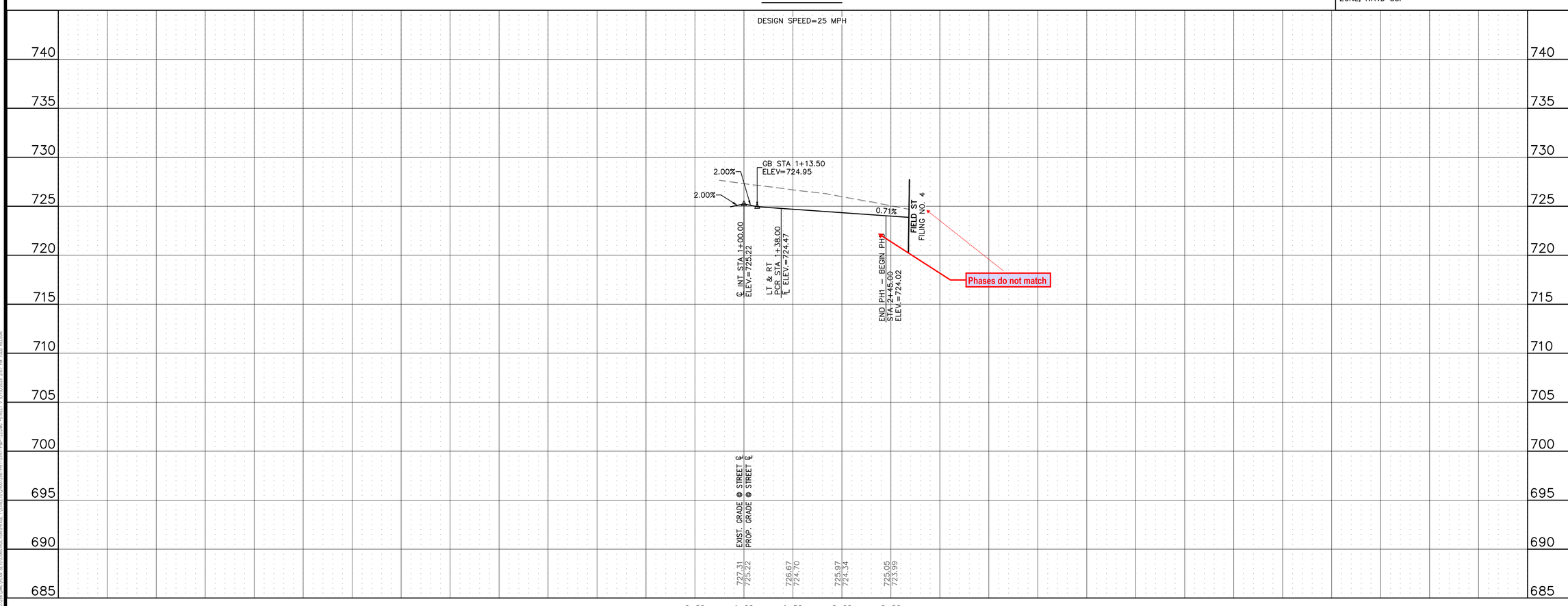
# FIELD ST





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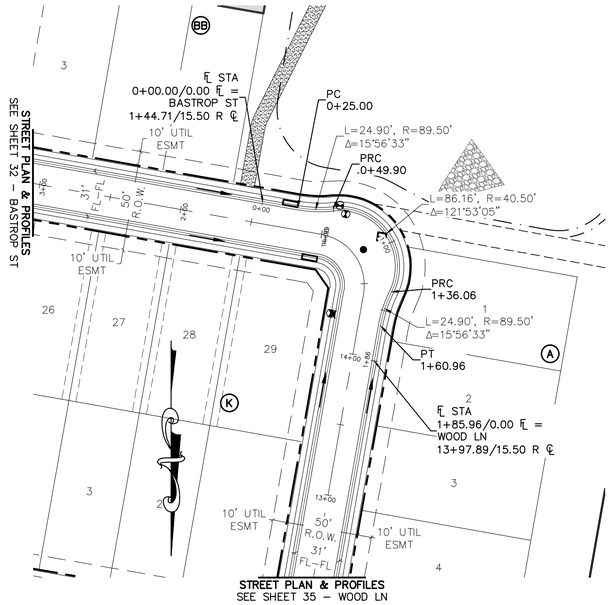
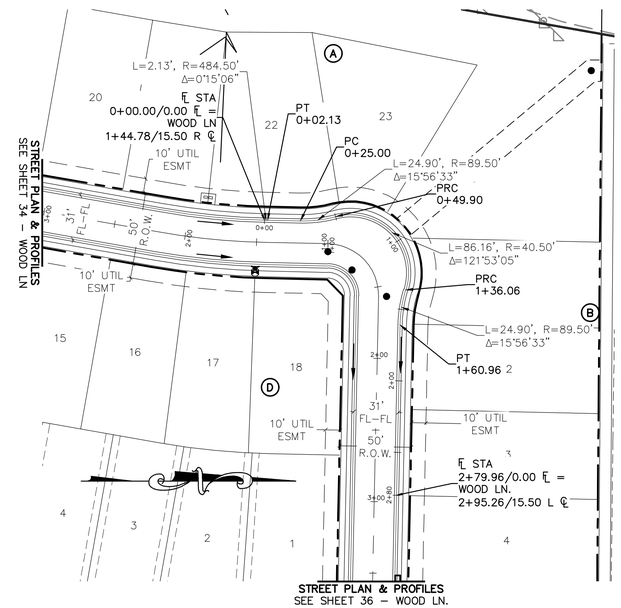
DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 44

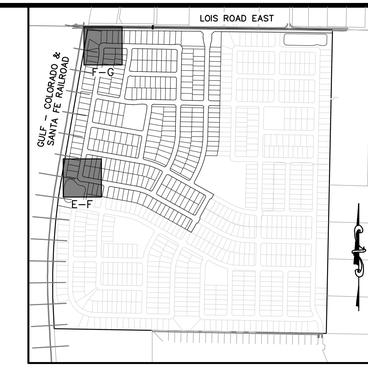
CAD FILE: 24007256-PH1-STRT-PAP-22.DWG



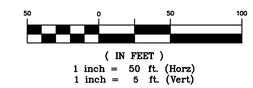

## KNUCKLE
## BASTROP ST - WOOD LN




## KNUCKLE
## WOOD LN - WOOD LN.




KEYMAP
1"=750'

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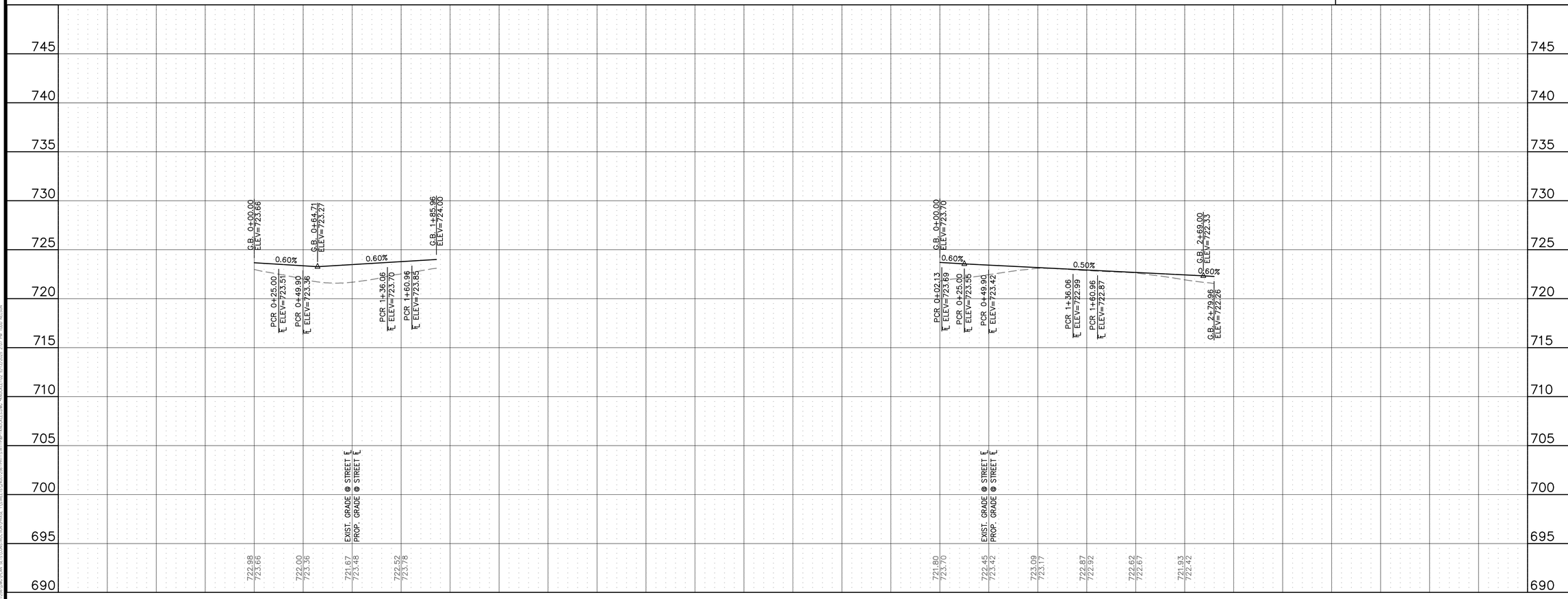



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STATE OF TEXAS
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(KNUCKLES) BASTROP ST – WOOD LN &
WOOD LN – WOOD LN.

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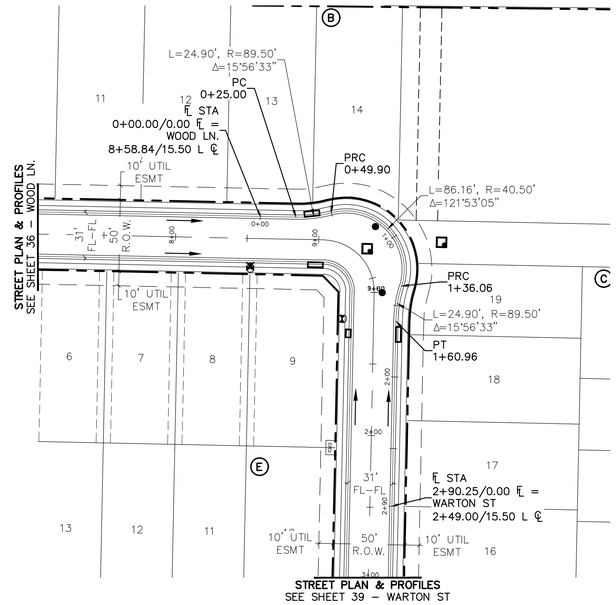
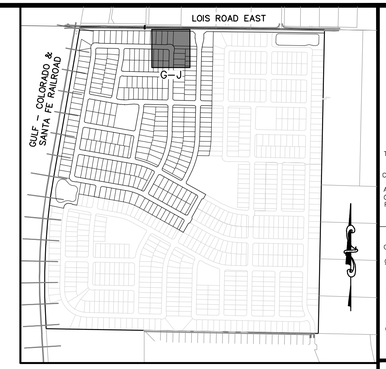
DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 45

CAD FILE: 24007256-PH1-STRT-P&P-KNUCKLES.DWG




# KNUCKLE
# WOOD LN. - WARTON ST

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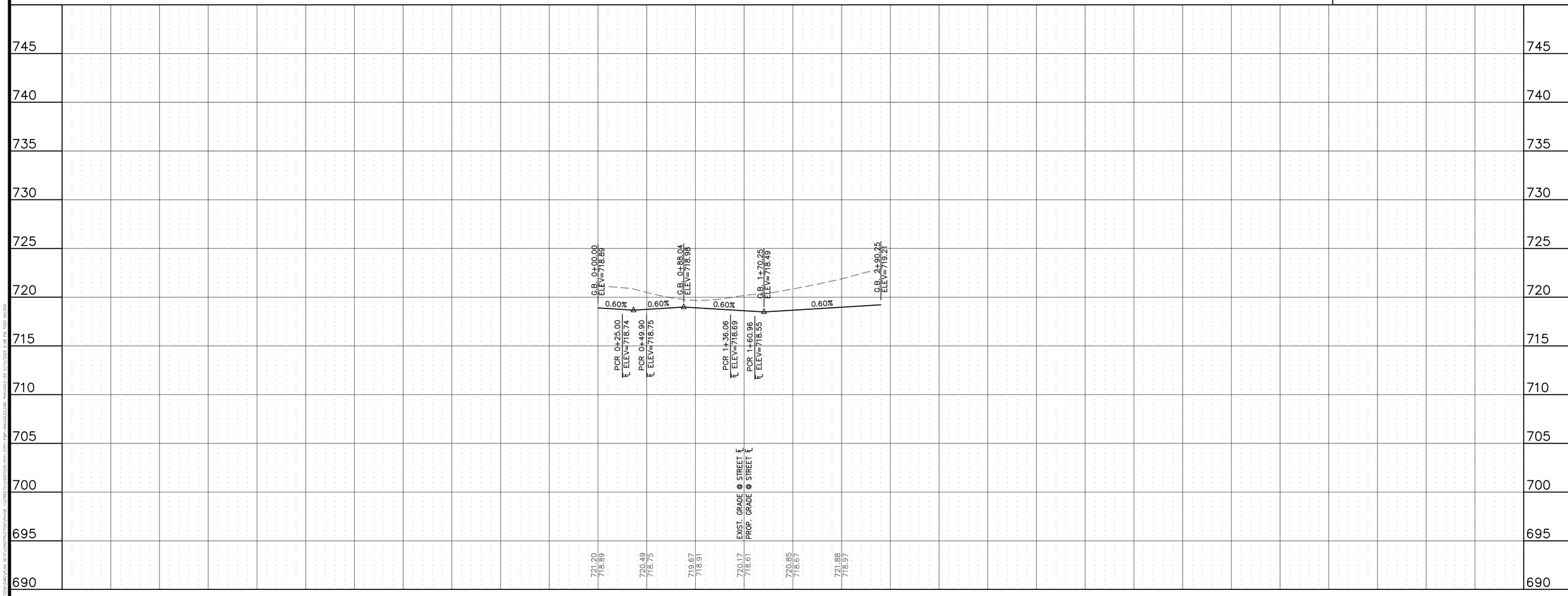


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STATE OF TEXAS
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(KNUCKLES) WOOD LN. – WARTON ST

DATE 4/7/2025

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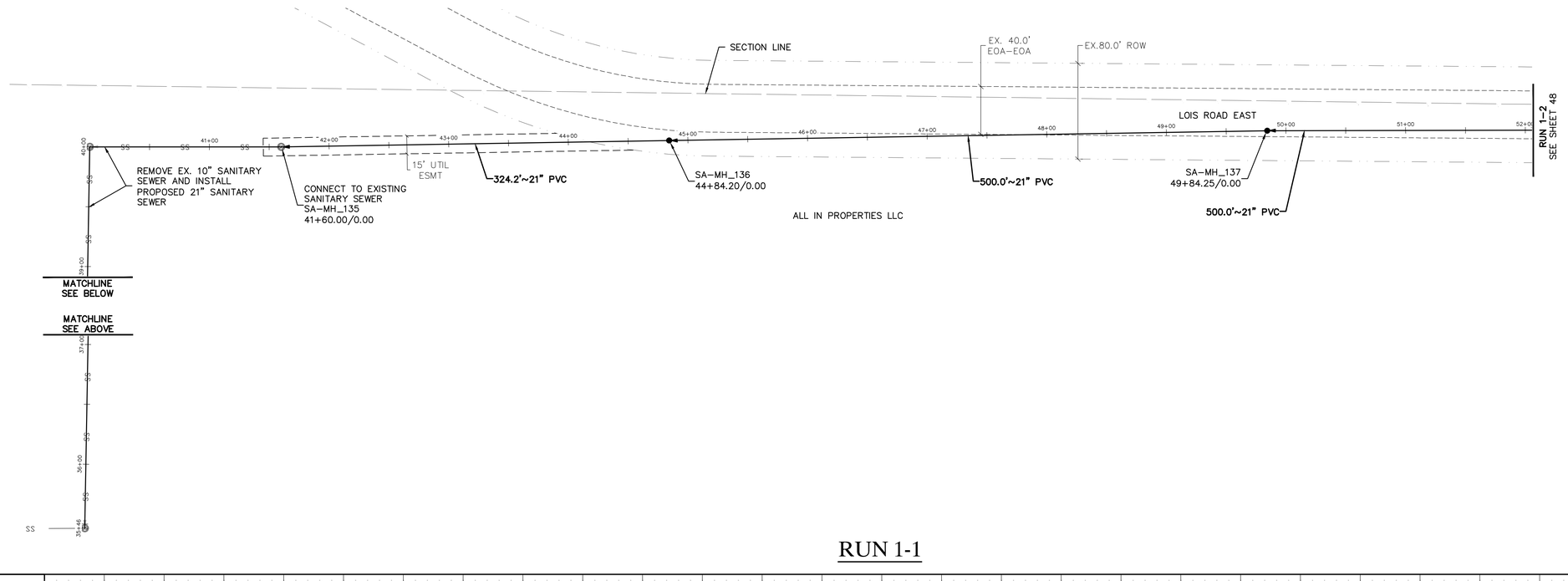
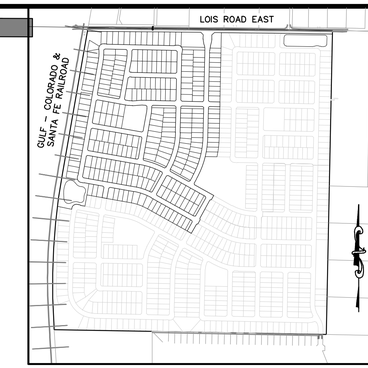
DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 46

CAD FILE: 24007256-PH1-STRT-PAP-KNUCKLES.DWG

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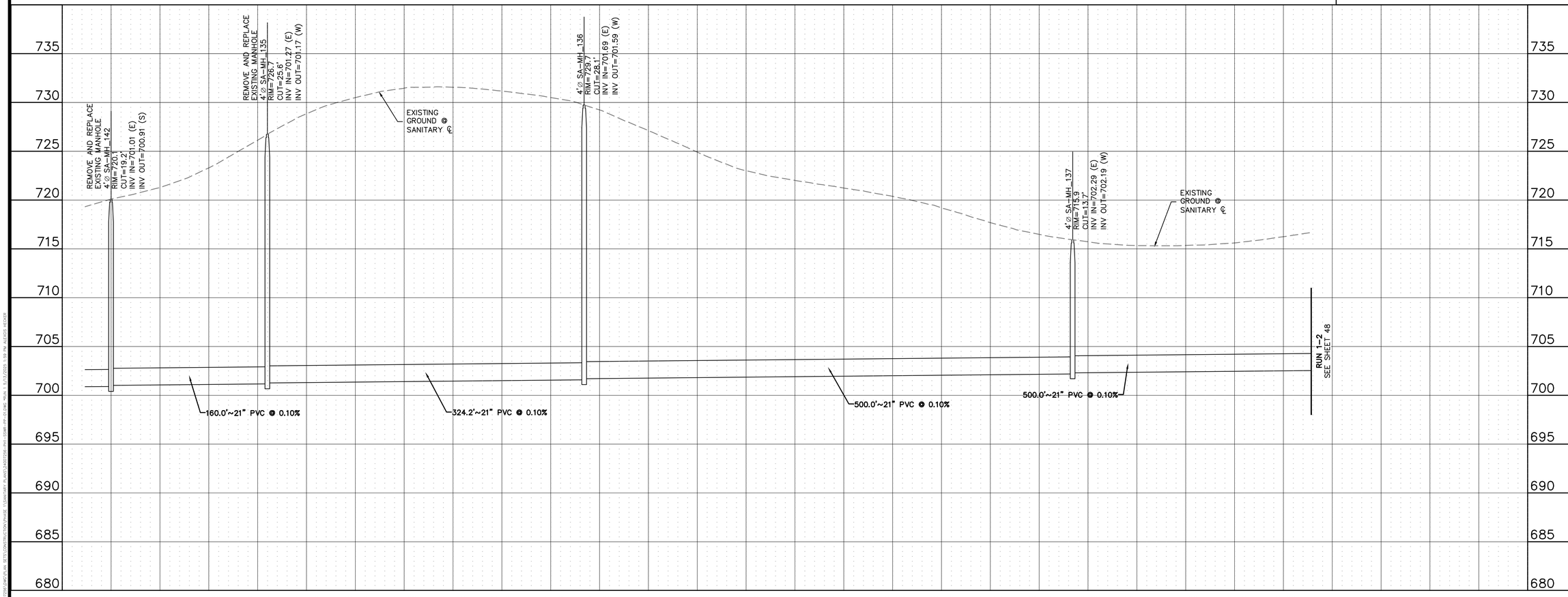
## RUN 1-1

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CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS
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RUN 1-1

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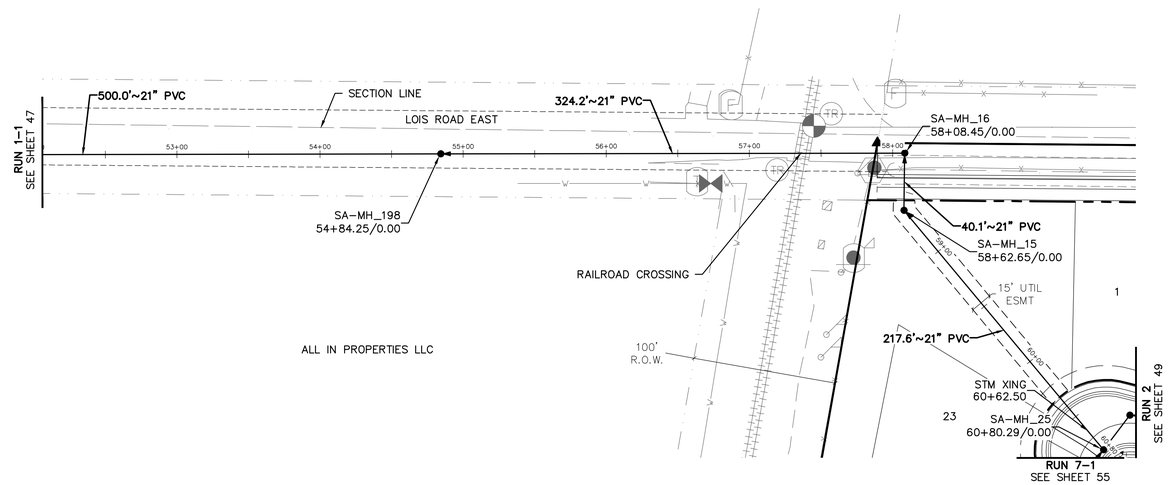
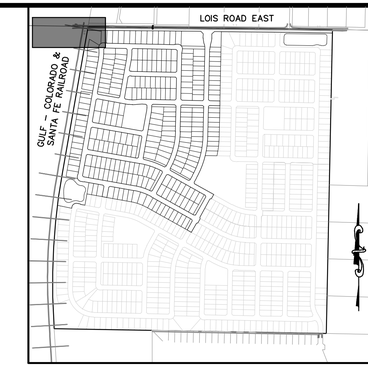
REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 47

CAD FILE: 24007256-PH1-SSWR-PPP-01.DWG

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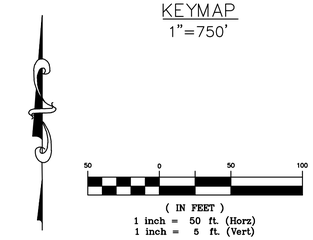


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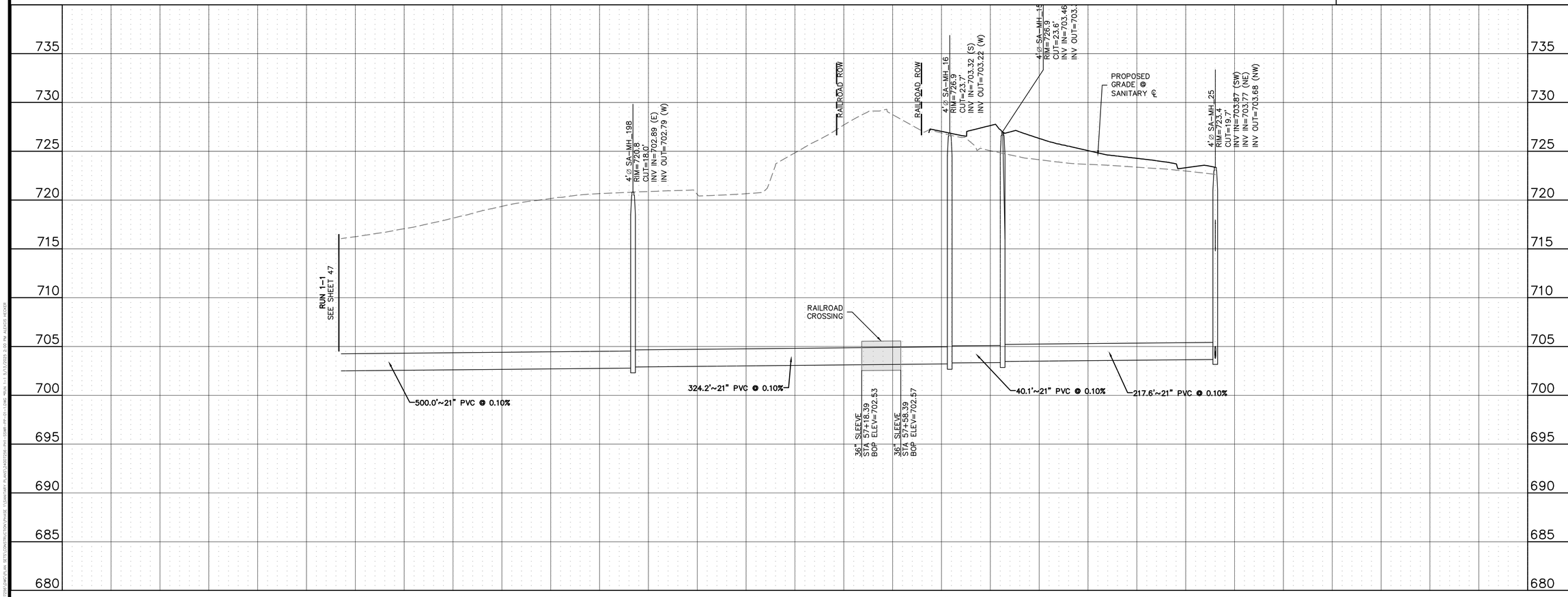
# RUN 1-2

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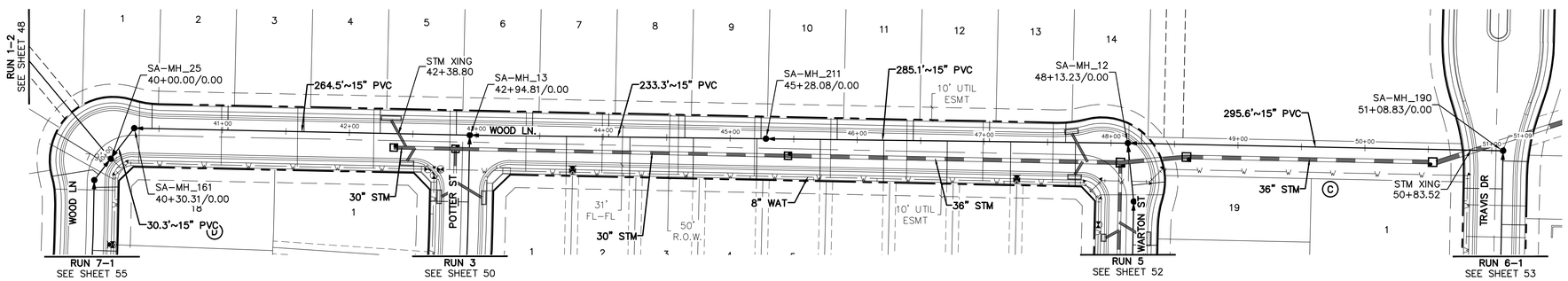
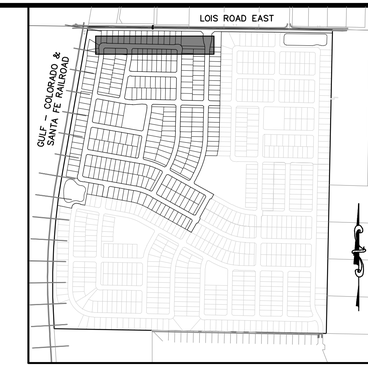
DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 48

CAD FILE: 24007256-PH1-SSWR-PPP-01-1.DWG



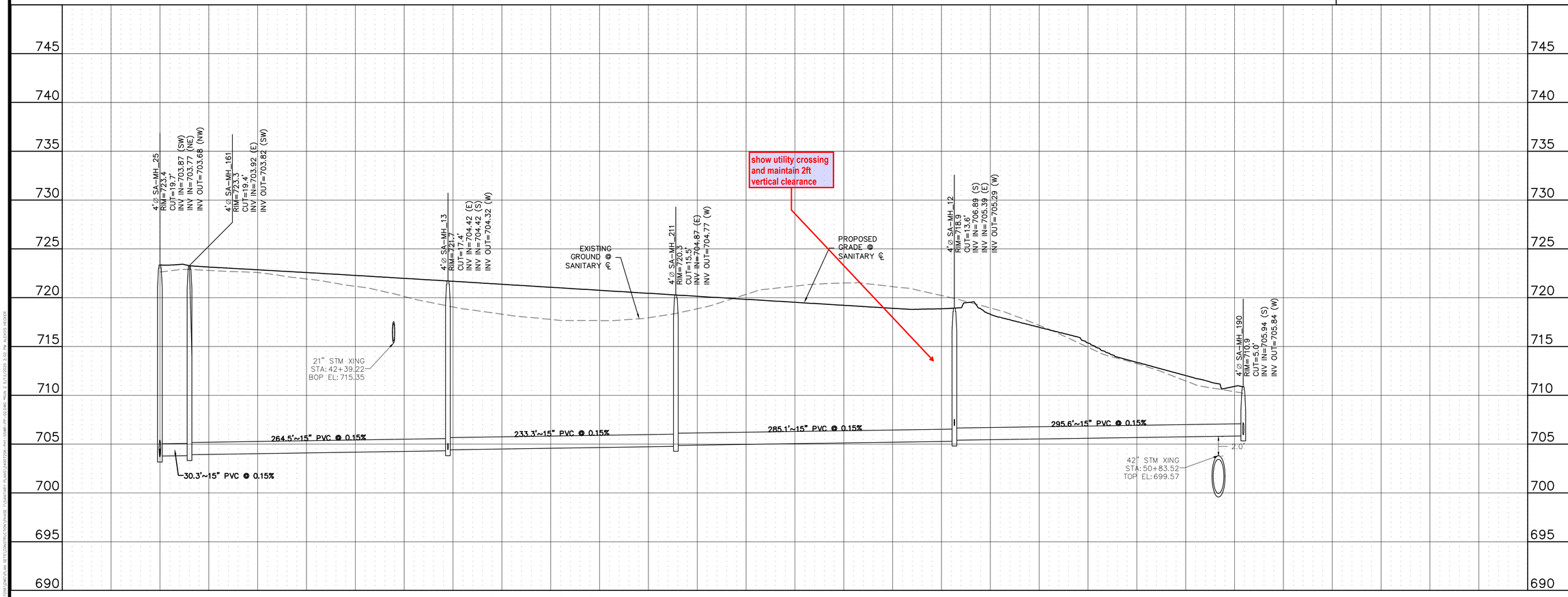

KEYMAP
1"=750'

( IN FEET )
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

**BENCHMARK:**
AN "X" CUT IN CONCRETE LOCATED WITHIN THE INTERSECTION OF LOIS ROAD EAST AND THE GULF COAST AND SANTA FE RAILROAD RIGHTS-OF-WAY, HAVING AN ELEVATION OF 729.3 FEET, A NORTHING COORDINATE VALUE OF 7,192,162.0, AND AN EASTING COORDINATE VALUE OF 2,374,666.1.

BEARINGS AND ELEVATIONS SHOWN HEREON ARE BASED ON NAD 83 TEXAS STATE PLANE COORDINATES, NORTH CENTRAL ZONE, NAVD 88.

# RUN 2





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JOB 24007256
SHEET NO. 49

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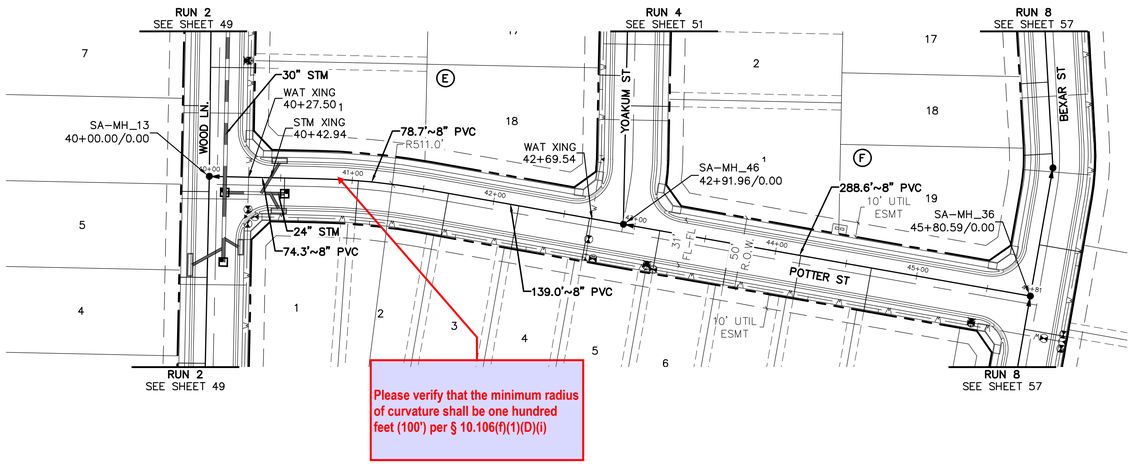


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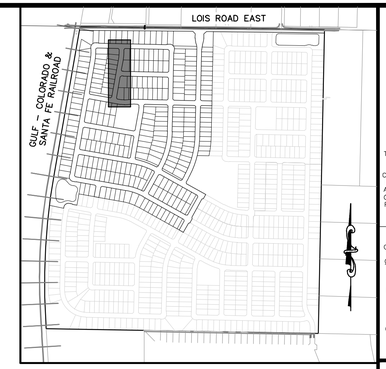


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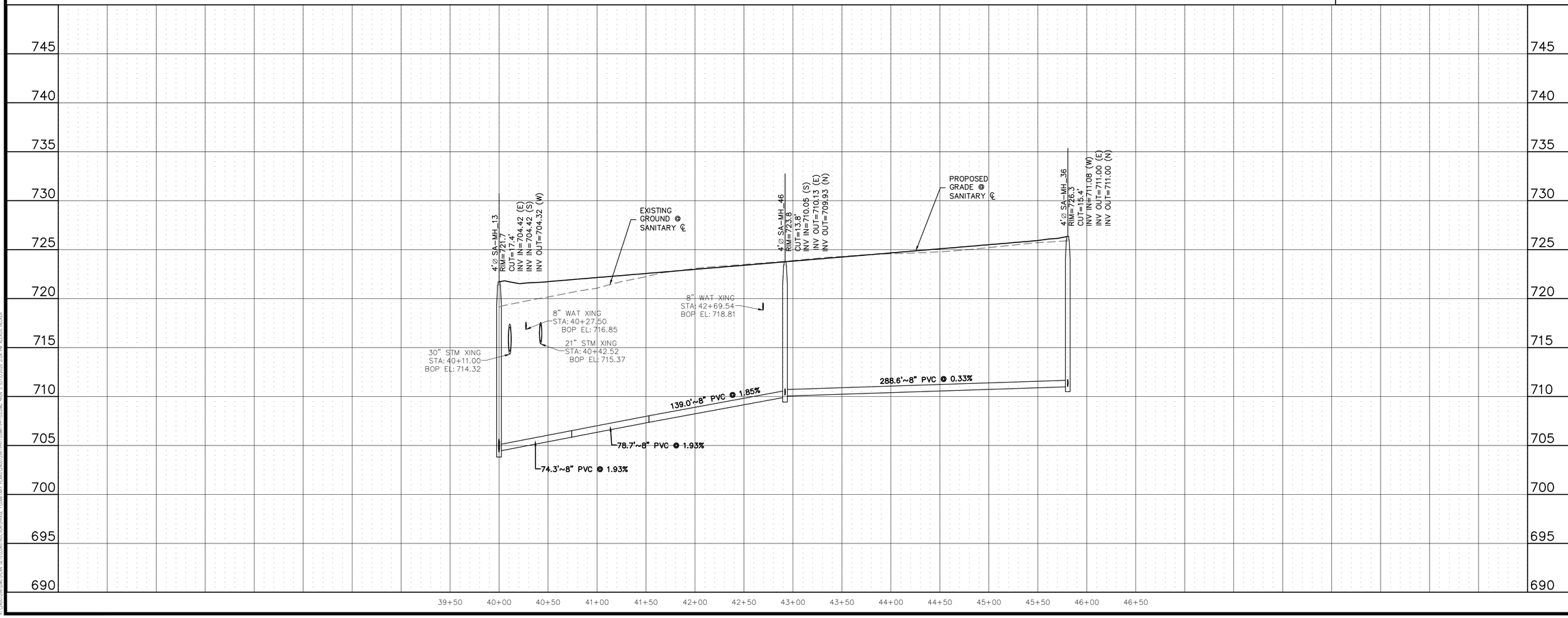


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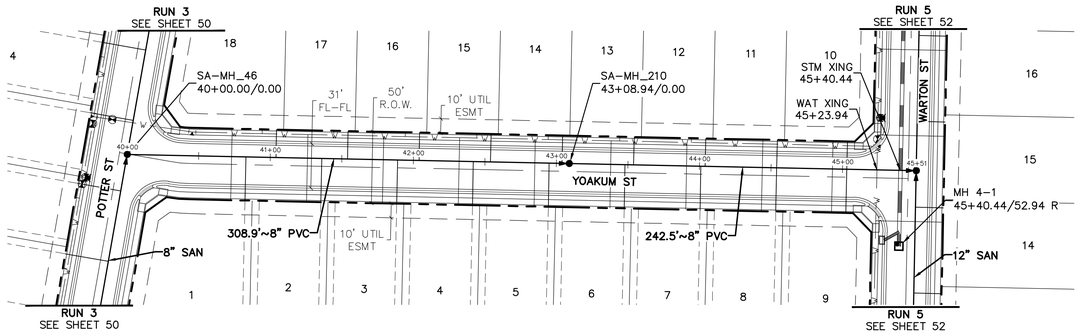
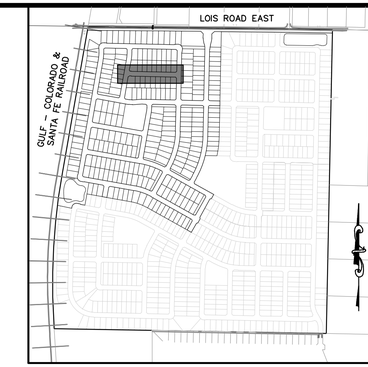
P.M. JF
JOB 24007256
SHEET NO. 50

CAD FILE: 24007256-PH1-SSWR-PP-03.DWG

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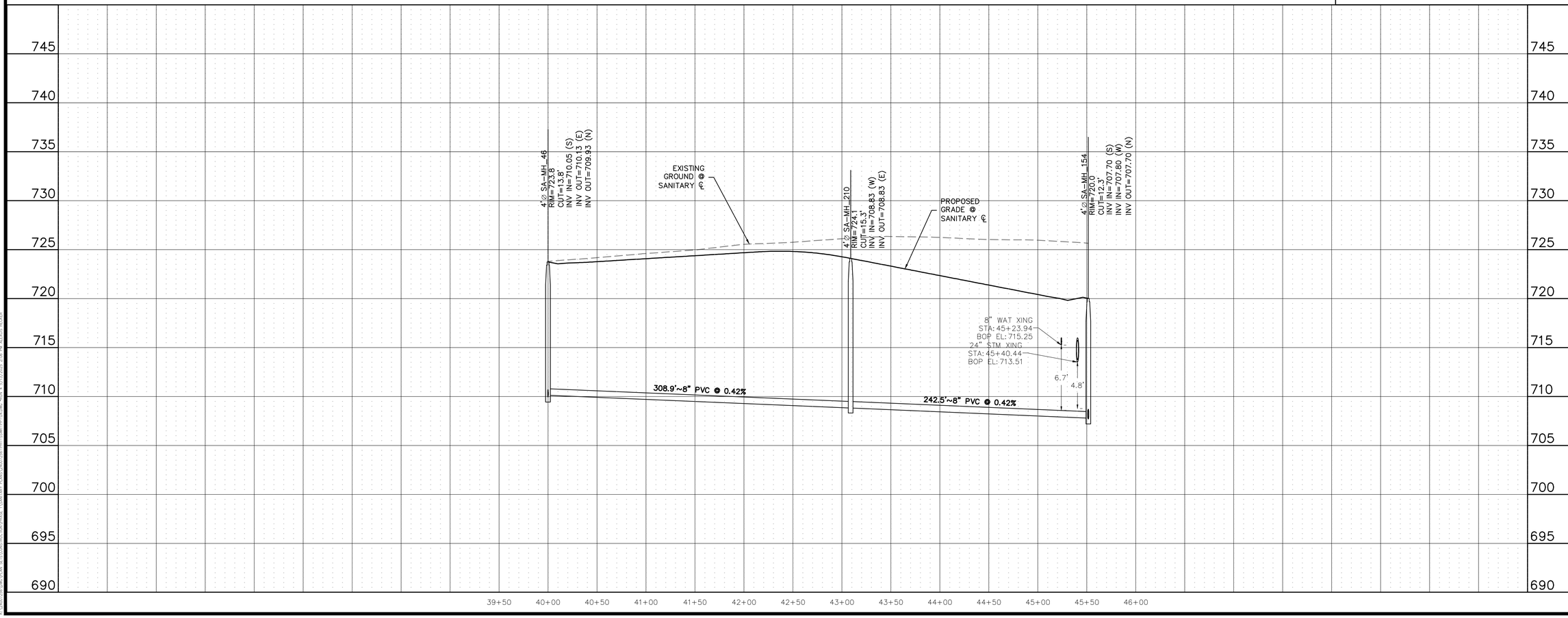
# RUN 4

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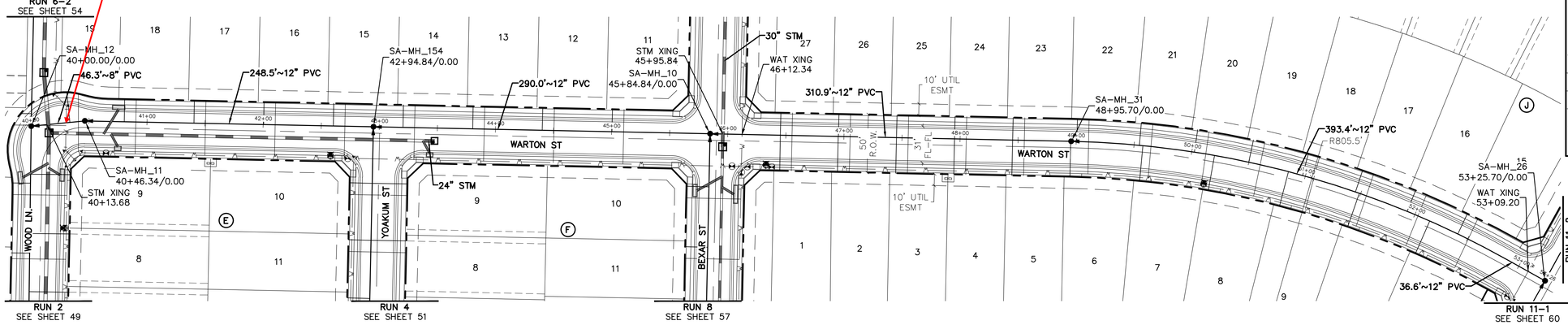
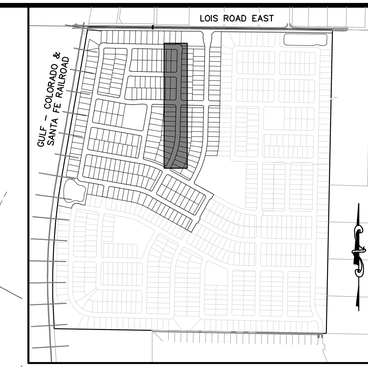
P.M. JF
JOB 24007256
SHEET NO. 51

CAD FILE: 24007256-PH1-SSWR-PP-04.DWG

Why is a 12" PVC feeding into an 8" PVC and then a 15" PVC? Please upsize 8" to either 12" or 15" PVC on Run 5

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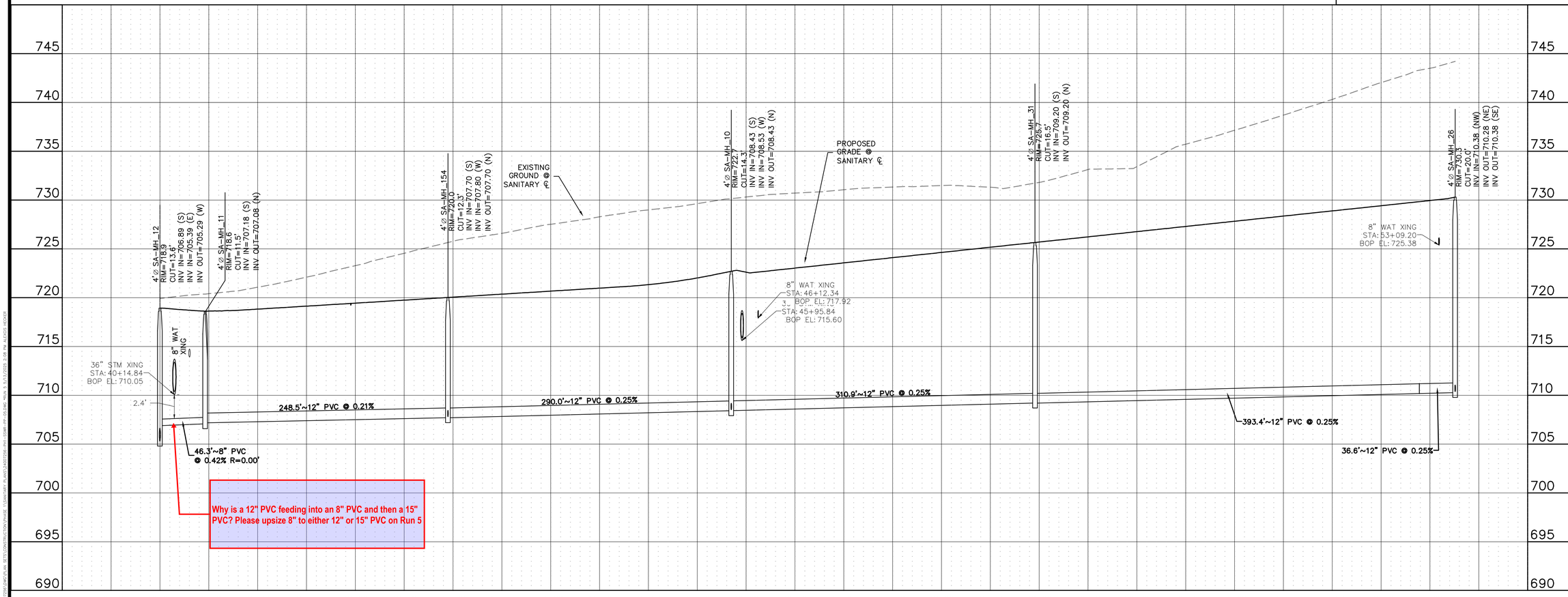
# RUN 5




Why is a 12" PVC feeding into an 8" PVC and then a 15" PVC? Please upsize 8" to either 12" or 15" PVC on Run 5

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JOB 24007256
SHEET NO. 52

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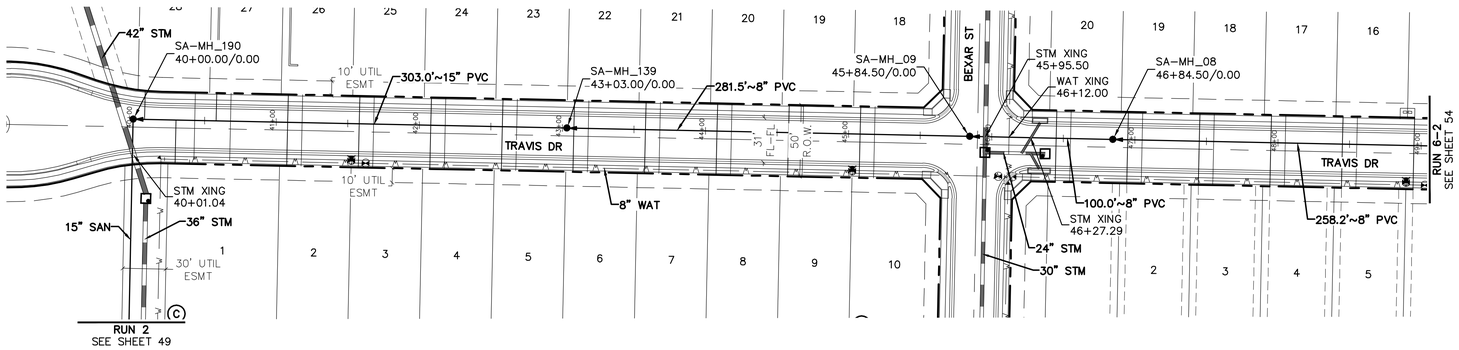


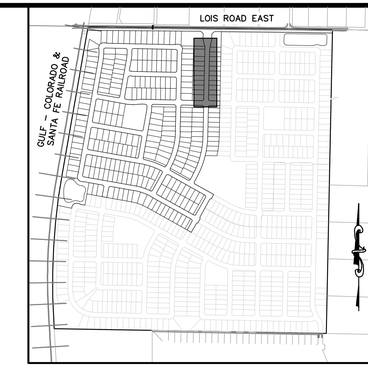


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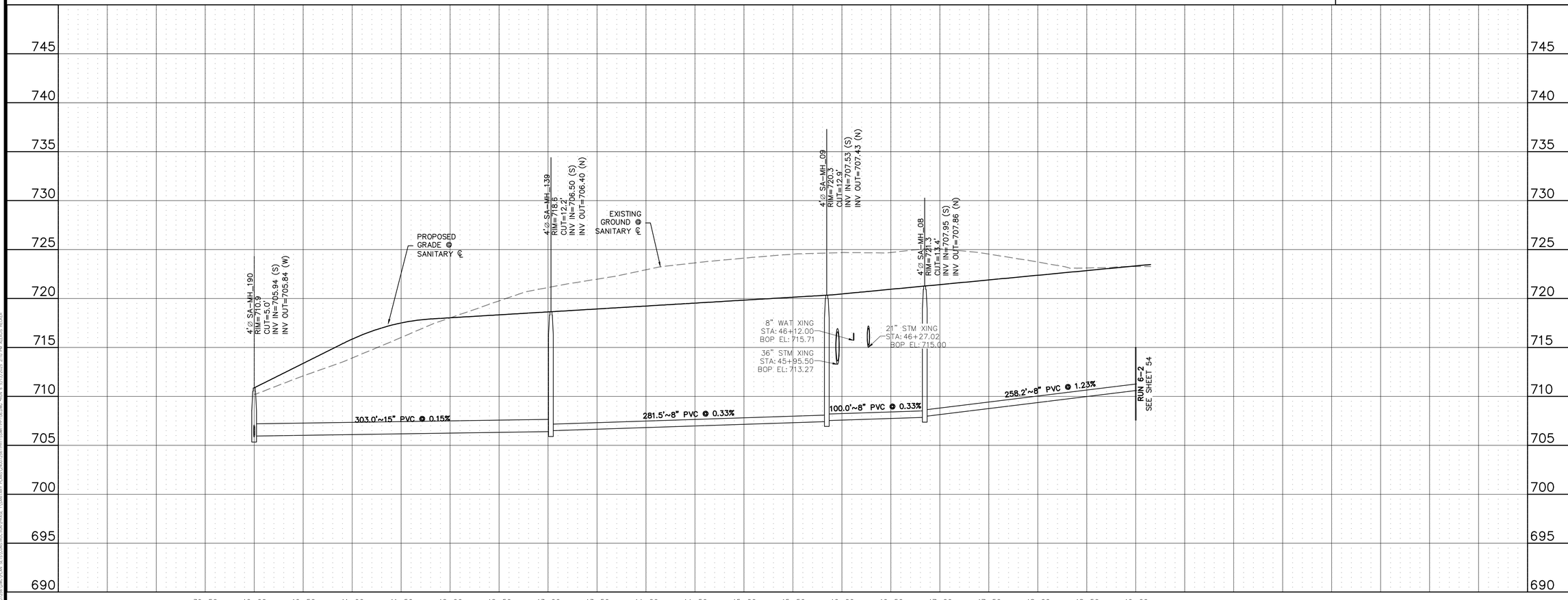


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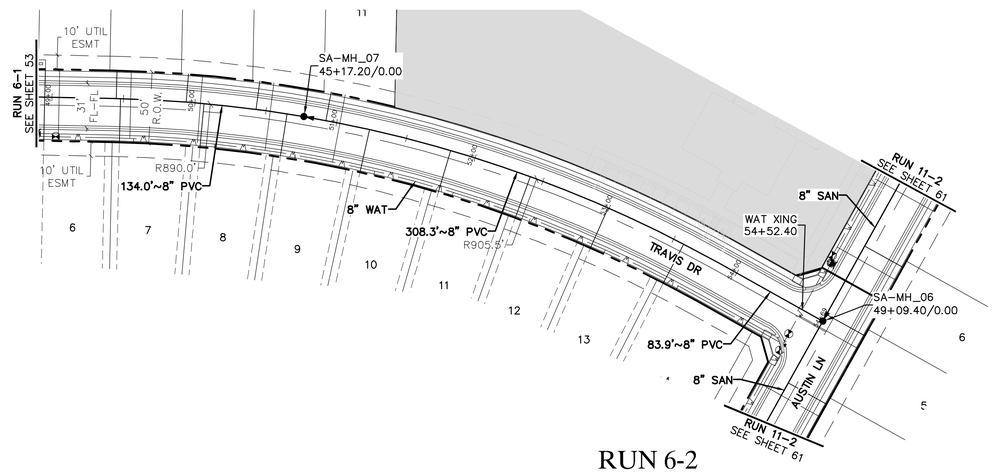
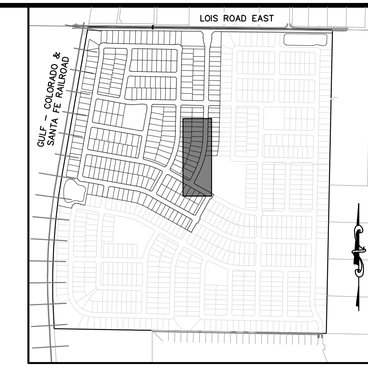
JOB 24007256
SHEET NO. 53

CAD FILE: 24007256-PH1-SSWR-PP-06.DWG




RUN 6-2

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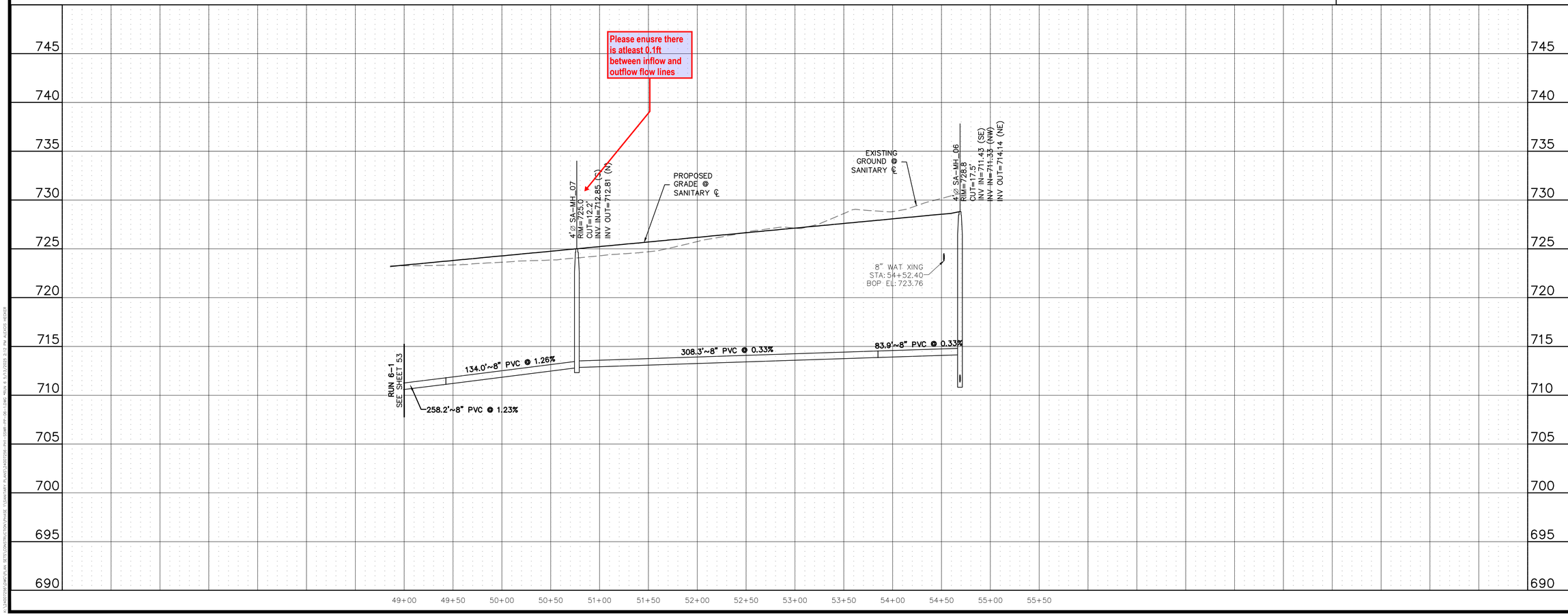


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P.M. JF
JOB 24007256
SHEET NO. 54

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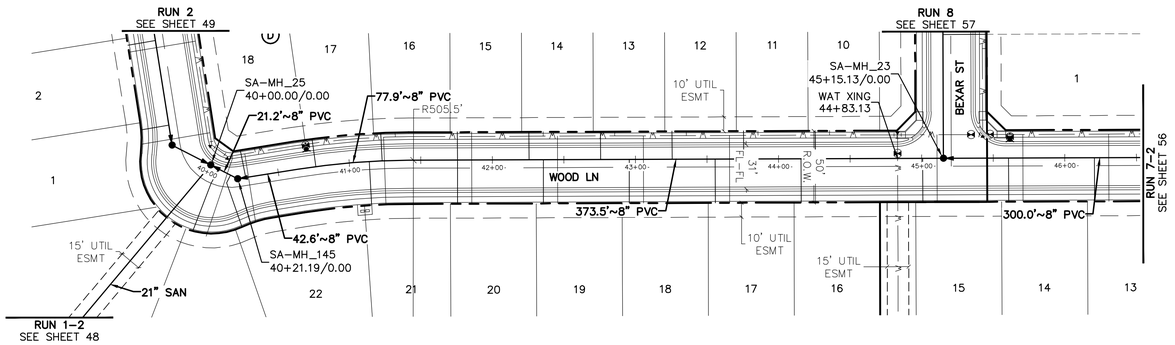


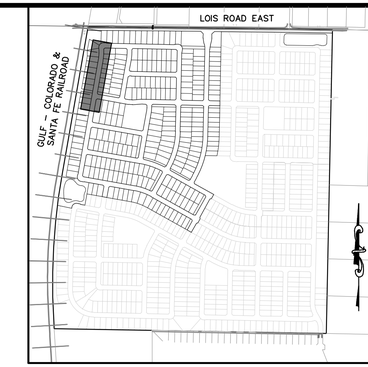


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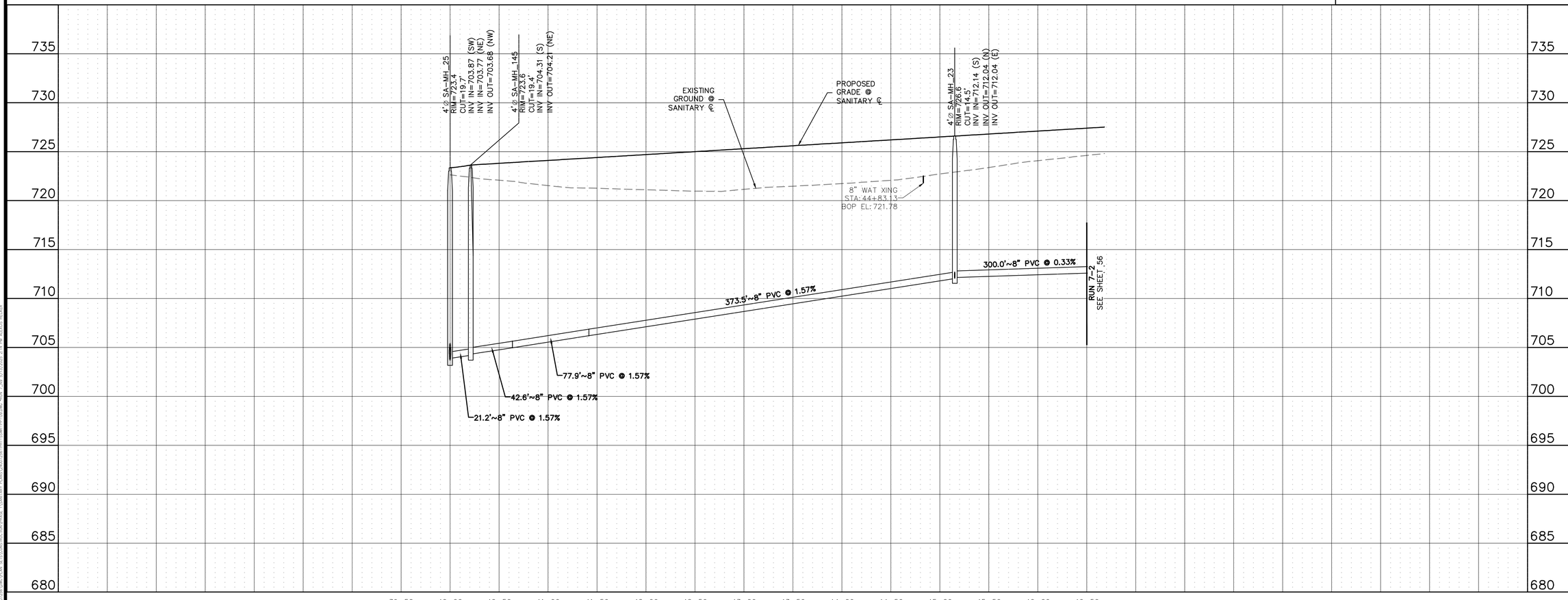


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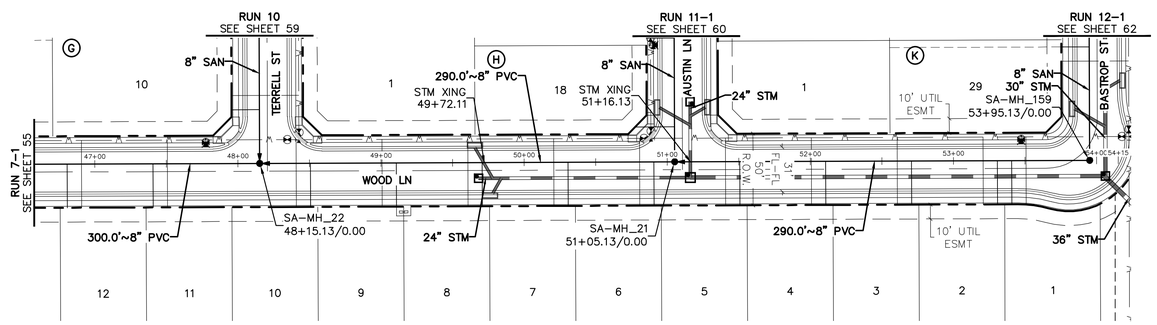


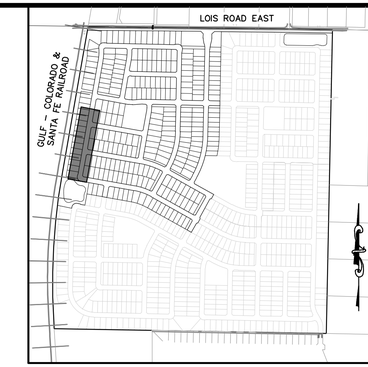


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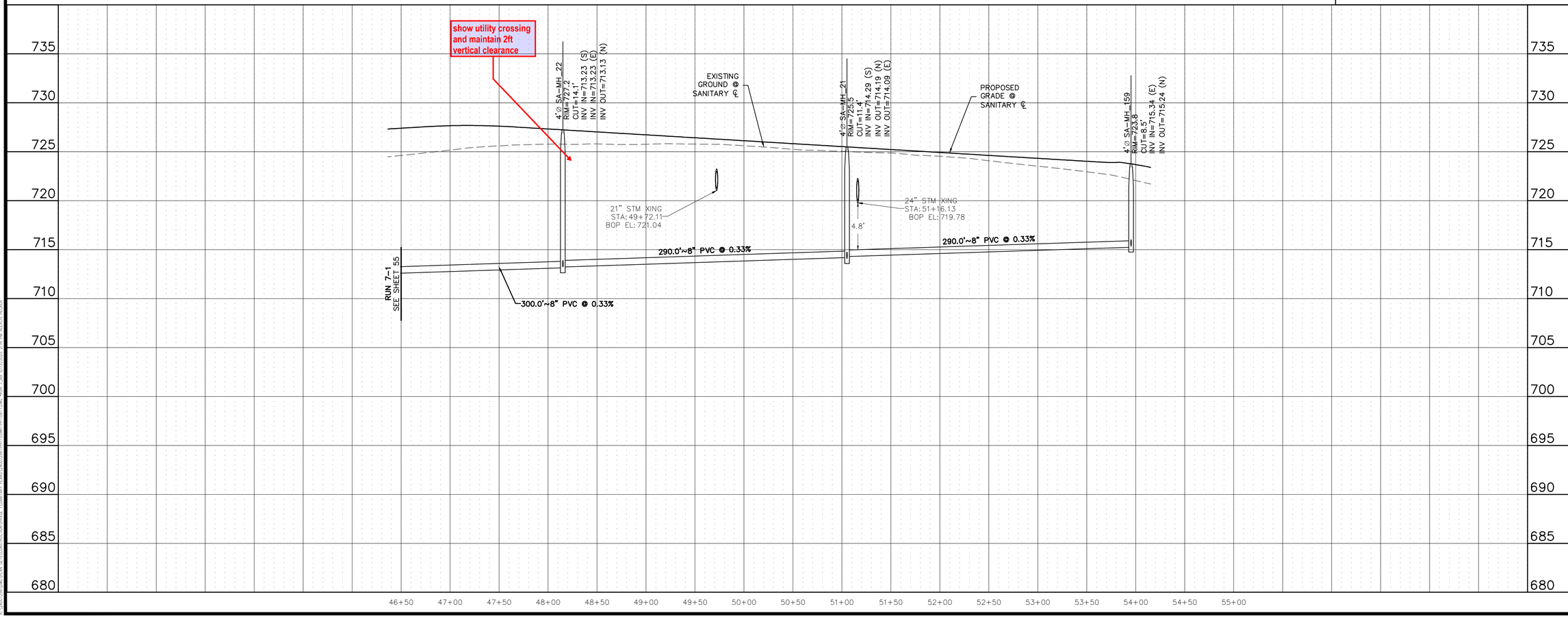


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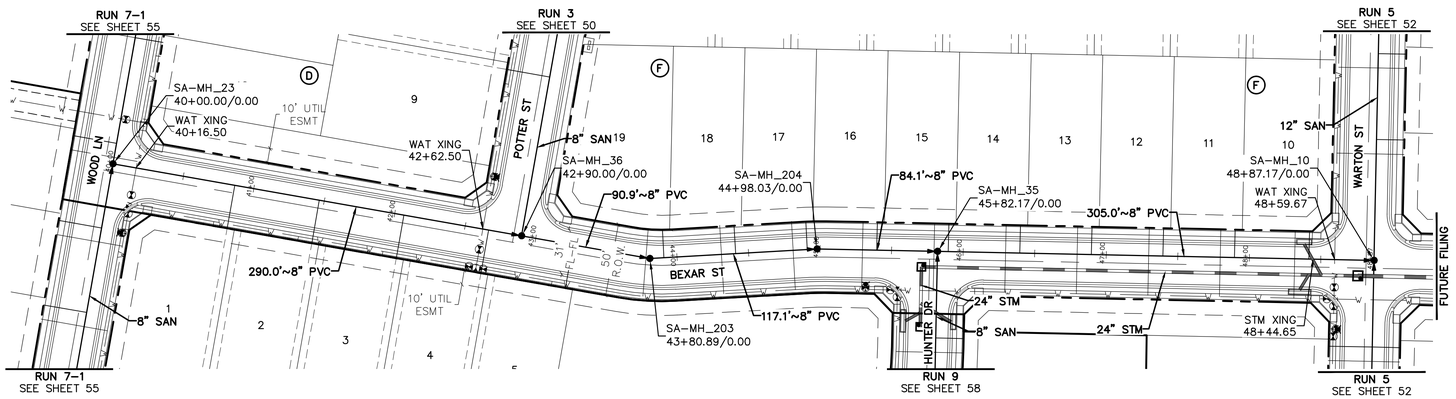


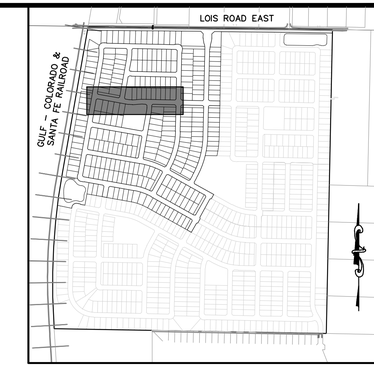


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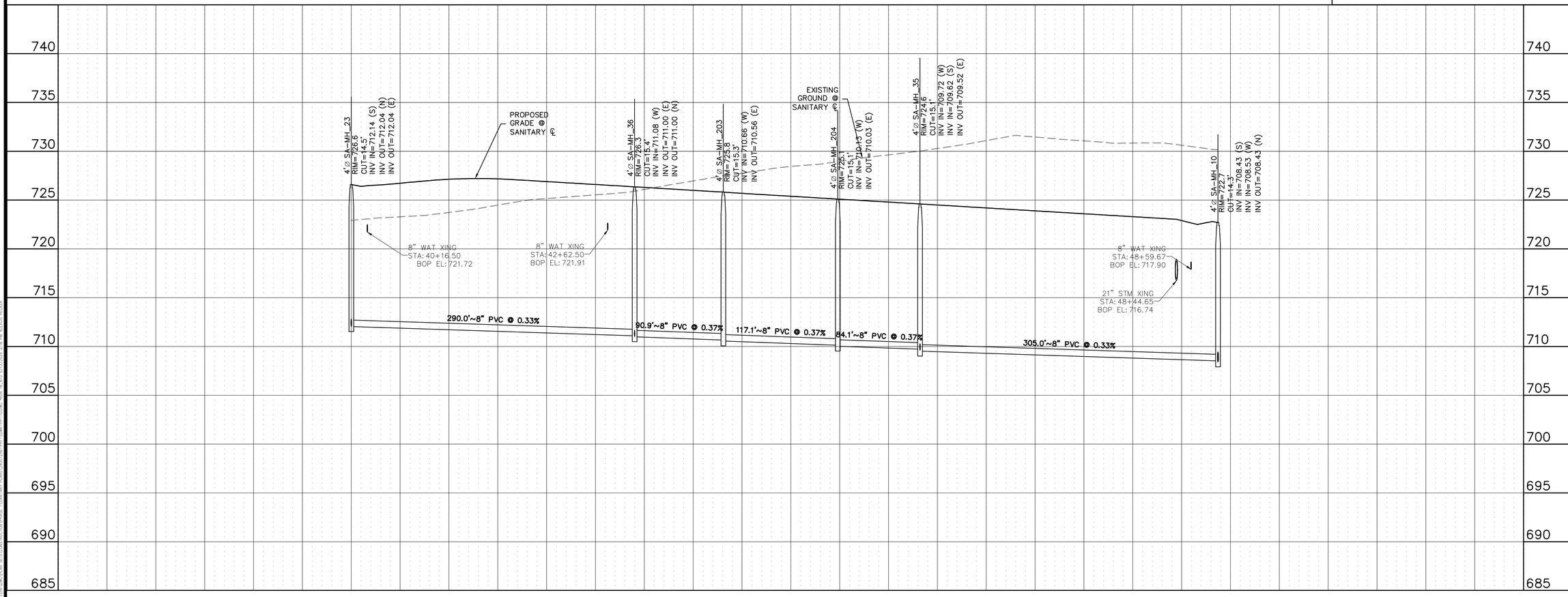


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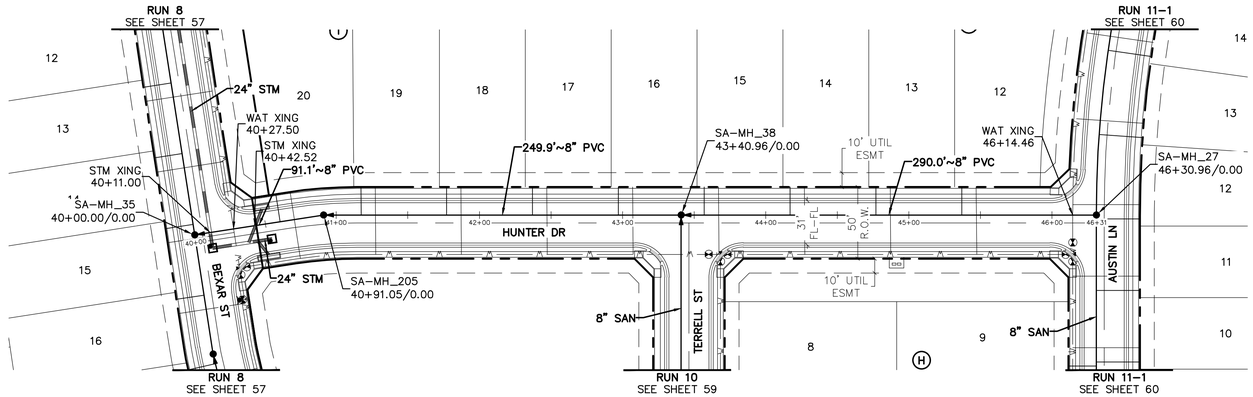


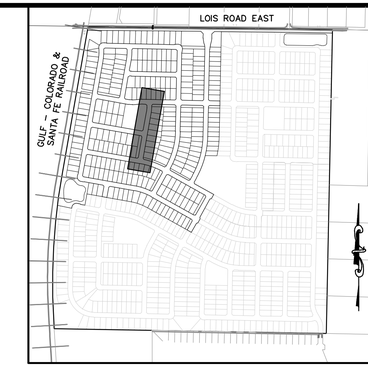


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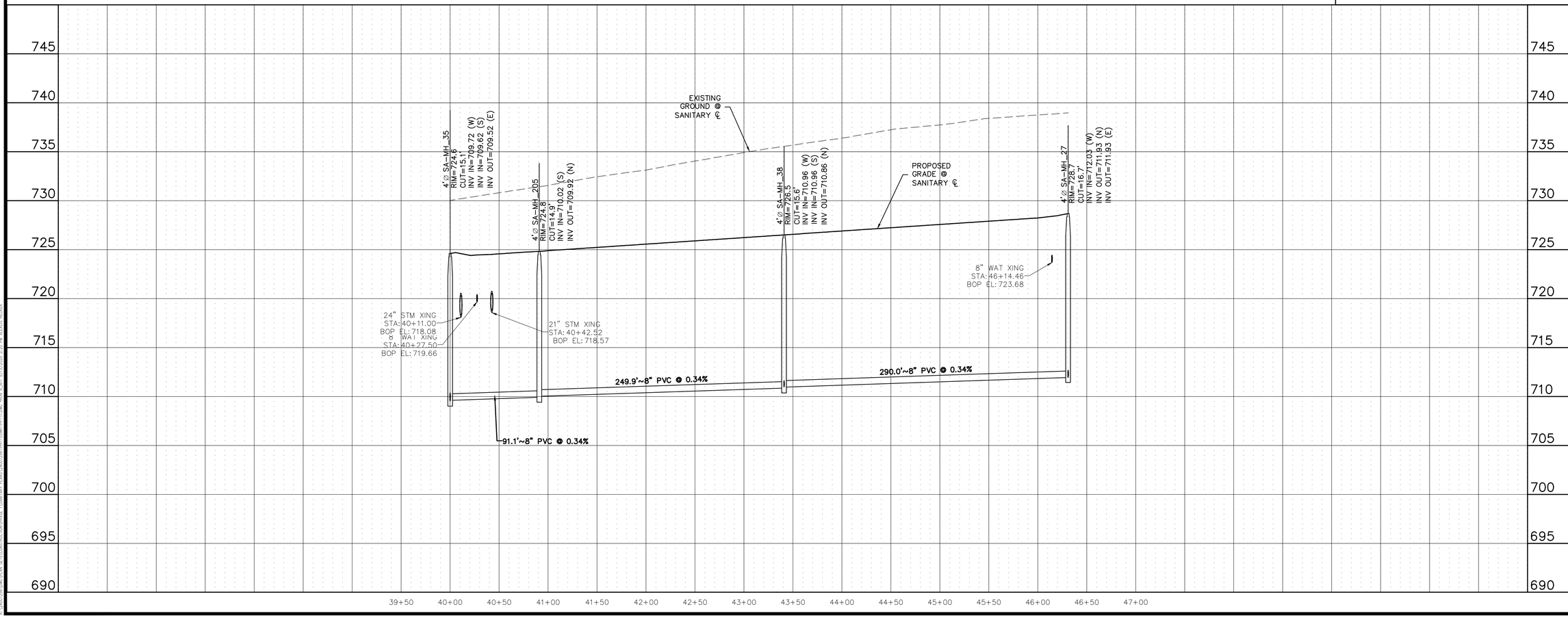


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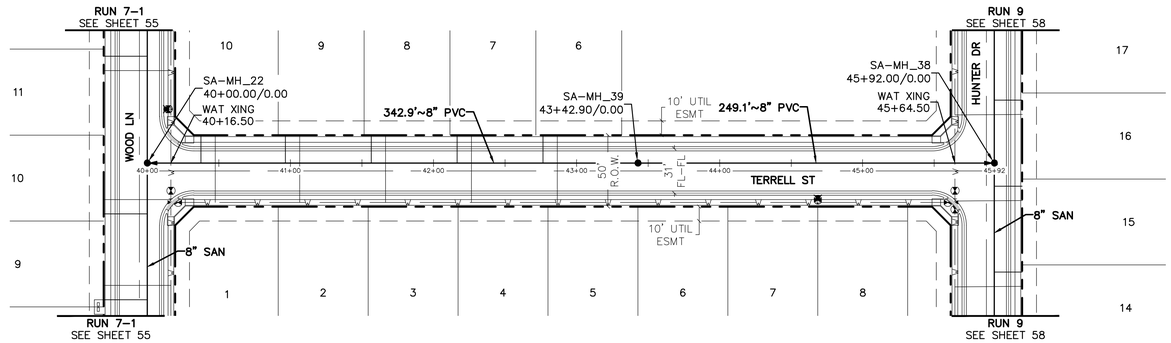


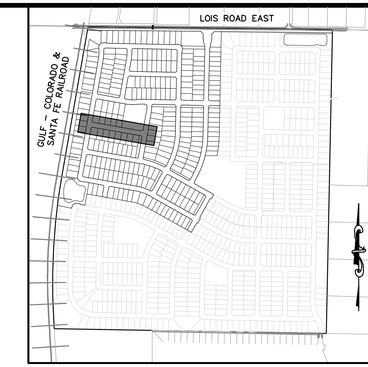


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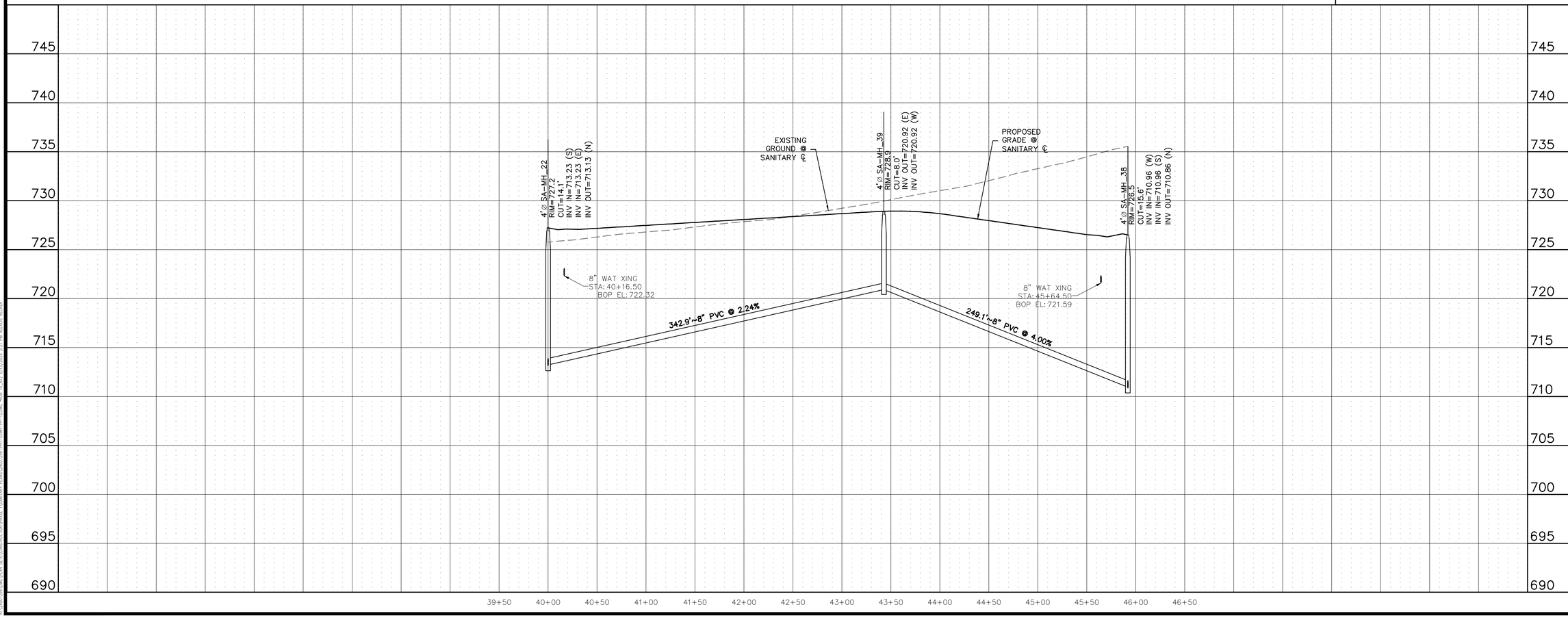


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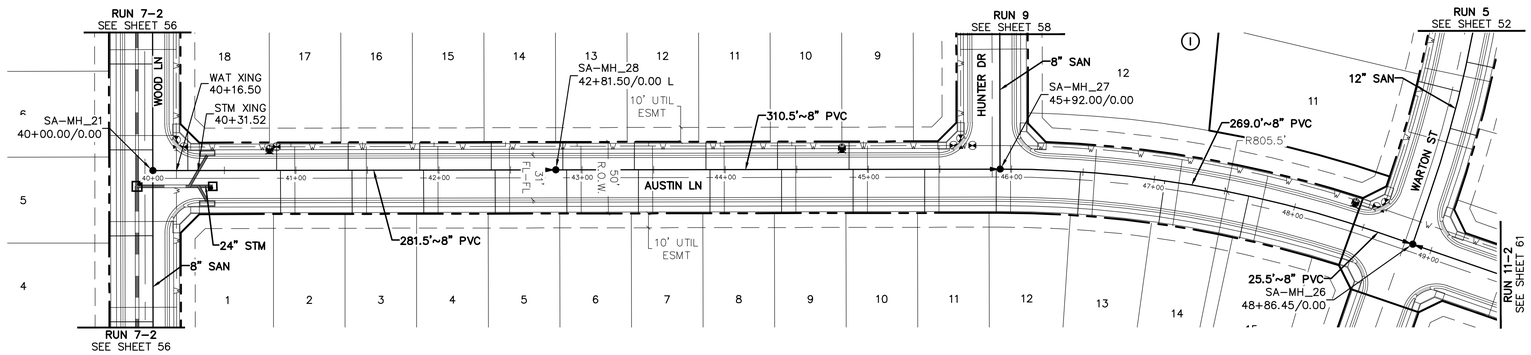


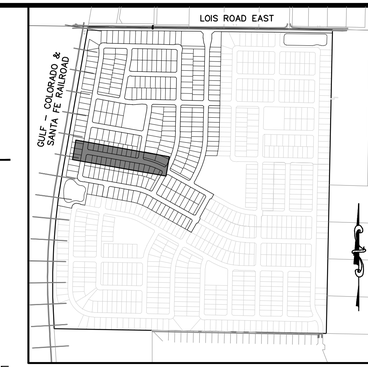


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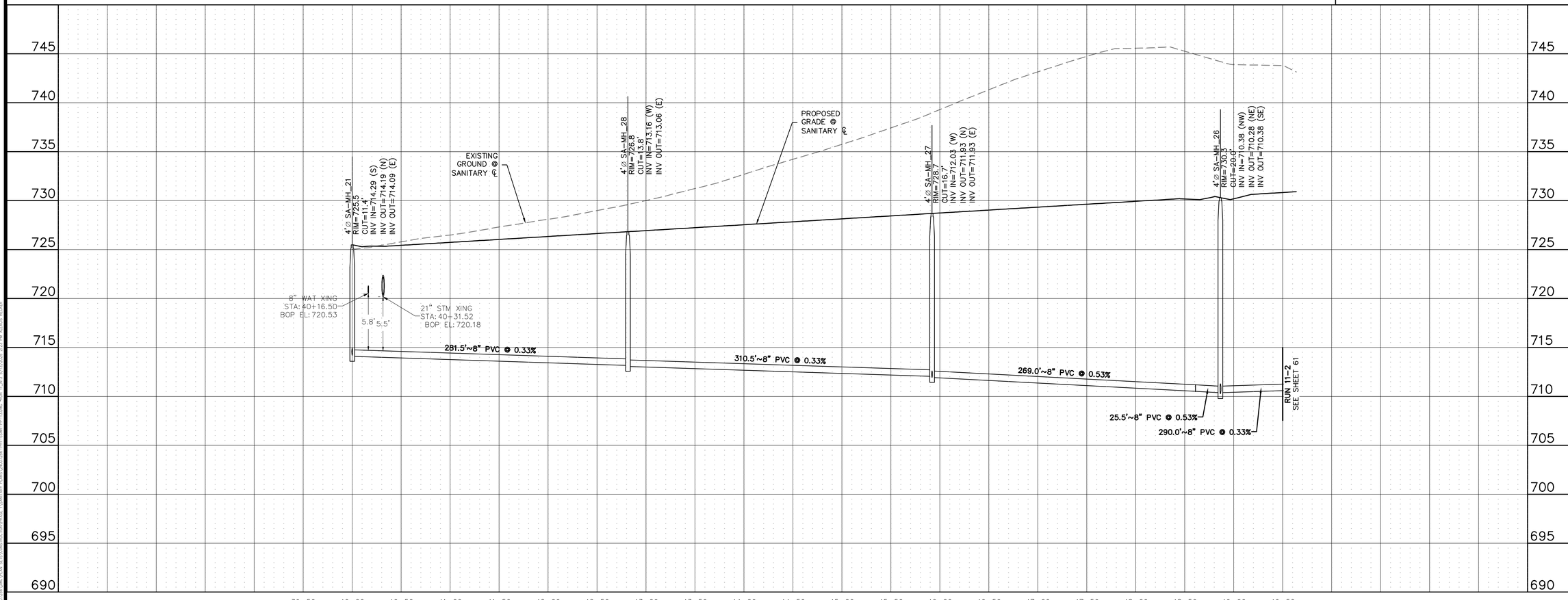


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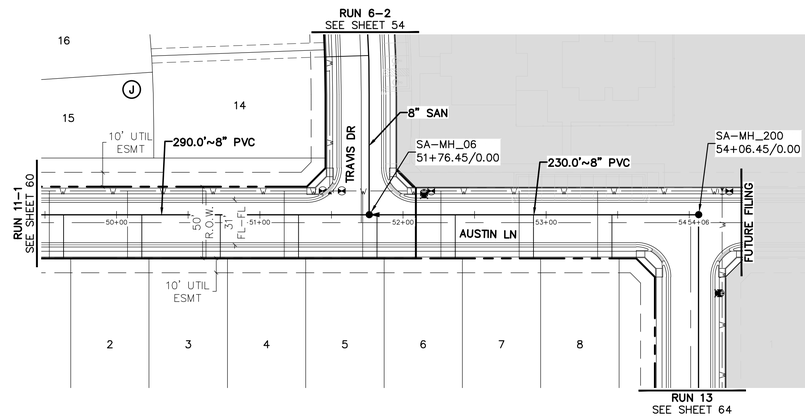


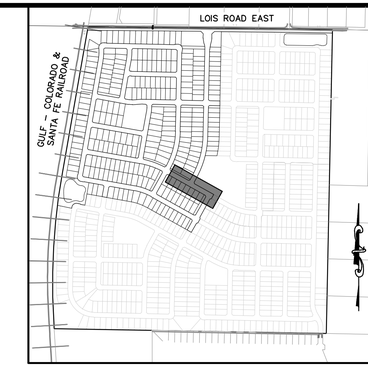


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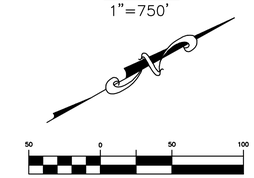


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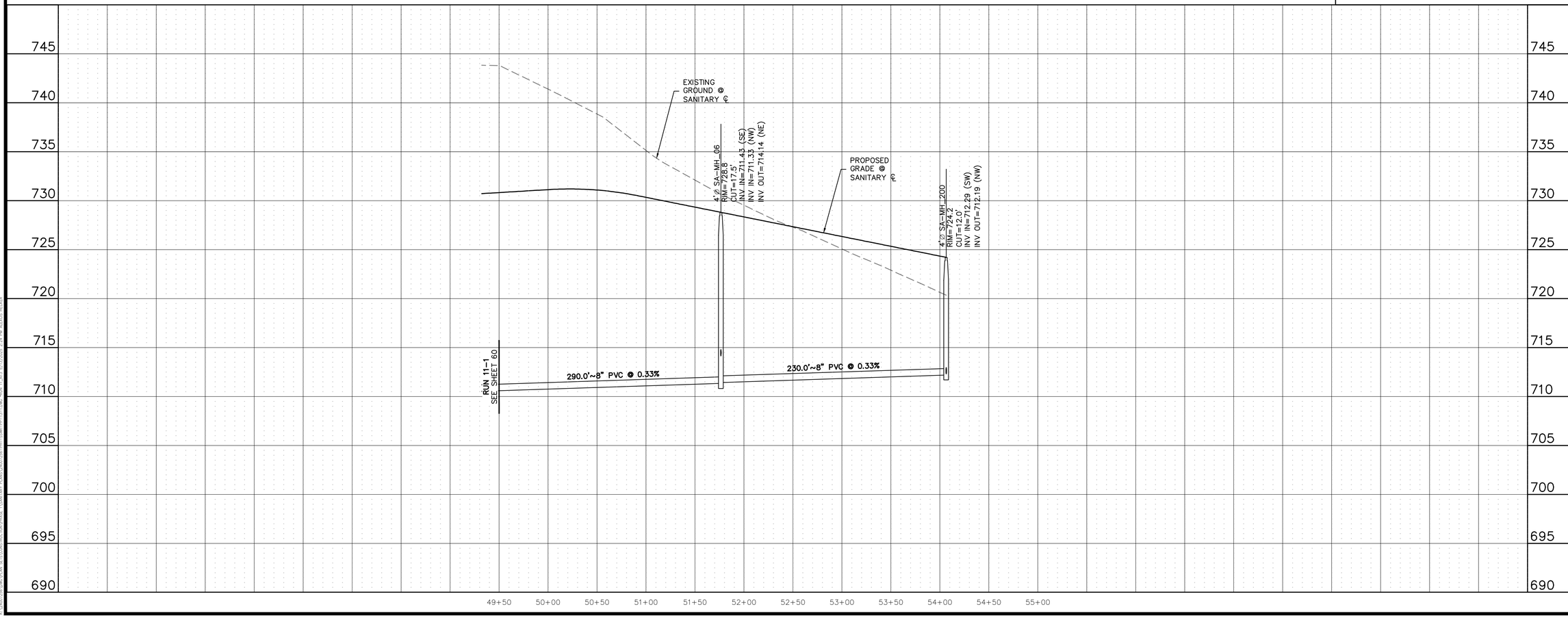


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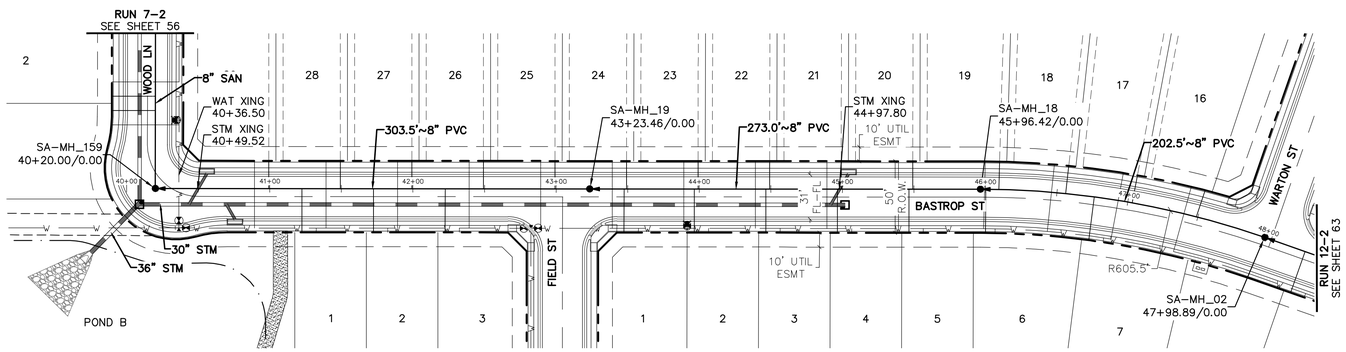
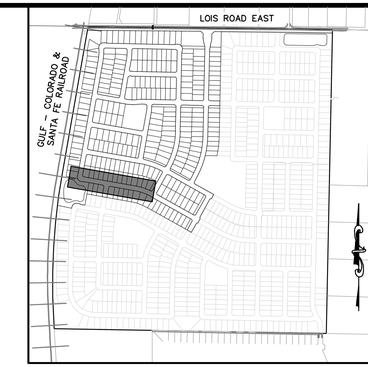
SHEET NO. 61

CAD FILE: 24007256-PH1-SSWR-PP1-13-1.DWG



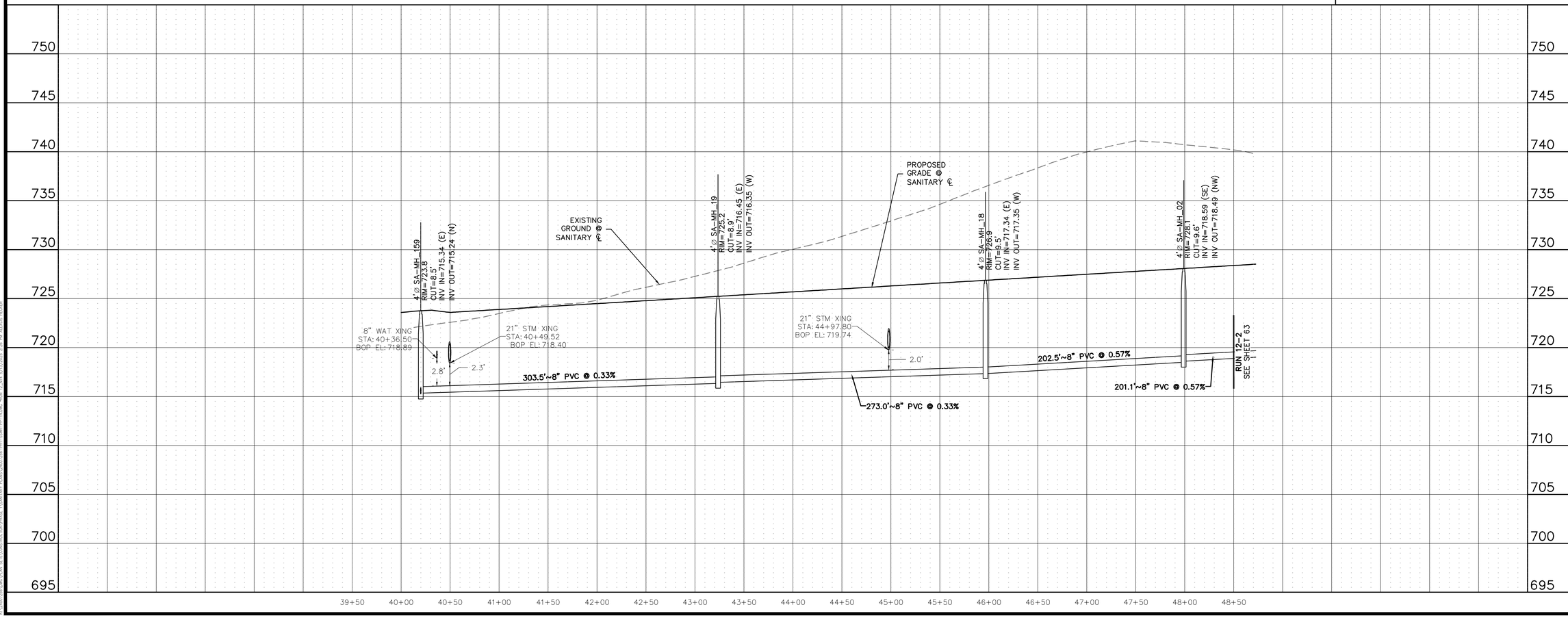

KEYMAP
1"=750'

( IN FEET )
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

**BENCHMARK:**
AN "X" CUT IN CONCRETE LOCATED WITHIN THE INTERSECTION OF LOIS ROAD EAST AND THE GULF COAST AND SANTA FE RAILROAD RIGHTS-OF-WAY, HAVING AN ELEVATION OF 729.3 FEET, A NORTHING COORDINATE VALUE OF 7,192,162.0, AND AN EASTING COORDINATE VALUE OF 2,374,666.1.

BEARINGS AND ELEVATIONS SHOWN HEREON ARE BASED ON NAD 83 TEXAS STATE PLANE COORDINATES, NORTH CENTRAL ZONE, NAVD 88.

## RUN 12-1

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SANITARY SEWER PLAN & PROFILES
RUN 12-1

DATE 4/7/2025

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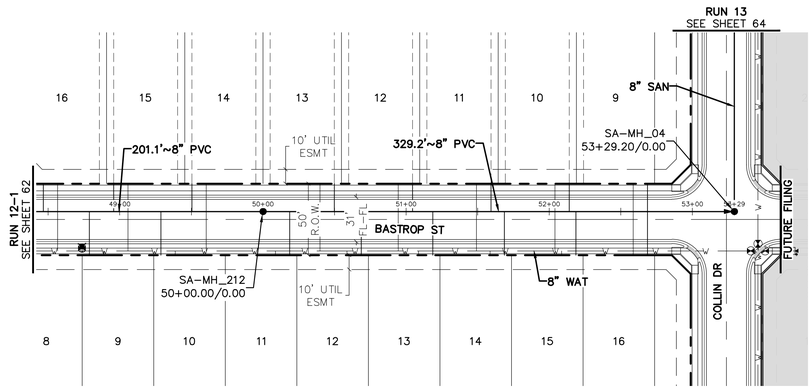
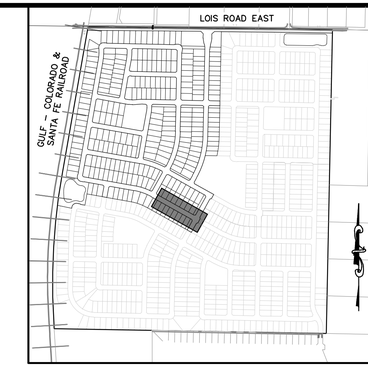
REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 62

CAD FILE: 24007256-PH1-SSWR-PP-14.DWG

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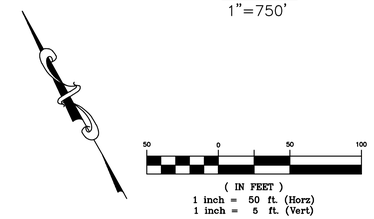


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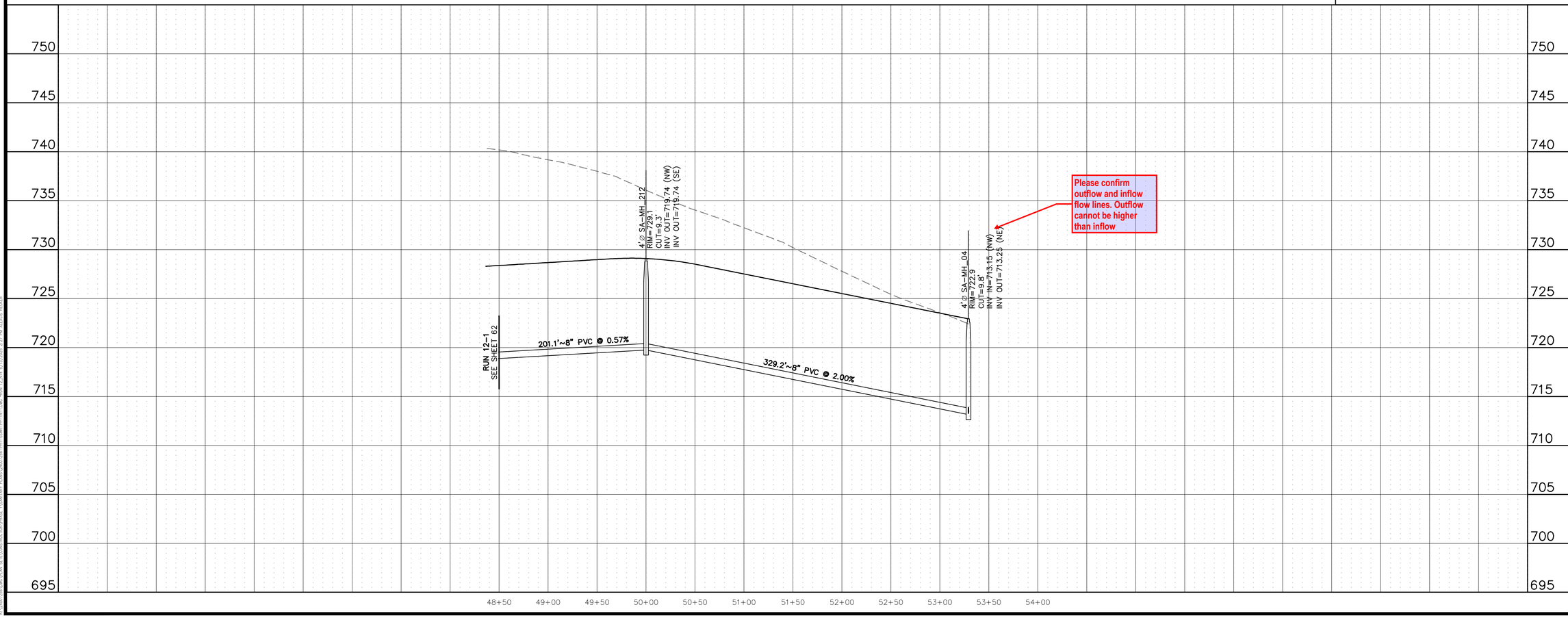
# RUN 12-2

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STATE OF TEXAS
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RUN 12-2

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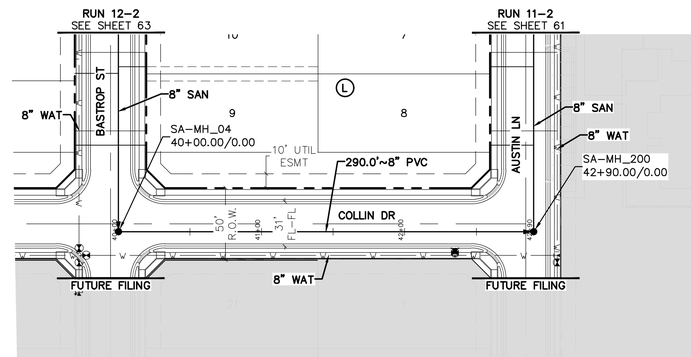
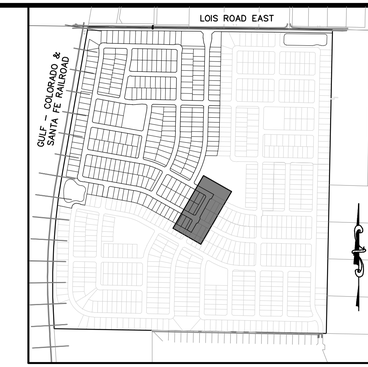
REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 63

CAD FILE: 24007256-PH1-SSWR-PP1-14-1.DWG




KEYMAP
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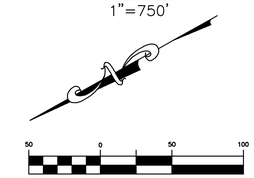


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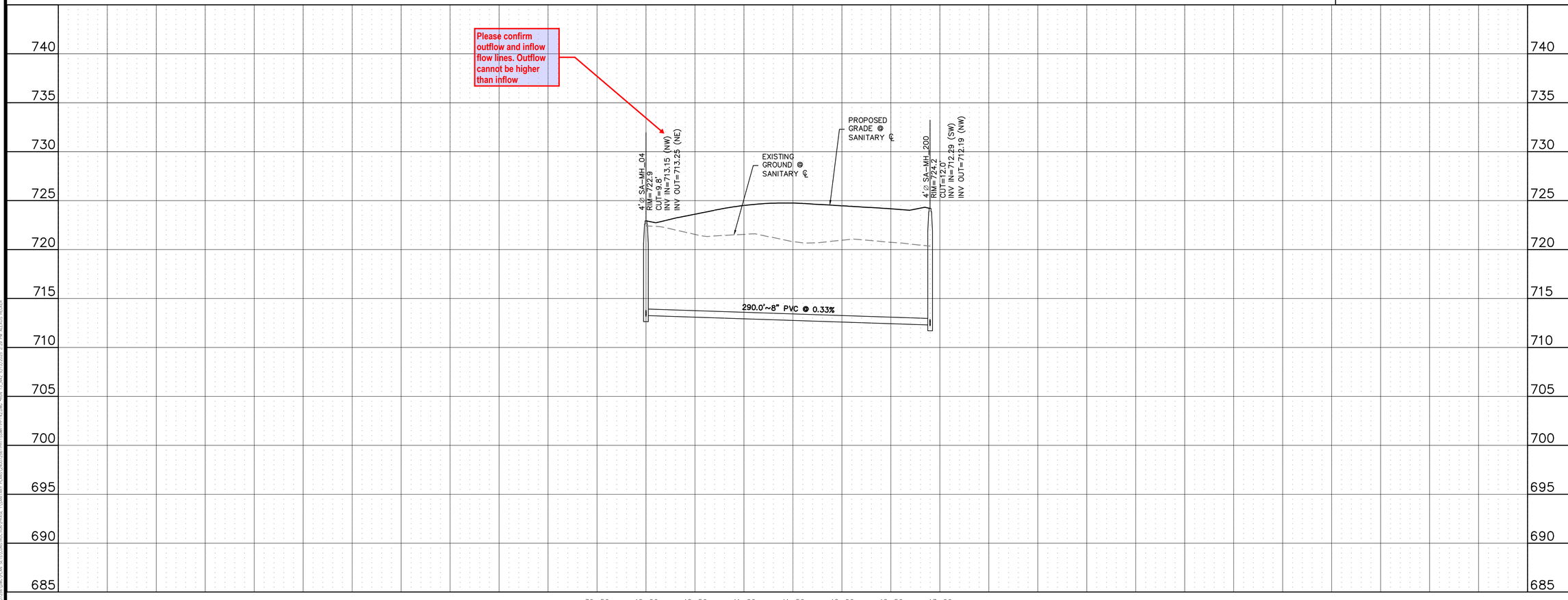
# RUN 13

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RUN 13

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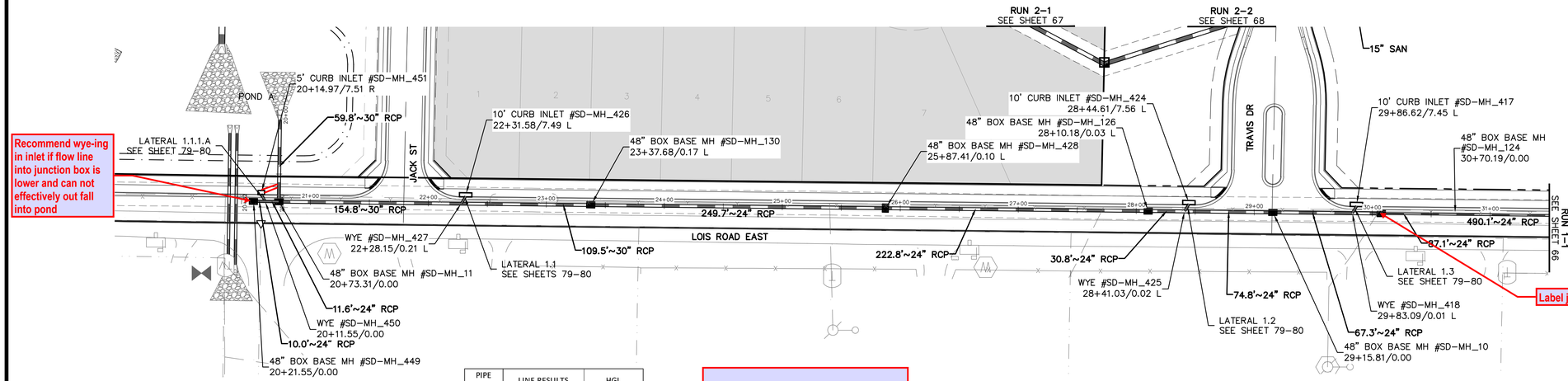
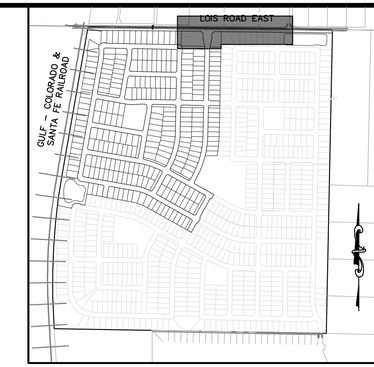
P.M. JF
JOB 24007256
SHEET NO. 64

CAD FILE: 24007256-PH1-SSWR-PP-42.DWG

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LOIS ROAD ESTATES – FILING NOS. 1 & 2
CITY OF SANGER, COUNTY OF DENTON,
STATE OF TEXAS

STORM SEWER PLAN & PROFILES
RUN 1

DATE 4/7/2025

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DR. TN | CH. KB
P.M. JF
JOB 24007256
SHEET NO. 65

CAD FILE: 24007256-PH1-STRM-P&P-01.DWG

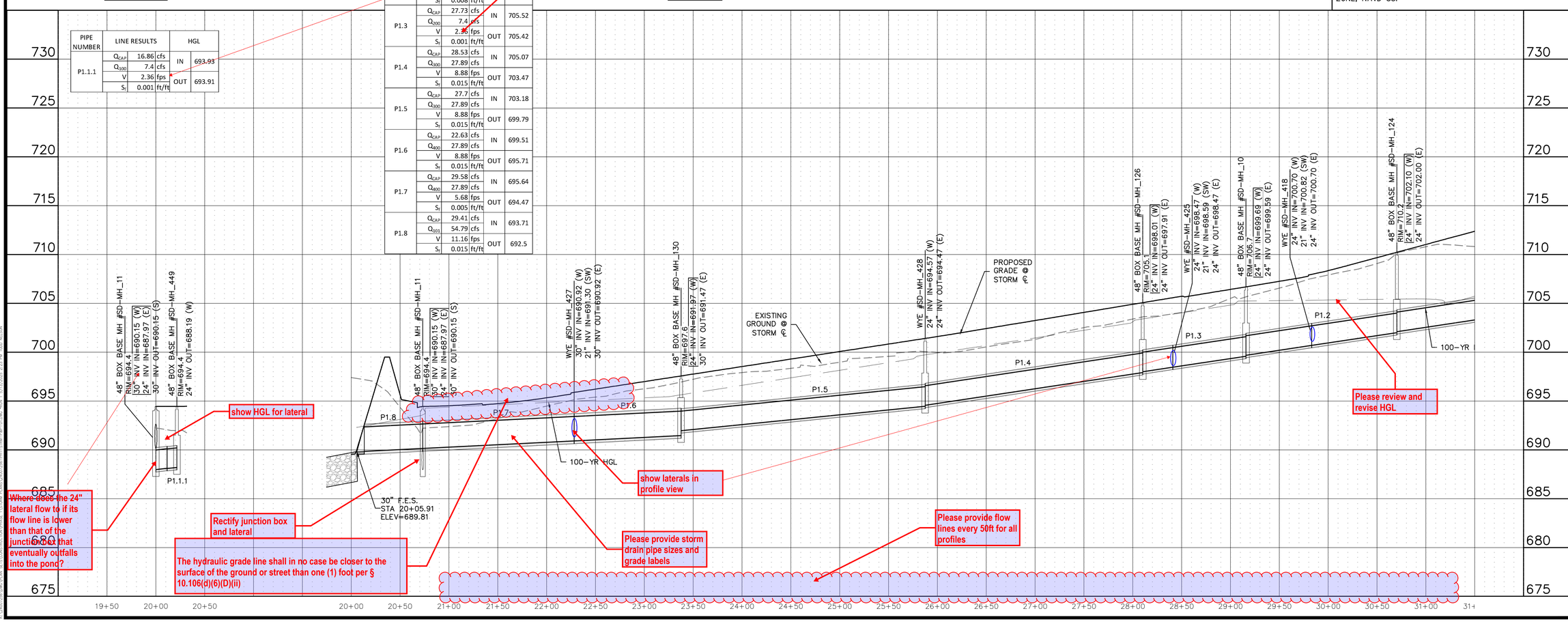
## RUN 34

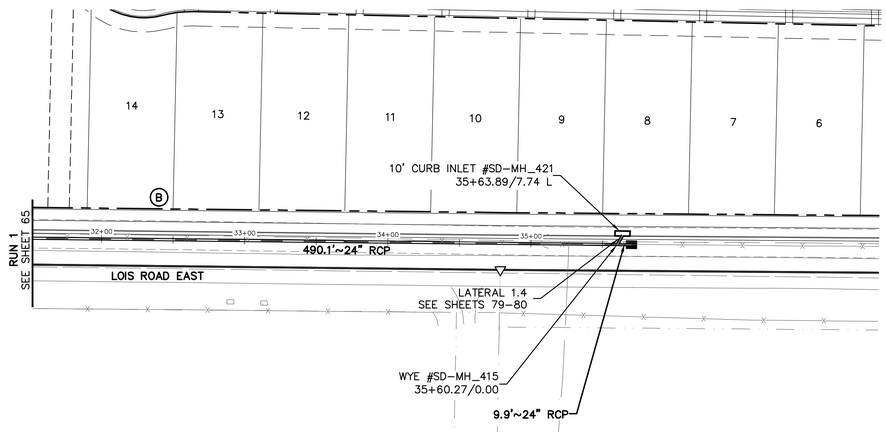
| PIPE NUMBER | LINE RESULTS | | | HGL | |
|---|---|---|---|---|---|
| P1.1.1 | $Q_{CAP}$ | 16.86 | cfs | IN | 693.93 |
| | $Q_{100}$ | 7.4 | cfs | | |
| | V | 2.36 | fps | OUT | 693.91 |
| | $S_f$ | 0.001 | ft/ft | | |

## RUN 1

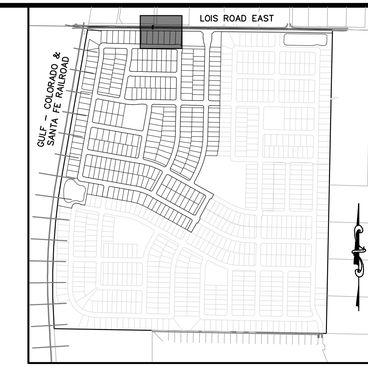
| PIPE NUMBER | LINE RESULTS | | | HGL | |
|---|---|---|---|---|---|
| P1.1 | $Q_{CAP}$ | 35.74 | cfs | IN | 711.73 |
| | $Q_{100}$ | 7.4 | cfs | | |
| | V | 8.97 | fps | OUT | 706.39 |
| | $S_f$ | 0.022 | ft/ft | | |
| P1.2 | $Q_{CAP}$ | 35.77 | cfs | IN | 706.64 |
| | $Q_{100}$ | 7.4 | cfs | | |
| | V | 8.98 | fps | OUT | 705.54 |
| | $S_f$ | 0.008 | ft/ft | | |
| P1.3 | $Q_{CAP}$ | 27.73 | cfs | IN | 705.52 |
| | $Q_{100}$ | 7.4 | cfs | | |
| | V | 2.30 | fps | OUT | 705.42 |
| | $S_f$ | 0.001 | ft/ft | | |
| P1.4 | $Q_{CAP}$ | 28.53 | cfs | IN | 705.07 |
| | $Q_{100}$ | 27.89 | cfs | | |
| | V | 8.88 | fps | OUT | 703.47 |
| | $S_f$ | 0.015 | ft/ft | | |
| P1.5 | $Q_{CAP}$ | 27.7 | cfs | IN | 703.18 |
| | $Q_{100}$ | 27.89 | cfs | | |
| | V | 8.88 | fps | OUT | 699.79 |
| | $S_f$ | 0.015 | ft/ft | | |
| P1.6 | $Q_{CAP}$ | 22.63 | cfs | IN | 699.51 |
| | $Q_{400}$ | 27.89 | cfs | | |
| | V | 8.88 | fps | OUT | 695.71 |
| | $S_f$ | 0.015 | ft/ft | | |
| P1.7 | $Q_{CAP}$ | 29.58 | cfs | IN | 695.64 |
| | $Q_{400}$ | 27.89 | cfs | | |
| | V | 5.68 | fps | OUT | 694.47 |
| | $S_f$ | 0.005 | ft/ft | | |
| P1.8 | $Q_{CAP}$ | 29.41 | cfs | IN | 693.71 |
| | $Q_{101}$ | 54.79 | cfs | | |
| | V | 11.16 | fps | OUT | 692.5 |
| | $S_f$ | 0.015 | ft/ft | | |

The minimum velocities in conduit shall be 2.5 feet per second per § 10.106(d)(6)(B)(i)






RUN 1-1




KEYMAP
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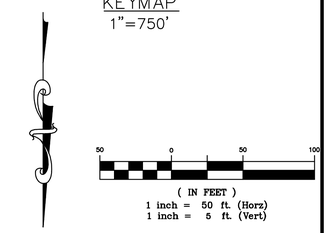


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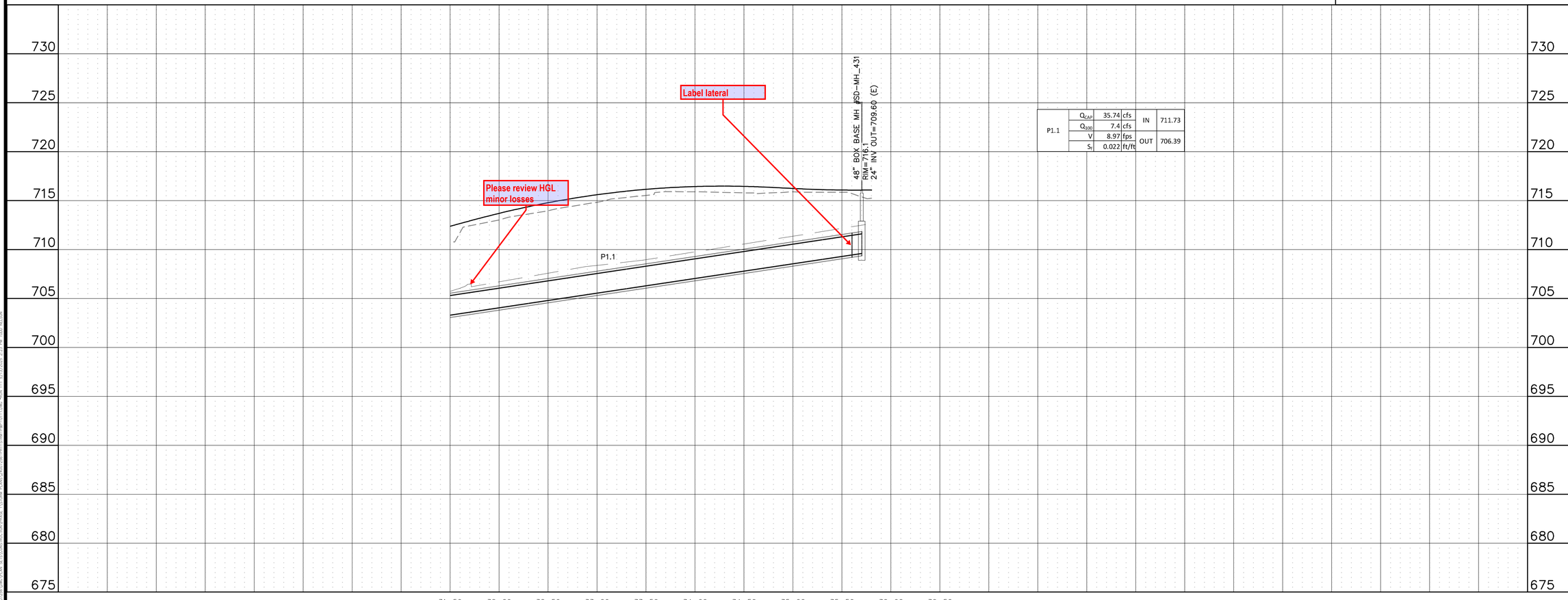


| | | | | | |
|---|---|---|---|---|---|
| P1.1 | $Q_{CAP}$ | 35.74 | cfs | IN | 711.73 |
| | $Q_{100}$ | 7.4 | cfs | | |
| | V | 8.97 | fps | OUT | 706.39 |
| | $S_f$ | 0.022 | ft/ft | | |

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CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS
STORM SEWER PLAN & PROFILES
RUN 1-1

DATE 4/7/2025

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REVISIONS

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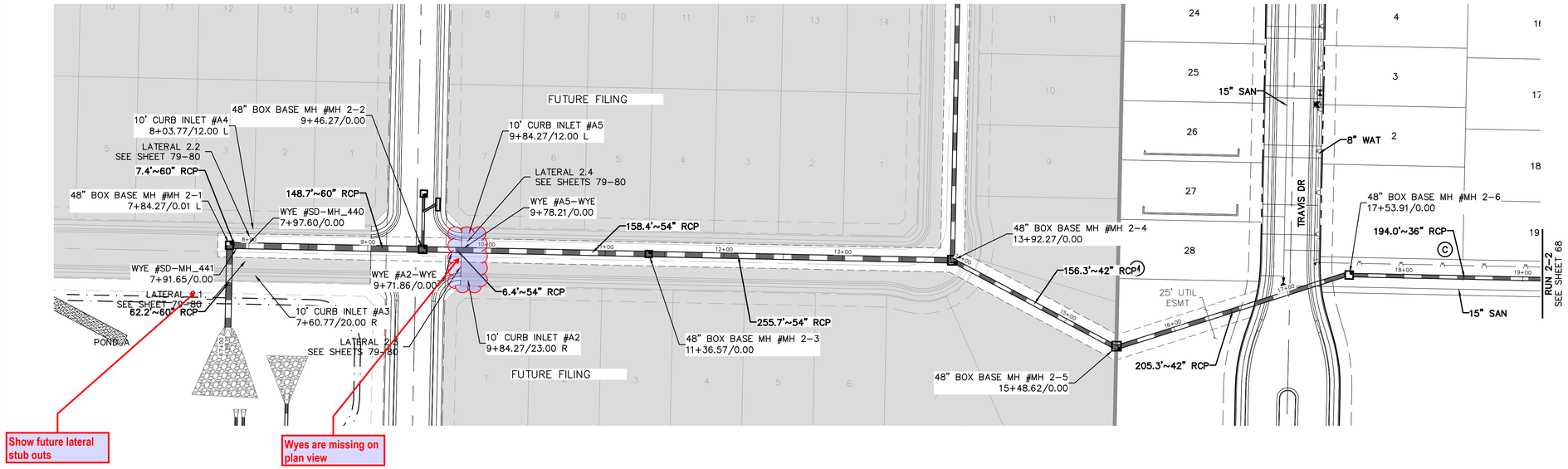
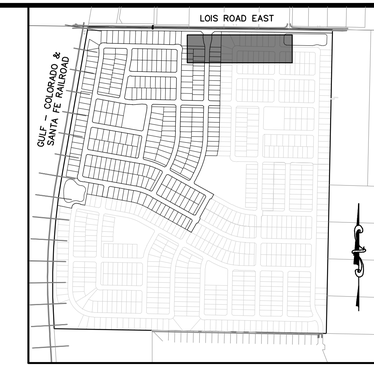
SHEET NO. 66

CAD FILE: 24007256-PH1-STRM-P&P-01-1.DWG

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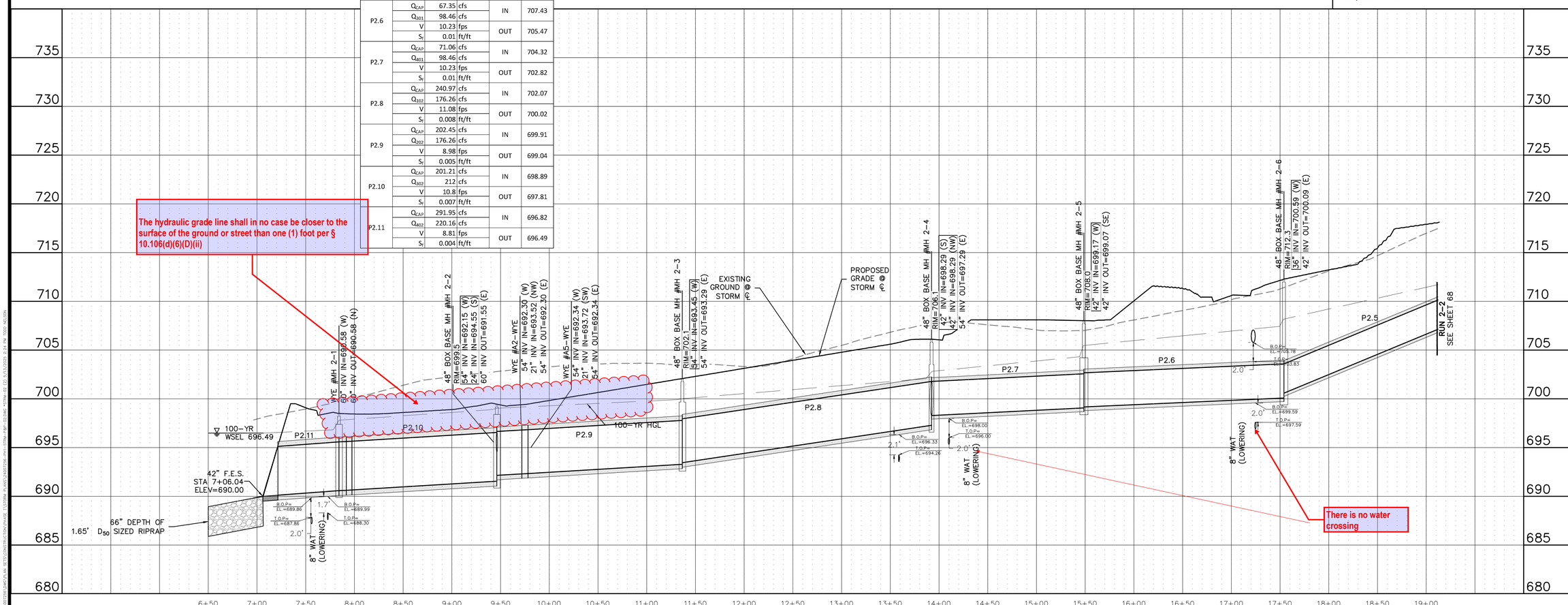
| | | | | | |
|---|---|---|---|---|---|
| P2.5 | $Q_{CAP}$ | 128.29 | cfs | IN | 713.07 |
| | $Q_{201}$ | 98.46 | cfs | | |
| | V | 13.93 | fps | OUT | 708.17 |
| | $S_f$ | 0.022 | ft/ft | | |
| P2.6 | $Q_{CAP}$ | 67.35 | cfs | IN | 707.43 |
| | $Q_{301}$ | 98.46 | cfs | | |
| | V | 10.23 | fps | OUT | 705.47 |
| | $S_f$ | 0.01 | ft/ft | | |
| P2.7 | $Q_{CAP}$ | 71.06 | cfs | IN | 704.32 |
| | $Q_{401}$ | 98.46 | cfs | | |
| | V | 10.23 | fps | OUT | 702.82 |
| | $S_f$ | 0.01 | ft/ft | | |
| P2.8 | $Q_{CAP}$ | 240.97 | cfs | IN | 702.07 |
| | $Q_{102}$ | 176.26 | cfs | | |
| | V | 11.08 | fps | OUT | 700.02 |
| | $S_f$ | 0.008 | ft/ft | | |
| P2.9 | $Q_{CAP}$ | 202.45 | cfs | IN | 699.91 |
| | $Q_{202}$ | 176.26 | cfs | | |
| | V | 8.98 | fps | OUT | 699.04 |
| | $S_f$ | 0.005 | ft/ft | | |
| P2.10 | $Q_{CAP}$ | 201.21 | cfs | IN | 698.89 |
| | $Q_{302}$ | 212 | cfs | | |
| | V | 10.8 | fps | OUT | 697.81 |
| | $S_f$ | 0.007 | ft/ft | | |
| P2.11 | $Q_{CAP}$ | 291.95 | cfs | IN | 696.82 |
| | $Q_{402}$ | 220.16 | cfs | | |
| | V | 8.81 | fps | OUT | 696.49 |

## RUN 2-1

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STORM SEWER PLAN & PROFILES
RUN 2-1

DATE 4/7/2025

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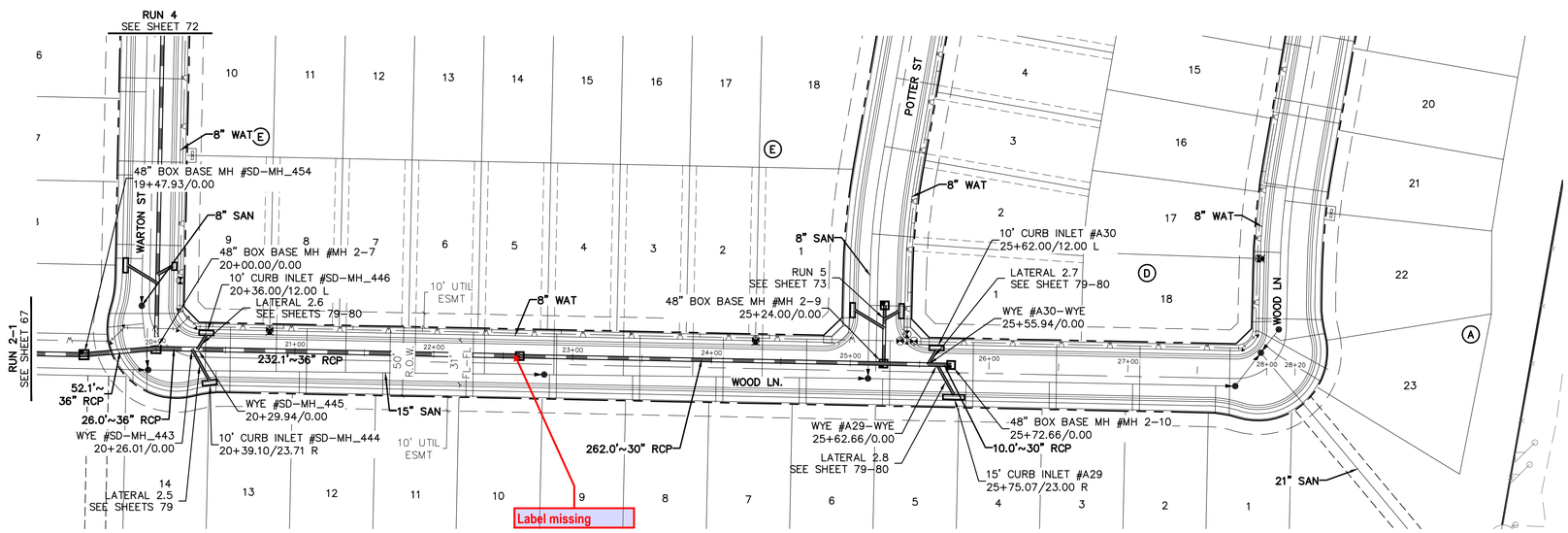
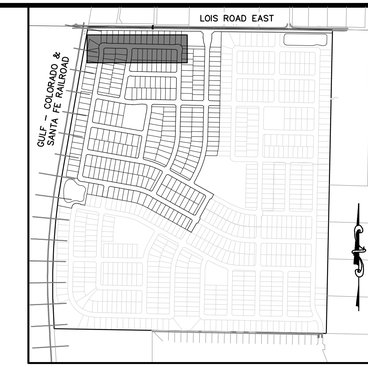
P.M. JF
JOB 24007256
SHEET NO. 67

CAD FILE: 24007256-PH1-STRM-P&P-02.DWG




KEYMAP
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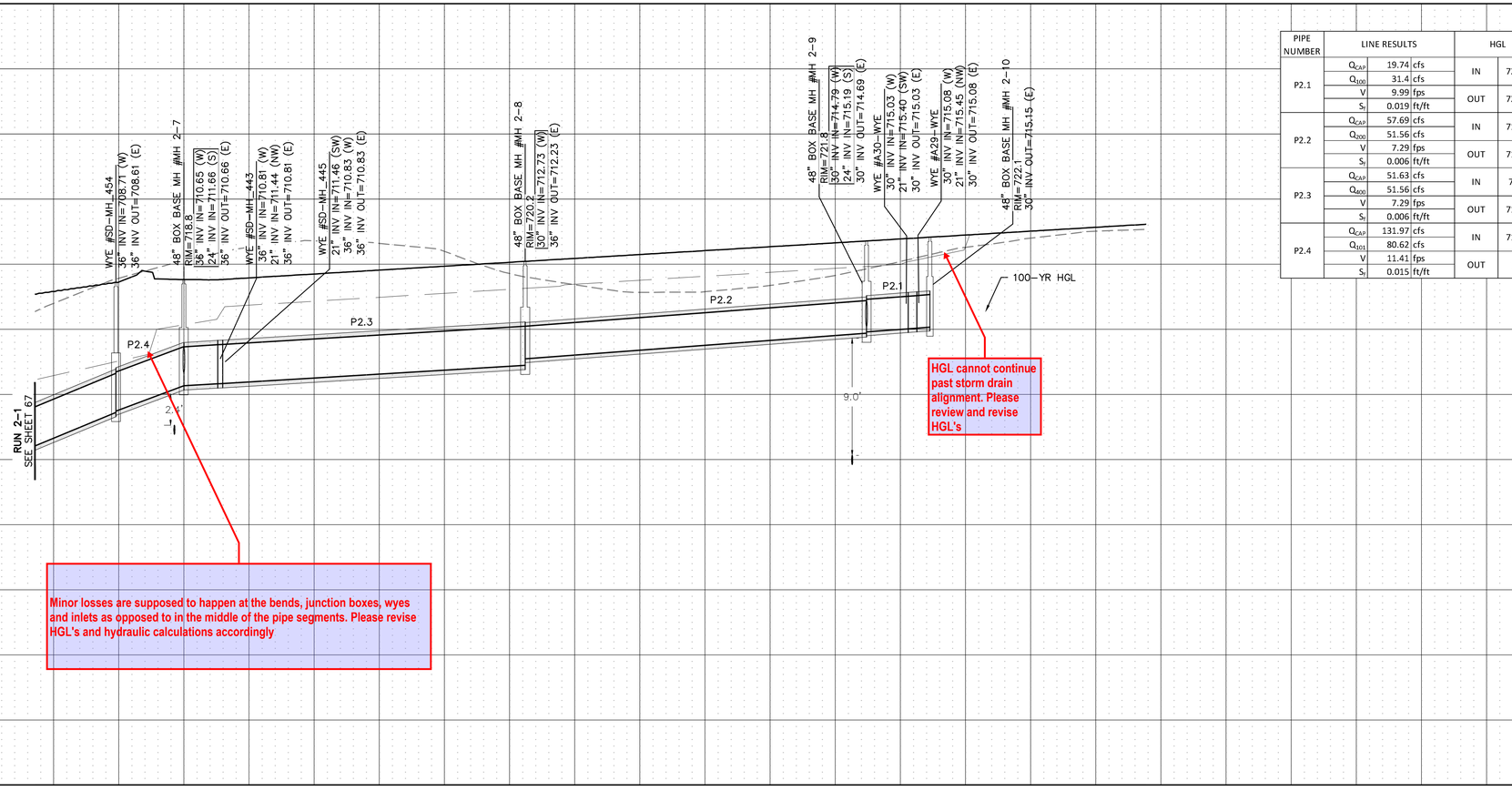
# RUN 2-2




| PIPE NUMBER | LINE RESULTS | | | HGL | |
|---|---|---|---|---|---|
| P2.1 | $Q_{CAP}$ | 19.74 | cfs | IN | 721.08 |
| | $Q_{100}$ | 31.4 | cfs | | |
| | V | 9.99 | fps | OUT | 720.15 |
| | $S_f$ | 0.019 | ft/ft | | |
| P2.2 | $Q_{CAP}$ | 57.69 | cfs | IN | 719.98 |
| | $Q_{200}$ | 51.56 | cfs | | |
| | V | 7.29 | fps | OUT | 718.41 |
| | $S_f$ | 0.006 | ft/ft | | |
| P2.3 | $Q_{CAP}$ | 51.63 | cfs | IN | 718.3 |
| | $Q_{200}$ | 51.56 | cfs | | |
| | V | 7.29 | fps | OUT | 716.73 |
| | $S_f$ | 0.006 | ft/ft | | |
| P2.4 | $Q_{CAP}$ | 131.97 | cfs | IN | 715.76 |
| | $Q_{101}$ | 80.62 | cfs | | |
| | V | 11.41 | fps | OUT | 715 |
| | $S_f$ | 0.015 | ft/ft | | |

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SHEET NO. 68

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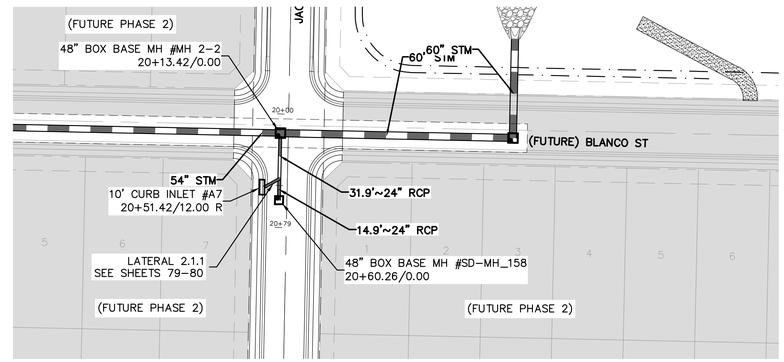


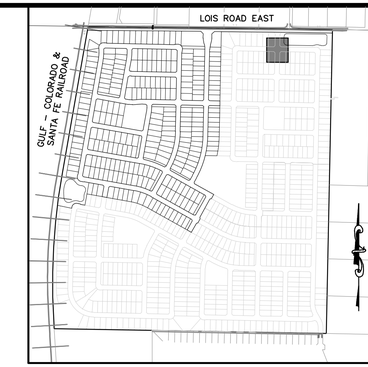


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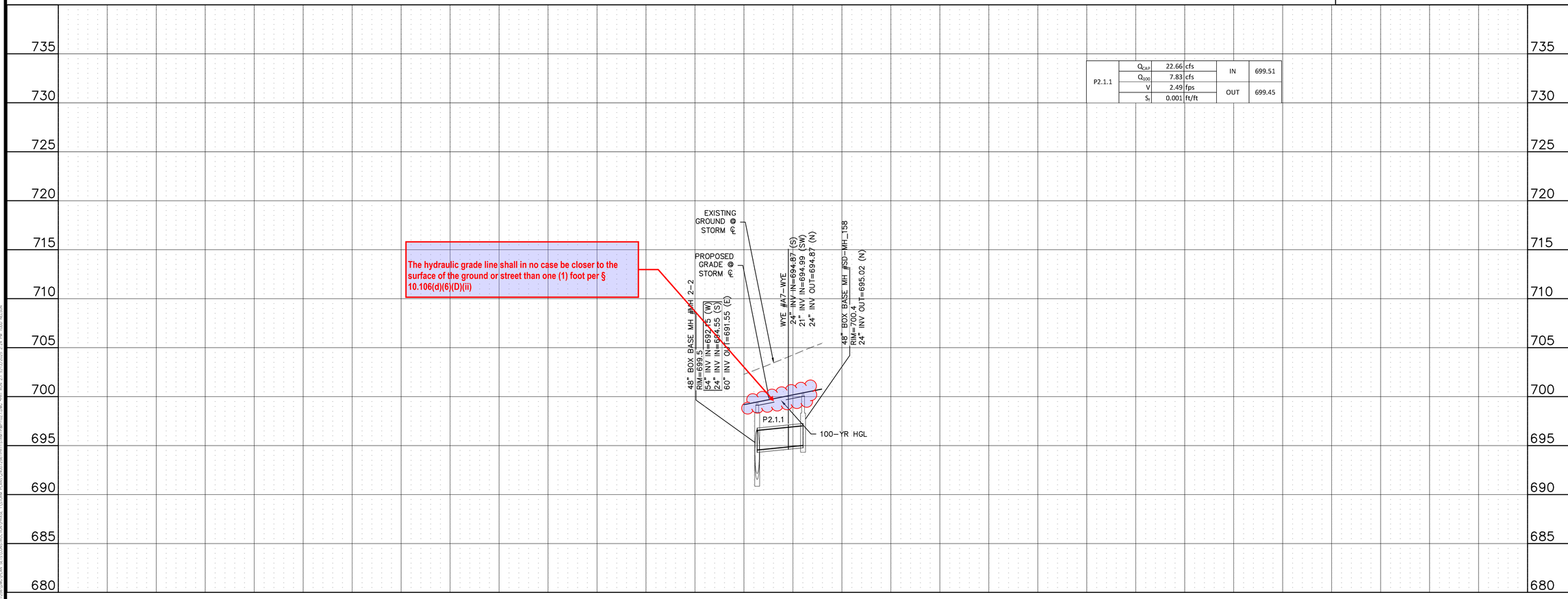


| | | | | | |
|---|---|---|---|---|---|
| P2.1.1 | $Q_{CAP}$ | 22.66 | cfs | IN | 699.51 |
| | $Q_{100}$ | 7.83 | cfs | | |
| | V | 2.49 | fps | OUT | 699.45 |
| | $S_f$ | 0.001 | ft/ft | | |

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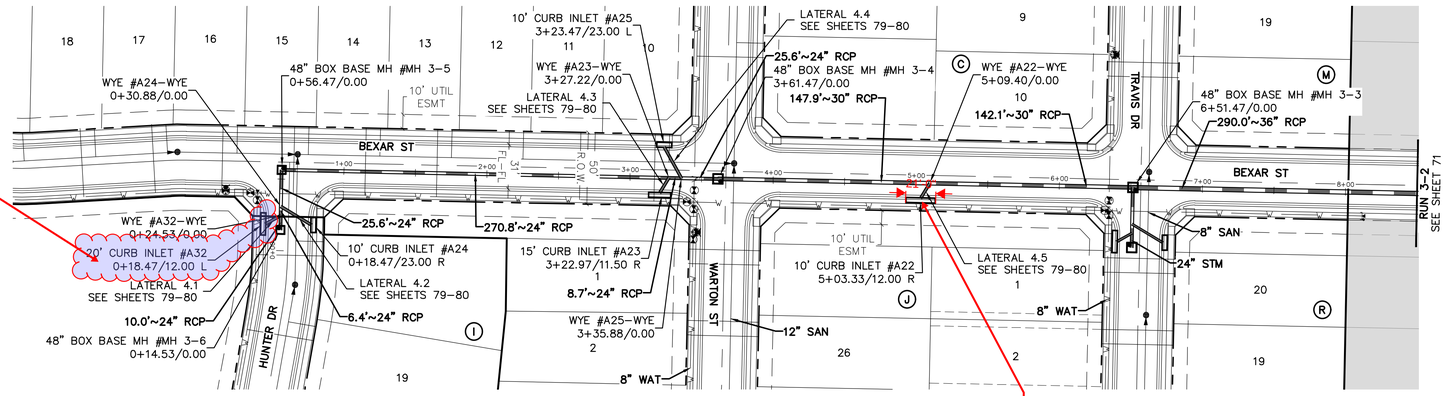
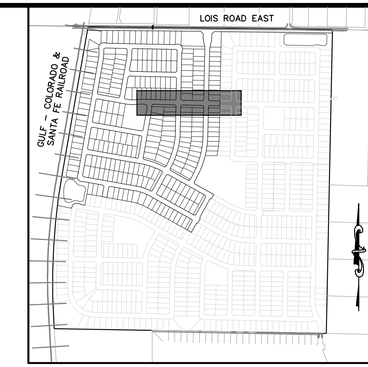
P.M. JF
JOB 24007256
SHEET NO. 69

CAD FILE: 24007256-PH1-STRM-P&P-02.1.DWG

Minimum sizes of laterals shall be 18 inches for use with 5-foot inlets, 21-inch laterals with 10-foot, 15 foot, and drop inlets and 24-inch laterals for 20-foot inlets




This appears to be a 20ft curb inlet. Please update both label and lateral accordingly

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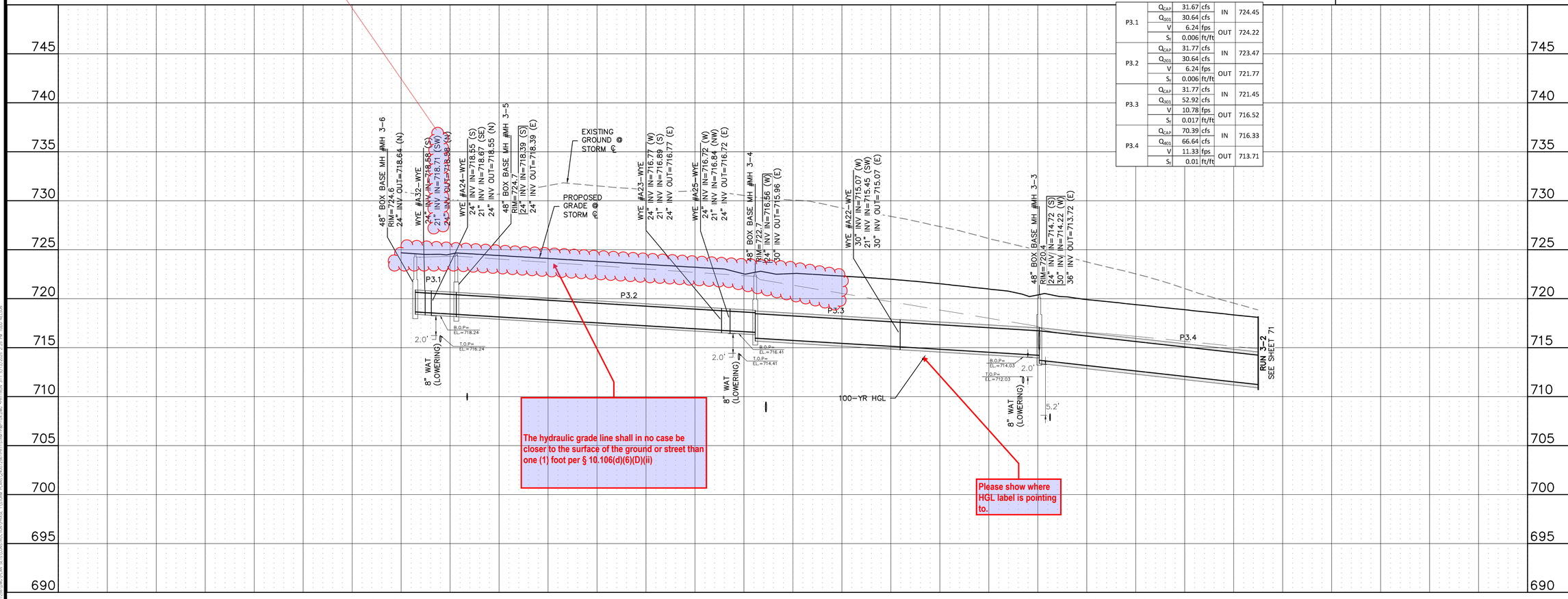
## RUN 3-1

| | | | | |
|---|---|---|---|---|
| P3.1 | $Q_{CAP}$ | 31.67 cfs | IN | 724.45 |
| | $Q_{100}$ | 30.64 cfs | | |
| | V | 6.24 fps | OUT | 724.22 |
| | $S_f$ | 0.006 ft/ft | | |
| P3.2 | $Q_{CAP}$ | 31.77 cfs | IN | 723.47 |
| | $Q_{100}$ | 30.64 cfs | | |
| | V | 6.24 fps | OUT | 721.77 |
| | $S_f$ | 0.006 ft/ft | | |
| P3.3 | $Q_{CAP}$ | 31.77 cfs | IN | 721.45 |
| | $Q_{100}$ | 52.92 cfs | | |
| | V | 10.78 fps | OUT | 716.52 |
| | $S_f$ | 0.017 ft/ft | | |
| P3.4 | $Q_{CAP}$ | 70.39 cfs | IN | 716.33 |
| | $Q_{100}$ | 66.64 cfs | | |
| | V | 11.33 fps | OUT | 713.71 |
| | $S_f$ | 0.01 ft/ft | | |




The hydraulic grade line shall in no case be closer to the surface of the ground or street than one (1) foot per § 10.106(d)(6)(D)(ii)

Please show where HGL label is pointing to.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JOB 24007256
SHEET NO. 70

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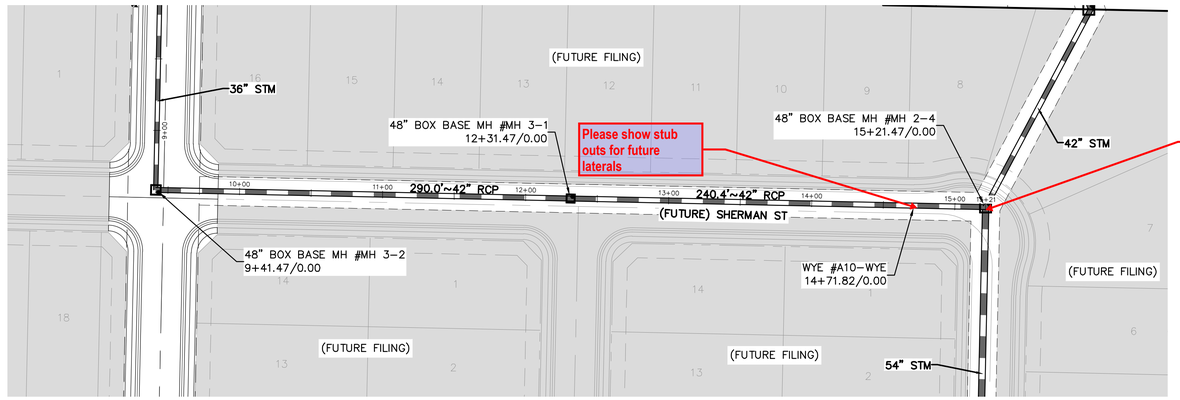


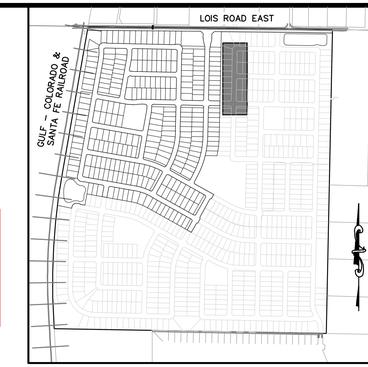


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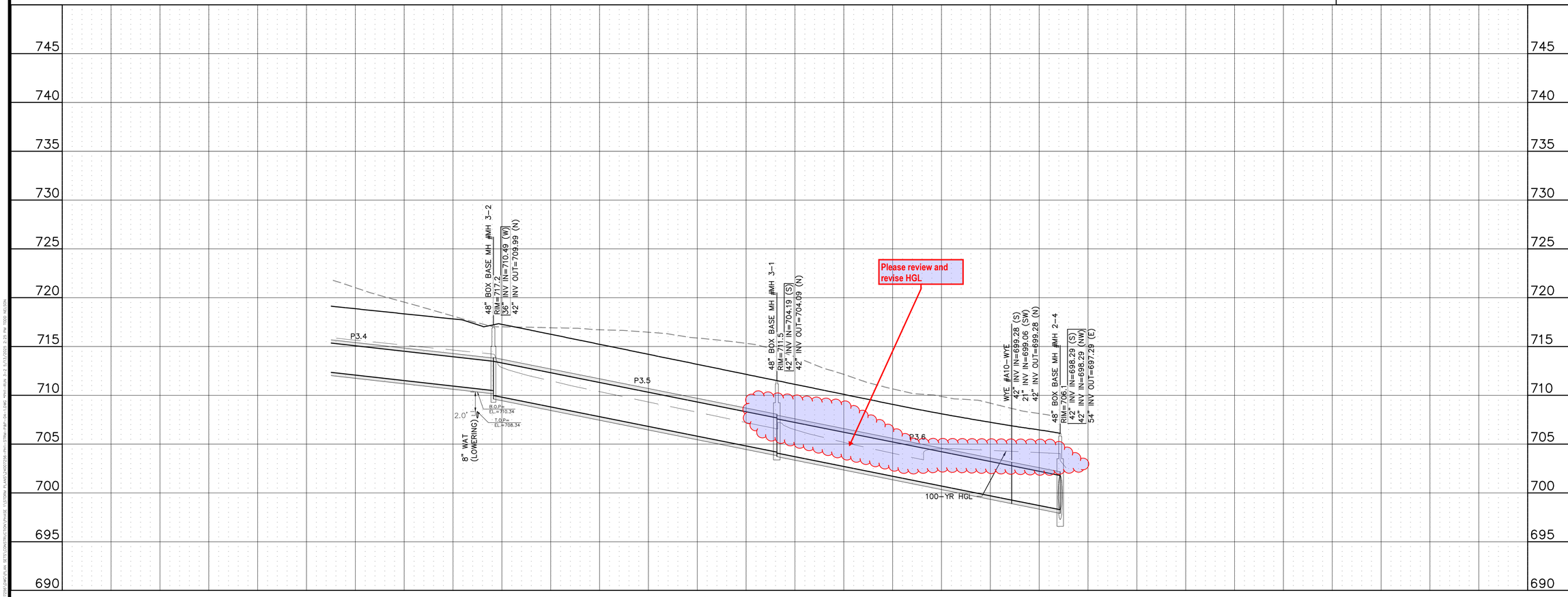
## RUN 3-2

Provide flow table for Run 3-2

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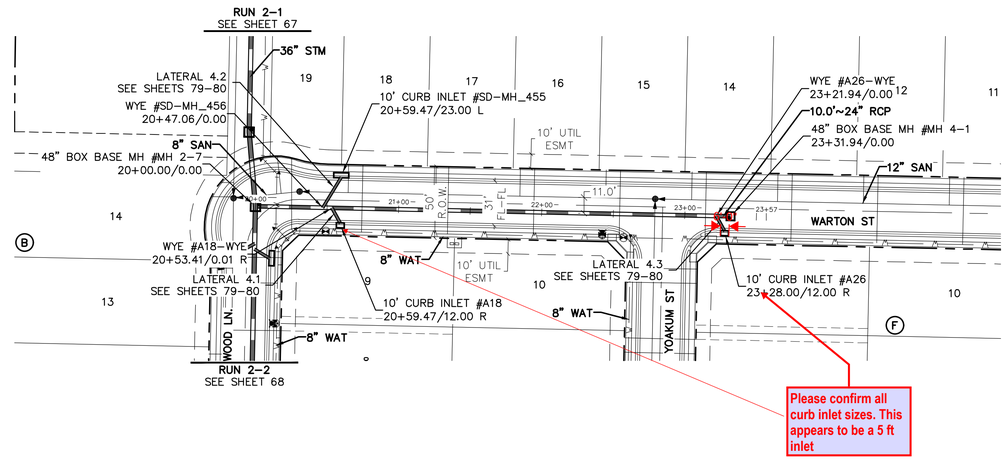


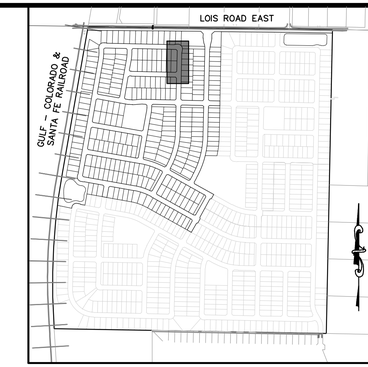


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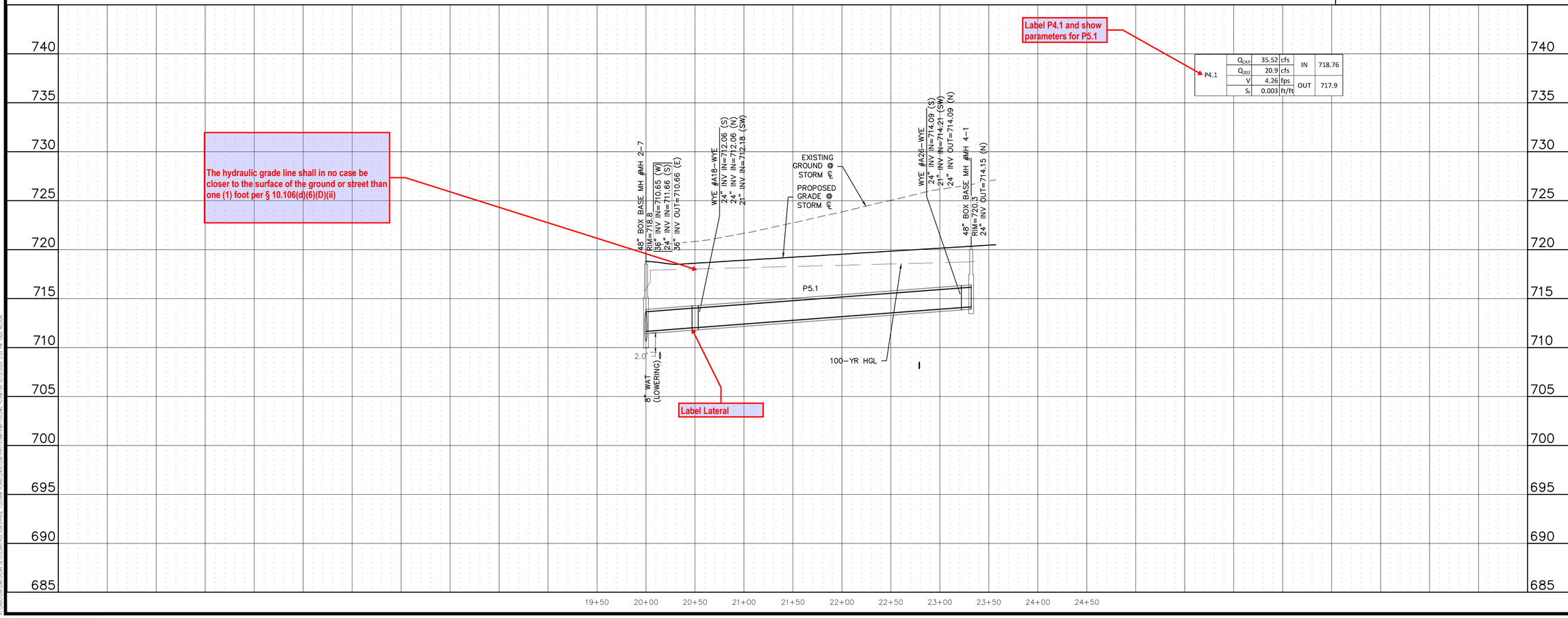
# RUN 4

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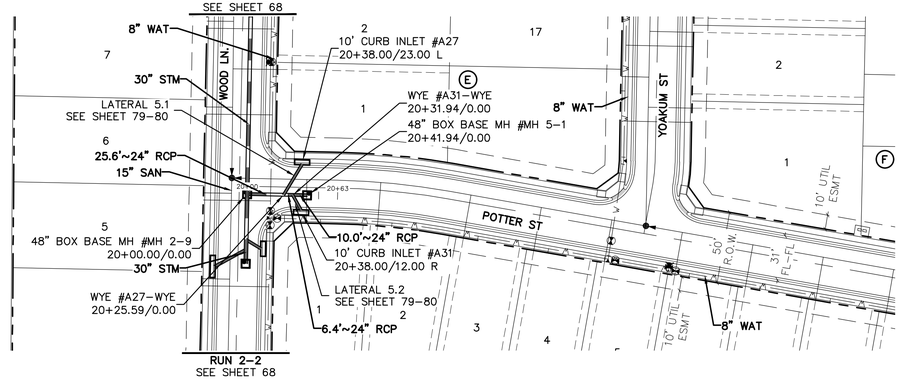
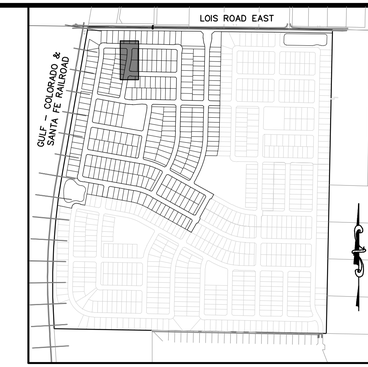
SHEET NO. 72

CAD FILE: 24007256-PH1-STRM-P&P-05.DWG



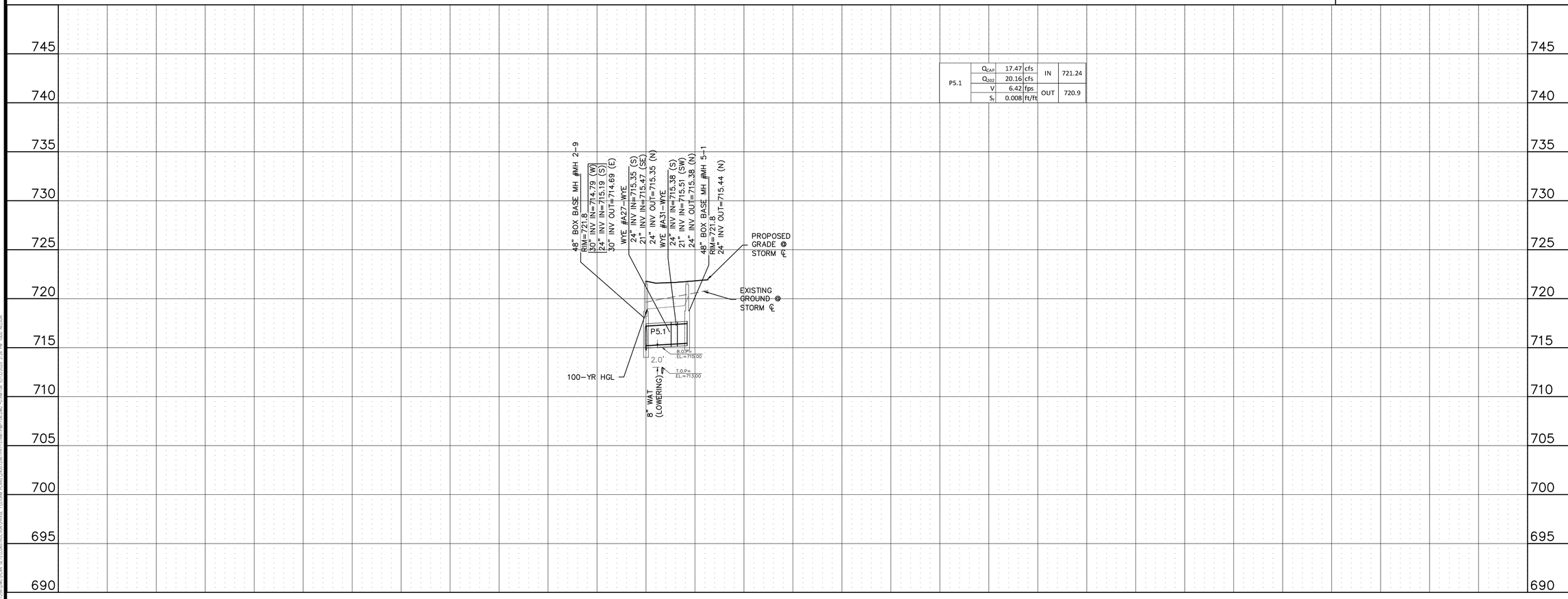

KEYMAP
1"=750'

50 0 50 100
( IN FEET )
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

**BENCHMARK:**
AN "X" CUT IN CONCRETE LOCATED WITHIN THE INTERSECTION OF LOIS ROAD EAST AND THE GULF COAST AND SANTA FE RAILROAD RIGHTS-OF-WAY, HAVING AN ELEVATION OF 729.3 FEET, A NORTHING COORDINATE VALUE OF 7,192,162.0, AND AN EASTING COORDINATE VALUE OF 2,374,666.1.

BEARINGS AND ELEVATIONS SHOWN HEREON ARE BASED ON NAD 83 TEXAS STATE PLANE COORDINATES, NORTH CENTRAL ZONE, NAVD 88.

# RUN 5




| | | | | | |
|---|---|---|---|---|---|
| P5.1 | $Q_{CAP}$ | 17.47 | cfs | IN | 721.24 |
| | $Q_{202}$ | 20.16 | cfs | | |
| | V | 6.42 | fps | OUT | 720.9 |
| | $S_f$ | 0.008 | ft/ft | | |

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CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS
STORM SEWER PLAN & PROFILES
RUN 5

DATE 4/7/2025

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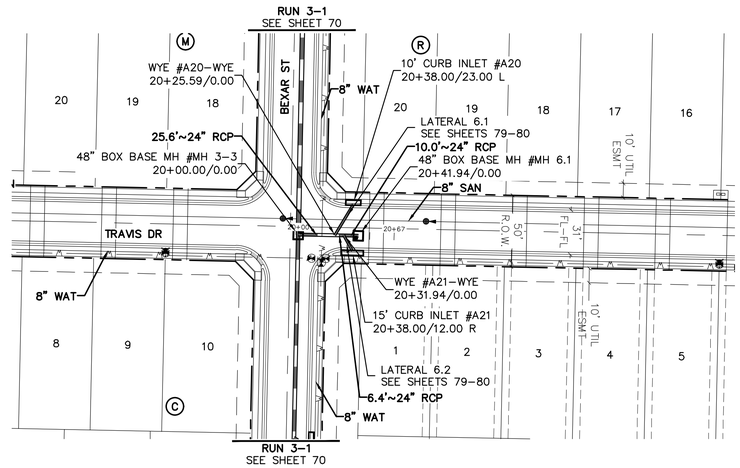
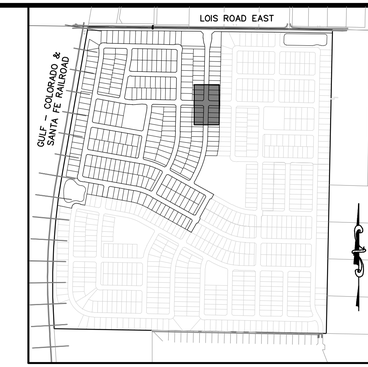
| B | 2nd SUBMITTAL TO JURISDICTION 5/12/2025 – KMB |

REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 73

CAD FILE: 24007256-PH1-STRM-PAP-06.DWG

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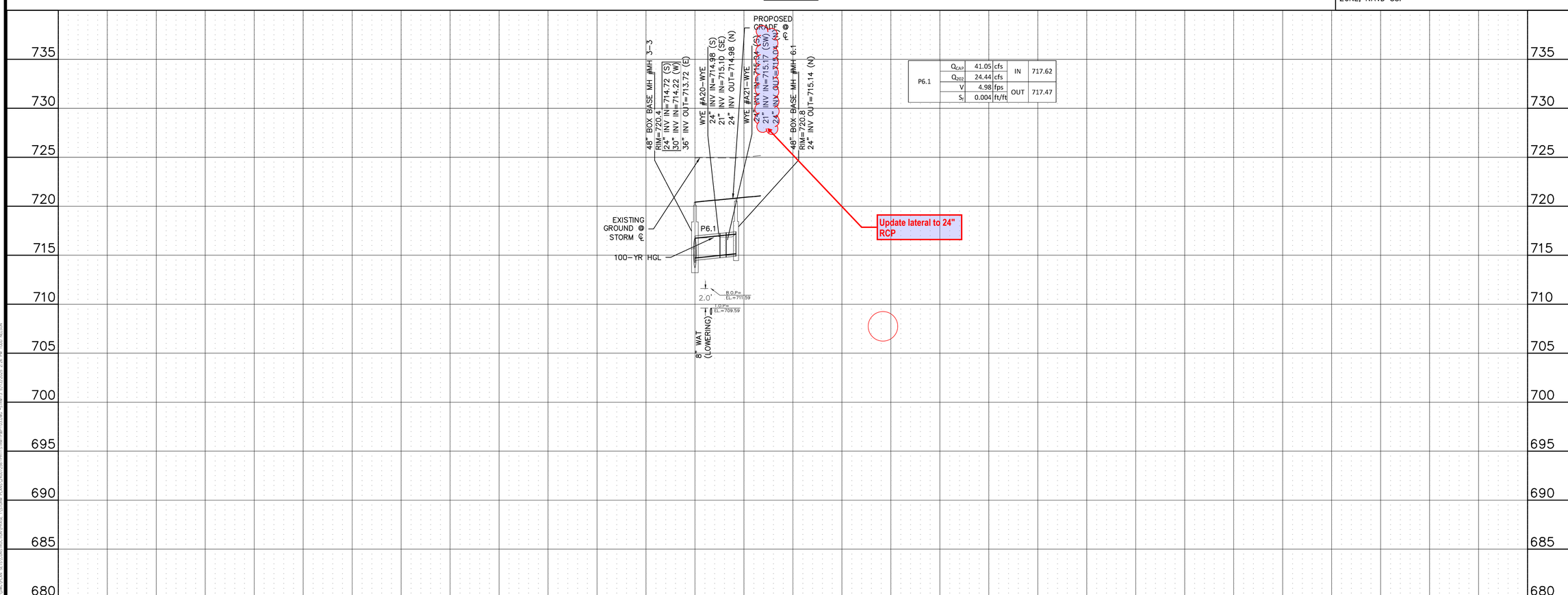
# RUN 6




| P6.1 | | | | |
|---|---|---|---|---|
| $Q_{CAP}$ | 41.05 | cfs | IN | 717.62 |
| $Q_{202}$ | 24.44 | cfs | | |
| V | 4.98 | fps | OUT | 717.47 |
| $S_f$ | 0.004 | ft/ft | | |

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STORM SEWER PLAN & PROFILES
RUN 6

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P.M. JF
JOB 24007256
SHEET NO. 74

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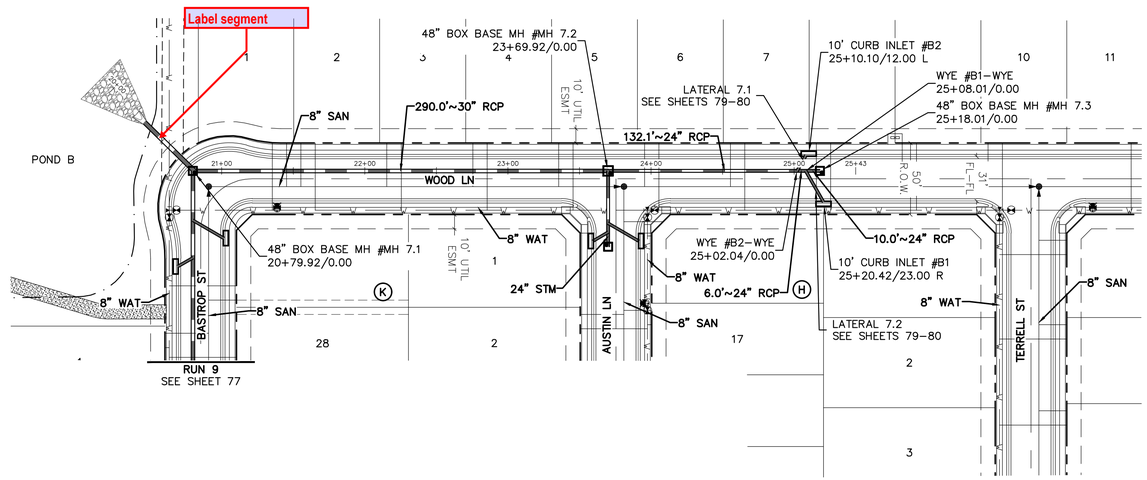
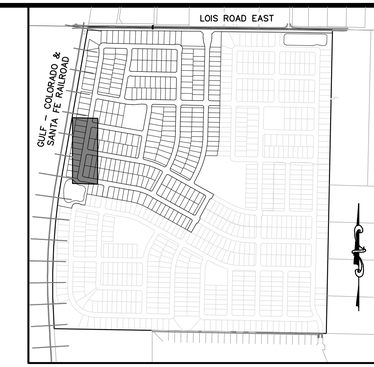



# RUN 7

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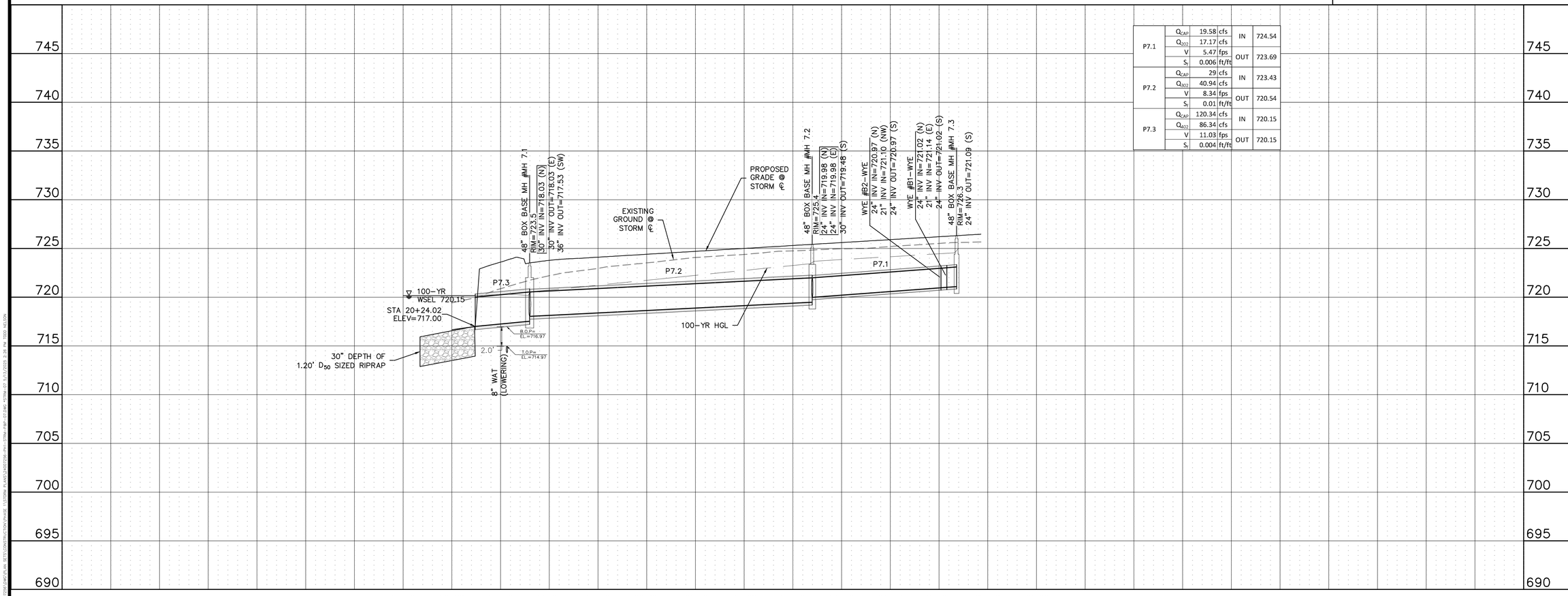


| | | | | | |
|---|---|---|---|---|---|
| P7.1 | $Q_{CAP}$ | 19.58 | cfs | IN | 724.54 |
| | $Q_{100}$ | 17.17 | cfs | | |
| | V | 5.47 | fps | OUT | 723.69 |
| | $S_f$ | 0.006 | ft/ft | | |
| P7.2 | $Q_{CAP}$ | 29 | cfs | IN | 723.43 |
| | $Q_{100}$ | 40.94 | cfs | | |
| | V | 8.34 | fps | OUT | 720.54 |
| | $S_f$ | 0.01 | ft/ft | | |
| P7.3 | $Q_{CAP}$ | 120.34 | cfs | IN | 720.15 |
| | $Q_{100}$ | 86.34 | cfs | | |
| | V | 11.03 | fps | OUT | 720.15 |
| | $S_f$ | 0.004 | ft/ft | | |

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P.M. JF
JOB 24007256
SHEET NO. 75

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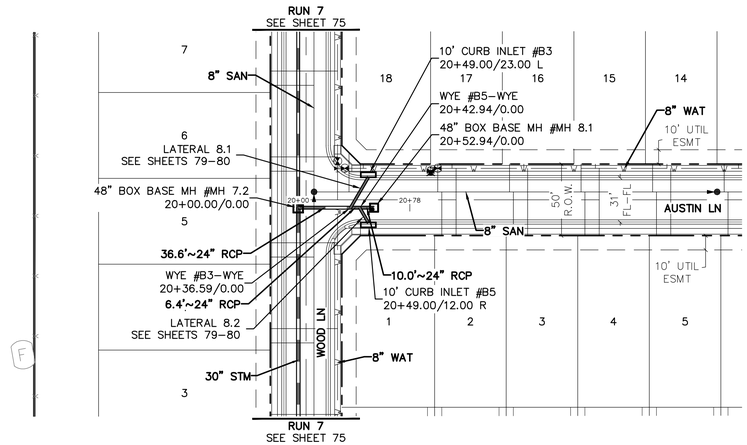
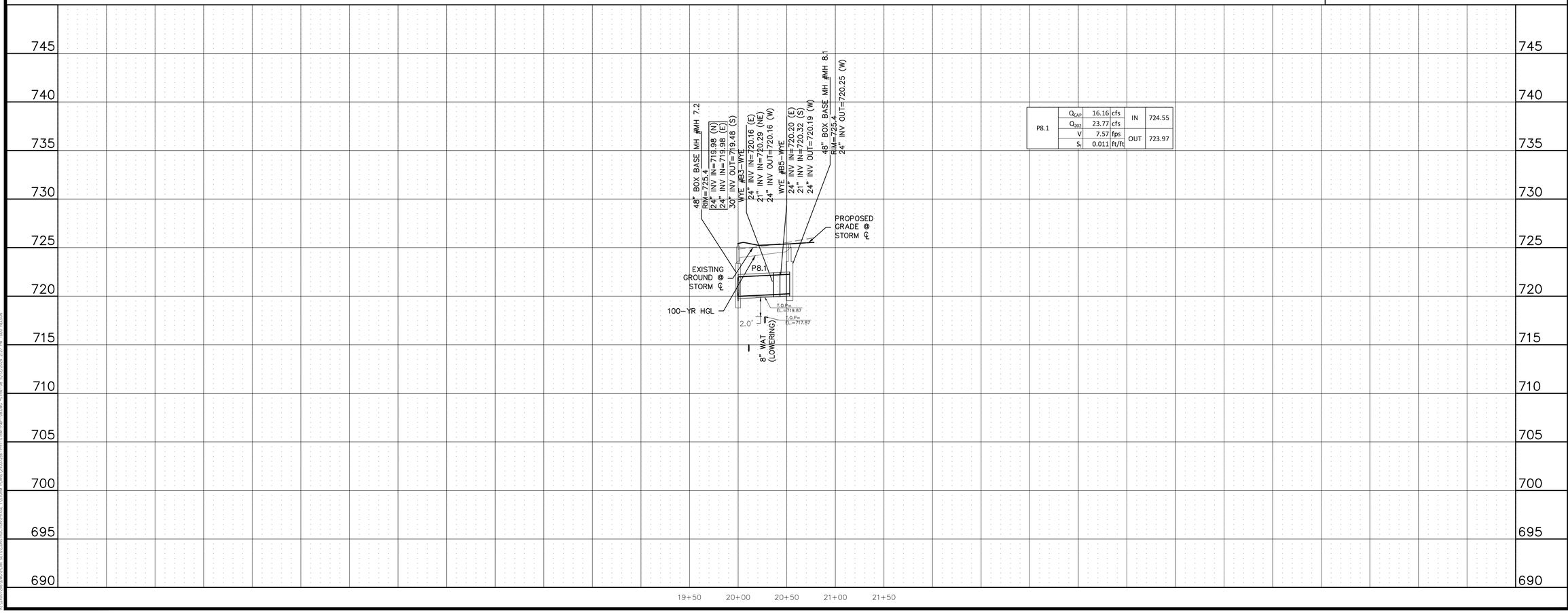
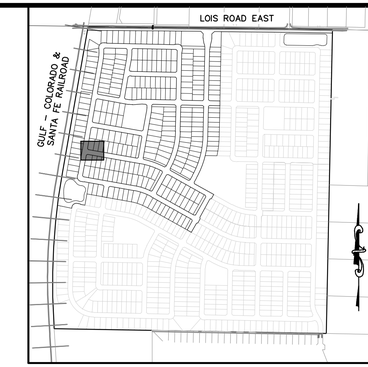



# RUN 8




| | | | | | |
|---|---|---|---|---|---|
| P8.1 | $Q_{CAP}$ | 16.16 | cfs | IN | 724.55 |
| | $Q_{100}$ | 23.77 | cfs | | |
| | V | 7.57 | fps | OUT | 723.97 |
| | $S_f$ | 0.011 | ft/ft | | |

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RUN 8

DATE 4/7/2025

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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 76

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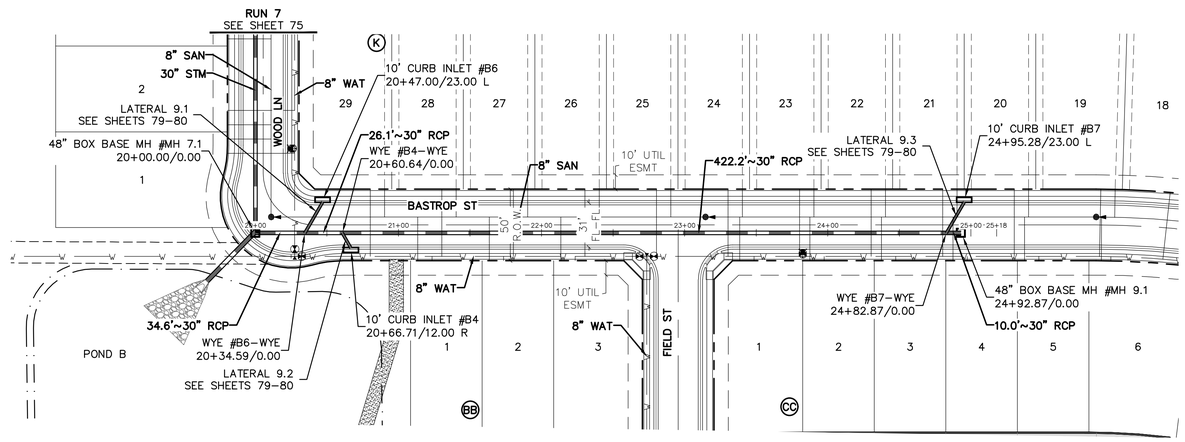


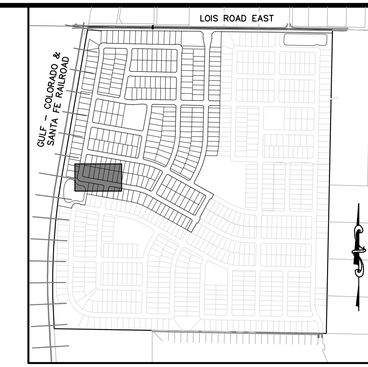


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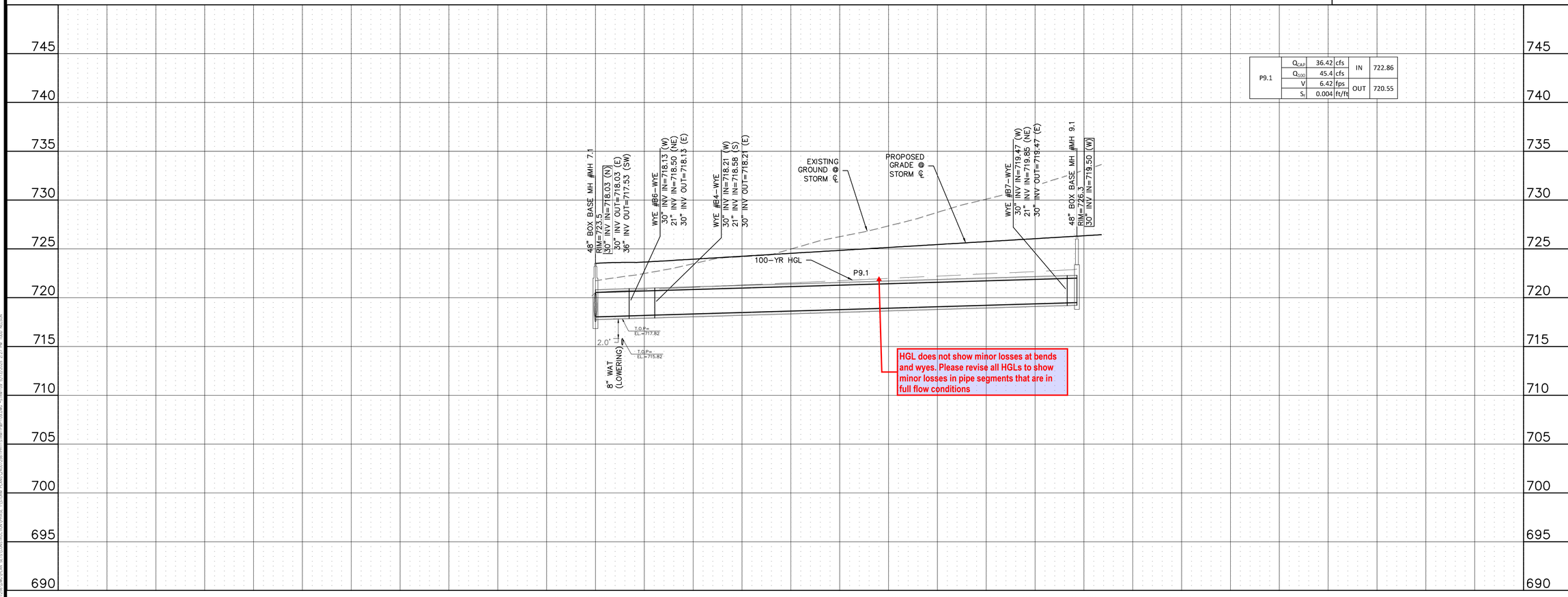
# RUN 9

| | | | | | |
|---|---|---|---|---|---|
| P9.1 | $Q_{CAP}$ | 36.42 | cfs | IN | 722.86 |
| | $Q_{100}$ | 45.4 | cfs | | |
| | V | 6.42 | fps | OUT | 720.55 |
| | $S_f$ | 0.004 | ft/ft | | |




HGL does not show minor losses at bends and wyes. Please revise all HGLs to show minor losses in pipe segments that are in full flow conditions

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DR. TN CH. KB
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JOB 24007256
SHEET NO. 77

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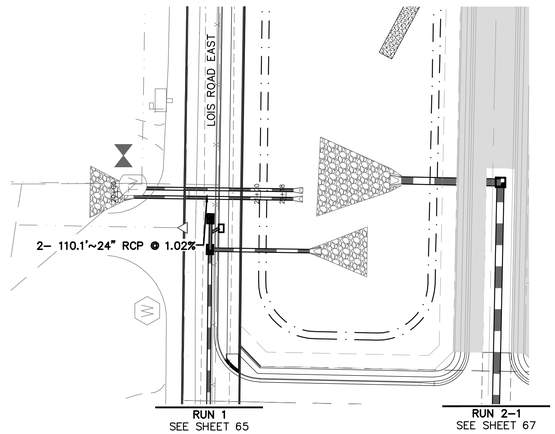
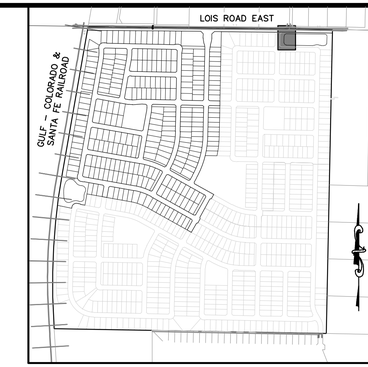



# POND A OUTFALL

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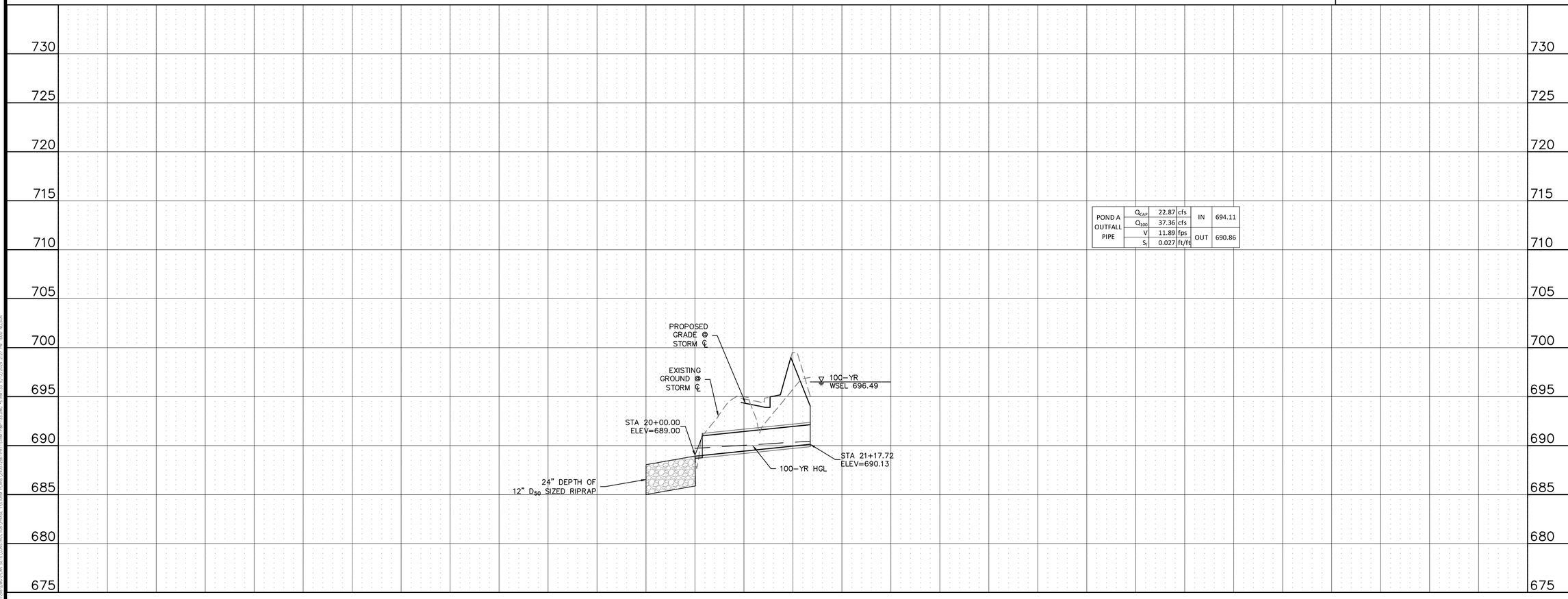


| | | | | | |
|---|---|---|---|---|---|
| POND A OUTFALL PIPE | $Q_{CAP}$ | 22.87 | cfs | IN | 694.11 |
| | $Q_{100}$ | 37.36 | cfs | | |
| | V | 11.89 | fps | OUT | 690.86 |
| | $S_f$ | 0.027 | ft/ft | | |

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POND A OUTFALL

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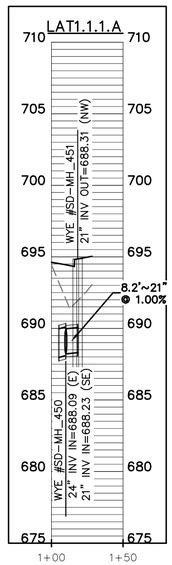
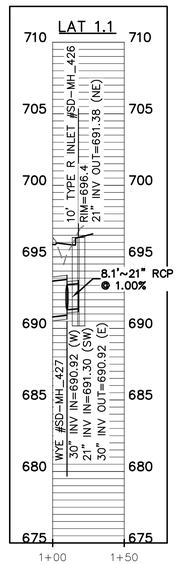
JOB 24007256
SHEET NO. 78

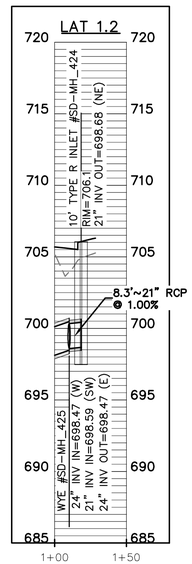
CAD FILE: 24007256-PH1-STRM-PAN-33.DWG

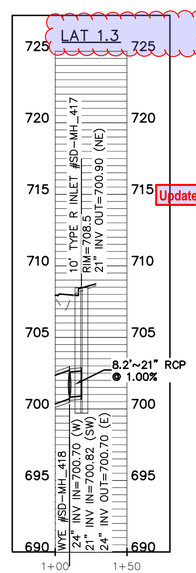
Provide profile for lateral 1.4, 2.1, 2.2, 2.3 and 2.4

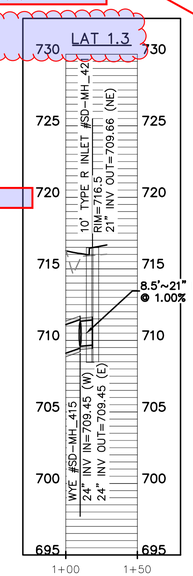
Update labels

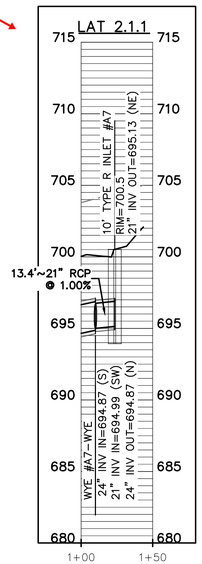


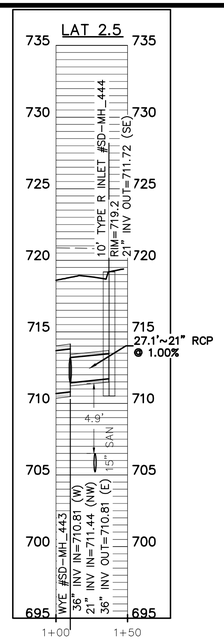



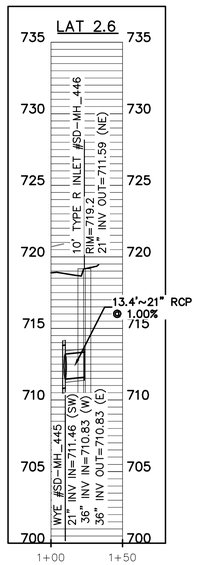



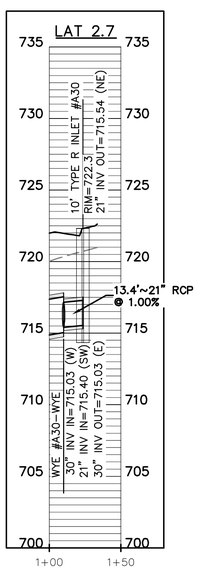



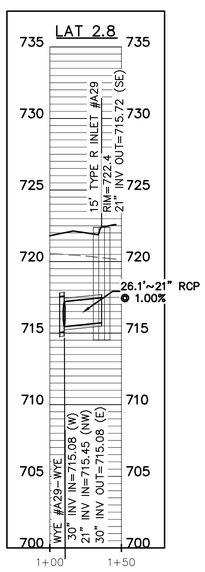



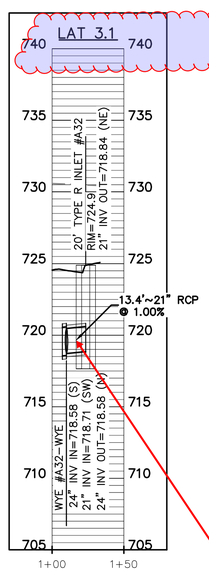

1. Provide HGL's for all laterals to confirm there is no surcharge at inlets
2. Update laterals accordingly per § 10.106(d)(5)(C)
3. Provide flow boxes for all laterals

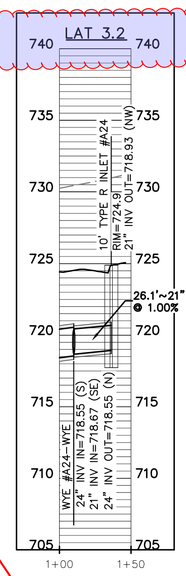
Please confirm these are shown and labeled in plan and profile sheets

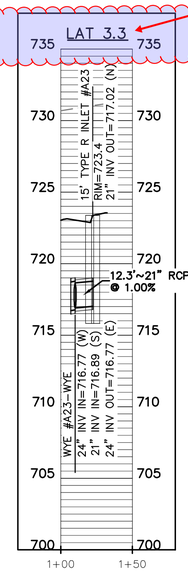
inlet shown as 20ft in plans. Please review and revise

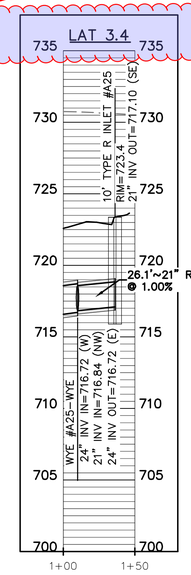


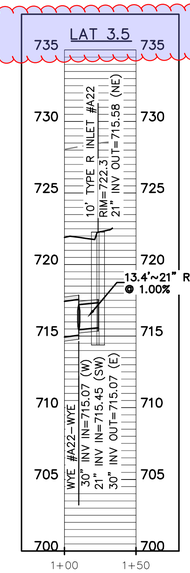



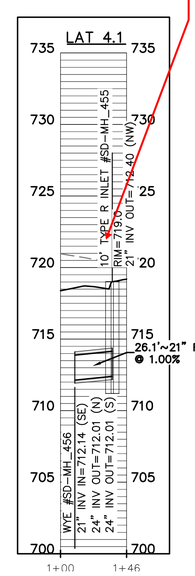



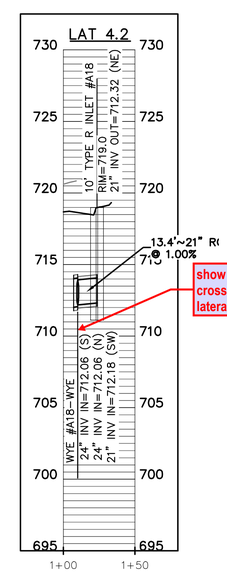




show utility crossings for all laterals

Update lateral to 24"

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AN "X" CUT IN CONCRETE LOCATED WITHIN THE INTERSECTION OF LOIS ROAD EAST AND THE GULF COAST AND SANTA FE RAILROAD RIGHTS-OF-WAY, HAVING AN ELEVATION OF 729.3 FEET, A NORTHING COORDINATE VALUE OF 7,192,162.0, AND AN EASTING COORDINATE VALUE OF 2,374,666.1.

BEARINGS AND ELEVATIONS SHOWN HEREON ARE BASED ON NAD 83 TEXAS STATE PLANE COORDINATES, NORTH CENTRAL ZONE, NAVD 88.

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KALTER CAPITAL
LOIS ROAD ESTATES – FILING NOS. 1 & 2
CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS
STORM SEWER PLAN & PROFILES
LATERALS 1

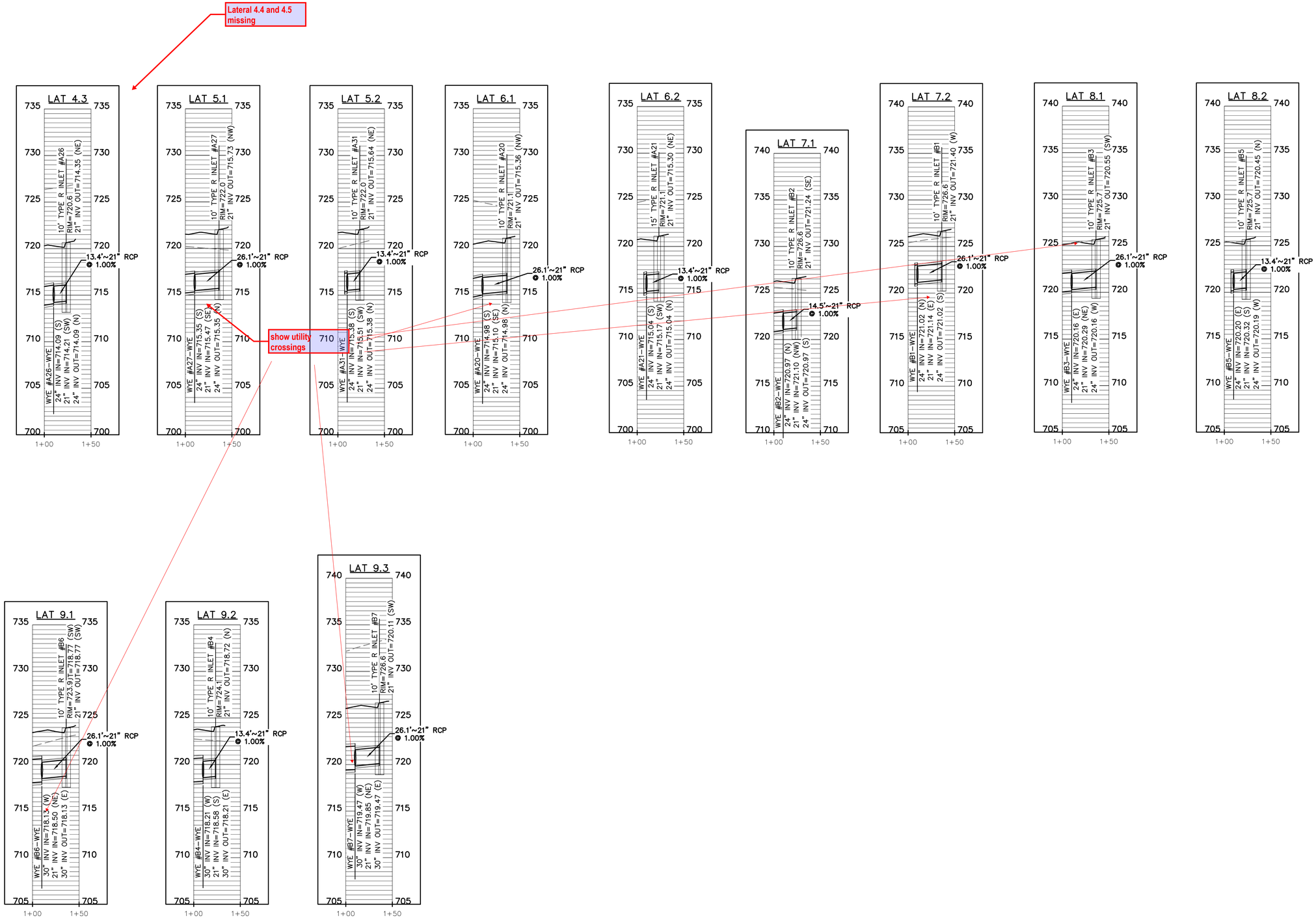
DATE 4/7/2025

| | |
|---|---|
| A | 1st SUBMITTAL TO JURISDICTION 4/7/2025 – KMB |
| B | 2nd SUBMITTAL TO JURISDICTION 5/12/2025 – KMB |

REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 79

CAD FILE: 24007256-PHI-STRM-LAT-01.DWG

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CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS
STORM SEWER PLAN & PROFILES
LATERALS 2

DATE 4/7/2025

| | |
|---|---|
| A | 1st SUBMITTAL TO JURISDICTION 4/7/2025 – KMB |
| B | 2nd SUBMITTAL TO JURISDICTION 5/12/2025 – KMB |

REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 80

CAD FILE: 24007256-PH1-STRM-LAT-02.DWG

## Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Saturday, 03 / 22 / 2025

**Pond No. 1 - Pond A**

**Pond Data**

**Contours** -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 689.00 ft

**Stage / Storage Table**

| Stage (ft) | Elevation (ft) | Contour area (sq ft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 689.00 | 06 | 0 | 0 |
| 1.00 | 690.00 | 15,149 | 7,578 | 7,578 |
| 2.00 | 691.00 | 28,394 | 21,772 | 29,349 |
| 3.00 | 692.00 | 31,429 | 29,912 | 59,261 |
| 4.00 | 693.00 | 34,521 | 32,975 | 92,236 |
| 5.00 | 694.00 | 37,669 | 36,095 | 128,331 |
| 6.00 | 695.00 | 40,874 | 39,272 | 167,602 |
| 7.00 | 696.00 | 44,135 | 42,505 | 210,107 |
| 8.00 | 697.00 | 47,453 | 45,794 | 255,901 |
| 9.00 | 698.00 | 50,827 | 49,140 | 305,041 |
| 10.00 | 699.00 | 54,258 | 52,543 | 357,583 |
| 10.50 | 699.50 | 55,995 | 27,563 | 385,146 |

**Culvert / Orifice Structures**

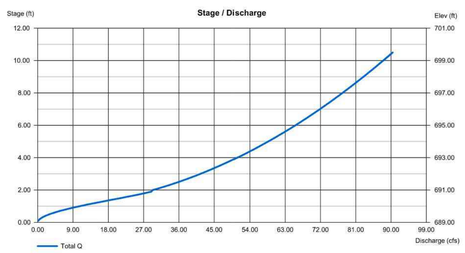
| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 24.00 | 0.00 | 0.00 | 0.00 |
| **Span (in)** | = 24.00 | 0.00 | 0.00 | 0.00 |
| **No. Barrels** | = 2 | 1 | 0 | 0 |
| **Invert El. (ft)** | = 689.00 | 0.00 | 0.00 | 0.00 |
| **Length (ft)** | = 118.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 0.85 | 0.00 | 0.00 | n/a |
| **N-Value** | = .013 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | No | No | No |

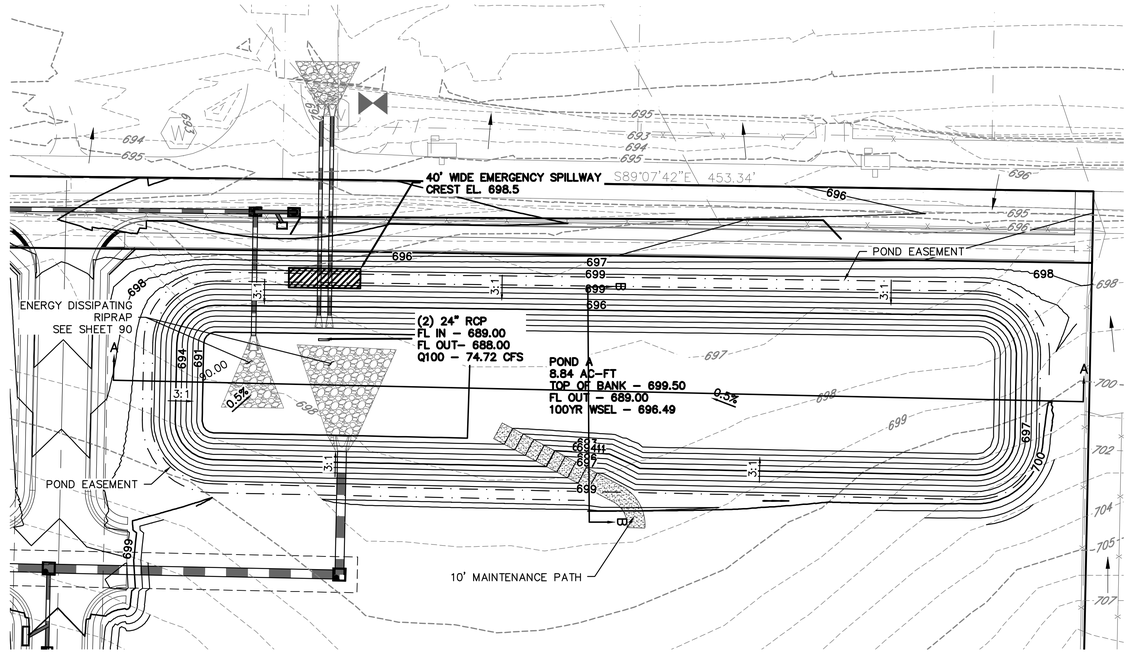
**Weir Structures**

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = --- | --- | --- | --- |
| **Multi-Stage** | = No | No | No | No |

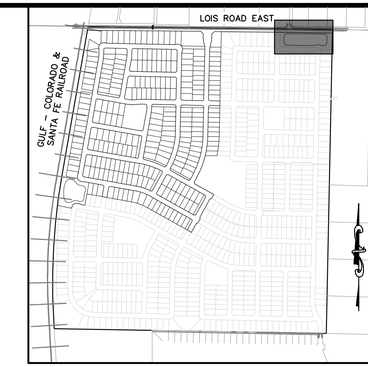
| | |
|---|---|
| **Exfil.(in/hr)** | = 0.000 (by Wet area) |
| **TW Elev. (ft)** | = 0.00 |

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).




POND A

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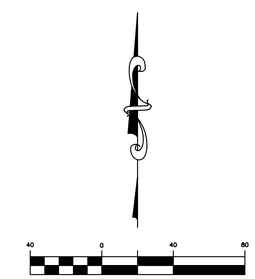



## Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Saturday, 03 / 22 / 2025

**Hyd. No. 1**

Ex Pond A

| | | | |
|---|---|---|---|
| Hydrograph type | = Rational | Peak discharge | = 76.49 cfs |
| Storm frequency | = 100 yrs | Time to peak | = 0.25 hrs |
| Time interval | = 1 min | Hyd. volume | = 68,843 cuft |
| Drainage area | = 32.670 ac | Runoff coeff. | = 0.3 |
| Intensity | = 7.805 in/hr | Tc by User | = 15.00 min |
| IDF Curve | = Sanger IDF.IDF | Asc/Rec limb fact | = 1/1 |

## Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Saturday, 03 / 22 / 2025

**Hyd. No. 2**

Prop Pond A

| | | | |
|---|---|---|---|
| Hydrograph type | = Mod. Rational | Peak discharge | = 110.24 cfs |
| Storm frequency | = 100 yrs | Time to peak | = 0.25 hrs |
| Time interval | = 1 min | Hyd. volume | = 515,908 cuft |
| Drainage area | = 65.700 ac | Runoff coeff. | = 0.55 |
| Intensity | = 3.051 in/hr | Tc by User | = 15.00 min |
| IDF Curve | = Sanger IDF.IDF | Storm duration | = 5.2 x Tc |
| Target Q | =76.00 cfs | Est. Req'd Storage | =302,414 cuft |

## Hydrograph Report

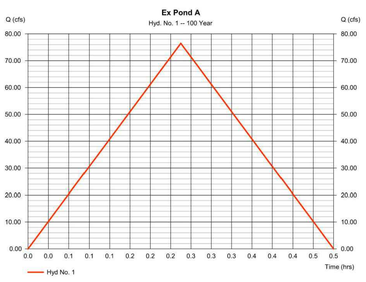
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Saturday, 03 / 22 / 2025

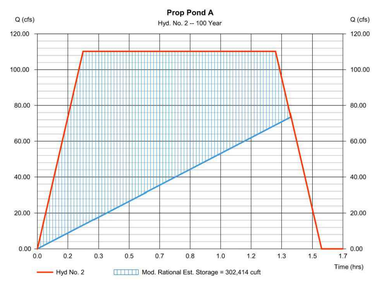
**Hyd. No. 3**

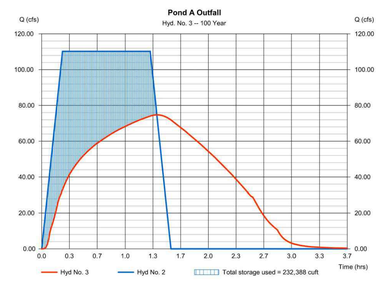
Pond A Outfall

| | | | |
|---|---|---|---|
| Hydrograph type | = Reservoir | Peak discharge | = 74.72 cfs |
| Storm frequency | = 100 yrs | Time to peak | = 1.38 hrs |
| Time interval | = 1 min | Hyd. volume | = 515,900 cuft |
| Inflow hyd. No. | = 2 - Prop Pond A | Max. Elevation | = 696.49 ft |
| Reservoir name | = Pond A | Max. Storage | = 232,388 cuft |

Storage Indication method used.




## EMERGENCY SPILLWAY CALCULATIONS

| | | | | | |
|---|---|---|---|---|---|
| Discharge: | 110.24 | cfs | Headwater Height Above Crest: | 0.98 | ft |
| Headwater Elevation: | 699.48 | ft | Tailwater Height Above Crest: | -698.50 | ft |
| Crest Elevation: | 698.50 | ft | Weir Coefficient: | 2.82 | ft^(1/2)/s |
| Tailwater Elevation: | 0.00 | ft | Submergence Factor: | 1.000 | |
| Crest Surface Type: | Gravel | | Adjusted Weir Coefficient: | 2.82 | ft^(1/2)/s |
| Crest Breadth: | 11.00 | ft | Flow Area: | 39.4 | ft² |
| Crest Length: | 40.0 | ft | Velocity: | 2.80 | ft/s |
| | | | Wetted Perimeter: | 42.0 | ft |
| | | | Top Width: | 40.00 | ft |

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LOIS ROAD ESTATES – FILING NOS. 1 & 2
CITY OF SANGER, COUNTY OF DENTON,
STATE OF TEXAS
POND PLAN & DETAILS
POND A

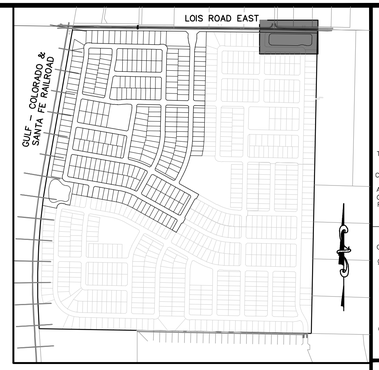
DATE 4/7/2025

| | |
|---|---|
| A | 1ST SUBMITTAL TO JURISDICTION 4/7/2025 – KMB |
| B | 2ND SUBMITTAL TO JURISDICTION 5/12/2025 – KMB |

REVISIONS

DR. TN | CH. KB
P.M. JF
JOB 24007256
SHEET NO. 81

CAD FILE: 24007256-PH1-GRAD-POND.DWG

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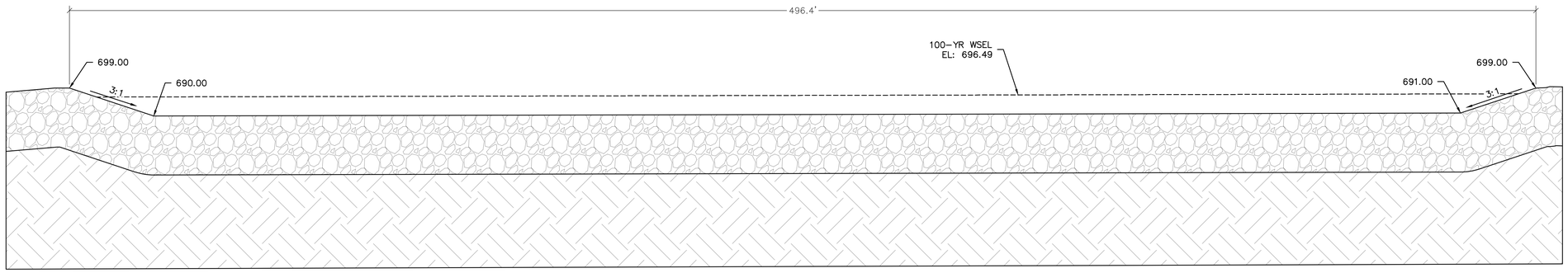
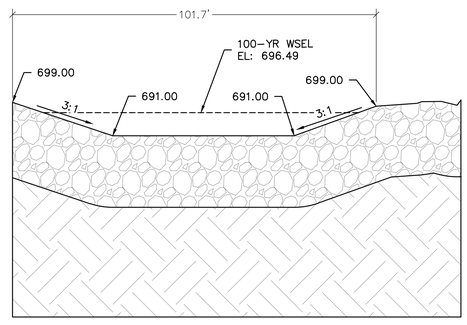



SECTION A-A
SCALE: 1"=20'




SECTION B-B
SCALE: 1"=20'

**BENCHMARK:**
AN "X" CUT IN CONCRETE LOCATED WITHIN THE INTERSECTION OF LOIS ROAD EAST AND THE GULF COAST AND SANTA FE RAILROAD RIGHTS–OF–WAY, HAVING AN ELEVATION OF 729.3 FEET, A NORTHING COORDINATE VALUE OF 7,192,162.0, AND AN EASTING COORDINATE VALUE OF 2,374,666.1.

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LOIS ROAD ESTATES – FILING NOS. 1 & 2
CITY OF SANGER, COUNTY OF DENTON,
STATE OF TEXAS
POND PLAN & DETAILS
POND A SECTIONS

DATE 4/7/2025

| | |
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| A | 1ST SUBMITTAL TO JURISDICTION 4/7/2025 – KMB |
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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 82

CAD FILE: 24007256-PH1-GRAD-POND.DWG

## Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Saturday, 03 / 22 / 2025

**Pond No. 2 - Pond B**

**Pond Data**

**Contours** -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 718.00 ft

**Stage / Storage Table**

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 718.00 | 03 | 0 | 0 |
| 1.00 | 719.00 | 39,892 | 19,948 | 19,948 |
| 2.00 | 720.00 | 46,445 | 43,169 | 63,116 |
| 3.00 | 721.00 | 48,999 | 47,722 | 110,838 |
| 4.00 | 722.00 | 51,609 | 50,304 | 161,142 |
| 5.00 | 723.00 | 54,276 | 52,943 | 214,085 |
| 5.25 | 723.25 | 54,952 | 13,654 | 227,738 |

**Culvert / Orifice Structures**

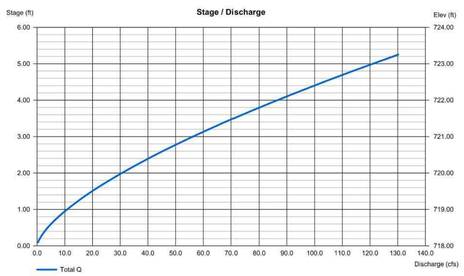
| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| Rise (in) | = 0.00 | 0.00 | 0.00 | 0.00 |
| Span (in) | = 0.00 | 0.00 | 0.00 | 0.00 |
| No. Barrels | = 1 | 0 | 0 | 0 |
| Invert El. (ft) | = 0.00 | 0.00 | 0.00 | 0.00 |
| Length (ft) | = 0.00 | 0.00 | 0.00 | 0.00 |
| Slope (%) | = 0.00 | 0.00 | 0.00 | n/a |
| N-Value | = .013 | .013 | .013 | n/a |
| Orifice Coeff. | = 0.60 | 0.60 | 0.60 | 0.60 |
| Multi-Stage | = n/a | No | No | No |

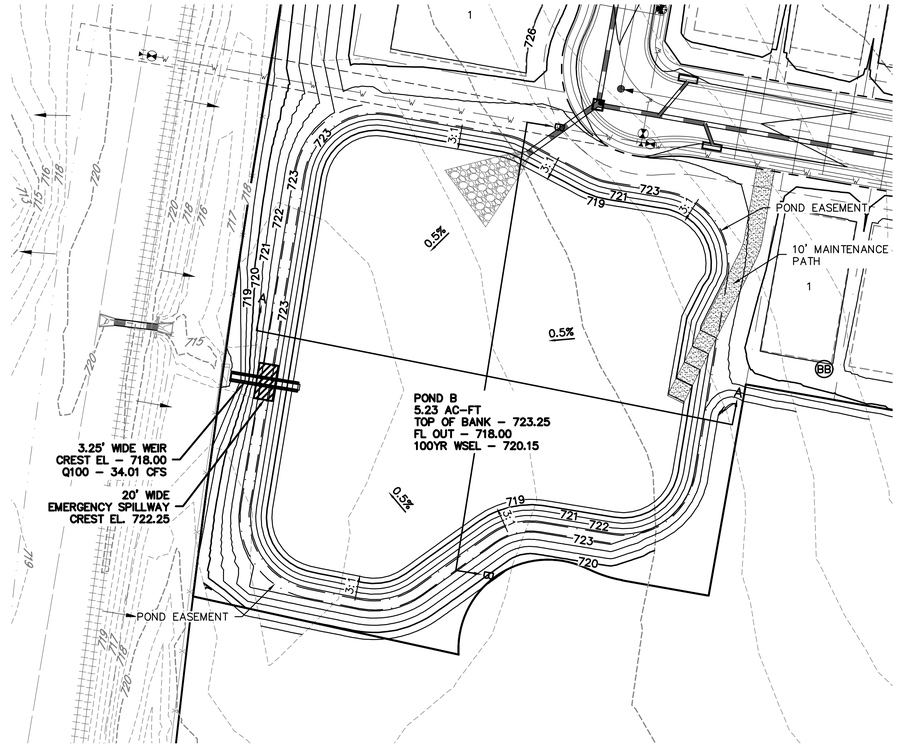
**Weir Structures**

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| Crest Len (ft) | = 3.25 | 0.00 | 0.00 | 0.00 |
| Crest El. (ft) | = 718.00 | 0.00 | 0.00 | 0.00 |
| Weir Coeff. | = 3.33 | 3.33 | 3.33 | 3.33 |
| Weir Type | = Rect | --- | --- | --- |
| Multi-Stage | = No | No | No | No |

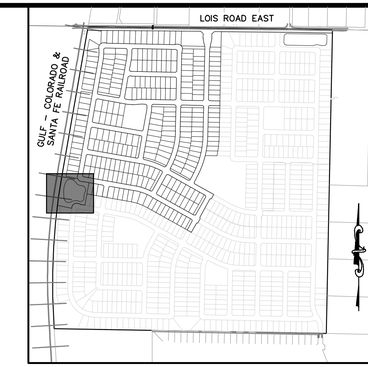
Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (oc) and submergence (s).

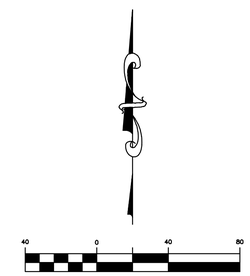



POND B




KEYMAP
1"=750'




### Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Saturday, 03 / 22 / 2025

**Hyd. No. 5**

Ex Pond B

| | | | |
|---|---|---|---|
| Hydrograph type | = Rational | Peak discharge | = 34.75 cfs |
| Storm frequency | = 100 yrs | Time to peak | = 0.25 hrs |
| Time interval | = 1 min | Hyd. volume | = 31,271 cuft |
| Drainage area | = 14.840 ac | Runoff coeff. | = 0.3 |
| Intensity | = 7.805 in/hr | Tc by User | = 15.00 min |
| IDF Curve | = Sanger IDF.IDF | Asc/Rec limb fact | = 1/1 |

### Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Saturday, 03 / 22 / 2025

**Hyd. No. 6**

Prop Pond B

| | | | |
|---|---|---|---|
| Hydrograph type | = Mod. Rational | Peak discharge | = 45.40 cfs |
| Storm frequency | = 100 yrs | Time to peak | = 0.25 hrs |
| Time interval | = 1 min | Hyd. volume | = 144,646 cuft |
| Drainage area | = 21.260 ac | Runoff coeff. | = 0.55 |
| Intensity | = 3.883 in/hr | Tc by User | = 15.00 min |
| IDF Curve | = Sanger IDF.IDF | Storm duration | = 3.5 x Tc |
| Target Q | =34.75 cfs | Est. Req'd Storage | =72,966 cuft |

### Hydrograph Report

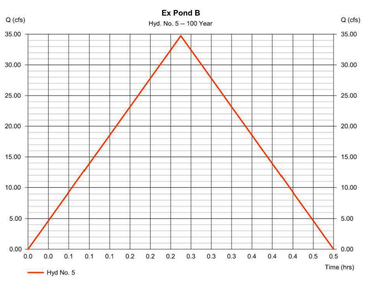
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Saturday, 03 / 22 / 2025

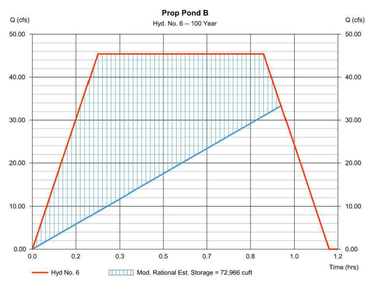
**Hyd. No. 7**

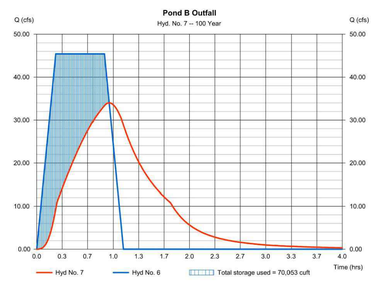
Pond B Outfall

| | | | |
|---|---|---|---|
| Hydrograph type | = Reservoir | Peak discharge | = 34.01 cfs |
| Storm frequency | = 100 yrs | Time to peak | = 0.95 hrs |
| Time interval | = 1 min | Hyd. volume | = 144,368 cuft |
| Inflow hyd. No. | = 6 - Prop Pond B | Max. Elevation | = 720.15 ft |
| Reservoir name | = Pond B | Max. Storage | = 70,053 cuft |

Storage Indication method used.




## EMERGENCY SPILLWAY CALCULATIONS

| | | |
|---|---|---|
| Discharge: | 45.40 | cfs |
| Headwater Elevation: | 723.12 | ft |
| Crest Elevation: | 722.25 | ft |
| Tailwater Elevation: | 0.00 | ft |
| Crest Surface Type: | Gravel | |
| Crest Breadth: | 11.00 | ft |
| Crest Length: | 20.0 | ft |

| | | |
|---|---|---|
| Headwater Height Above Crest: | 0.87 | ft |
| Tailwater Height Above Crest: | -722.25 | ft |
| Weir Coefficient: | 2.60 | ft^(1/2)/s |
| Submergence Factor: | 1.000 | |
| Adjusted Weir Coefficient: | 2.60 | ft^(1/2)/s |
| Flow Area: | 17.4 | ft² |
| Velocity: | 2.61 | ft/s |
| Wetted Perimeter: | 21.7 | ft |
| Top Width: | 20.00 | ft |

## 100-YR OUTFALL VELOCITY CALCULATIONS

| | | |
|---|---|---|
| Discharge: | 34.01 | cfs |
| Headwater Elevation: | 720.15 | ft |
| Crest Elevation: | 718.00 | ft |
| Tailwater Elevation: | 0.00 | ft |
| Weir Coefficient: | 3.33 | ft^(1/2)/s |
| Crest Length: | 3.25 | ft |
| Number Of Contractions: | 0 | |

| | | |
|---|---|---|
| Headwater Height Above Crest: | 2.15 | ft |
| Tailwater Height Above Crest: | -718.00 | ft |
| Flow Area: | 7.0 | ft² |
| Velocity: | 4.88 | ft/s |
| Wetted Perimeter: | 7.54 | ft |
| Top Width: | 3.25 | ft |

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CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS
POND PLAN & DETAILS
POND B

DATE 4/7/2025

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REVISIONS

DR. TN CH. KB
P.M. JF
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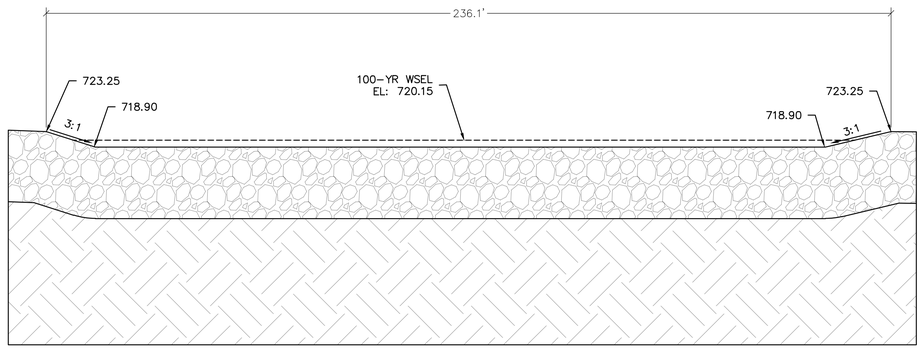
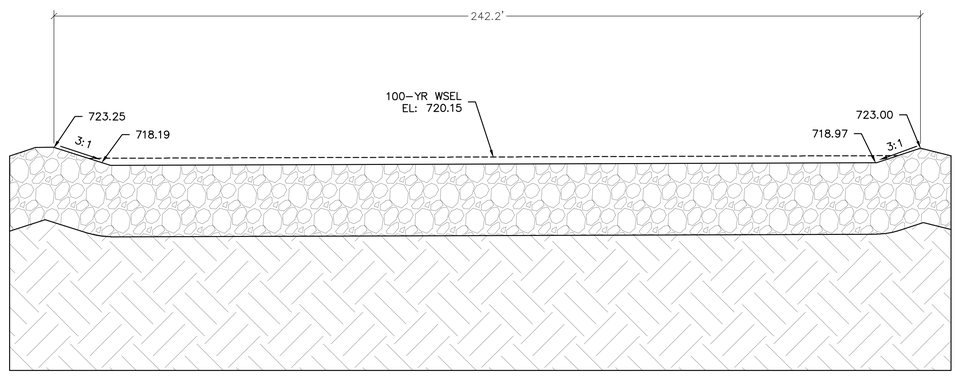
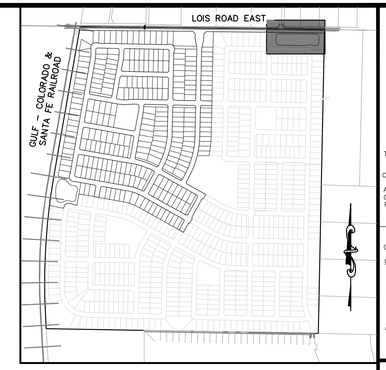
CAD FILE: 24007256-PH1-GRAD-POND.DWG




SECTION A-A
SCALE: 1"=20'




SECTION B-B
SCALE: 1"=20'




KEYMAP
1"=750'

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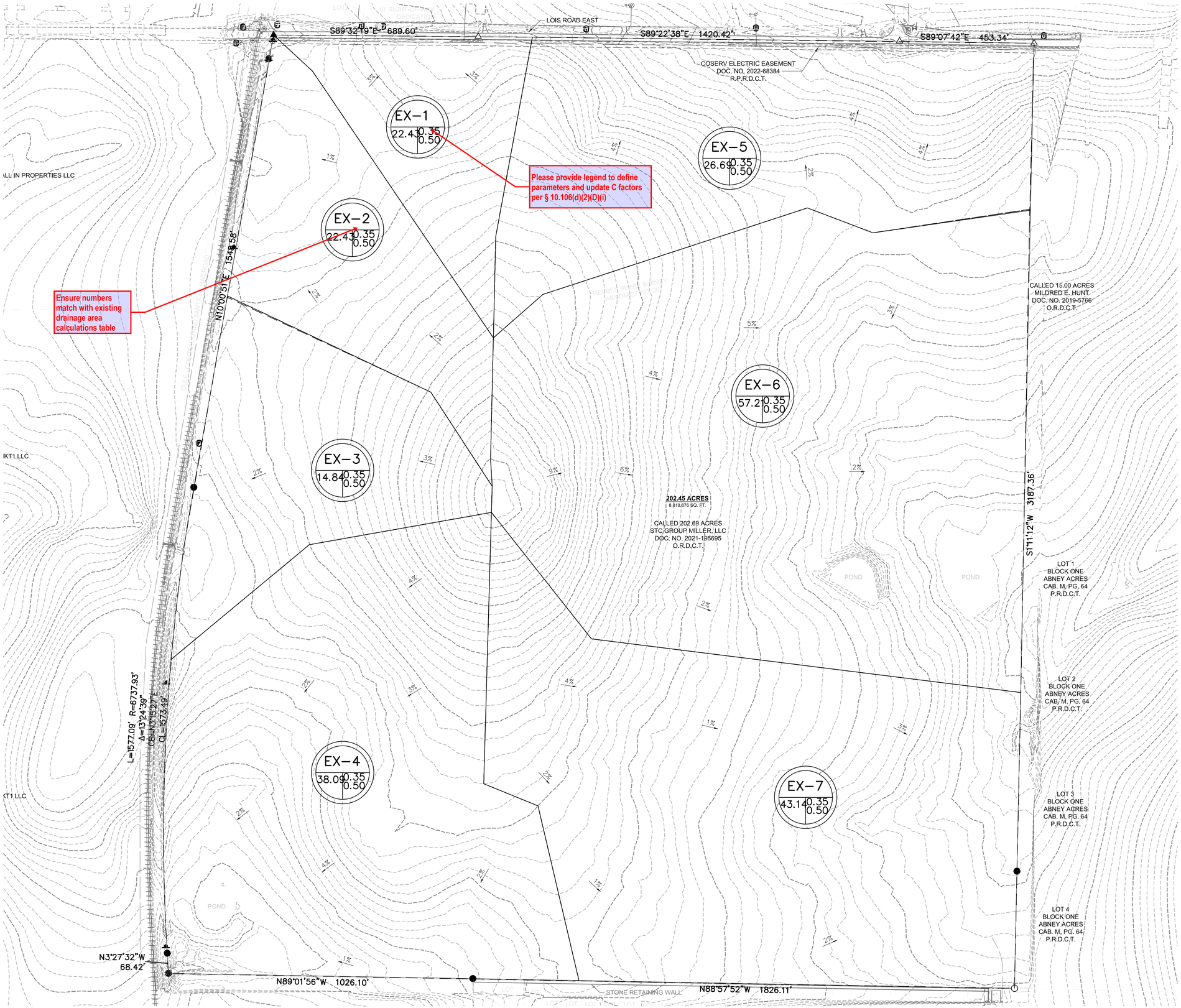

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LOIS ROAD ESTATES – FILING NOS. 1 & 2
CITY OF SANGER, COUNTY OF DENTON,
STATE OF TEXAS

POND PLAN & DETAILS
EXISTING DRAIANGE MAP

DATE 4/7/2025

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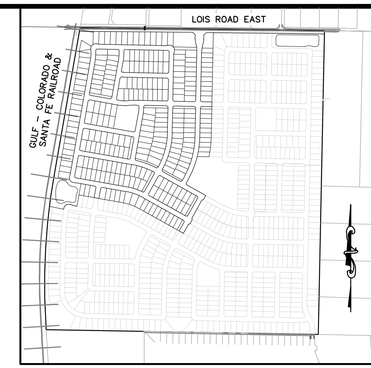
REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 85

CAD FILE: 24007256-EXISTING DRAINAGE MAP.DWG




KEYMAP
1"=750'

1. Please update proposed drainage area map per updated grading plans and provide drainage areas at a scale smaller than 750 for easier visibility

## LEGEND

- PROPERTY BOUNDARY
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED CATCH CURB & GUTTER
- PROPOSED SPILL CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED SIDEWALK
- EXISTING SIDEWALK
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOURS
- EXISTING CONTOURS

A = BASIN DESIGNATION
B = AREA IN ACRES

DESIGN POINT

( IN FEET )
1 inch = 150 ft.

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CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS
POND PLAN & DETAILS
PROPOSED DRAINAGE MAP

DATE 4/7/2025

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|---|---|
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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 86

CAD FILE: 24007256-PROPOSED DRAINAGE MAP.DWG

## EXISTING DRAINAGE AREA CALCULATIONS

Rational Method Q=CIA

| AREA | ACRES | C | Tc (min) | $I_{10}$ (In/Hr) | $I_{100}$ (In/Hr) | $Q_{10}$ (cfs) | $Q_{100}$ (cfs) | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| EX-1 | 9.24 | 0.30 | 15 | 6.6 | 9.6 | 18.30 | 26.61 | |
| EX-2 | 13.19 | 0.30 | 15 | 6.6 | 9.6 | 26.12 | 37.99 | |
| EX-3 | 14.81 | 0.30 | 15 | 6.6 | 9.6 | 29.32 | 42.65 | |
| EX-4 | 38.10 | 0.30 | 15 | 6.6 | 9.6 | 75.44 | 109.73 | |
| EX-5 | 27.62 | 0.30 | 15 | 6.6 | 9.6 | 54.69 | 79.55 | |
| EX-6 | 56.22 | 0.30 | 15 | 6.6 | 9.6 | 111.32 | 161.91 | |
| EX-7 | 43.21 | 0.30 | 15 | 6.6 | 9.6 | 85.56 | 124.44 | |

Rational Method Q=CIA

| AREA | SF | ACRES | C | Tc (min) | $I_{10}$ (In/Hr) | $I_{100}$ (In/Hr) | $Q_{10}$ (cfs) | $Q_{100}$ (cfs) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|
| **A** | **2,861,874** | **65.70** | **0.55** | **15** | **6.6** | **9.60** | **238.49** | **346.89** | **MAJOR BASIN A** |
| **POND A** | **77327** | **1.78** | 0.55 | 15 | 6.60 | 9.60 | 6.44 | 9.37 | **POND A** |
| A1 | 165794 | **3.81** | 0.55 | 15 | 6.60 | 9.60 | 13.82 | 20.10 | |
| A2 | 64539 | **1.48** | 0.55 | 15 | 6.60 | 9.60 | 5.38 | 7.82 | |
| A3 | 79757 | **1.83** | 0.55 | 15 | 6.60 | 9.60 | 6.65 | 9.67 | |
| A4 | 67340 | **1.55** | 0.55 | 15 | 6.60 | 9.60 | 5.61 | 8.16 | |
| A5 | 64418 | **1.48** | 0.55 | 15 | 6.60 | 9.60 | 5.37 | 7.81 | |
| A6 | 55179 | **1.27** | 0.55 | 15 | 6.60 | 9.60 | 4.60 | 6.69 | |
| A7 | 64593 | **1.48** | 0.55 | 15 | 6.60 | 9.60 | 5.38 | 7.83 | |
| A8 | 70471 | **1.62** | 0.55 | 15 | 6.60 | 9.60 | 5.87 | 8.54 | |
| A9 | 67252 | **1.54** | 0.55 | 15 | 6.60 | 9.60 | 5.60 | 8.15 | |
| A10 | 92029 | **2.11** | 0.55 | 15 | 6.60 | 9.60 | 7.67 | 11.16 | |
| A11 | 114553 | **2.63** | 0.55 | 15 | 6.60 | 9.60 | 9.55 | 13.89 | |
| A12 | 91368 | **2.10** | 0.55 | 15 | 6.60 | 9.60 | 7.61 | 11.07 | |
| A15 | 164058 | **3.77** | 0.55 | 15 | 6.60 | 9.60 | 13.67 | 19.89 | |
| A17 | 79303 | **1.82** | 0.55 | 15 | 6.60 | 9.60 | 6.61 | 9.61 | |
| A18 | 67028 | **1.54** | 0.55 | 15 | 6.60 | 9.60 | 5.59 | 8.12 | |
| A18.1 | 65467 | **1.50** | 0.55 | 15 | 6.60 | 9.60 | 5.46 | 7.94 | |
| A19 | 43485 | **1.00** | 0.55 | 15 | 6.60 | 9.60 | 3.62 | 5.27 | |
| A20 | 84400 | **1.94** | 0.55 | 15 | 6.60 | 9.60 | 7.03 | 10.23 | |
| A21 | 117246 | **2.69** | 0.55 | 15 | 6.60 | 9.60 | 9.77 | 14.21 | |
| A22 | 113015 | **2.59** | 0.55 | 15 | 6.60 | 9.60 | 9.42 | 13.70 | |
| A23 | 111693 | **2.56** | 0.55 | 15 | 6.60 | 9.60 | 9.31 | 13.54 | |
| A24 | 106905 | **2.45** | 0.55 | 15 | 6.60 | 9.60 | 8.91 | 12.96 | |
| A25 | 72270 | **1.66** | 0.55 | 15 | 6.60 | 9.60 | 6.02 | 8.76 | |
| A26 | 49923 | **1.15** | 0.55 | 15 | 6.60 | 9.60 | 4.16 | 6.05 | |
| A27 | 89179 | **2.05** | 0.55 | 15 | 6.60 | 9.60 | 7.43 | 10.81 | |
| A29 | 152919 | **3.51** | 0.55 | 15 | 6.60 | 9.60 | 12.74 | 18.54 | |
| A30 | 106061 | **2.43** | 0.55 | 15 | 6.60 | 9.60 | 8.84 | 12.86 | |
| A31 | 77148 | **1.77** | 0.55 | 15 | 6.60 | 9.60 | 6.43 | 9.35 | |
| A32 | 145867 | **3.35** | 0.55 | 15 | 6.60 | 9.60 | 12.16 | 17.68 | |
| A-37 | 29258 | **0.67** | 0.55 | 15 | 6.60 | 9.60 | 2.44 | 3.55 | |
| A-40 | 61048 | **1.40** | 0.55 | 15 | 6.60 | 9.60 | 5.09 | 7.40 | |
| | | | | | | **TOTAL=** | **220.27** | **329.77** | |
| **B** | **931879** | **21.39** | **0.55** | **15** | **6.6** | **9.60** | **77.66** | **112.96** | **MAJOR BASIN B** |
| **POND B** | **42462** | **0.97** | **0.55** | **15** | **6.6** | **9.60** | **3.54** | **5.15** | **POND B** |
| B1 | 104521 | 2.40 | 0.55 | 15 | 6.60 | 9.60 | 8.71 | 12.67 | |
| B2 | 37164 | 0.85 | 0.55 | 15 | 6.60 | 9.60 | 3.10 | 4.50 | |
| B3 | 82222 | 1.89 | 0.55 | 15 | 6.60 | 9.60 | 6.85 | 9.97 | |
| B4 | 197396 | 4.53 | 0.55 | 15 | 6.60 | 9.60 | 16.45 | 23.93 | |
| B5 | 113836 | 2.61 | 0.55 | 15 | 6.60 | 9.60 | 9.49 | 13.80 | |
| B6 | 78007 | 1.79 | 0.55 | 15 | 6.60 | 9.60 | 6.50 | 9.46 | |
| B7 | 99045 | 2.27 | 0.55 | 15 | 6.60 | 9.60 | 8.25 | 12.01 | |
| B10 | 100017 | 2.30 | 0.55 | 15 | 6.60 | 9.60 | 8.33 | 12.12 | |
| B11 | 22567 | 0.52 | 0.55 | 15 | 6.60 | 9.60 | 1.88 | 2.74 | |
| | | | | | | **TOTAL=** | **69.56** | **101.18** | |
| **C** | | **0.00** | **0.55** | **15** | **6.6** | **9.60** | **0.00** | **0.00** | **MAJOR BASIN C** |
| **POND C** | **53919** | **1.24** | **0.55** | **15** | **6.6** | **9.60** | **4.49** | **6.54** | **POND C** |
| C1 | 114468 | 2.63 | 0.55 | 15 | 6.60 | 9.60 | 9.54 | 13.87 | |
| C3 | 119825 | 2.75 | 0.55 | 15 | 6.60 | 9.60 | 9.99 | 14.52 | |
| C5 | 43266 | 0.99 | 0.55 | 15 | 6.60 | 9.60 | 3.61 | 5.24 | |
| C6 | 56052 | 1.29 | 0.55 | 15 | 6.60 | 9.60 | 4.67 | 6.79 | |
| C7 | 120709 | 2.77 | 0.55 | 15 | 6.60 | 9.60 | 10.06 | 14.63 | |
| C9 | 107682 | 2.47 | 0.55 | 15 | 6.60 | 9.60 | 8.97 | 13.05 | |
| C10 | 102843 | 2.36 | 0.55 | 15 | 6.60 | 9.60 | 8.57 | 12.47 | |
| C11 | 140646 | 3.23 | 0.55 | 15 | 6.60 | 9.60 | 11.72 | 17.05 | |
| C13 | 74001 | 1.70 | 0.55 | 15 | 6.60 | 9.60 | 6.17 | 8.97 | |
| C14 | 84638 | 1.94 | 0.55 | 15 | 6.60 | 9.60 | 7.05 | 10.26 | |
| C15 | 56074 | 1.29 | 0.55 | 15 | 6.60 | 9.60 | 4.67 | 6.80 | |
| C16 | 82542 | 1.89 | 0.55 | 15 | 6.60 | 9.60 | 6.88 | 10.01 | |
| C17 | 143589 | 3.30 | 0.55 | 15 | 6.60 | 9.60 | 11.97 | 17.40 | |
| C19 | 142386 | 3.27 | 0.55 | 15 | 6.60 | 9.60 | 11.87 | 17.26 | |
| | | | | | | **TOTAL=** | **115.73** | **168.33** | |
| **D** | | | **0.55** | **15** | **6.6** | **9.6** | **0.00** | **0.00** | **MAJOR BASIN D** |
| **POND D** | | | **0.55** | **15** | **6.6** | **9.6** | **0.00** | **0.00** | **POND D** |
| D3 | 160863 | 3.69 | 0.55 | 15 | 6.60 | 9.60 | 13.41 | 19.50 | |
| D4 | 91285 | 2.10 | 0.55 | 15 | 6.60 | 9.60 | 7.61 | 11.06 | |
| D5 | 77384 | 1.78 | 0.55 | 15 | 6.60 | 9.60 | 6.45 | 9.38 | |
| D6 | 72137 | 1.66 | 0.55 | 15 | 6.60 | 9.60 | 6.01 | 8.74 | |
| D7 | 90920 | 2.09 | 0.55 | 15 | 6.60 | 9.60 | 7.58 | 11.02 | |
| D8 | 161804 | 3.71 | 0.55 | 15 | 6.60 | 9.60 | 13.48 | 19.61 | |
| D9 | 62324 | 1.43 | 0.55 | 15 | 6.60 | 9.60 | 5.19 | 7.55 | |
| D10 | 146449 | 3.36 | 0.55 | 15 | 6.60 | 9.60 | 12.20 | 17.75 | |
| D11 | 162882 | 3.74 | 0.55 | 15 | 6.60 | 9.60 | 13.57 | 19.74 | |
| D13 | 104629 | 2.40 | 0.55 | 15 | 6.60 | 9.60 | 8.72 | 12.68 | |
| D15 | 143551 | 3.30 | 0.55 | 15 | 6.60 | 9.60 | 11.96 | 17.40 | |
| D17 | 83731 | 1.92 | 0.55 | 15 | 6.60 | 9.60 | 6.98 | 10.15 | |
| D18 | 143652 | 3.30 | 0.55 | 15 | 6.60 | 9.60 | 11.97 | 17.41 | |
| D20 | 84646 | 1.94 | 0.55 | 15 | 6.60 | 9.60 | 7.05 | 10.26 | |
| D22 | 140917 | 3.24 | 0.55 | 15 | 6.60 | 9.60 | 11.74 | 17.08 | |
| D24 | 143359 | 3.29 | 0.55 | 15 | 6.60 | 9.60 | 11.95 | 17.38 | |
| D25 | 66434 | 1.53 | 0.55 | 15 | 6.60 | 9.60 | 5.54 | 8.05 | |
| D26 | 82466 | 1.89 | 0.55 | 15 | 6.60 | 9.60 | 6.87 | 10.00 | |
| D27 | 85335 | 1.96 | 0.55 | 15 | 6.60 | 9.60 | 7.11 | 10.34 | |
| D28 | 137975 | 3.17 | 0.55 | 15 | 6.60 | 9.60 | 11.50 | 16.72 | |
| D29 | 95923 | 2.20 | 0.55 | 15 | 6.60 | 9.60 | 7.99 | 11.63 | |
| D30 | 112040 | 2.57 | 0.55 | 15 | 6.60 | 9.60 | 9.34 | 13.58 | |
| D32 | 137575 | 3.16 | 0.55 | 15 | 6.60 | 9.60 | 11.46 | 16.68 | |
| D34 | 118915 | 2.73 | 0.55 | 15 | 6.60 | 9.60 | 9.91 | 14.41 | |
| D35 | 137176 | 3.15 | 0.55 | 15 | 6.60 | 9.60 | 11.43 | 16.63 | |
| D37 | 56826 | 1.30 | 0.55 | 15 | 6.60 | 9.60 | 4.74 | 6.89 | |
| D38 | 148846 | 3.42 | 0.55 | 15 | 6.60 | 9.60 | 12.40 | 18.04 | |
| D40 | 62752 | 1.44 | 0.55 | 15 | 6.60 | 9.60 | 5.23 | 7.61 | |
| | | | | | | **TOTAL=** | **259.40** | **377.31** | |
| OS1 | 34171 | 0.78 | 0.55 | 15 | 6.60 | 9.60 | 2.85 | 4.14 | |
| OS2 | 49046 | 1.13 | 0.55 | 15 | 6.60 | 9.60 | 4.09 | 5.94 | |
| OS3 | 61108 | 1.40 | 0.55 | 15 | 6.60 | 9.60 | 5.09 | 7.41 | |
| OS4 | 23931 | 0.55 | 0.55 | 15 | 6.60 | 9.60 | 1.99 | 2.90 | |
| OS5 | 17747 | 0.41 | 0.55 | 15 | 6.60 | 9.60 | 1.48 | 2.15 | |
| OS6 | 18252 | 0.42 | 0.55 | 15 | 6.60 | 9.60 | 1.52 | 2.21 | |
| OS7 | 24049 | 0.55 | 0.55 | 15 | 6.60 | 9.60 | 2.00 | 2.92 | |
| | | | | | | **TOTAL=** | **14.02** | **20.39** | |

**BENCHMARK:**

AN "X" CUT IN CONCRETE LOCATED WITHIN THE INTERSECTION OF LOIS ROAD EAST AND THE GULF COAST AND SANTA FE RAILROAD RIGHTS-OF-WAY, HAVING AN ELEVATION OF 729.3 FEET, A NORTHING COORDINATE VALUE OF 7,192,162.0, AND AN EASTING COORDINATE VALUE OF 2,374,666.1.

BEARINGS AND ELEVATIONS SHOWN HEREON ARE BASED ON NAD 83 TEXAS STATE PLANE COORDINATES, NORTH CENTRAL ZONE, NAVD 88.

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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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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STATE OF TEXAS
POND PLAN & DETAILS
RATIONAL CALCS

DATE 4/7/2025

| | |
|---|---|
| A | 1st SUBMITTAL TO JURISDICTION 4/7/2025 – KMB |
| B | 2nd SUBMITTAL TO JURISDICTION 5/12/2025 – KMB |

REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 87

CAD FILE: 24007256-DRAINAGE CALC SHEETS.DWG

| BASIN | INLET | AREA (AC) | SUMP/ON-GRADE | 100-YR FLOW (CFS) | 100-YR CARRYOVER FLOW (CFS) | CARRY OVER FROM INLET | 100-YR TOTAL FLOW (CFS) | 10-YR FLOW (CFS) | 10-YR CARRYOVER FLOW (CFS) | CARRY OVER FROM INLET | 10-YR TOTAL (CFS) | MAX GUTTER FLOW DEPTH (FT) | DEPTH OF DEPRESSION | LENGTH OF OPENING REQUIRED | LENGTH OF OPENING PROVIDED (FT) | MAX INLET CAPACITY (CFS) | 100-YR PERCENT CAPTURED (%) | 100-YR BYPASS FLOW (CFS) | 10-YR PERCENT CAPTURED (%) | 10-YR BYPASS FLOW (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | | 7 | 8 | 9 | | 10 | 11 | 12 | 13 | 14 | 16 | 17 | 18 | 19 | |
| A2 | A2 | 1.48 | SUMP | 7.82 | 0 | | 7.82 | 5.38 | 0 | | 5.38 | 0.5 | 0.5 | 5.8 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A3 | A3 | 1.83 | SUMP | 9.67 | 0 | | 9.67 | 6.65 | 0 | | 6.65 | 0.5 | 0.5 | 7.2 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A4 | A4 | 1.55 | SUMP | 8.16 | 0 | | 8.16 | 5.61 | 0 | | 5.61 | 0.5 | 0.5 | 6.1 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A5 | A5 | 1.48 | SUMP | 7.81 | 0 | | 7.81 | 5.37 | 0 | | 5.37 | 0.5 | 0.5 | 5.8 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A6 | A6 | 1.27 | SUMP | 6.69 | 0 | | 6.69 | 4.60 | 0 | | 4.60 | 0.5 | 0.5 | 5.0 | 5 | 6.7 | 100.00 | 0.00 | 100.00 | 0.00 |
| A7 | A7 | 1.48 | SUMP | 7.83 | 0 | | 7.83 | 5.38 | 0 | | 5.38 | 0.5 | 0.5 | 5.8 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A8 | A8 | 1.62 | SUMP | 8.54 | 0 | | 8.54 | 5.87 | 0 | | 5.87 | 0.5 | 0.5 | 6.4 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A9 | A9 | 1.54 | SUMP | 8.15 | 0 | | 8.15 | 5.60 | 0 | | 5.60 | 0.5 | 0.5 | 6.1 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A11 | A11 | 2.63 | SUMP | 13.89 | 0 | | 13.89 | 9.55 | 0 | | 9.55 | 0.5 | 0.5 | 10.3 | 15 | 20.2 | 100.00 | 0.00 | 100.00 | 0.00 |
| A12 | A12 | 2.10 | SUMP | 11.07 | 0 | | 11.07 | 7.61 | 0 | | 7.61 | 0.5 | 0.5 | 8.2 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A15 | A15 | 3.77 | SUMP | 19.89 | 0 | | 19.89 | 13.67 | 0 | | 13.67 | 0.5 | 0.5 | 14.8 | 15 | 20.2 | 100.00 | 0.00 | 100.00 | 0.00 |
| A17 | A17 | 1.82 | SUMP | 9.61 | 0 | | 9.61 | 6.61 | 0 | | 6.61 | 0.5 | 0.5 | 7.2 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A18 | A18 | 1.54 | SUMP | 8.12 | 0 | | 8.12 | 5.59 | 0 | | 5.59 | 0.5 | 0.5 | 6.0 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A18.1 | A19 | 1.50 | SUMP | 7.94 | 1 | | 8.94 | 5.46 | 0 | | 5.46 | 0.5 | 0.5 | 6.6 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A19 | A19 | 1.00 | SUMP | 5.27 | 1 | | 6.27 | 3.62 | 0 | | 3.62 | 0.5 | 0.5 | 4.7 | 5 | 6.7 | 100.00 | 0.00 | 100.00 | 0.00 |
| A20 | A20 | 1.94 | SUMP | 10.23 | 0 | | 10.23 | 7.03 | 0 | | 7.03 | 0.5 | 0.5 | 7.6 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A21 | A21 | 2.69 | SUMP | 14.21 | 0 | | 14.21 | 9.77 | 0 | | 9.77 | 0.5 | 0.5 | 10.6 | 15 | 20.2 | 100.00 | 0.00 | 100.00 | 0.00 |
| A23 | A24 | 2.56 | SUMP | 13.54 | 0 | | 13.54 | 9.31 | 0 | | 9.31 | 0.5 | 0.5 | 10.1 | 15 | 20.2 | 100.00 | 0.00 | 100.00 | 0.00 |
| A24 | A26 | 2.45 | SUMP | 12.96 | 0 | | 12.96 | 8.91 | 0 | | 8.91 | 0.5 | 0.5 | 9.6 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A25 | A27 | 1.66 | SUMP | 8.76 | 0 | | 8.76 | 6.02 | 0 | | 6.02 | 0.5 | 0.5 | 6.5 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A26 | A28 | 1.15 | SUMP | 6.05 | 0 | | 6.05 | 4.16 | 0 | | 4.16 | 0.5 | 0.5 | 4.5 | 5 | 6.7 | 100.00 | 0.00 | 100.00 | 0.00 |
| A27 | A29 | 2.05 | SUMP | 10.81 | 0 | | 10.81 | 7.43 | 0 | | 7.43 | 0.5 | 0.5 | 8.0 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A30 | A32 | 2.43 | SUMP | 12.86 | 0 | | 12.86 | 8.84 | 0 | | 8.84 | 0.5 | 0.5 | 9.6 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A31 | A33 | 1.77 | SUMP | 9.35 | 0 | | 9.35 | 6.43 | 0 | | 6.43 | 0.5 | 0.5 | 7.0 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| A32 | A34 | 3.35 | SUMP | 17.68 | 0 | | 17.68 | 12.16 | 0 | | 12.16 | 0.5 | 0.5 | 13.2 | 15 | 20.2 | 100.00 | 0.00 | 100.00 | 0.00 |
| A-37 | A39 | 0.67 | SUMP | 3.55 | 0 | | 3.55 | 2.44 | 0 | | 2.44 | 0.5 | 0.5 | 2.6 | 5 | 6.7 | 100.00 | 0.00 | 100.00 | 0.00 |
| A-40 | A42 | 1.40 | SUMP | 7.40 | 0 | | 7.40 | 5.09 | 0 | | 5.09 | 0.5 | 0.5 | 5.5 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| B3 | B3 | 1.89 | SUMP | 9.97 | | | 9.97 | 6.85 | | | 6.85 | 0.5 | 0.5 | 7.4 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| B4 | B4 | 4.53 | SUMP | 23.93 | | | 23.93 | 16.45 | | | 16.45 | 0.5 | 0.5 | 17.8 | 20 | 26.9 | 100.00 | 0.00 | 100.00 | 0.00 |
| B5 | B5 | 2.61 | SUMP | 13.80 | | | 13.80 | 9.49 | | | 9.49 | 0.5 | 0.5 | 10.3 | 15 | 20.2 | 100.00 | 0.00 | 100.00 | 0.00 |
| B6 | B6 | 1.79 | SUMP | 9.46 | | | 9.46 | 6.50 | | | 6.50 | 0.5 | 0.5 | 7.0 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |
| B10 | B11 | 2.30 | SUMP | 12.12 | | | 12.12 | 8.33 | | | 8.33 | 0.5 | 0.5 | 9.0 | 10 | 13.4 | 100.00 | 0.00 | 100.00 | 0.00 |

| BASIN | INLET | AREA (AC) | SUMP/ON-GRADE | 100-YR FLOW (CFS) | 100-YR CARRYOVER FLOW (CFS) | LONG SLOPE (FT/FT) | PAVEMENT CROSS SLOPE (FT/FT) | GUTTER CROSS SLOPE (FT/FT) | DEPTH OF FLOW (FT) | SPREAD OF FLOW (FT) | CROSS SLOPE (FT/FT) | MANNINGS COEFF "N" | REQUIRED LENGTH ON OF INLET | LENGTH PROVIDED | L/Lt | EFFICIENCY "E" | INLET CAPACITY | 100-YR PERCENT CAPTURED (%) | 100-YR BYPASS FLOW (CFS) | 10-YR BYPASS FLOW (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | | | | | | | | |
| A1 | A1 | 3.81 | ON-GRADE | 20.10 | 0 | 0.0127 | 0.02 | 0.2 | 0.5 | 15.5 | 0.02 | 0.013 | 20.31 | 20 | 0.98 | 1.00 | 19.38 | 96.5 | 0.71 | 0 |
| A10 | A10 | 2.11 | ON-GRADE | 11.16 | 0 | 0.0168 | 0.02 | 0.2 | 0.5 | 15.5 | 0.02 | 0.013 | 17.25 | 20 | 1.16 | 1.00 | 15.87 | 100.0 | 0.00 | 0 |
| A22 | A22 | 2.59 | ON-GRADE | 13.70 | 0 | 0.01 | 0.02 | 0.2 | 0.5 | 15.5 | 0.02 | 0.013 | 16.09 | 20 | 1.24 | 1.00 | 22.99 | 100.0 | 0.00 | 0 |
| A29 | A31 | 3.51 | ON-GRADE | 18.54 | 0 | 0.006 | 0.02 | 0.2 | 0.5 | 15.5 | 0.02 | 0.013 | 15.67 | 20 | 1.28 | 1.00 | 33.12 | 100.0 | 0.00 | 0 |
| B1 | B1 | 2.40 | ON-GRADE | 12.67 | | 0.006 | 0.02 | 0.2 | 0.5 | 15.5 | 0.02 | 0.013 | 13.36 | 15 | 1.12 | 1.00 | 16.69 | 100.0 | 0.00 | 0 |
| B2 | B2 | 0.85 | ON-GRADE | 4.50 | | 0.006 | 0.02 | 0.2 | 0.5 | 15.5 | 0.02 | 0.013 | 8.65 | 10 | 1.16 | 1.00 | 6.36 | 100.0 | 0.00 | 0 |
| B7 | B7 | 2.27 | ON-GRADE | 12.01 | | 0.006 | 0.02 | 0.2 | 0.5 | 15.5 | 0.02 | 0.013 | 13.06 | 15 | 1.15 | 1.00 | 16.69 | 100.0 | 0.00 | 0 |
| B11 | B12 | 0.52 | ON-GRADE | 2.74 | | 0.01 | 0.02 | 0.2 | 0.5 | 15.5 | 0.02 | 0.013 | 8.18 | 10 | 1.22 | 1.00 | 4.41 | 100.0 | 0.00 | 0 |

STREET SECTION MODELED FOR
WORST CASE SCENARIO IN A SUMP

## Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, May 12 2025

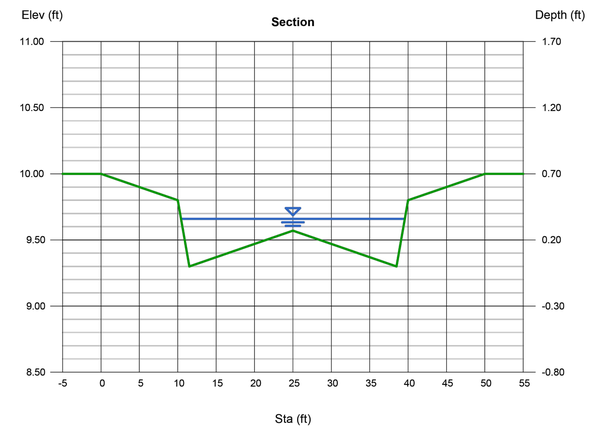
### Typical Street Section

**User-defined**
Invert Elev (ft) = 9.30
Slope (%) = 0.60
N-Value = 0.013

**Calculations**
Compute by: Known Q
Known Q (cfs) = 20.10

**Highlighted**
Depth (ft) = 0.36
Q (cfs) = 20.10
Area (sqft) = 6.46
Velocity (ft/s) = 3.11
Wetted Perim (ft) = 29.28
Crit Depth, Yc (ft) = 0.39
Top Width (ft) = 29.16
EGL (ft) = 0.51

**(Sta, El, n)-(Sta, El, n)...**
( 0.00, 10.00)-(10.00, 9.80, 0.013)-(11.50, 9.30, 0.013)-(25.00, 9.57, 0.013)-(38.50, 9.30, 0.013)-(40.00, 9.80, 0.013)-(50.00, 10.00, 0.013)




**BENCHMARK:**
AN "X" CUT IN CONCRETE LOCATED WITHIN THE INTERSECTION OF LOIS ROAD EAST AND THE GULF COAST AND SANTA FE RAILROAD RIGHTS-OF-WAY, HAVING AN ELEVATION OF 729.3 FEET, A NORTHING COORDINATE VALUE OF 7,192,162.0, AND AN EASTING COORDINATE VALUE OF 2,374,666.1.

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KALTER CAPITAL
LOIS ROAD ESTATES – FILING NOS. 1 & 2
CITY OF SANGER, COUNTY OF DENTON,
STATE OF TEXAS
POND PLAN & DETAILS
INLET CALCS 1

DATE 4/7/2025

| | | |
|---|---|---|
| A | 1st SUBMITTAL TO JURISDICTION 4/7/2025 – KMB | |
| B | 2nd SUBMITTAL TO JURISDICTION 5/12/2025 – KMB | |

REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 88

CAD FILE: 24007256-DRAINAGE CALC SHEETS.DWG

| PIPE | Start Node | Stop Node | Invert (Start) (ft) | Invert (Stop) (ft) | Flow (cfs) | Length (3D) (ft) | Slope (ft/ft) | Diameter (in) | Manning's n | Friction Slope $f_f$(ft/ft) | Velocity (ft/s) | Capacity (Full Flow) (cfs) | Design Capacity %full(%) | Hydraulic Grade Line (In) (ft) | Hydraulic Grade Line (Out) (ft) | Energy Grade Line (In) (ft) | Energy Grade Line (Out) | Headloss(ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RUN 1** | | | | | | | | | | | | | | | | | | |
| P1.1 | PH1-MH 1.8 | PH1-MH 1.7 | 710.76 | 705.77 | 7.4 | 199.9 | 0.025 | 24 | 0.013 | 0.022 | 8.97 | 35.74 | 20.7 | 711.73 | 706.39 | 712.1 | 707.64 | 0.03 |
| P1.1.1 | MH-10 | PH1-MH 1.1 | 690.48 | 690.35 | 7.4 | 23.4 | 0.006 | 24 | 0.013 | 0.001 | 2.36 | 16.86 | 43.9 | 693.93 | 693.91 | 694.02 | 693.99 | 0.19 |
| P1.2 | PH1-MH 1.7 | PH1-MH 1.6 | 705.67 | 701.37 | 7.4 | 171.9 | 0.025 | 24 | 0.013 | 0.008 | 8.98 | 35.77 | 20.7 | 706.64 | 705.54 | 707.01 | 705.63 | 0.02 |
| P1.3 | PH1-MH 1.6 | PH1-MH 1.5 | 701.27 | 699.89 | 7.4 | 91.9 | 0.015 | 24 | 0.013 | 0.001 | 2.36 | 27.73 | 26.7 | 705.52 | 705.42 | 705.61 | 705.51 | 0.35 |
| P1.4 | PH1-MH 1.5 | PH1-MH 1.4 | 699.89 | 698.21 | 27.89 | 105.6 | 0.016 | 24 | 0.013 | 0.015 | 8.88 | 28.53 | 97.8 | 705.07 | 703.47 | 706.3 | 704.69 | 0.29 |
| P1.5 | PH1-MH 1.4 | PH1- MH 1.3 | 698.11 | 694.77 | 27.89 | 222.8 | 0.015 | 24 | 0.013 | 0.015 | 8.88 | 27.7 | 100.7 | 703.18 | 699.79 | 704.4 | 701.02 | 0.28 |
| P1.6 | PH1- MH 1.3 | PH1-MH 1.2 | 694.67 | 692.17 | 27.89 | 249.8 | 0.01 | 24 | 0.013 | 0.015 | 8.88 | 22.63 | 123.2 | 699.51 | 695.71 | 700.73 | 696.94 | 0.07 |
| P1.7 | PH1-MH 1.2 | PH1-MH 1.1 | 691.67 | 690.35 | 27.89 | 253.9 | 0.005 | 30 | 0.013 | 0.005 | 5.68 | 29.58 | 94.3 | 695.64 | 694.47 | 696.14 | 694.97 | 0.77 |
| P1.8 | PH1-MH 1.1 | O-5 | 690.35 | 690 | 54.79 | 68.1 | 0.005 | 30 | 0.013 | 0.018 | 11.16 | 29.41 | 186.3 | 693.71 | 692.5 | 695.65 | 694.44 | (N/A) |
| **RUN 2** | | | | | | | | | | | | | | | | | | |
| P2.1 | PH1-MH 2.10 | MH 2-9 | 715.16 | 714.79 | 31.4 | 69.7 | 0.008 | 24 | 0.013 | 0.019 | 9.99 | 19.74 | 159.1 | 721.08 | 720.15 | 722.64 | 721.7 | 0.17 |
| P2.2 | MH 2-9 | MH 2-8 | 714.29 | 712.33 | 51.56 | 262 | 0.007 | 36 | 0.013 | 0.006 | 7.29 | 57.69 | 89.4 | 719.98 | 718.41 | 720.8 | 719.24 | 0.11 |
| P2.2.1 | PH1-MH 2.1.1 | MH 2-2 | 695.02 | 694.55 | 7.83 | 47 | 0.01 | 24 | 0.013 | 0.001 | 2.49 | 22.66 | 34.6 | 699.51 | 699.45 | 699.61 | 699.55 | 1.67 |
| P2.3 | MH 2-8 | MH 2-7 | 712.23 | 710.66 | 51.56 | 262 | 0.006 | 36 | 0.013 | 0.006 | 7.29 | 51.63 | 99.9 | 718.3 | 716.73 | 719.12 | 717.56 | 0.97 |
| P2.4 | MH 2-7 | MH-9 | 710.65 | 708.61 | 80.62 | 22 | 0.039 | 36 | 0.013 | 0.015 | 11.41 | 131.97 | 61.1 | 715.76 | 715 | 717.78 | 717.02 | 1.93 |
| P2.5 | MH-9 | MH 2-6 | 708.51 | 700.19 | 98.46 | 224.8 | 0.037 | 36 | 0.013 | 0.022 | 13.93 | 128.29 | 76.7 | 713.07 | 708.17 | 716.09 | 711.19 | 0.74 |
| P2.6 | MH 2-6 | MH 2-5 | 700.09 | 699.17 | 98.46 | 205.3 | 0.004 | 42 | 0.013 | 0.01 | 10.23 | 67.35 | 146.2 | 707.43 | 705.47 | 709.06 | 707.09 | 1.15 |
| P2.7 | MH 2-5 | MH 2-4 | 699.07 | 698.29 | 98.46 | 156.4 | 0.005 | 42 | 0.013 | 0.01 | 10.23 | 71.06 | 138.6 | 704.32 | 702.82 | 705.94 | 704.45 | 0.75 |
| P2.8 | MH 2-4 | MH 2-3 | 697.29 | 693.45 | 176.26 | 255.7 | 0.015 | 54 | 0.013 | 0.008 | 11.08 | 240.97 | 73.1 | 702.07 | 700.02 | 703.98 | 701.93 | 0.1 |
| P2.9 | MH 2-3 | MH 2-2 | 692.8 | 691.65 | 176.26 | 190.3 | 0.006 | 60 | 0.013 | 0.005 | 8.98 | 202.45 | 87.1 | 699.91 | 699.04 | 701.16 | 700.29 | 0.16 |
| P2.10 | MH 2-2 | MH 2-1 | 691.55 | 690.58 | 212 | 175.2 | 0.006 | 60 | 0.013 | 0.007 | 10.8 | 201.21 | 105.4 | 698.89 | 697.81 | 700.7 | 699.62 | 0.99 |
| P2.11 | MH 2-1 | O-1 | 690.58 | 690 | 220.16 | 74.6 | 0.008 | | 0.013 | 0.004 | 8.81 | 291.95 | 75.4 | 696.82 | 696.49 | 698.02 | 697.7 | (N/A) |
| **RUN 3** | | | | | | | | | | | | | | | | | | |
| P3.1 | MH 4-6 | MH 4-5 | 718.21 | 717.96 | 30.64 | 41.9 | 0.006 | 30 | 0.013 | 0.006 | 6.24 | 31.67 | 96.8 | 724.45 | 724.22 | 725.06 | 724.83 | 0.75 |
| P3.2 | MH 4-5 | MH 4-4 | 717.86 | 716.03 | 30.64 | 305 | 0.006 | 30 | 0.013 | 0.006 | 6.24 | 31.77 | 96.4 | 723.47 | 721.77 | 724.07 | 722.37 | 0.32 |
| P3.3 | MH 4-4 | MH 4-3 | 715.93 | 714.19 | 52.92 | 290 | 0.006 | 30 | 0.013 | 0.017 | 10.78 | 31.77 | 166.6 | 721.45 | 716.52 | 723.26 | 718.44 | 0.18 |
| P3.4 | MH 4-3 | MH 4-2 | 713.72 | 710.49 | 66.64 | 290 | 0.011 | 36 | 0.013 | 0.01 | 11.33 | 70.39 | 94.7 | 716.33 | 713.71 | 717.95 | 715.09 | 1.11 |
| P3.5 | MH 4-2 | MH 4-1 | 709.99 | 704.19 | 66.64 | 290.1 | 0.02 | 36 | 0.013 | 0.02 | 14.44 | 94.31 | 70.7 | 712.6 | 706.86 | 714.22 | 708.42 | 0.16 |
| P3.6 | MH 4-1 | MH 2-4 | 704.09 | 698.29 | 66.64 | 290.1 | 0.02 | 36 | 0.013 | 0.012 | 14.47 | 94.32 | 70.7 | 706.7 | 703.55 | 708.32 | 704.93 | 1.47 |
| **RUN 4** | | | | | | | | | | | | | | | | | | |
| P4.1 | SD-MH_19 (STRM) | MH 2-7 | 714.15 | 711.66 | 20.9 | 332 | 0.008 | 30 | 0.013 | 0.003 | 4.26 | 35.52 | 58.8 | 718.76 | 717.9 | 719.04 | 718.18 | 2.14 |
| **RUN 5** | | | | | | | | | | | | | | | | | | |
| P5.1 | PH1-MH 5.1 | MH 2-9 | 715.44 | 715.19 | 20.16 | 42 | 0.006 | 24 | 0.013 | 0.008 | 6.42 | 17.47 | 115.4 | 721.24 | 720.9 | 721.88 | 721.54 | 0.93 |
| **RUN 6** | | | | | | | | | | | | | | | | | | |
| P6.1 | PH1-MH 6-1 | MH 4-3 | 714.81 | 714.39 | 24.44 | 42 | 0.01 | 30 | 0.013 | 0.004 | 4.98 | 41.05 | 59.5 | 717.62 | 717.47 | 718 | 717.86 | 1.14 |
| **RUN 7** | | | | | | | | | | | | | | | | | | |
| P7.1 | PH1 - MH 7.3 | PH1- MH 7.2 | 721.09 | 719.98 | 17.17 | 148.1 | 0.007 | 24 | 0.013 | 0.006 | 5.47 | 19.58 | 87.7 | 724.54 | 723.69 | 725.01 | 724.15 | 0.26 |
| P7.2 | PH1- MH 7.2 | PH1- MH 7.1 | 719.48 | 718.03 | 40.94 | 290 | 0.005 | 30 | 0.013 | 0.01 | 8.34 | 29 | 141.2 | 723.43 | 720.54 | 724.51 | 721.62 | 0.39 |
| P7.3 | PH1- MH 7.1 | O-3 | 717.53 | 717 | 86.34 | 55.9 | 0.009 | | 0.013 | 0.004 | 11.03 | 120.34 | 71.7 | 720.15 | 720.15 | 721.21 | 720.95 | (N/A) |
| **RUN 8** | | | | | | | | | | | | | | | | | | |
| P8.1 | PH1-MH 8.1 | PH1- MH 7.2 | 720.25 | 719.98 | 23.77 | 52.9 | 0.005 | 24 | 0.013 | 0.011 | 7.57 | 16.16 | 147.1 | 724.55 | 723.97 | 725.44 | 724.86 | 0.54 |
| **RUN 9** | | | | | | | | | | | | | | | | | | |
| P9.1 | PH1-MH 9.1 | PH1- MH 7.1 | 719.5 | 718.03 | 45.4 | 492.9 | 0.003 | 36 | 0.013 | 0.004 | 6.42 | 36.42 | 124.6 | 722.86 | 720.55 | 723.5 | 721.35 | 0.4 |
| **POND A OUTFALL** | | | | | | | | | | | | | | | | | | |
| POND A OUTFALL PIPE | POND A OUTFALL | O-6 | 690.13 | 688.93 | 37.36 | 117.7 | 0.01 | 24 | 0.013 | 0.027 | 11.89 | 22.87 | 163.4 | 694.11 | 690.86 | 696.31 | 693.1 | (N/A) |

Maximum velocity in the pipe shall not exceed 12 feet per second per § 10.106(d)(6)(B)(ii)

Provide Hydraulic calculations for laterals

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REVISIONS

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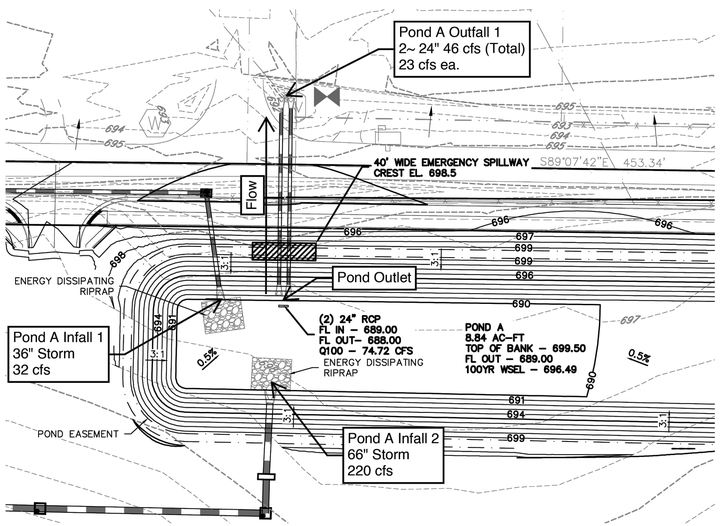
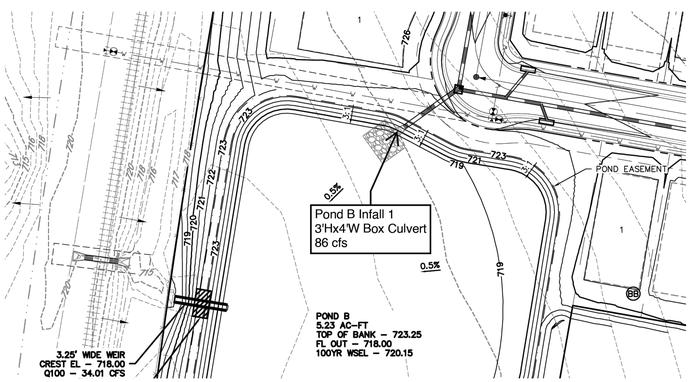
JOB 24007256
SHEET NO. 89

CAD FILE: 24007256-DRAINAGE CALC SHEETS.DWG

## Pond A Infalls & Outfalls for RipRap Calculations

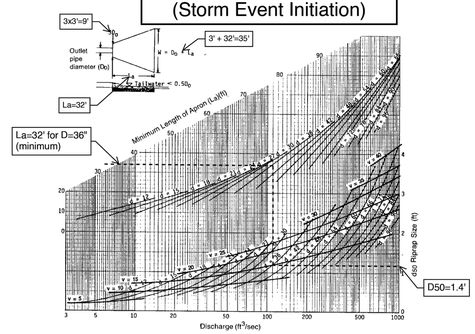



## Pond B Infalls & Outfalls for RipRap Calculations




iSWM™ Technical Manual — Hydraulics

### Pond A Infall 1 Low Tailwater (Storm Event Initiation)




Curves may not be extrapolated.

**Figure 4.2 Design of Riprap Apron under Minimum Tailwater Conditions**

**(Source: USDA, SCS, 1975)**

Energy Dissipation — HA-213
April 2010, Revised 9/2014

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### Pond A Infall 2 Low Tailwater (Storm Event Initiation)

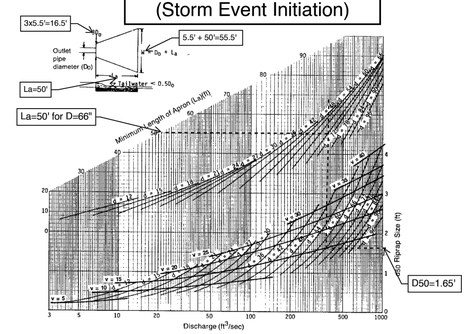


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**Figure 4.2 Design of Riprap Apron under Minimum Tailwater Conditions**

**(Source: USDA, SCS, 1975)**

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iSWM™ Technical Manual — Hydraulics

### Pond A Outfall 1 Low Tailwater (Channel Empty)

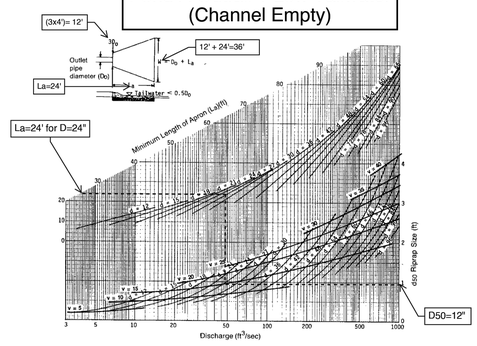


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**Figure 4.2 Design of Riprap Apron under Minimum Tailwater Conditions**

**(Source: USDA, SCS, 1975)**

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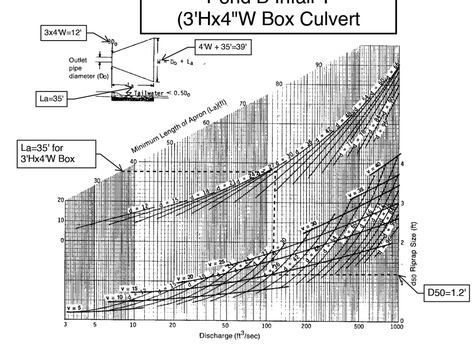
iSWM™ Technical Manual — Hydraulics

### Pond B Infall 1 (3'Hx4"W Box Culvert

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REVISIONS

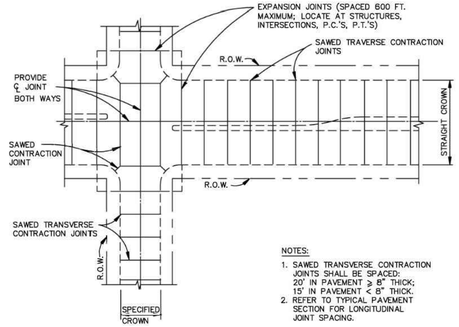
DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 90

CAD FILE: 24007256–DRAINAGE CALC SHEETS.DWG

## GENERAL NOTES:

1. REINFORCED CONCRETE PAVEMENT:
   A. ALL CURBS SHALL BE PLACED INTEGRAL WITH PAVEMENT UNLESS OTHERWISE APPROVED BY THE OWNER.
   B. CURBS SHALL MEET THE SAME COMPRESSIVE STRENGTH AS SPECIFIED FOR THE PAVEMENT.
   C. BAR LAPS SHALL BE 30 DIAMETERS.
   D. REINFORCING BARS SHALL BE SUPPORTED BY CHAIRS OR OTHER DEVICES APPROVED BY THE OWNER.
2. SUBGRADE: (UNLESS OTHERWISE SPECIFIED BY OWNER)
   A. SUBGRADE UNDER ALL PAVEMENTS SHALL BE STABILIZED TO A MINIMUM DEPTH OF 6" WITH HYDRATED LIME OR CEMENT WHEN THE P.I. OF THE INPLACE MATERIAL IS GREATER THAN 15. LABORATORY TESTS MUST BE PERFORMED TO DETERMINE THE AMOUNT OF LIME OR CEMENT REQUIRED TO LOWER THE P.I. TO 15 OR BELOW. SATURATION P.I. (PH ≥ 12.4) WILL BE THE LIMIT WHEN A SOIL'S P.I. CANNOT BE BROUGHT TO 15 OR LOWER.
   B. WHERE THE INPLACE MATERIAL HAS A P.I. OF LESS THAN 15, THE SUBGRADE SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 6" AND RECOMPACTED.
3. IF THE ROADWAY IS A DESIGNATED BIKE ROUTE OR BIKE USAGE IS ANTICIPATED, REFER TO NCTCOG'S REGIONAL BICYCLE AND PEDESTRIAN FACILITIES DESIGN MANUAL FOR DESIGN GUIDANCE.

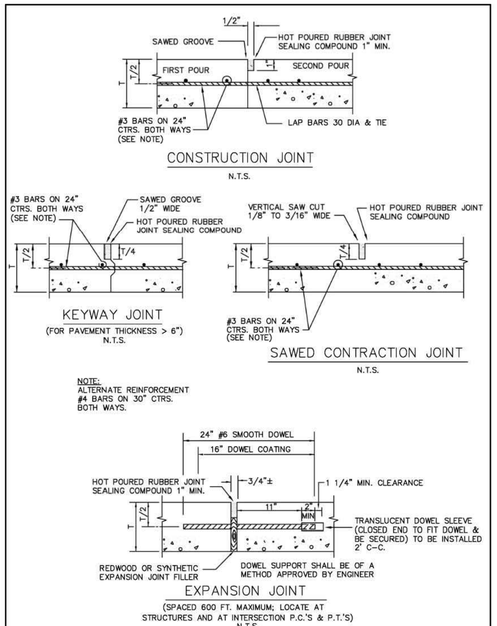
| PAVEMENT SYSTEMS | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 302,303 | |
|---|---|---|---|
| GENERAL NOTES | | DATE OCT. '04 | STANDARD DRAWING NO. 2190 |



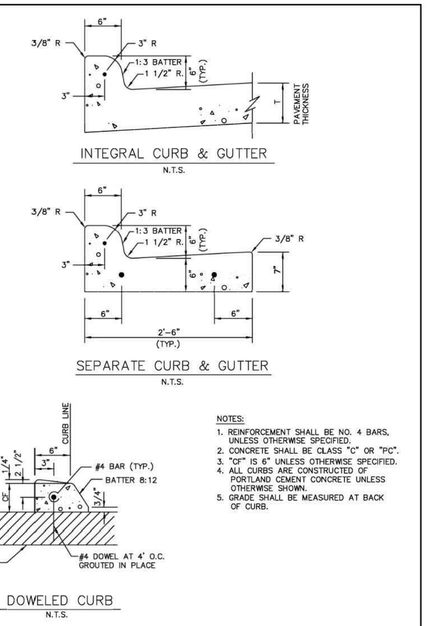

NOTES:
1. SAWED TRANSVERSE CONTRACTION JOINTS SHALL BE SPACED: 20' IN PAVEMENT ≥ 8" THICK; 15' IN PAVEMENT < 8" THICK.
2. REFER TO TYPICAL PAVEMENT SECTION FOR LONGITUDINAL JOINT SPACING.

SPACING DIAGRAM FOR TRANSVERSE JOINTS
N.T.S.

| REINFORCED CONCRETE PAVEMENT | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 303.5.4. | |
|---|---|---|---|
| TRANSVERSE JOINT SPACING | | DATE OCT. '04 | STANDARD DRAWING NO. 2060 |

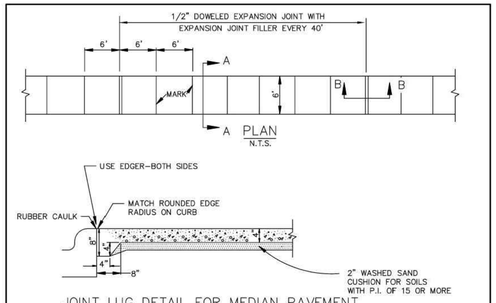


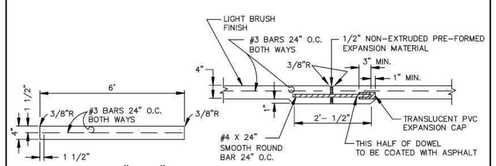

| REINFORCED CONCRETE PAVEMENT | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 303.5.4. | |
|---|---|---|---|
| JOINTS | | DATE OCT. '04 | STANDARD DRAWING NO. 2050 |




NOTES:
1. REINFORCEMENT SHALL BE NO. 4 BARS, UNLESS OTHERWISE SPECIFIED.
2. CONCRETE SHALL BE CLASS "C" OR "PC".
3. "CF" IS 6" UNLESS OTHERWISE SPECIFIED.
4. ALL CURBS ARE CONSTRUCTED OF PORTLAND CEMENT CONCRETE UNLESS OTHERWISE SHOWN.
5. GRADE SHALL BE MEASURED AT BACK OF CURB.

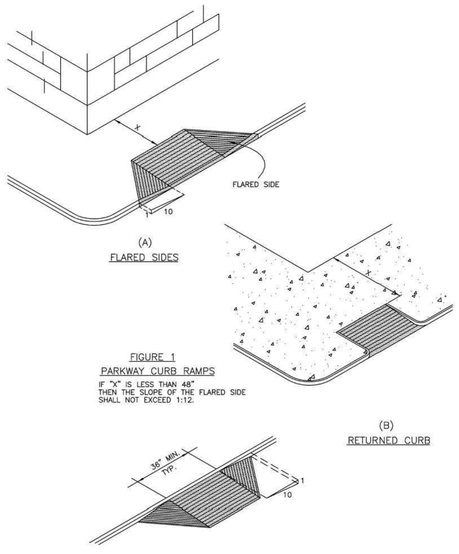
| CONCRETE CURB & GUTTER | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 305.1 | |
|---|---|---|---|
| INTEGRAL, SEPARATE, & DOWELED | | DATE OCT. '04 | STANDARD DRAWING NO. 2120 |




NOTE:
1. REFER TO STANDARD SPECIFICATION ITEM 305.2 FOR ALTERNATE REINFORCEMENT.
2. CROSS SLOPE OF SIDEWALK SHALL BE ± 1/4" PER FT. MIN. TO ± 3/8" PER FT. MAX.
3. OTHER THAN 6'-0" SIDEWALK WIDTH MAY BE SPECIFIED BY OWNER.
4. SIDEWALK SHALL BE CLASS "A" CONCRETE UNLESS OTHERWISE SPECIFIED BY OWNER.
5. ALL HONEYCOMB IN BACK OF CURB TO BE TROWEL-PLASTERED BEFORE POURING SIDEWALK.
6. LUG MAY BE FORMED BY SHAPING SUBGRADE TO APPROXIMATE DIMENSIONS SHOWN.

| REINFORCED CONCRETE SIDEWALKS | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 305.2 | |
|---|---|---|---|
| JOINTS AND SPACING | | DATE OCT. '04 | STANDARD DRAWING NO. 2170 |




| CURB RAMPS | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE | |
|---|---|---|---|
| | | DATE OCT. '04 | STANDARD DRAWING NO. 2125A |

### CURB RAMPS NOTES:

GENERAL REQUIREMENTS
CURB RAMPS SHALL BE CONSTRUCTED AS PER THE REQUIREMENTS AND SPECIFICATIONS OF THE TEXAS ACCESSIBILITY STANDARDS AND THE ADA & ABA ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES. (FEDERAL REGISTER/ VOL. 69, NO. 141, FRIDAY, JULY 23, 2004)

LOCATION:
CURB RAMPS UNDER THESE PROVISIONS, SHALL BE WHEREVER AN ACCESSIBLE ROUTE CROSSES A CURB.

SLOPE:
SLOPES ON CURB RAMPS SHALL BE MEASURED AS FOLLOWS: (Y:X = VERTICAL:HORIZONTAL)
A) TRANSITIONS FROM RAMPS TO WALKS, GUTTERS, OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.
B) MAXIMUM SLOPES OF ADJOINING GUTTERS, ROAD SURFACE IMMEDIATLEY ADJACENT TO THE CURB OR ACCESSIBLE ROUTE SHALL NOT EXCEED 1:20.
C) THE LEAST POSSIBLE SLOPE SHALL BE USED FOR ANY RAMP. THE MAXIMUM SLOPE OF A RAMP IN NEW CONSTRUCTION SHALL BE 1:12. THE MAXIMUM RISE FOR ANY RUN SHALL BE 30" (760 MM). CURB RAMPS AND RAMPS TO BE CONSTRUCTED ON EXISTING SITES OR IN EXISTING BUILDINGS OR FACILITIES MAY HAVE SLOPES AND RISES IF SPACE LIMITATIONS PROHIBIT THE USE OF A 1:12 SLOPE OR LESS, AS FOLLOWS:
   1. A SLOPE BETWEEN 1:10 AND 1:12 IS ALLOWED FOR A MAXIMUM RISE OF 6".
   2. A SLOPE BETWEEN 1:8 AND 1:10 IS ALLOWED FOR A MAXIMUM OF 3"
   A SLOPE STEEPER THAN 1:8 IS NOT ALLOWED.

RAMP WIDTH:
THE MINIMUM WIDTH OF A CURB RAMP SHALL BE 36" EXCLUSIVE OF FLARED SIDES.

SURFACE:
SURFACES OF CURB RAMPS, SHALL BE STABLE FIRM, AND SLIP RESISTANT. SURFACE TEXTURES SHALL CONSIST OF EXPOSED CRUSHED STONE AGGREGATE, ROUGHENED CONCRETE, RUBBER, RAISED ABRASIVE STRIPS, OR GROOVES. EXTENDING THE FULL WIDTH AND DEPTH OF THE CURB RAMP. SURFACES THAT ARE RAISED, ETCHED, OR GROOVED IN A WAY THAT WOULD ALLOW WATER TO ACCUMULATE ARE PROHIBITED. FOR PURPOSES OF WARNING, THE FULL WIDTH AND DEPTH OF CURB RAMPS SHALL HAVE A LIGHT REFLECTIVE VALUE AND TEXTURE THAT SIGNIFICANTLY CONTRASTS WITH THAT OF ADJOINING PEDESTRIAN ROUTES.

SIDES OF CURB RAMPS:
IF A CURB RAMP IS LOCATED WHERE PEDESTRIANS MUST WALK ACROSS THE RAMP, OR WHERE IT IS NOT PROTECTED BY HANDRAILS OR GUARDRAILS, IT SHALL HAVE FLARED SIDES. THE MAXIMUM SLOPE OF THE FLARE SHALL BE 1:10 (SEE FIG. 1 (A)). CURB RAMPS WITH RETURNED CURBS MAY BE USED WHERE PEDESTRIANS WOULD NOT WALK ACROSS THE RAMP. (SEE FIG. 1 (B))

BUILT-UP RAMPS:
BUILT-UP CURB RAMPS SHALL BE LOCATED SO THEY DO NOT PROJECT INTO VEHICULAR TRAFFIC LANES (SEE FIG. 2)

OBSTRUCTIONS:
CURB RAMPS SHALL BE LOCATED OR PROTECTED TO PREVENT THEIR OBSTRUCTION BY PARKED VEHICLES.

LOCATION AT MARKED CROSSINGS:
CURB RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARED SIDES.

DIAGONAL CURB RAMPS:
IF DIAGONAL (OR CORNER TYPE) CURB RAMPS HAVE RETURNED CURBS OR OTHER WELL DEFINED EDGES, SUCH EDGES SHALL BE PARALLEL TO THE DIRECTION OF PEDESTRIAN FLOW. THE BOTTOM OF DIAGONAL CURB RAMPS SHALL HAVE 48" (1220 MM) MINIMUM. IF DIAGONAL CURB RAMPS ARE PROVIDED AT MARKED CROSSINGS, THE 48" (1220 MM) CLEAR SPACE SHALL BE WITHIN THE MARKINGS. IF DIAGONAL CURB RAMPS HAVE FLARED SIDES, THEY SHALL ALSO HAVE AT LEAST A 24" (610 MM) LONG SEGMENT OF STRAIGHT CURB LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING. ANY RAISED ISLANDS IN CROSSINGS SHALL BE CUT THROUGH LEVEL WITH THE STREET OR HAVE CURB RAMPS AT BOTH SIDES AND A LEVEL AREA AT LEAST 48" (1220 MM) LONG BETWEEN THE CURB RAMPS IN THE PART OF THE ISLAND INTERSECTED BY THE CROSSINGS.

CONSTRUCTION
(A.) THE CONTRACTOR SHALL SAWCUT, REMOVE AND DISPOSE OFF-SITE THE REQUIRED EXISTING CONCRETE SIDEWALK, CURB AND GUTTER, TO CONSTRUCT THE PROPOSED RAMPS.
(B.) CONCRETE SIDEWALKS AND RAMPS SHALL BE MINIMUM 4" THICK, 4000 PSI, 5 SACK CONCRETE, REINFORCED WITH #3 BARS AT 14" CENTERS BOTH WAYS, PLACED OVER A 2" THICK SAND CUSHION EMBEDMENT.
(C.) THE CONTRACTOR SHALL USE 1" PREMOLDED EXPANSION JOINT MATERIAL BETWEEN THE PROPOSED SIDEWALKS AND RAMPS AT THE BACK OF CURBS, AND AT JOINTS AT NO EXTRA PAY.
(D.) DUMMY JOINT REQUIRED EVERY 4' IN 4' WIDE SIDEWALKS AND EVERY 5' IN 6' WIDE SIDEWALK.

| CURB RAMPS | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE | |
|---|---|---|---|
| | | DATE OCT. '04 | STANDARD DRAWING NO. 2125B |

Please update details to NCTCOG latest details (Aug 2023)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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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CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS
CONSTRUCTION DETAILS
STREET DETAILS

DATE 4/7/2025

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| B | 2ND SUBMITTAL TO JURISDICTION 5/12/2025 – KMB |

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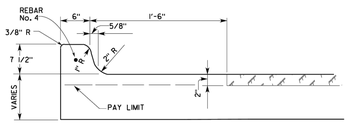
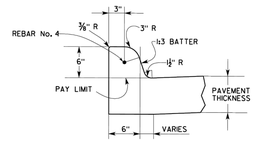
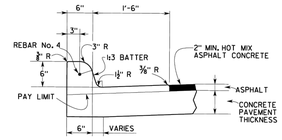


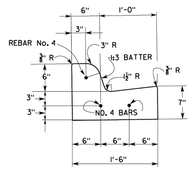

SPECIAL CURB & GUTTER



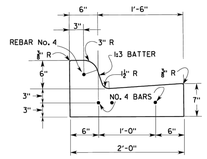

INTEGRAL CURB



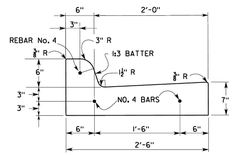

INTEGRAL CURB & GUTTER



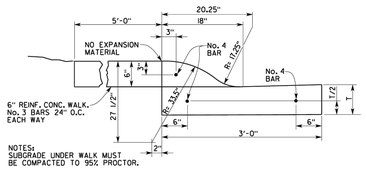

1'-6" SEPARATE CURB AND GUTTER




2'-0" SEPARATE CURB AND GUTTER




2'-6" SEPARATE CURB AND GUTTER




NOTES:
SUBGRADE UNDER WALK MUST BE COMPACTED TO 95% PROCTOR.

MOUNTABLE CURB AND GUTTER DETAILS
REINF. CONC. WALK DETAILS

NOTES:

1. ALL REINFORCEMENT STEEL SHALL BE MINIMUM No. 4 BARS. EXCEPT FOR CBD AS SHOWN ON SHEET No. 1008A.
2. SEPARATE CURB WITH 12" OR 18" GUTTER SHALL BE USED ONLY AS REPLACEMENT TO MATCH EXISTING CONDITIONS.
3. FOR CONNECTING SEPARATE CURB AND GUTTER TO AN EXISTING CONCRETE STREET, No.4 BARS MUST BE PLACED EVERY 24" WITH NO SEPARATE PAY ITEM.

*SEE GENERAL NOTES ON SHEET No. 1007A FOR FURTHER INFORMATION.

| PAVING DETAILS | |
|---|---|
| CURB AND GUTTER | |
| DETAILS | |
| DEPARTMENT OF PUBLIC WORKS CITY OF DALLAS, TEXAS | |
| DRAWINGS NOT TO SCALE REVISED: DECEMBER 2021 | SHEET No. 1007B |

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STREET DETAILS

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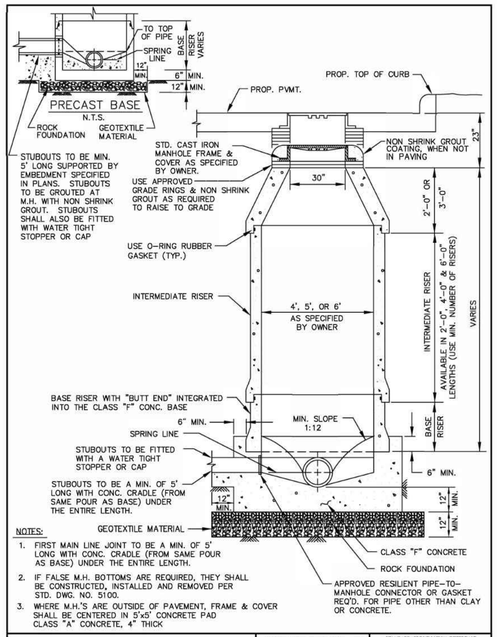
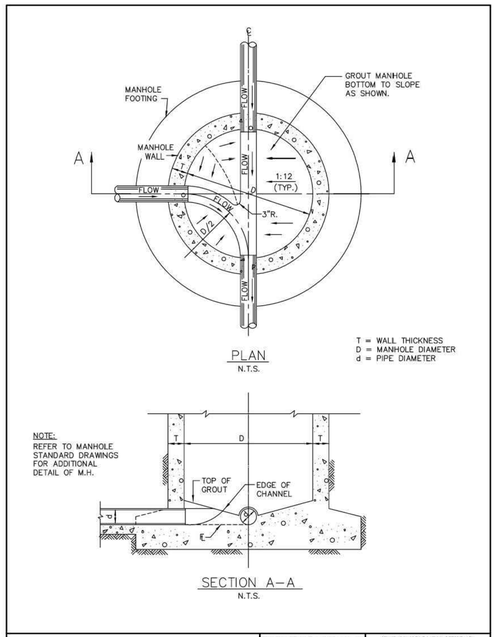



| WASTEWATER MANHOLE PRECAST | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 502.1.4.1.2* | DATE OCT. '04 | STANDARD DRAWING NO. 5020 |
|---|---|---|---|---|

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*




| WASTEWATER MANHOLE LINE INTERSECTION | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 502.1 | DATE OCT. '04 | STANDARD DRAWING NO. 5090 |
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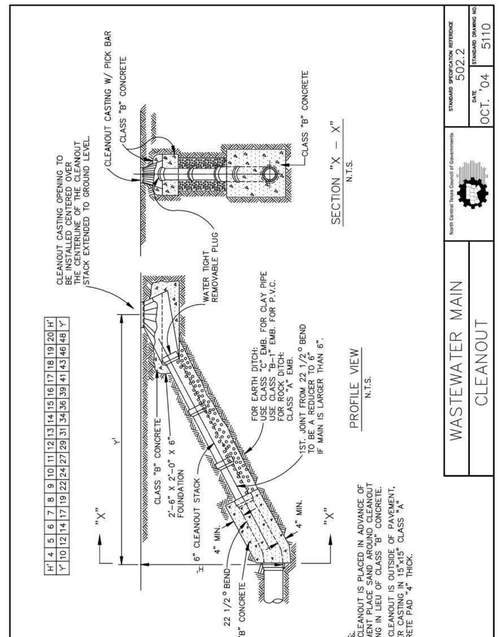
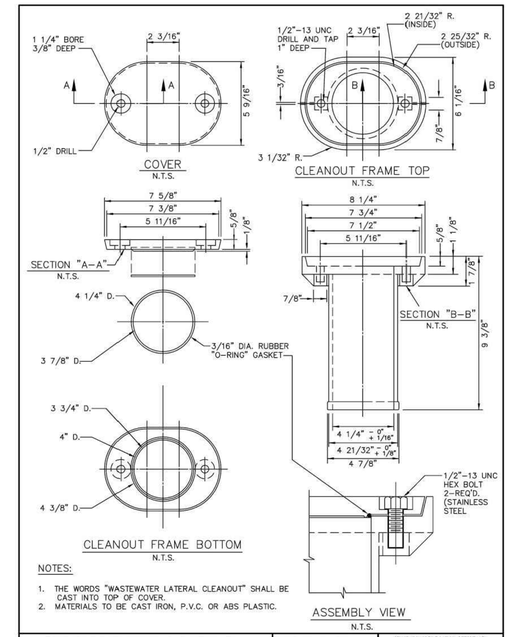
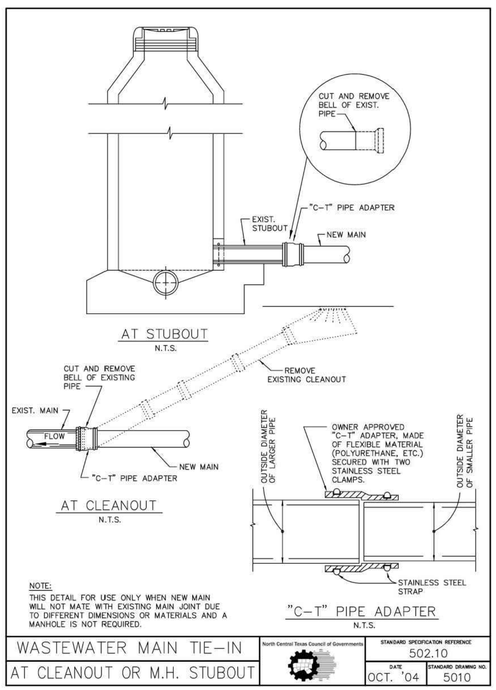
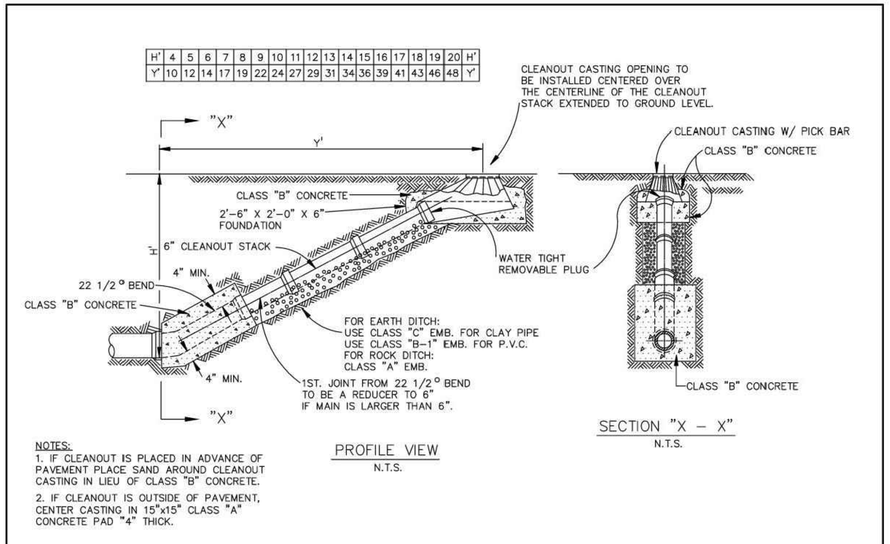



| WASTEWATER LATERAL CLEANOUT FRAME & COVER | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 502.10 | DATE OCT. '04 | STANDARD DRAWING NO. 5140 |
|---|---|---|---|---|




| WASTEWATER MAIN TIE-IN AT CLEANOUT OR M.H. STUBOUT | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 502.10 | DATE OCT. '04 | STANDARD DRAWING NO. 5010 |
|---|---|---|---|---|




| STANDARD DRAWING NO. 5110 | WASTEWATER MAIN CLEANOUT | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 502.2 | DATE OCT. '04 | STANDARD DRAWING NO. 5110 |
|---|---|---|---|---|---|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JOB 24007256
SHEET NO. 93

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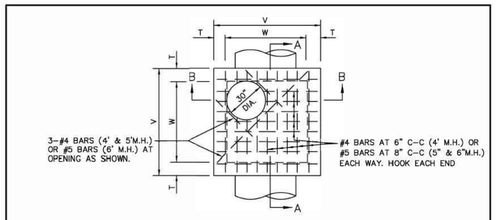
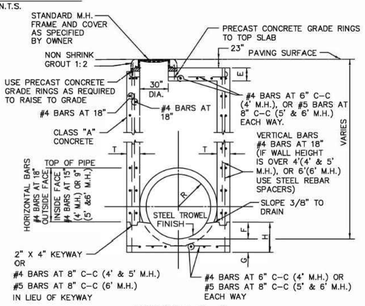



PLAN
N.T.S.

| M.H. SIZE(W) | V | T | E | F | G | H |
|---|---|---|---|---|---|---|
| 4' | 5'-4" | 8" | 6" | 9" | 6" | 1'-3" |
| 5' | 6'-4" | 8" | 6" | 12" | 8" | 1'-8" |
| 6' | 7'-6" | 9" | 9" | 16" | 10" | 2'-2" |

TABLE OF DIMENSIONS
N.T.S.



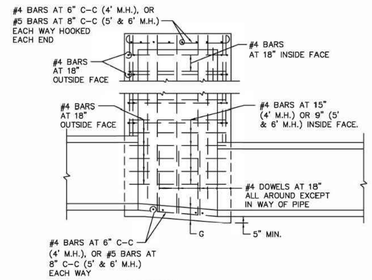

SECTION B-B
N.T.S.

STORM WATER MANHOLE
4', 5', OR 6' SQUARE

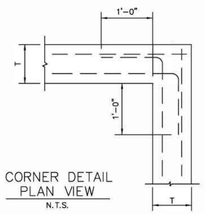
North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 502.1.4.1º
DATE OCT. '04
STANDARD DRAWING NO. 6010A

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*




SECTION A-A
N.T.S.




CORNER DETAIL
PLAN VIEW
N.T.S.

NOTES:

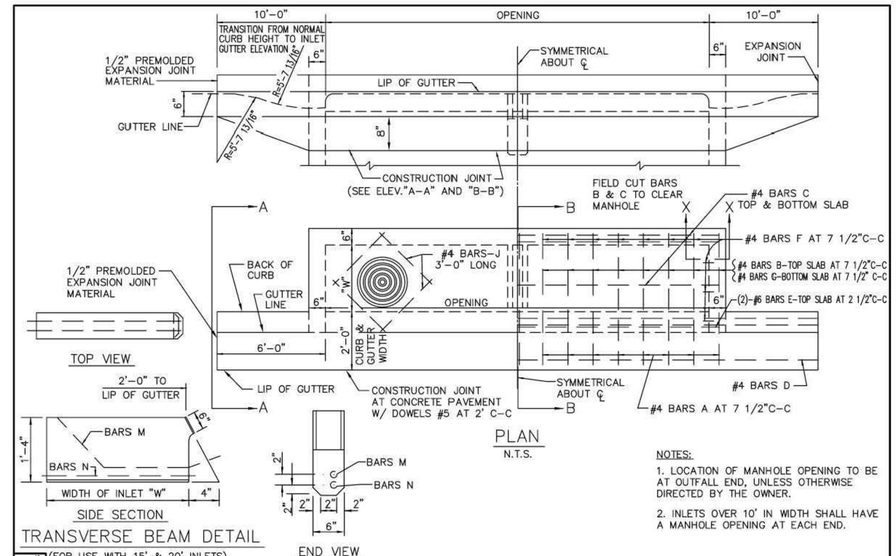
1. SLOPE INVERT OF MANHOLE AS INDICATED ON PLAN-PROFILE SHEET.
2. LAYERS OF REINFORCING STEEL NEAREST THE INTERIOR AND EXTERIOR SURFACE SHALL HAVE A COVER OF 2" TO THE CENTER OF BARS, UNLESS OTHERWISE NOTED.
3. CONCRETE SHALL BE CLASS "A".

STORM WATER MANHOLE
4', 5', OR 6' SQUARE

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 502.1.4.1º
DATE OCT. '04
STANDARD DRAWING NO. 6010B

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*




TRANSVERSE BEAM DETAIL
(FOR USE WITH 15' & 20' INLETS)
N.T.S.

NOTES:

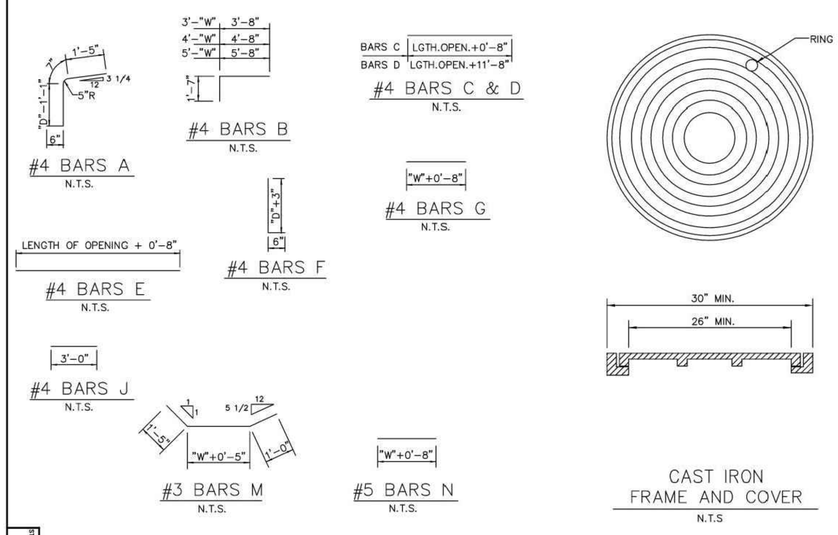
1. LOCATION OF MANHOLE OPENING TO BE AT OUTFALL END, UNLESS OTHERWISE DIRECTED BY THE OWNER.
2. INLETS OVER 10' IN WIDTH SHALL HAVE A MANHOLE OPENING AT EACH END.

STANDARD DRAWING NO. 6020A

CURB INLET
5', 10', 15' OR 20' OPENING

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702
DATE OCT. '04
STANDARD DRAWING NO. 6020A




STANDARD DRAWING NO. 6020C

CURB INLET
REBAR & M.H. FRAME & COVER

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702
DATE OCT. '04
STANDARD DRAWING NO. 6020C

BILL OF REINFORCING STEEL

| DEPTH "D" | ALL WIDTHS AND LENGTHS | | | | OPENING LENGTH "L" = 5ft Widths "W" 3ft | 4ft | 5ft | | | | OPENING LENGTH "L" = 10ft Widths "W" 3ft | 4ft | 5ft | | | | OPENING LENGTH "L" = 15 ft Widths "W" 3ft | 4ft | 5ft | | | | | | OPENING LENGTH "L" = 20 ft Widths "W" 3ft | 4ft | 5ft | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS | BARS |
| | C | D | E | J | F | F | F | A | B | G | F | F | F | A | B | G | F | F | F | A | B | G | M | N | F | F | F | A | B | G | M | N |
| 3'-6" | 17 | 3 | 2 | 4 | 20 | 24 | 28 | 10 | 10 | 20 | 28 | 32 | 36 | 18 | 18 | 28 | 36 | 40 | 44 | 26 | 26 | 36 | 2 | 2 | 44 | 48 | 52 | 34 | 34 | 44 | 2 | 2 |
| 3'-9" | 18 | " | " | " | " | " | " | " | " | 20 | " | " | " | " | " | 28 | " | " | " | " | " | 36 | " | " | " | " | " | " | " | " | 44 | " | " |
| 4'-0" | 19 | " | " | " | " | " | " | " | " | 24 | " | " | " | " | " | 32 | " | " | " | " | " | 40 | " | " | " | " | " | " | " | " | 48 | " | " |
| 4'-3" | 19 | " | " | " | " | " | " | " | " | 24 | " | " | " | " | " | 32 | " | " | " | " | " | 40 | " | " | " | " | " | " | " | " | 48 | " | " |
| 4'-6" | 21 | " | " | " | " | " | " | " | " | 26 | " | " | " | " | " | 34 | " | " | " | " | " | 42 | " | " | " | " | " | " | " | " | 50 | " | " |
| 4'-9" | 21 | " | " | " | " | " | " | " | " | 26 | " | " | " | " | " | 34 | " | " | " | " | " | 42 | " | " | " | " | " | " | " | " | 50 | " | " |
| 5'-0" | 21 | " | " | " | " | " | " | " | " | 26 | " | " | " | " | " | 34 | " | " | " | " | " | 42 | " | " | " | " | " | " | " | " | 50 | " | " |
| 5'-3" | 23 | " | " | " | " | " | " | " | " | 28 | " | " | " | " | " | 36 | " | " | " | " | " | 44 | " | " | " | " | " | " | " | " | 52 | " | " |
| 5'-6" | 23 | " | " | " | " | " | " | " | " | 28 | " | " | " | " | " | 36 | " | " | " | " | " | 44 | " | " | " | " | " | " | " | " | 52 | " | " |
| 5'-9" | 25 | " | " | " | " | " | " | " | " | 30 | " | " | " | " | " | 38 | " | " | " | " | " | 46 | " | " | " | " | " | " | " | " | 54 | " | " |
| 6'-0" | 25 | " | " | " | " | " | " | " | " | 30 | " | " | " | " | " | 38 | " | " | " | " | " | 46 | " | " | " | " | " | " | " | " | 54 | " | " |
| 6'-3" | 26 | " | " | " | " | " | " | " | " | 30 | " | " | " | " | " | 38 | " | " | " | " | " | 46 | " | " | " | " | " | " | " | " | 54 | " | " |
| 6'-6" | 27 | " | " | " | " | " | " | " | " | 32 | " | " | " | " | " | 40 | " | " | " | " | " | 48 | " | " | " | " | " | " | " | " | 56 | " | " |
| 6'-9" | 27 | " | " | " | " | " | " | " | " | 32 | " | " | " | " | " | 40 | " | " | " | " | " | 48 | " | " | " | " | " | " | " | " | 56 | " | " |
| 7'-0" | 29 | " | " | " | " | " | " | " | " | 34 | " | " | " | " | " | 42 | " | " | " | " | " | 50 | " | " | " | " | " | " | " | " | 58 | " | " |
| 7'-3" | 29 | " | " | " | " | " | " | " | " | 34 | " | " | " | " | " | 42 | " | " | " | " | " | 50 | " | " | " | " | " | " | " | " | 58 | " | " |
| 7'-6" | 30 | " | " | " | " | " | " | " | " | 34 | " | " | " | " | " | 42 | " | " | " | " | " | 50 | " | " | " | " | " | " | " | " | 58 | " | " |
| 7'-9" | 31 | " | " | " | " | " | " | " | " | 36 | " | " | " | " | " | 44 | " | " | " | " | " | 52 | " | " | " | " | " | " | " | " | 60 | " | " |
| 8'-0" | 31 | " | " | " | " | " | " | " | " | 36 | " | " | " | " | " | 44 | " | " | " | " | " | 52 | " | " | " | " | " | " | " | " | 60 | " | " |
| 8'-3" | 32 | " | " | " | " | " | " | " | " | 36 | " | " | " | " | " | 44 | " | " | " | " | " | 52 | " | " | " | " | " | " | " | " | 60 | " | " |
| 8'-6" | 33 | " | " | " | " | " | " | " | " | 38 | " | " | " | " | " | 46 | " | " | " | " | " | 54 | " | " | " | " | " | " | " | " | 62 | " | " |
| 8'-9" | 34 | " | " | " | " | " | " | " | " | 38 | " | " | " | " | " | 46 | " | " | " | " | " | 54 | " | " | " | " | " | " | " | " | 62 | " | " |
| 9'-0" | 35 | " | " | " | " | " | " | " | " | 40 | " | " | " | " | " | 48 | " | " | " | " | " | 56 | " | " | " | " | " | " | " | " | 64 | " | " |
| 9'-3" | 36 | " | " | " | " | " | " | " | " | 40 | " | " | " | " | " | 48 | " | " | " | " | " | 56 | " | " | " | " | " | " | " | " | 64 | " | " |
| 9'-6" | 37 | " | " | " | " | " | " | " | " | 42 | " | " | " | " | " | 50 | " | " | " | " | " | 58 | " | " | " | " | " | " | " | " | 66 | " | " |
| 10'-0" | 38 | " | " | " | " | " | " | " | " | 42 | " | " | " | " | " | 50 | " | " | " | " | " | 58 | " | " | " | " | " | " | " | " | 66 | " | " |

NOTE:
FOR CONVENIENCE, DEPTHS OF INLETS SHOWN IN ABOVE TABLES ARE IN INCREMENTS OF 3 INCHES BUT ANY DEPTHS OTHER THAN THOSE SHOWN ABOVE MAY BE USED WHEREVER DEEMED NECESSARY. QUANTITIES FOR OTHER DEPTHS FALLING WITHIN THE LIMITS OF THE TABLE MAY BE FOUND BY INTERPOLATION.

STANDARD DRAWING NO. 6020D

CURB INLET
BILL OF REINFORCING STEEL

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702
DATE OCT. '04
STANDARD DRAWING NO. 6020D


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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CLIENT
KALTER CAPITAL
LOIS ROAD ESTATES – FILING NOS. 1 & 2
CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS
CONSTRUCTION DETAILS
STORM SEWER DETAILS

DATE 4/7/2025

| | |
|---|---|
| A | 1st SUBMITTAL TO JURISDICTION 4/7/2025 – KMB |
| B | 2nd SUBMITTAL TO JURISDICTION 5/12/2025 – KMB |

REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 94

CAD FILE: 24007256-PH1-DTLS.DWG

## SUMMARY OF QUANTITIES FOR CURB INLETS

| DEPTH "D" | 5'–0" OPENING | | | | | | 10'–0" OPENING | | | | | | 15'–0" OPENING | | | | | | 20'–0" OPENING | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WIDTH 3'–0" | | WIDTH 4'–0" | | WIDTH 5'–0" | | WIDTH 3'–0" | | WIDTH 4'–0" | | WIDTH 5'–0" | | WIDTH 3'–0" | | WIDTH 4'–0" | | WIDTH 5'–0" | | WIDTH 3'–0" | | WIDTH 4'–0" | | WIDTH 5'–0" | |
| | CONC C.Y. | STEEL LBS. | CONC C.Y. | STEEL LBS. | CONC C.Y. | STEEL LBS. | CONC C.Y. | STEEL LBS. | CONC C.Y. | STEEL LBS. | CONC C.Y. | STEEL LBS. | CONC C.Y. | STEEL LBS. | CONC C.Y. | STEEL LBS. | CONC C.Y. | STEEL LBS. | CONC C.Y. | STEEL LBS. | CONC C.Y. | STEEL LBS. | CONC C.Y. | STEEL LBS. |
| 3'–6" | 2.62 | 306 | 2.95 | 332 | 3.28 | 373 | 4.12 | 479 | 4.64 | 521 | 5.20 | 564 | 5.69 | 667 | 6.40 | 721 | 7.10 | 775 | 7.20 | 846 | 8.11 | 909 | 9.03 | 976 |
| 3'–9" | 2.70 | 309 | 3.04 | 341 | 3.39 | 373 | 4.25 | 494 | 4.78 | 536 | 5.34 | 579 | 5.87 | 687 | 6.58 | 741 | 7.30 | 796 | 7.42 | 874 | 8.34 | 937 | 9.27 | 1010 |
| 4'–0" | 2.78 | 328 | 3.14 | 364 | 3.49 | 399 | 4.38 | 518 | 4.92 | 565 | 5.49 | 610 | 6.05 | 718 | 6.77 | 776 | 7.49 | 835 | 7.64 | 909 | 8.58 | 976 | 9.51 | 1046 |
| 4'–3" | 2.87 | 334 | 3.23 | 370 | 3.59 | 406 | 4.51 | 526 | 5.06 | 573 | 5.64 | 619 | 6.22 | 729 | 6.95 | 787 | 7.69 | 847 | 7.87 | 922 | 8.81 | 990 | 9.75 | 1061 |
| 4'–6" | 2.95 | 356 | 3.32 | 394 | 3.69 | 431 | 4.64 | 558 | 5.20 | 607 | 5.79 | 656 | 6.40 | 770 | 7.14 | 830 | 7.88 | 891 | 8.09 | 973 | 9.04 | 1043 | 9.99 | 1115 |
| 4'–9" | 3.03 | 361 | 3.41 | 410 | 3.79 | 438 | 4.77 | 566 | 5.34 | 616 | 5.94 | 665 | 6.57 | 780 | 7.32 | 841 | 8.07 | 903 | 8.31 | 986 | 9.27 | 1056 | 10.23 | 1129 |
| 5'–0" | 3.12 | 367 | 3.51 | 416 | 3.90 | 445 | 4.90 | 574 | 5.47 | 624 | 6.09 | 674 | 6.75 | 791 | 7.51 | 853 | 8.27 | 915 | 8.53 | 999 | 9.50 | 1070 | 10.47 | 1144 |
| 5'–3" | 3.20 | 383 | 3.60 | 424 | 4.00 | 465 | 5.03 | 600 | 5.61 | 652 | 6.23 | 704 | 6.93 | 827 | 7.69 | 890 | 8.46 | 955 | 8.76 | 1044 | 9.73 | 1118 | 10.71 | 1194 |
| 5'–6" | 3.28 | 389 | 3.69 | 430 | 4.10 | 472 | 5.16 | 608 | 5.75 | 661 | 6.38 | 713 | 7.11 | 837 | 7.88 | 901 | 8.66 | 967 | 8.98 | 1057 | 9.97 | 1131 | 10.95 | 1208 |
| 5'–9" | 3.37 | 405 | 3.78 | 451 | 4.20 | 495 | 5.29 | 635 | 5.89 | 690 | 6.53 | 744 | 7.28 | 874 | 8.07 | 940 | 8.85 | 1007 | 9.20 | 1102 | 10.20 | 1178 | 11.19 | 1258 |
| 6'–0" | 3.45 | 415 | 3.88 | 460 | 4.30 | 504 | 5.42 | 646 | 6.03 | 702 | 6.68 | 757 | 7.45 | 888 | 8.25 | 954 | 9.05 | 1022 | 9.42 | 1119 | 10.43 | 1196 | 11.43 | 1276 |
| 6'–3" | 3.53 | 425 | 3.97 | 470 | 4.41 | 515 | 5.55 | 661 | 6.17 | 718 | 6.83 | 773 | 7.63 | 908 | 8.44 | 975 | 9.24 | 1044 | 9.64 | 1147 | 10.66 | 1223 | 11.67 | 1305 |
| 6'–6" | 3.62 | 437 | 4.06 | 486 | 4.51 | 532 | 5.68 | 681 | 6.31 | 739 | 6.97 | 797 | 7.81 | 935 | 8.62 | 1005 | 9.43 | 1057 | 9.87 | 1178 | 10.89 | 1258 | 11.92 | 1340 |
| 6'–9" | 3.70 | 441 | 4.15 | 490 | 4.61 | 537 | 5.81 | 688 | 6.45 | 747 | 7.12 | 806 | 7.98 | 945 | 8.81 | 1015 | 9.63 | 1066 | 10.09 | 1191 | 11.12 | 1272 | 12.15 | 1355 |
| 7'–0" | 3.78 | 460 | 4.25 | 510 | 4.71 | 560 | 5.94 | 716 | 6.59 | 777 | 7.27 | 837 | 8.16 | 981 | 8.99 | 1053 | 9.82 | 1126 | 10.31 | 1237 | 11.35 | 1319 | 12.40 | 1404 |
| 7'–3" | 3.86 | 465 | 4.34 | 516 | 4.81 | 567 | 6.07 | 724 | 6.72 | 785 | 7.42 | 846 | 8.33 | 992 | 9.18 | 1065 | 10.02 | 1138 | 10.53 | 1249 | 11.59 | 1333 | 12.64 | 1418 |
| 7'–6" | 3.95 | 477 | 4.43 | 529 | 4.91 | 570 | 6.20 | 742 | 6.86 | 804 | 7.57 | 866 | 8.51 | 1016 | 9.36 | 1089 | 10.21 | 1163 | 10.75 | 1290 | 11.82 | 1365 | 12.88 | 1451 |
| 7'–9" | 4.03 | 491 | 4.53 | 544 | 5.02 | 597 | 6.33 | 762 | 7.00 | 826 | 7.71 | 890 | 8.67 | 1040 | 9.55 | 1116 | 10.41 | 1193 | 10.98 | 1313 | 12.05 | 1399 | 13.12 | 1498 |
| 8'–0" | 4.12 | 496 | 4.62 | 550 | 5.12 | 604 | 6.46 | 770 | 7.14 | 834 | 7.86 | 899 | 8.86 | 1051 | 9.73 | 1129 | 10.60 | 1205 | 11.20 | 1325 | 12.28 | 1412 | 13.36 | 1510 |
| 8'–3" | 4.20 | 504 | 4.71 | 559 | 5.22 | 613 | 6.59 | 784 | 7.28 | 849 | 8.01 | 915 | 9.04 | 1069 | 9.92 | 1149 | 10.80 | 1228 | 11.42 | 1353 | 12.51 | 1440 | 13.60 | 1529 |
| 8'–6" | 4.28 | 519 | 4.80 | 576 | 5.32 | 632 | 6.71 | 804 | 7.42 | 871 | 8.16 | 938 | 9.21 | 1107 | 10.10 | 1176 | 10.99 | 1257 | 11.64 | 1385 | 12.74 | 1474 | 13.84 | 1565 |
| 8'–9" | 4.37 | 528 | 4.90 | 586 | 5.42 | 643 | 6.84 | 819 | 7.56 | 886 | 8.31 | 954 | 9.39 | 1119 | 10.29 | 1199 | 11.18 | 1280 | 11.87 | 1410 | 12.97 | 1500 | 14.08 | 1592 |
| 9'–0" | 4.45 | 545 | 4.99 | 605 | 5.53 | 664 | 6.97 | 842 | 7.70 | 912 | 8.46 | 982 | 9.56 | 1148 | 10.47 | 1231 | 11.38 | 1313 | 12.09 | 1447 | 13.21 | 1539 | 14.32 | 1631 |
| 9'–3" | 4.53 | 554 | 5.08 | 614 | 5.63 | 674 | 7.10 | 858 | 7.84 | 929 | 8.60 | 999 | 9.74 | 1169 | 10.66 | 1252 | 11.57 | 1335 | 12.31 | 1474 | 13.44 | 1563 | 14.56 | 1660 |
| 9'–6" | 4.62 | 568 | 5.17 | 630 | 5.73 | 692 | 7.23 | 878 | 7.97 | 950 | 8.75 | 1022 | 9.92 | 1195 | 10.84 | 1280 | 11.77 | 1365 | 12.53 | 1505 | 13.67 | 1600 | 14.80 | 1696 |
| 10'–0" | 4.78 | 582 | 5.36 | 645 | 5.93 | 708 | 7.49 | 900 | 8.11 | 974 | 9.05 | 1048 | 10.27 | 1227 | 11.21 | 1312 | 12.16 | 1399 | 12.98 | 1546 | 14.13 | 1642 | 15.29 | 1739 |

NOTE:
FOR CONVENIENCE, DEPTHS OF INLETS SHOWN IN ABOVE TABLES ARE IN INCREMENTS OF 3 INCHES BUT ANY DEPTHS OTHER THAN THOSE SHOWN ABOVE MAY BE USED WHEREVER DEEMED NECESSARY. QUANTITIES FOR OTHER DEPTHS FALLING WITHIN THE LIMITS OF THE TABLE MAY BE FOUND BY INTERPOLATION.

STANDARD DRAWING NO. 6020E

CURB INLET
SUMMARY OF QUANTITIES

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 702
DATE: OCT. '04
STANDARD DRAWING NO.: 6020E

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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MICHAEL PRYOR

CLIENT: KALTER CAPITAL
LOIS ROAD ESTATES – FILING NOS. 1 & 2
CITY OF SANGER, COUNTY OF DENTON,
STATE OF TEXAS
CONSTRUCTION DETAILS
STORM SEWER DETAILS

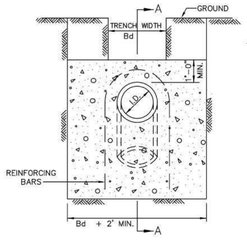
DATE 4/7/2025

| | |
|---|---|
| A | 1st SUBMITTAL TO JURISDICTION 4/7/2025 – KMB |
| B | 2nd SUBMITTAL TO JURISDICTION 5/12/2025 – KMB |

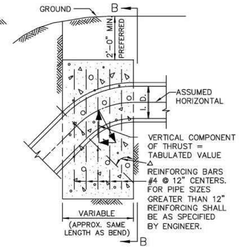
REVISIONS

DR. TN | CH. KB
P.M. JF
JOB 24007256
SHEET NO. 95

CAD FILE: 24007256-PH1-DTLS.DWG




ELEVATION "B–B"
N.T.S.




SECTION "A–A"
N.T.S.

REFER TO
STD. DWG. No. 4040
FOR GENERAL NOTES.

| Δ → | 11.25° | | 22.50° | | 30° | | 45° | | 67.50° | | 90° | | ← Δ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I.D. (IN.) | THRUST (TONS) | VOL. (C.Y.) | THRUST (TONS) | VOL. (C.Y.) | THRUST (TONS) | VOL. (C.Y.) | THRUST (TONS) | VOL. (C.Y.) | THRUST (TONS) | VOL. (C.Y.) | THRUST (TONS) | VOL. (C.Y.) | I.D. (IN.) |
| 4,6,8 | 1.0 | 0.5 | 2.0 | 1.0 | 2.5 | 1.3 | 3.6 | 1.8 | 4.6 | 2.3 | 5.0 | 2.5 | 4,6,8 |
| 10,12 | 2.2 | 1.1 | 4.3 | 2.2 | 5.7 | 2.8 | 8.0 | 4.0 | 10.5 | 5.2 | 11.3 | 5.7 | 10,12 |
| 16,18 | 5.0 | 2.5 | 9.7 | 4.9 | 12.7 | 6.4 | 18.0 | 9.0 | 23.5 | 11.8 | 25.5 | 12.7 | 16,18 |
| 20 | 6.1 | 3.1 | 12.0 | 6.0 | 15.7 | 7.9 | 22.2 | 11.1 | 29.2 | 14.5 | 31.4 | 15.7 | 20 |
| 24 | 8.2 | 4.4 | 17.3 | 8.7 | 22.6 | 11.3 | 32.0 | 16.0 | 41.8 | 20.9 | 45.2 | 22.6 | 24 |
| 30 | 10.5 | 5.2 | 20.3 | 10.1 | 26.5 | 13.3 | 37.5 | 18.8 | 49.0 | 24.5 | 53.1 | 26.5 | 30 |
| 36 | 14.9 | 7.5 | 29.2 | 14.6 | 38.2 | 19.1 | 54.0 | 27.0 | 70.5 | 35.3 | 76.4 | 38.2 | 36 |
| 42 | 20.3 | 10.1 | 39.8 | 19.9 | 52.0 | 26.0 | 73.5 | 36.7 | 96.0 | 48.0 | 104.0 | 52.0 | 42 |
| 48 | 26.5 | 13.2 | 51.9 | 26.0 | 67.9 | 33.9 | 96.0 | 48.0 | 126.0 | 62.7 | 136.0 | 67.9 | 48 |
| 54 | 33.5 | 16.8 | 65.7 | 32.9 | 85.9 | 42.9 | 122.0 | 60.7 | 159.0 | 79.4 | 172.0 | 85.9 | 54 |
| 60 | 41.4 | 20.7 | 81.2 | 40.6 | 106.0 | 53.0 | 150.0 | 75.0 | 196.0 | 98.0 | 212.0 | 106.0 | 60 |
| 66 | 50.1 | 25.0 | 98.2 | 49.1 | 128.0 | 64.2 | 182.0 | 90.7 | 237.0 | 119.0 | 257.0 | 128.0 | 66 |
| 72 | 59.6 | 29.8 | 117.0 | 58.4 | 153.0 | 76.3 | 216.0 | 108.0 | 282.0 | 141.0 | 305.0 | 153.0 | 72 |
| 78 | 69.9 | 35.0 | 137.0 | 68.6 | 179.0 | 90.0 | 254.0 | 127.0 | 331.0 | 166.0 | 358.0 | 179.0 | 78 |
| 84 | 81.1 | 40.5 | 159.0 | 79.5 | 208.0 | 104.0 | 294.0 | 147.0 | 384.0 | 192.0 | 416.0 | 208.0 | 84 |
| 90 | 93.1 | 46.5 | 183.0 | 91.3 | 239.0 | 119.0 | 337.0 | 169.0 | 441.0 | 221.0 | 477.0 | 239.0 | 90 |
| 96 | 106.0 | 53.0 | 208.0 | 104.0 | 272.0 | 136.0 | 384.0 | 192.0 | 502.0 | 251.0 | 543.0 | 272.0 | 96 |

VERTICAL THRUST BLOCK
AT PIPE BEND

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 502.4
DATE: OCT. '04 | STANDARD DRAWING NO.: 4030

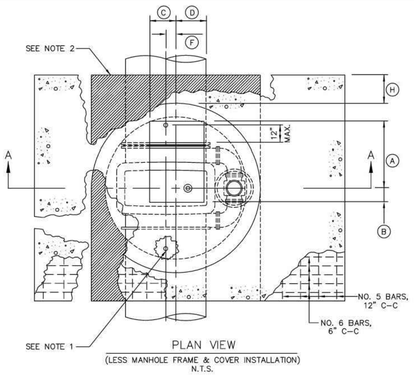
GENERAL NOTES FOR ALL THRUST BLOCKS:

1. CONCRETE FOR BLOCKING SHALL BE CLASS "B".
2. ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 PSI FOR DUCTILE IRON, P.V.C., AND 150 PSI FOR CONCRETE PIPE.
3. VOLUMES OF THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED. THE CORRESPONDING WEIGHT OF THE CONCRETE (CLASS "B") IS EQUAL TO OR GREATER THAN THE VERTICAL COMPONENT OF THE THRUST ON THE VERTICAL BEND.
4. WALL THICKNESS (T) ASSUMED HERE FOR ESTIMATING PURPOSES ONLY.
5. POUR CONCRETE FOR BLOCK AGAINST UNDISTURBED EARTH.
6. DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS WHERE AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.
7. THE SOIL BEARING PRESSURES ARE BASED ON 1000 LBS./S.F. IN SOIL AND 2000 LBS./S.F. IN ROCK.
8. USE POLYETHYLENE WRAP OR EQUAL BETWEEN CONCRETE AND BEND, TEE, OR PLUG TO PREVENT THE CONCRETE FROM STICKING TO IT.
9. CONCRETE SHALL NOT EXTEND BEYOND JOINTS.

THRUST BLOCK
GENERAL NOTES

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 502.4
DATE: OCT. '04 | STANDARD DRAWING NO.: 4040




PLAN VIEW
(LESS MANHOLE FRAME & COVER INSTALLATION)
N.T.S.

DIMENSION TABLE

| GATE VALVE SIZE | A | B | C | D | E | F | G | H | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16" | 20" | 20" | 12" | 12" | 44 1/2" | 1" | 48" | 12" | 10" | 24" | 12" | 16" |
| 18" | 20" | 20" | 12" | 12" | 51 3/8" | 2" | 48" | 12" | 12" | 24" | 12" | 18" |
| 20" | 22" | 18" | 12" | 12" | 56 5/8" | 1" | 54" | 12" | 12" | 24" | 16" | 20" |
| 24" | 26" | 14" | 12" | 12" | 64 3/8" | 1" | 60" | 18" | 14" | 30" | 18" | 24" |
| 30" | 28" | 12" | 12" | 12" | 80 5/8" | 3" | 66" | 18" | 18" | 30" | 20" | 30" |
| 36" | 32" | 8" | 12" | 12" | 90 1/16" | 4" | 72" | 18" | 18" | 36" | 24" | 36" |
| 42" | 34" | 6" | 15" | 9" | 107 3/4" | 5" | 78" | 24" | 20" | 36" | 30" | 42" |
| 48" | 36" | 4" | 14" | 10" | 121 5/8" | 4" | 90" | 24" | 26" | 42" | 36" | 48" |
| 54" | 36" | 4" | 9" | 15" | 142 1/2" | 3" | 102" | 24" | 32" | 46" | 40" | 54" |

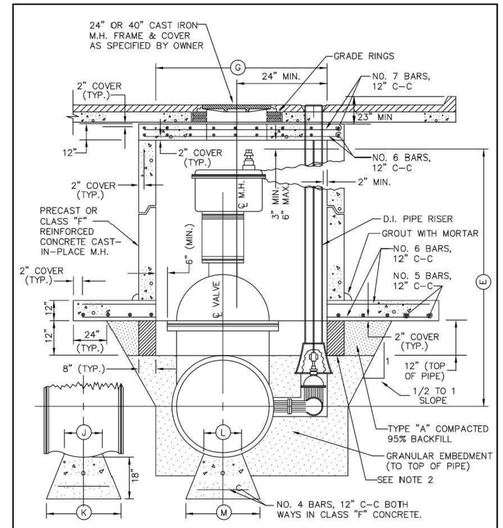
NOTES:
1. PROVIDE CORPORATION AND CURB STOPS A MAXIMUM OF 12" FROM EACH END OF GATE VALVE, AS SHOWN. CORPORATION AND CURB STOP SIZES SHALL BE 1" FOR 16", 20", AND 24" NOMINAL PIPE DIAMETERS; 2" FOR 30" AND LARGER DIAMETERS. 2" TAPS SHALL BE MADE AS A 2" FLANGED OUTLET WITH INSULATED ADAPTOR KIT. COPPER RISERS SHALL BE PROVIDED BETWEEN THE CORPORATION AND CURB STOPS. CURB STOPS SHALL BE INSTALLED AT AN ELEVATION 12" ABOVE THE TOP SURFACE OF VAULT BOTTOM SLAB.
2. POLYURETHANE CUSHION PAD.

VAULT CONSTRUCTION
VERTICAL GATE VALVE ≥ 16"

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 702.5 *
DATE: OCT. '04 | STANDARD DRAWING NO.: 4070A

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*




SECTION "A–A"

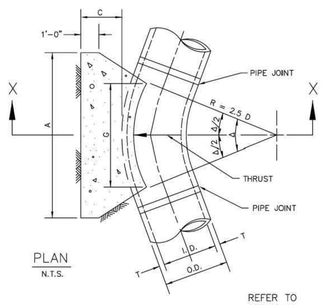
REFER TO STD. DWG. 4070A FOR DIMENSION TABLE AND GENERAL NOTES.

VAULT CONSTRUCTION
VERTICAL GATE VALVE ≥ 16"

North Central Texas Council of Governments

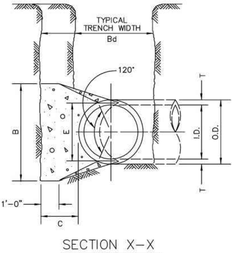
STANDARD SPECIFICATION REFERENCE: 702.5 *
DATE: OCT. '04 | STANDARD DRAWING NO.: 4070B

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*




PLAN
N.T.S.

REFER TO
STD. DWG. No. 4040
FOR GENERAL NOTES.

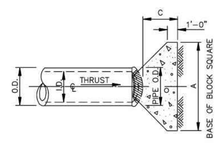



SECTION X–X
N.T.S.

HORIZONTAL THRUST BLOCK
AT PIPE BEND

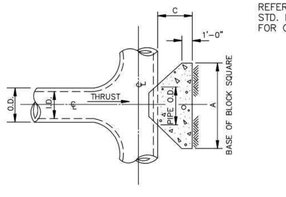
North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 502.4
DATE: OCT. '04 | STANDARD DRAWING NO.: 4010A




PLAN OF PLUG THRUST BLOCK
N.T.S.

REFER TO
STD. DWG. No. 4040
FOR GENERAL NOTES.




PLAN OF TEE THRUST BLOCK
N.T.S.

| I.D. (IN.) | T (IN.) | Δ = 11.25° C (FT.) | Δ ≥ 22.50° C (FT.) | E (FT.) |
|---|---|---|---|---|
| 4,6,8 | 0.4 | 1.5 | 1.5 | 0.9 |
| 10,12 | 0.5 | 1.5 | 1.5 | 1.2 |
| 16,18 | 0.6 | 1.5 | 1.5 | 1.6 |
| 20 | 0.7 | 1.5 | 1.5 | 1.8 |
| 24 | 0.9 | 1.5 | 1.5 | 2.1 |
| 30 | 2.9 | 1.5 | 1.9 | 2.6 |
| 36 | 4.5 | 1.5 | 2.3 | 3.3 |
| 42 | 5.0 | 1.8 | 2.6 | 3.8 |
| 48 | 5.5 | 2.0 | 3.0 | 4.3 |
| 54 | 6.0 | 2.3 | 3.4 | 4.8 |
| 60 | 6.5 | 2.5 | 3.8 | 5.3 |
| 66 | 6.8 | 2.8 | 4.1 | 5.7 |
| 72 | 7.5 | 3.0 | 4.5 | 6.3 |
| 78 | 7.5 | 3.3 | 4.9 | 6.7 |
| 84 | 8.0 | 3.5 | 5.3 | 7.2 |
| 90 | 8.5 | 3.8 | 5.6 | 7.7 |
| 96 | 9.0 | 4.0 | 6.0 | 8.2 |

| I.D. (IN.) | Δ = 11.25° | | | | | | | | I.D. (IN.) | Δ = 22.50° | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | EARTH | | | ROCK | | | | | | EARTH | | | ROCK | | |
| | G (FT.) | THRUST (TONS) | A (FT.) | B (FT.) | VOL. (C.Y.) | A (FT.) | B (FT.) | VOL. (C.Y.) | | G (FT.) | THRUST (TONS) | A (FT.) | B (FT.) | VOL. (C.Y.) | A (FT.) | B (FT.) | VOL. (C.Y.) |
| 4,6,8 | 0.4 | 1.0 | 1.0 | 1.5 | 0.1 | 1.0 | 1.0 | 0.1 | 4,6,8 | 0.8 | 2.0 | 1.5 | 1.5 | 0.1 | 1.0 | 1.0 | 0.1 |
| 10,12 | 0.6 | 2.2 | 1.5 | 1.5 | 0.1 | 1.0 | 1.5 | 0.1 | 10,12 | 1.1 | 4.4 | 2.0 | 2.5 | 0.3 | 1.5 | 1.5 | 0.1 |
| 16,18 | 0.8 | 5.0 | 2.0 | 2.5 | 0.3 | 1.5 | 2.0 | 0.2 | 16,18 | 1.6 | 9.9 | 3.0 | 3.5 | 0.6 | 2.0 | 2.5 | 0.3 |
| 20 | 0.9 | 6.2 | 2.0 | 3.5 | 0.4 | 1.5 | 3.0 | 0.3 | 20 | 1.8 | 12.3 | 3.5 | 3.5 | 0.7 | 2.0 | 3.0 | 0.4 |
| 24 | 1.1 | 8.9 | 3.0 | 3.5 | 0.5 | 1.5 | 3.0 | 0.3 | 24 | 2.2 | 17.7 | 4.0 | 4.5 | 1.0 | 3.0 | 3.5 | 0.5 |
| 30 | 1.4 | 10.4 | 3.0 | 3.5 | 0.6 | 2.0 | 3.5 | 0.4 | 30 | 2.7 | 20.7 | 5.0 | 4.5 | 1.5 | 3.0 | 4.0 | 0.8 |
| 36 | 1.7 | 15.0 | 3.5 | 4.5 | 0.9 | 2.0 | 4.0 | 0.5 | 36 | 3.3 | 29.8 | 5.5 | 5.5 | 2.3 | 4.0 | 4.0 | 1.3 |
| 42 | 1.9 | 20.4 | 4.5 | 5.0 | 1.5 | 2.5 | 5.0 | 0.8 | 42 | 3.8 | 40.5 | 7.0 | 6.0 | 3.9 | 4.5 | 5.0 | 2.1 |
| 48 | 2.2 | 26.6 | 4.5 | 6.0 | 2.0 | 2.5 | 6.0 | 1.1 | 48 | 4.4 | 52.9 | 8.0 | 7.0 | 5.7 | 4.5 | 6.0 | 2.8 |
| 54 | 2.5 | 33.7 | 6.0 | 6.0 | 3.0 | 3.0 | 6.0 | 1.4 | 54 | 4.9 | 67.0 | 9.0 | 8.0 | 8.0 | 6.0 | 6.0 | 4.1 |
| 60 | 2.7 | 41.6 | 6.0 | 7.0 | 3.8 | 3.0 | 7.0 | 1.8 | 60 | 5.5 | 82.7 | 9.5 | 9.0 | 10.6 | 6.0 | 7.0 | 5.3 |
| 66 | 3.0 | 50.3 | 6.5 | 8.0 | 5.1 | 3.5 | 8.0 | 2.7 | 66 | 6.0 | 100.1 | 10.5 | 10.0 | 14.1 | 6.5 | 8.0 | 7.2 |
| 72 | 3.3 | 59.9 | 7.5 | 8.0 | 6.3 | 4.0 | 8.0 | 3.3 | 72 | 6.6 | 119.1 | 11.0 | 11.0 | 17.6 | 7.5 | 8.0 | 9.1 |
| 78 | 3.6 | 70.2 | 8.0 | 9.0 | 8.1 | 4.0 | 9.0 | 3.9 | 78 | 7.1 | 139.8 | 12.0 | 12.0 | 22.5 | 8.0 | 9.0 | 11.7 |
| 84 | 3.8 | 81.5 | 8.5 | 10.0 | 10.3 | 4.5 | 10.0 | 5.3 | 84 | 7.6 | 162.1 | 13.0 | 12.5 | 27.2 | 8.5 | 10.0 | 14.8 |
| 90 | 4.1 | 93.5 | 9.5 | 10.0 | 12.2 | 5.0 | 10.0 | 6.3 | 90 | 8.2 | 186.1 | 14.0 | 13.5 | 33.7 | 9.5 | 10.0 | 17.7 |
| 96 | 4.4 | 106.4 | 10.0 | 11.0 | 15.0 | 5.0 | 11.0 | 7.4 | 96 | 8.7 | 211.7 | 15.0 | 14.5 | 41.2 | 10.0 | 11.0 | 21.8 |

TABLES OF DIMENSIONS AND QUANTITIES

HORIZONTAL THRUST BLOCK
AT PIPE BEND

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 502.4
DATE: OCT. '04 | STANDARD DRAWING NO.: 4010B

| I.D. (IN.) | Δ = 30° | | | | | | | I.D. (IN.) | Δ = 45° | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | EARTH | | | ROCK | | | | | | EARTH | | | ROCK | | |
| | G (FT.) | THRUST (TONS) | A (FT.) | B (FT.) | VOL. (C.Y.) | A (FT.) | B (FT.) | VOL. (C.Y.) | | G (FT.) | THRUST (TONS) | A (FT.) | B (FT.) | VOL. (C.Y.) | A (FT.) | B (FT.) | VOL. (C.Y.) |
| 4,6,8 | 1.0 | 2.6 | 2.0 | 1.5 | 0.2 | 1.0 | 1.5 | 0.1 | 4,6,8 | 1.5 | 3.9 | 2.0 | 2.0 | 0.2 | 1.5 | 1.5 | 0.1 |
| 10,12 | 1.5 | 5.9 | 2.5 | 2.5 | 0.3 | 2.0 | 1.5 | 0.2 | 10,12 | 2.2 | 8.7 | 3.5 | 2.5 | 0.5 | 2.0 | 2.5 | 0.3 |
| 16,18 | 2.2 | 13.2 | 3.5 | 4.0 | 0.8 | 2.5 | 3.0 | 0.4 | 16,18 | 3.2 | 19.5 | 4.5 | 4.5 | 1.2 | 3.0 | 3.5 | 0.6 |
| 20 | 2.4 | 16.3 | 4.5 | 4.0 | 1.0 | 3.0 | 3.0 | 0.5 | 20 | 3.6 | 24.1 | 5.5 | 4.5 | 1.5 | 3.5 | 3.5 | 0.7 |
| 24 | 2.9 | 23.4 | 6.0 | 4.0 | 1.4 | 3.5 | 3.5 | 0.7 | 24 | 4.3 | 34.6 | 8.0 | 4.5 | 2.3 | 4.5 | 4.0 | 1.1 |
| 30 | 3.6 | 27.5 | 6.5 | 5.0 | 1.9 | 3.5 | 4.0 | 0.9 | 30 | 5.4 | 40.6 | 8.5 | 5.0 | 3.2 | 5.5 | 4.0 | 1.6 |
| 36 | 4.4 | 39.5 | 7.0 | 6.0 | 3.4 | 4.5 | 4.5 | 1.6 | 36 | 6.5 | 58.5 | 10.0 | 6.0 | 5.3 | 6.5 | 4.5 | 2.6 |
| 42 | 5.1 | 53.8 | 8.0 | 7.0 | 5.1 | 5.5 | 5.0 | 2.5 | 42 | 7.5 | 79.6 | 11.5 | 7.0 | 8.1 | 8.0 | 5.0 | 4.2 |
| 48 | 5.8 | 70.3 | 9.0 | 8.0 | 7.4 | 6.0 | 6.0 | 3.7 | 48 | 8.6 | 104.0 | 13.0 | 8.0 | 11.9 | 9.0 | 6.0 | 6.3 |
| 54 | 6.5 | 89.0 | 10.0 | 9.0 | 10.3 | 7.0 | 6.5 | 5.3 | 54 | 9.7 | 131.5 | 15.0 | 9.0 | 17.1 | 10.5 | 6.5 | 8.9 |
| 60 | 7.3 | 110.0 | 11.0 | 10.0 | 13.9 | 7.5 | 7.5 | 7.3 | 60 | 10.7 | 162.4 | 16.5 | 10.0 | 23.1 | 11.0 | 7.5 | 12.0 |
| 66 | 8.0 | 132.9 | 12.5 | 11.0 | 18.9 | 8.5 | 8.0 | 9.6 | 66 | 11.8 | 196.5 | 18.0 | 11.0 | 30.1 | 12.0 | 8.5 | 16.2 |
| 72 | 8.7 | 158.2 | 13.5 | 12.0 | 24.0 | 9.0 | 9.0 | 12.3 | 72 | 12.9 | 233.9 | 19.5 | 12.0 | 38.6 | 14.0 | 8.5 | 20.7 |
| 78 | 9.4 | 185.6 | 14.5 | 13.0 | 30.0 | 10.0 | 9.5 | 15.6 | 78 | 13.9 | 274.5 | 21.5 | 13.0 | 49.8 | 14.5 | 9.5 | 25.9 |
| 84 | 10.1 | 215.3 | 15.5 | 14.0 | 37.1 | 10.5 | 10.5 | 19.5 | 84 | 15.0 | 318.4 | 23.0 | 14.0 | 61.2 | 15.5 | 10.5 | 32.6 |
| 90 | 10.9 | 247.1 | 16.5 | 15.0 | 45.0 | 11.5 | 11.0 | 23.9 | 90 | 16.1 | 365.5 | 24.5 | 15.0 | 74.5 | 17.5 | 10.5 | 39.6 |
| 96 | 11.6 | 281.2 | 18.0 | 16.0 | 55.5 | 12.5 | 11.5 | 28.9 | 96 | 17.1 | 415.6 | 26.0 | 16.0 | 89.5 | 18.5 | 11.5 | 48.5 |

| I.D. (IN.) | Δ = 67.50° | | | | | | | I.D. (IN.) | Δ = 90° | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | EARTH | | | ROCK | | | | | | EARTH | | | ROCK | | |
| | G (FT.) | THRUST (TONS) | A (FT.) | B (FT.) | VOL. (C.Y.) | A (FT.) | B (FT.) | VOL. (C.Y.) | | G (FT.) | THRUST (TONS) | A (FT.) | B (FT.) | VOL. (C.Y.) | A (FT.) | B (FT.) | VOL. (C.Y.) |
| 4,6,8 | 2.1 | 5.6 | 3.0 | 2.0 | 0.3 | 2.0 | 1.5 | 0.2 | 4,6,8 | 2.7 | 7.1 | 5.0 | 1.5 | 0.4 | 2.0 | 2.0 | 0.2 |
| 10,12 | 3.1 | 12.6 | 5.5 | 2.5 | 0.8 | 3.5 | 2.0 | 0.4 | 10,12 | 4.0 | 16.0 | 6.5 | 2.5 | 1.0 | 3.5 | 2.5 | 0.5 |
| 16,18 | 4.7 | 28.3 | 7.5 | 4.0 | 1.9 | 5.5 | 3.0 | 0.9 | 16,18 | 6.0 | 36.0 | 9.0 | 4.0 | 2.4 | 4.5 | 4.0 | 1.0 |
| 20 | 5.2 | 34.9 | 9.0 | 4.0 | 2.3 | 5.5 | 3.5 | 1.2 | 20 | 6.6 | 44.4 | 10.0 | 4.5 | 3.1 | 6.0 | 4.0 | 1.5 |
| 24 | 6.2 | 50.3 | 11.5 | 4.5 | 3.5 | 6.5 | 4.0 | 1.6 | 24 | 7.9 | 64.0 | 14.5 | 4.5 | 5.0 | 8.0 | 4.0 | 2.1 |
| 30 | 7.8 | 58.9 | 12.0 | 5.0 | 4.8 | 7.5 | 4.0 | 2.2 | 30 | 9.9 | 75.0 | 15.0 | 5.0 | 6.7 | 10.0 | 4.0 | 3.3 |
| 36 | 9.4 | 84.9 | 14.5 | 6.0 | 8.2 | 9.5 | 4.5 | 3.8 | 36 | 11.9 | 108.0 | 18.0 | 6.0 | 11.4 | 12.0 | 4.5 | 5.3 |
| 42 | 10.9 | 115.5 | 17.0 | 7.0 | 12.8 | 11.0 | 5.5 | 6.3 | 42 | 13.9 | 147.0 | 21.0 | 7.0 | 17.8 | 14.0 | 5.5 | 8.7 |
| 48 | 12.5 | 150.9 | 19.0 | 8.0 | 18.4 | 13.0 | 6.0 | 9.2 | 48 | 15.9 | 192.0 | 24.0 | 8.0 | 26.2 | 16.0 | 6.0 | 12.4 |
| 54 | 14.0 | 191.0 | 21.5 | 9.0 | 26.0 | 15.0 | 6.5 | 12.9 | 54 | 17.9 | 243.0 | 27.0 | 9.0 | 36.9 | 18.0 | 7.0 | 18.1 |
| 60 | 15.6 | 235.8 | 24.0 | 10.0 | 35.6 | 16.0 | 7.5 | 17.6 | 60 | 19.9 | 299.8 | 30.0 | 10.0 | 50.3 | 20.0 | 7.5 | 24.0 |
| 66 | 17.1 | 285.3 | 26.0 | 11.0 | 46.0 | 18.0 | 8.0 | 23.0 | 66 | 21.8 | 362.8 | 33.0 | 11.0 | 66.2 | 22.0 | 8.5 | 32.5 |
| 72 | 18.7 | 339.5 | 28.5 | 12.0 | 57.8 | 19.0 | 9.0 | 28.4 | 72 | 23.8 | 431.8 | 36.0 | 12.0 | 85.6 | 24.0 | 9.0 | 41.0 |
| 78 | 20.2 | 398.5 | 31.0 | 13.0 | 75.7 | 21.0 | 9.5 | 37.4 | 78 | 25.7 | 506.7 | 39.0 | 13.0 | 108.2 | 26.0 | 10.0 | 53.2 |
| 84 | 21.8 | 462.1 | 33.5 | 14.0 | 94.7 | 22.0 | 10.5 | 46.5 | 84 | 27.7 | 587.7 | 42.0 | 14.0 | 134.4 | 28.0 | 10.5 | 64.8 |
| 90 | 23.3 | 530.5 | 35.5 | 15.0 | 114.4 | 24.5 | 11.0 | 58.2 | 90 | 29.0 | 674.6 | 45.0 | 15.0 | 164.9 | 30.0 | 11.5 | 81.2 |
| 96 | 24.9 | 603.6 | 38.0 | 16.0 | 138.9 | 25.5 | 12.0 | 70.0 | 96 | 31.6 | 767.5 | 48.0 | 16.0 | 199.0 | 32.0 | 12.0 | 95.1 |

TABLES OF DIMENSIONS AND QUANTITIES

HORIZONTAL THRUST BLOCK
AT PIPE BEND

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 502.4
DATE: OCT. '04 | STANDARD DRAWING NO.: 4010C

HORIZONTAL THRUST BLOCK
AT TEES AND PLUGS

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 502.4
DATE: OCT. '04 | STANDARD DRAWING NO.: 4020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CITY OF SANGER, COUNTY OF DENTON, STATE OF TEXAS
CONSTRUCTION DETAILS
WATER DETAILS

DATE: 4/7/2025

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| A | 1st SUBMITTAL TO JURISDICTION 4/7/2025 – KMB |
| B | 2nd SUBMITTAL TO JURISDICTION 5/12/2025 – KMB |

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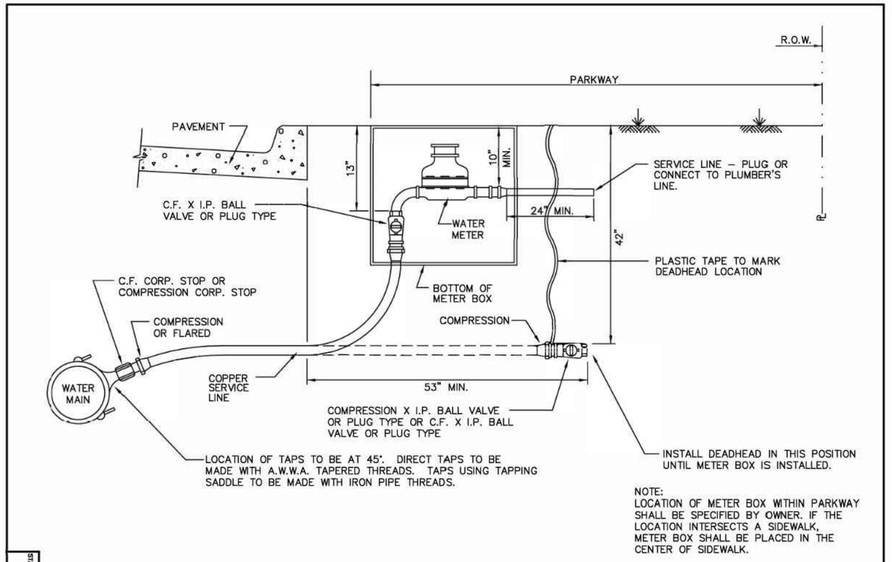
P.M. JF
JOB 24007256
SHEET NO. 96

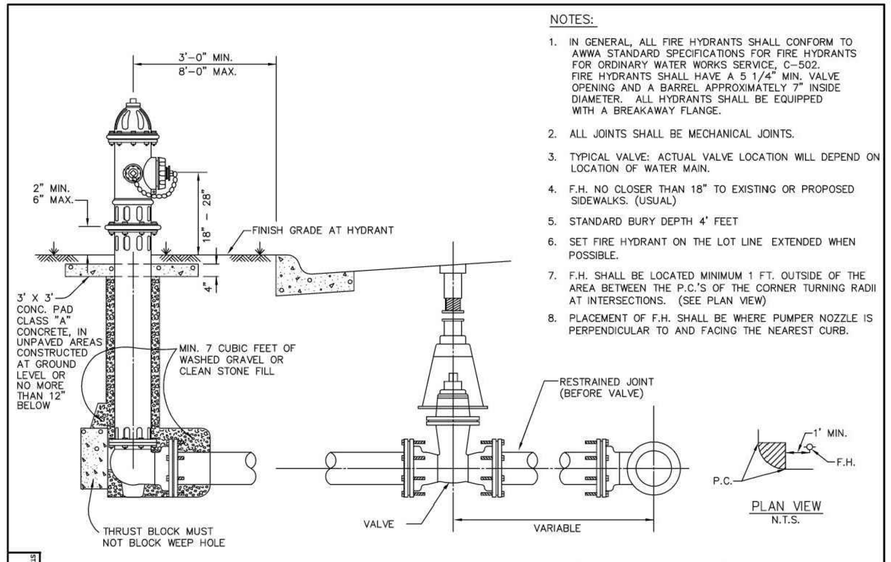
CAD FILE: 24007256-PHI-DTLS.DWG




STANDARD DRAWING NO. 4130

| WATER SERVICE INSTALLATION | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 502.10.3* | |
|---|---|---|---|
| 3/4" OR 1" LINE | | DATE OCT. '04 | STANDARD DRAWING NO. 4130 |

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*




NOTES:

1. IN GENERAL, ALL FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARD SPECIFICATIONS FOR FIRE HYDRANTS FOR ORDINARY WATER WORKS SERVICE, C-502. FIRE HYDRANTS SHALL HAVE A 5 1/4" MIN. VALVE OPENING AND A BARREL APPROXIMATELY 7" INSIDE DIAMETER. ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE.
2. ALL JOINTS SHALL BE MECHANICAL JOINTS.
3. TYPICAL VALVE: ACTUAL VALVE LOCATION WILL DEPEND ON LOCATION OF WATER MAIN.
4. F.H. NO CLOSER THAN 18" TO EXISTING OR PROPOSED SIDEWALKS. (USUAL)
5. STANDARD BURY DEPTH 4' FEET
6. SET FIRE HYDRANT ON THE LOT LINE EXTENDED WHEN POSSIBLE.
7. F.H. SHALL BE LOCATED MINIMUM 1 FT. OUTSIDE OF THE AREA BETWEEN THE P.C.'S OF THE CORNER TURNING RADII AT INTERSECTIONS. (SEE PLAN VIEW)
8. PLACEMENT OF F.H. SHALL BE WHERE PUMPER NOZZLE IS PERPENDICULAR TO AND FACING THE NEAREST CURB.

STANDARD DRAWING NO. 4120

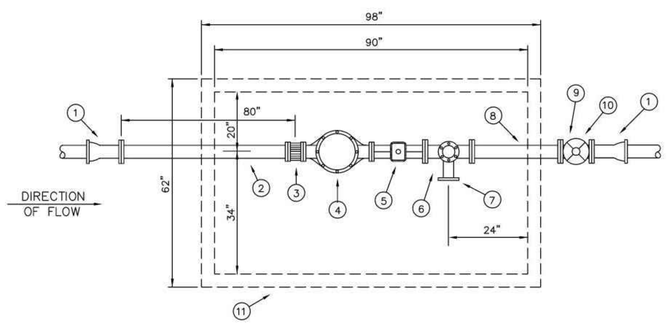
| FIRE HYDRANT | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 502.3 | |
|---|---|---|---|
| INSTALLATION | | DATE OCT. '04 | STANDARD DRAWING NO. 4120 |

MATERIALS LIST

| PART NO. | QUANTITY | DESCRIPTION |
|---|---|---|
| ① | 2 EA. | 8" X 12" D.I. NIPPLE M.J. X F. |
| ② | 1 EA. | 8" X 36" D.I. NIPPLE F. X SLEEVE |
| ③ | 1 EA. | 8" FLANGED COUPLING ADAPTER |
| ④ | 1 EA. | 8" U.L. APPROVED (FOR TURBINE) |
| ⑤ | 1 EA. | 8" TURBINE METER |
| ⑥ | 1 EA. | 8" X 4" D.I. TEE F. X F. (TEST PT) |
| ⑦ | 1 EA. | 8" BLIND FLG F. X F. |

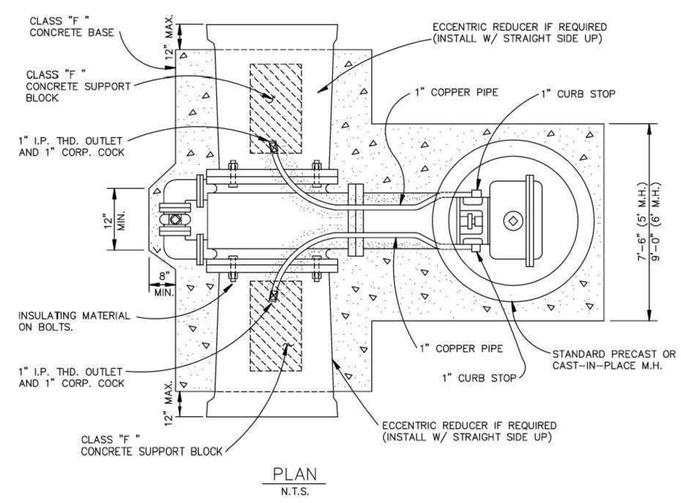
MATERIALS LIST

| PART NO. | QUANTITY | DESCRIPTION |
|---|---|---|
| ⑧ | 1 EA. | 8" X 24" D.I. NIPPLE F X F. |
| ⑨ | 1 EA. | 8" GATE VALVE F. X F. |
| ⑩ | 1 EA. | VALVE STACK RISER COVER & LID |
| ⑪ | 1 EA. | PRECAST METER VAULT |
| | 1 EA. | VAULT FLOOR (NOT SHOWN) |
| | 1 EA. | ACCESS HATCH (NOT SHOWN) |




STANDARD DRAWING NO. 4170

| 8" FIRE LINE STANDPIPE | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 502.10 | |
|---|---|---|---|
| SERVICE WITH 8" METER | | DATE OCT. '04 | STANDARD DRAWING NO. 4170 |




STANDARD DRAWING NO. 4060A

| VAULT CONSTRUCTION | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 702.5.8.8* | |
|---|---|---|---|
| HORIZONTAL GATE VALVE ≧ 16" | | DATE OCT. '04 | STANDARD DRAWING NO. 4060A |

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*

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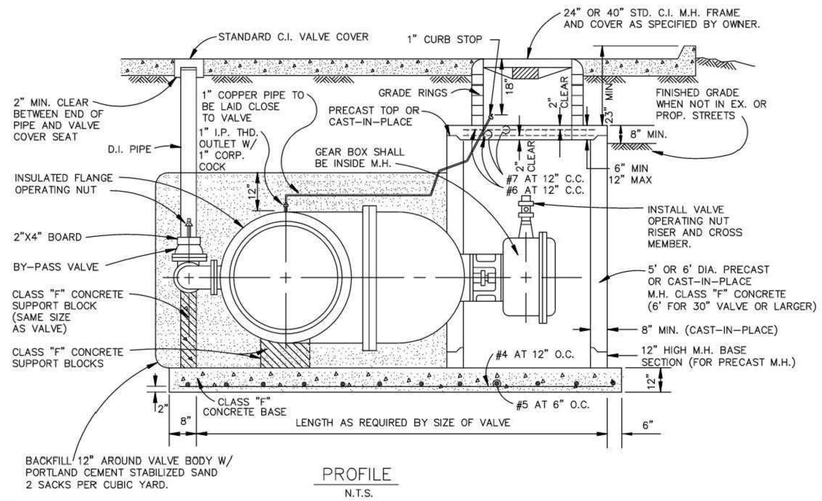


PROFILE
N.T.S.

STANDARD DRAWING NO. 4060B

| VAULT CONSTRUCTION | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 702.5.8.8* | |
|---|---|---|---|
| HORIZONTAL GATE VALVE ≥ 16" | | DATE OCT. '04 | STANDARD DRAWING NO. 4060B |

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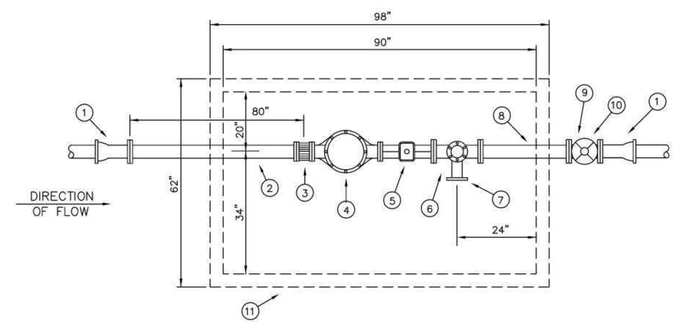
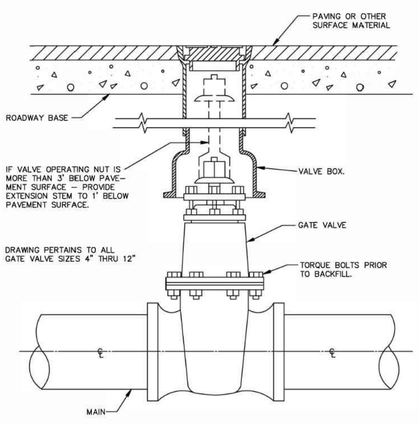



STANDARD DRAWING NO. 4170

| 8" FIRE LINE STANDPIPE | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 502.10 | |
|---|---|---|---|
| SERVICE WITH 8" METER | | DATE OCT. '04 | STANDARD DRAWING NO. 4170 |

NOTE:

IN UNPAVED AREAS, INSTALL 2' x 2' x 6" CONCRETE VALVE PAD FLUSH WITH THE TOP OF VALVE BOX. REINFORCE WITH #3 BARS ON 6" CENTERS BOTH WAYS.




GATE VALVE BOX AND EXTENSION STEM
N.T.S.

| GATE VALVE 4" TO 12" | North Central Texas Council of Governments | STANDARD SPECIFICATION REFERENCE 502.6.6* | |
|---|---|---|---|
| BOX & EXTENSION STEM | | DATE OCT. '04 | STANDARD DRAWING NO. 4050 |

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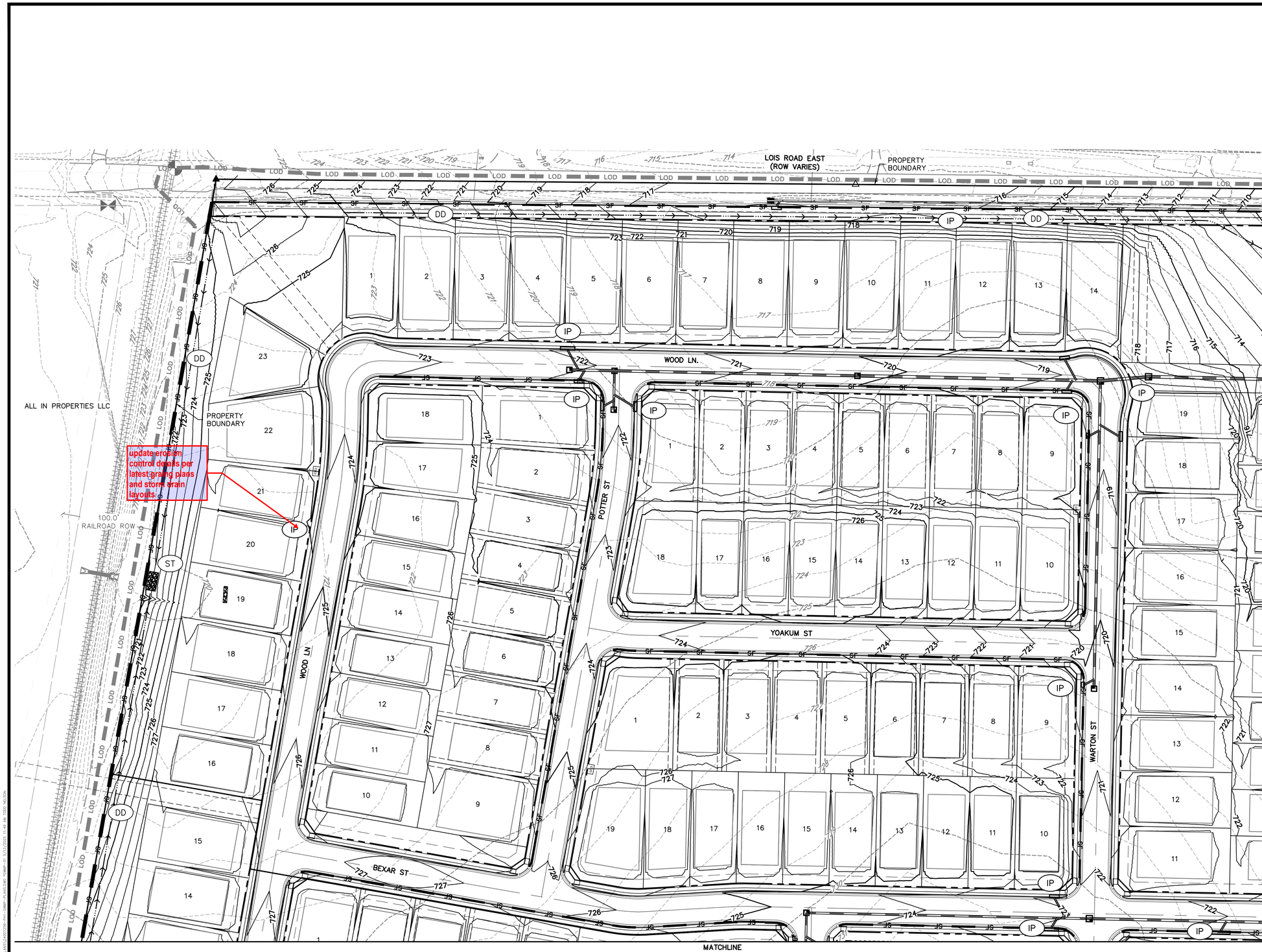


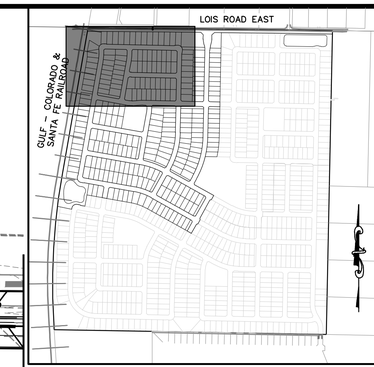


KEYMAP
1"=750'

LEGEND

| | |
|---|---|
| | PROPERTY BOUNDARY |
| | PROPOSED RIGHT-OF-WAY |
| | EXISTING RIGHT-OF-WAY |
| | EXISTING SECTION LINE |
| | PROPOSED EASEMENT |
| | EXISTING EASEMENT |
| | PROPOSED CONTOURS |
| | EXISTING CONTOURS |
| LOC | LOD — LIMITS OF DISTURBANCE |
| SF | SF — SILT FENCE |
| | DD — DIVERSION DITCH |
| | SP — STOCK PILE |
| | SB — SEDIMENT BASIN |
| | CWM — CONCRETE WASTE MANAGEMENT |
| | SCE — STABILIZED CONSTRUCTION EXIT |
| | ST — SEDIMENT TRAP |
| | IP — INLET PROTECTION |

( IN FEET )
1 inch = 50 ft.

**BENCHMARK:**
AN "X" CUT IN CONCRETE LOCATED WITHIN THE INTERSECTION OF LOIS ROAD EAST AND THE GULF COAST AND SANTA FE RAILROAD RIGHTS-OF-WAY, HAVING AN ELEVATION OF 729.3 FEET, A NORTHING COORDINATE VALUE OF 7,192,162.0, AND AN EASTING COORDINATE VALUE OF 2,374,666.1.

BEARINGS AND ELEVATIONS SHOWN HEREON ARE BASED ON NAD 83 TEXAS STATE PLANE COORDINATES, NORTH CENTRAL ZONE, NAVD 88.

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STORM WATER POLLUTION PREVENTION PLAN
SWPPP–1

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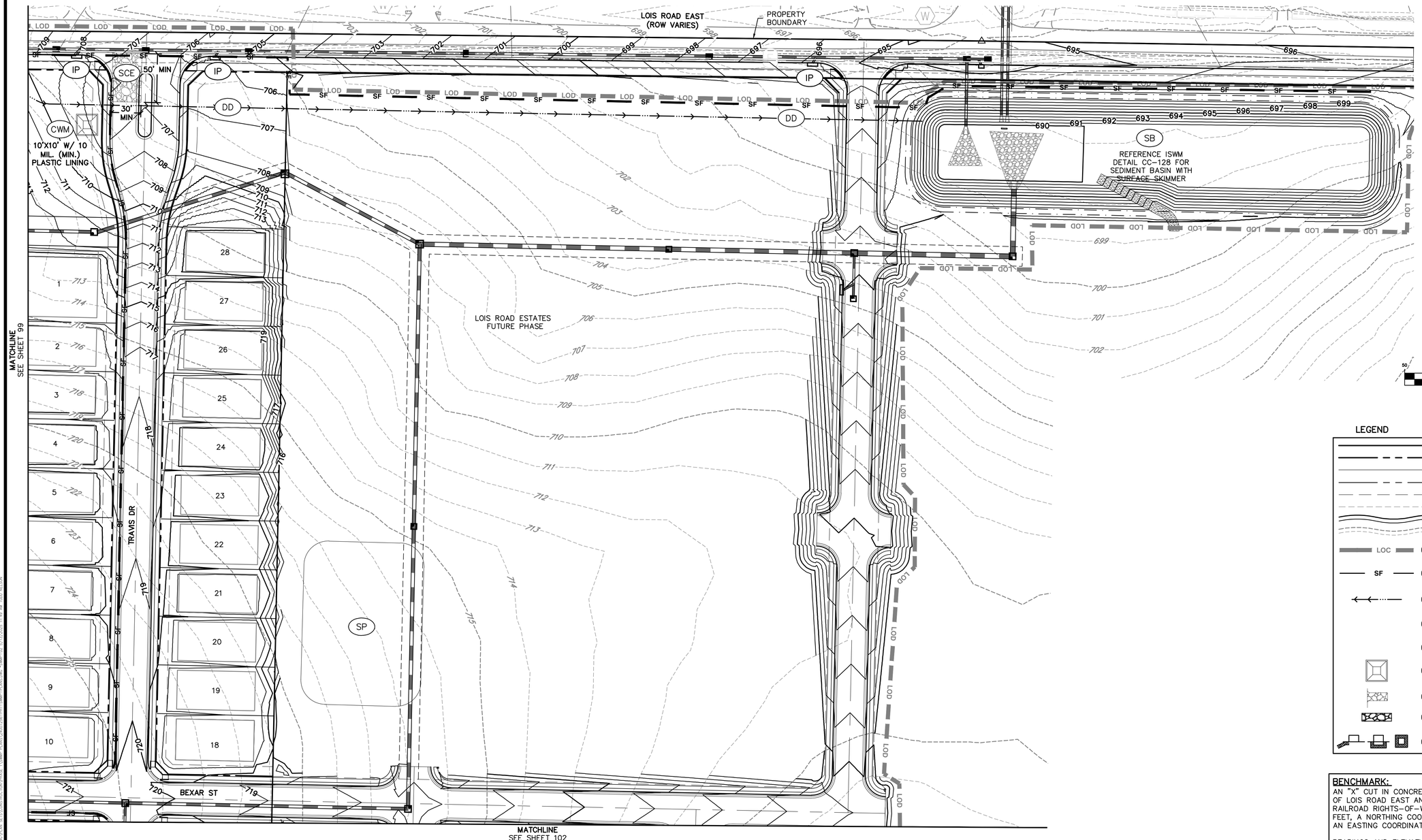


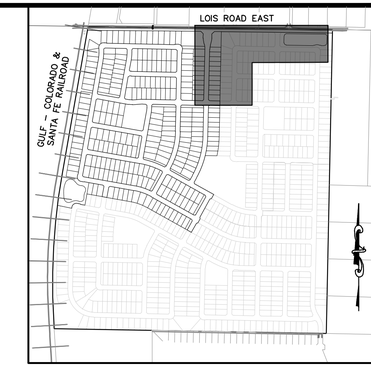


KEYMAP
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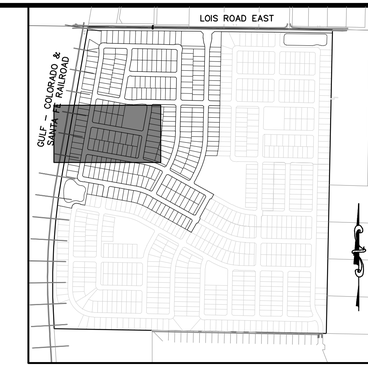


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CITY OF SANGER, COUNTY OF DENTON,
STATE OF TEXAS
STORM WATER POLLUTION PREVENTION PLAN
SWPPP–3

DATE 4/7/2025

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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 101

CAD FILE: 24007256-PH1-SWPP-PLANS.DWG

KEYMAP
1"=750'

LEGEND

| | |
|---|---|
| | PROPERTY BOUNDARY |
| | PROPOSED RIGHT-OF-WAY |
| | EXISTING RIGHT-OF-WAY |
| | EXISTING SECTION LINE |
| | PROPOSED EASEMENT |
| | EXISTING EASEMENT |
| | PROPOSED CONTOURS |
| | EXISTING CONTOURS |
| LOC | LOD — LIMITS OF DISTURBANCE |
| SF | SF — SILT FENCE |
| | DD — DIVERSION DITCH |
| | SP — STOCK PILE |
| | SB — SEDIMENT BASIN |
| | CWM — CONCRETE WASTE MANAGEMENT |
| | SCE — STABILIZED CONSTRUCTION EXIT |
| | ST — SEDIMENT TRAP |
| | IP — INLET PROTECTION |

50 0 50 100
( IN FEET )
1 inch = 50 ft.

**BENCHMARK:**
AN "X" CUT IN CONCRETE LOCATED WITHIN THE INTERSECTION OF LOIS ROAD EAST AND THE GULF COAST AND SANTA FE RAILROAD RIGHTS-OF-WAY, HAVING AN ELEVATION OF 729.3 FEET, A NORTHING COORDINATE VALUE OF 7,192,162.0, AND AN EASTING COORDINATE VALUE OF 2,374,666.1.

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P.M. JF
JOB 24007256
SHEET NO. 102

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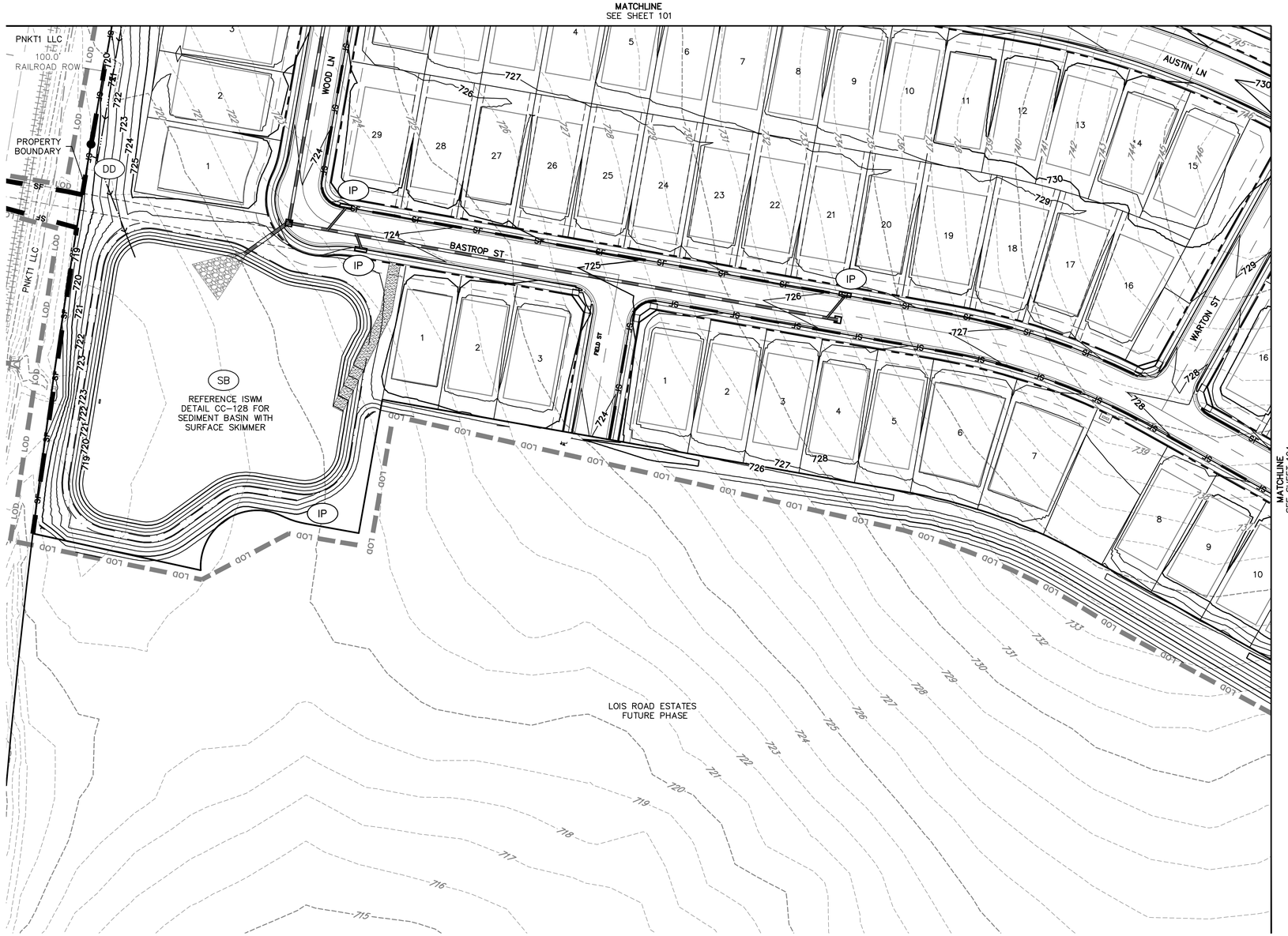


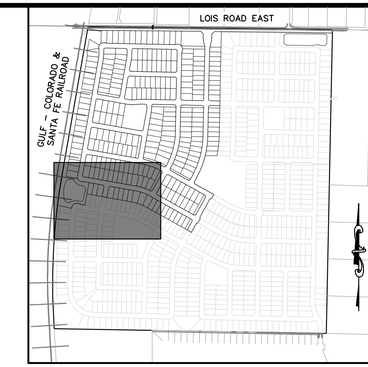


KEYMAP
1"=750'

LEGEND

| | |
|---|---|
| | PROPERTY BOUNDARY |
| | PROPOSED RIGHT-OF-WAY |
| | EXISTING RIGHT-OF-WAY |
| | EXISTING SECTION LINE |
| | PROPOSED EASEMENT |
| | EXISTING EASEMENT |
| | PROPOSED CONTOURS |
| | EXISTING CONTOURS |
| LOC | LOD LIMITS OF DISTURBANCE |
| SF | SF SILT FENCE |
| | DD DIVERSION DITCH |
| | SP STOCK PILE |
| | SB SEDIMENT BASIN |
| | CWM CONCRETE WASTE MANAGEMENT |
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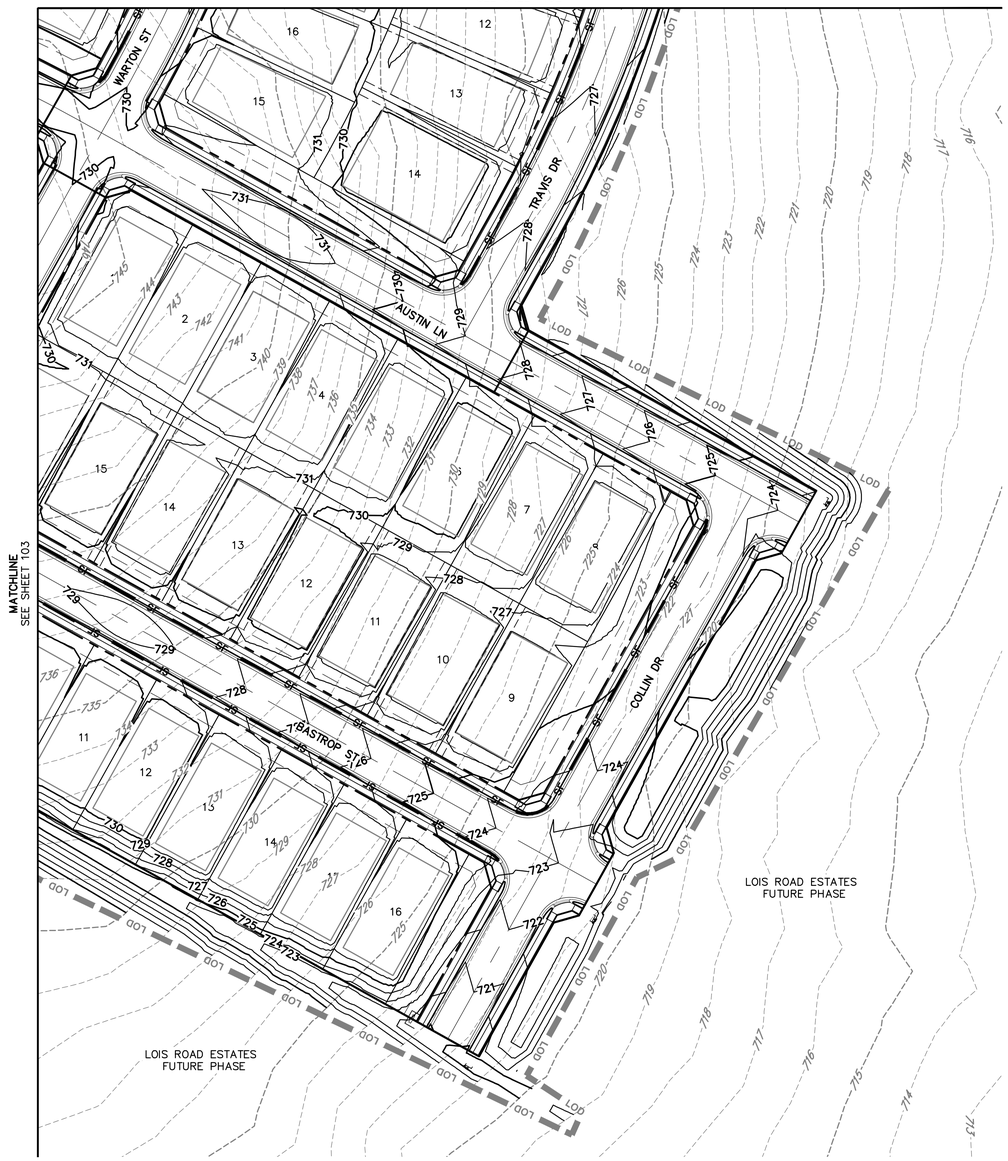
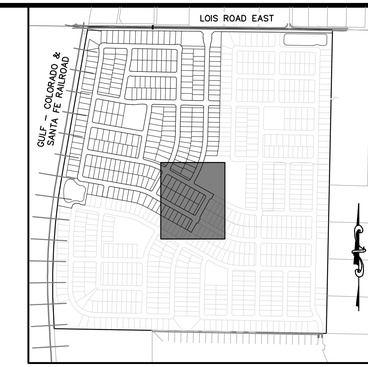
DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 103

CAD FILE: 24007256-PH1-SWMP-PLANS.DWG

MATCHLINE
SEE SHEET 102




MATCHLINE
SEE SHEET 103




KEYMAP
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| | |
|---|---|
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| | EXISTING RIGHT-OF-WAY |
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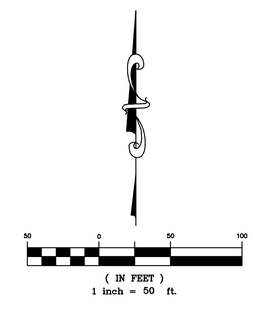


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JOB 24007256
SHEET NO. 104

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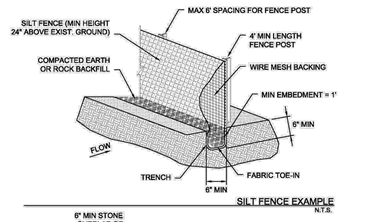
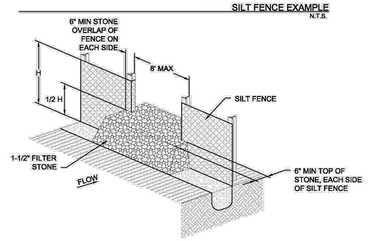



SILT FENCE EXAMPLE
N.T.S.



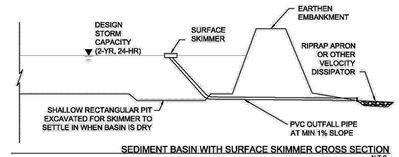

STONE OVERFLOW STRUCTURE EXAMPLE
N.T.S.

NOTES: 1. DESIGN SHALL SHOW ON THE DRAWINGS THE LOCATIONS WHERE OVERFLOW STRUCTURES SHALL BE INSTALLED. OVERFLOW STRUCTURES ARE REQUIRED AT ALL LOW POINTS AND AT A SPACING OF APPROXIMATELY 300 FT WHERE NO LOW POINT IS APPARENT.
2. DESIGNER SHALL ON THE DRAWINGS THE LOCATIONS WHERE SILT FENCE IS TO BE TURNED UPSLOPE. UPSLOPE LENGTHS SHALL BE A MINIMUM OF 10 FEET.

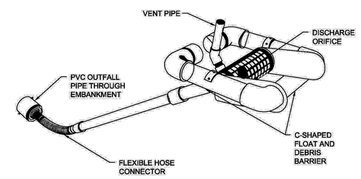
**Figure 3.28 Schematics of Silt Fence**








SEDIMENT BASIN WITH SURFACE SKIMMER CROSS SECTION
N.T.S.

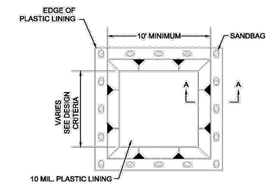



EXAMPLE OF SURFACE SKIMMER
N.T.S.

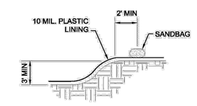
**Figure 3.19 Schematics of Sediment Basin with Surface Skimmer**
(Source: J.W. Faircloth & Son, Inc.)








CONCRETE WASHOUT PLAN VIEW
N.T.S.



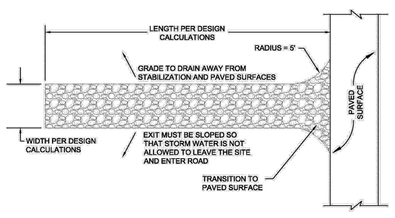

CONCRETE WASHOUT SECTION A-A
N.T.S.

NOTE: SANDBAGS MAY BE REPLACED BY A SOIL BERM TO ANCHOR THE PLASTIC LINING.

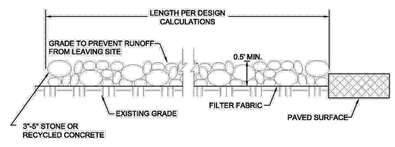
**Figure 4.1 Schematics of Concrete Washout Containment**








PLAN VIEW
N.T.S.



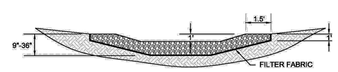

CROSS SECTION
N.T.S.

NOTE: INSTALL SILT FENCE, CONSTRUCTION SAFETY FENCING, OR SIMILAR BARRIER ALONG THE EXIT TO DIRECT TRAFFIC INTO THE EXIT.

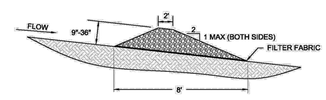
**Figure 3.29 Schematics of Stabilized Construction Exit**



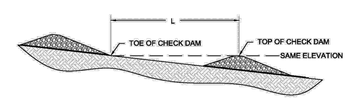





ROCK CHECK DAM VIEW LOOKING UPSTREAM
N.T.S.




CROSS SECTION OF ROCK CHECK DAM
N.T.S.




SPACING BETWEEN ROCK CHECK DAMS
N.T.S.

NOTES: ACTUAL DIMENSIONS OF THE CHECK DAMS SHALL BE DESIGNED BASED ON FLOW CONDITIONS IN THE DRAINAGE SWALE OR DITCH. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETERS USED TO DESIGN THE CHECK DAMS:

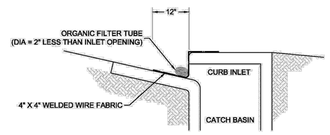
*HEIGHT OF CHECK DAMS BASED ON SWALE OR DITCH DIMENSIONS AND FLOW CONDITIONS.

*SPACING OF CHECK DAMS BASED ON GRADE OF THE SWALE OR DITCH. TOP OF DOWNSTREAM DAM SHALL BE AT SAME ELEVATION AS TOE OF UPSTREAM DAM

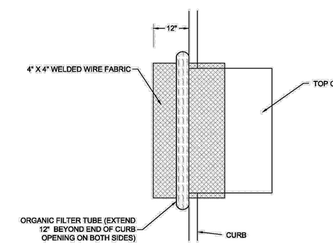
**Figure 2.1 Schematics of Rock Check Dams**
(Source: Modified from Stormwater Management Manual for Western Washington)








ORGANIC FILTER TUBE CURB INLET PROTECTION CROSS SECTION
N.T.S.



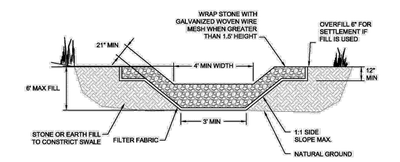

ORGANIC FILTER TUBE CURB INLET PROTECTION PLAN VIEW
N.T.S.

NOTE: THIS CONTROL WILL DECREASE THE CAPACITY OF THE INLET. IT SHALL ONLY BE USED WHEN AN ENGINEER HAS DETERMINED THERE IS ADEQUATE STORAGE OR POSITIVE OVERFLOW.

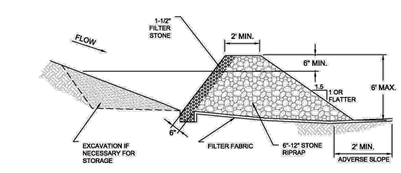
**Figure 3.6 Schematics of Organic Filter Tube Curb Inlet Protection**
(Source: Modified from City of Plano BMP SP-4)








EXCAVATED STONE OUTLET SEDIMENT TRAP VIEW LOOKING UPSTREAM
N.T.S.




EXCAVATED STONE OUTLET SEDIMENT TRAP SECTION VIEW
N.T.S.

NOTE: ACTUAL DIMENSIONS OF THE SEDIMENT TRAP SHALL BE DESIGNED BASED ON FLOW CONDITIONS AND SITE TOPOGRAPHY. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETER USED TO DESIGN THE TRAP.

* SIZE OF CONTRIBUTING DRAINAGE AREA
* DESIGN STORM VOLUME AND FLOW RATE AT THE TRAP
* HEIGHT, SLOPE, AND LENGTH OF STONE OUTLET
* STORAGE VOLUME
* EXTENT OF GRADING TO PROVIDE THE CONTROLLED OUTLET

**Figure 3.30 Schematics of Excavated Stone Outlet Sediment Trap**



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REVISIONS

DR. TN CH. KB
P.M. JF
JOB 24007256
SHEET NO. 105

CAD FILE: 24007256-PHI-SWMP COVER_NOTES_DETAILS.DWG

# OVERALL PLAN | PHASE 01

**LOIS ROAD ESTATES | SANGER, TX** | CONCEPTUAL DESIGN

05/12/2025

**DESIGN INTENT ONLY, SUBJECT TO CHANGE*

NORTH

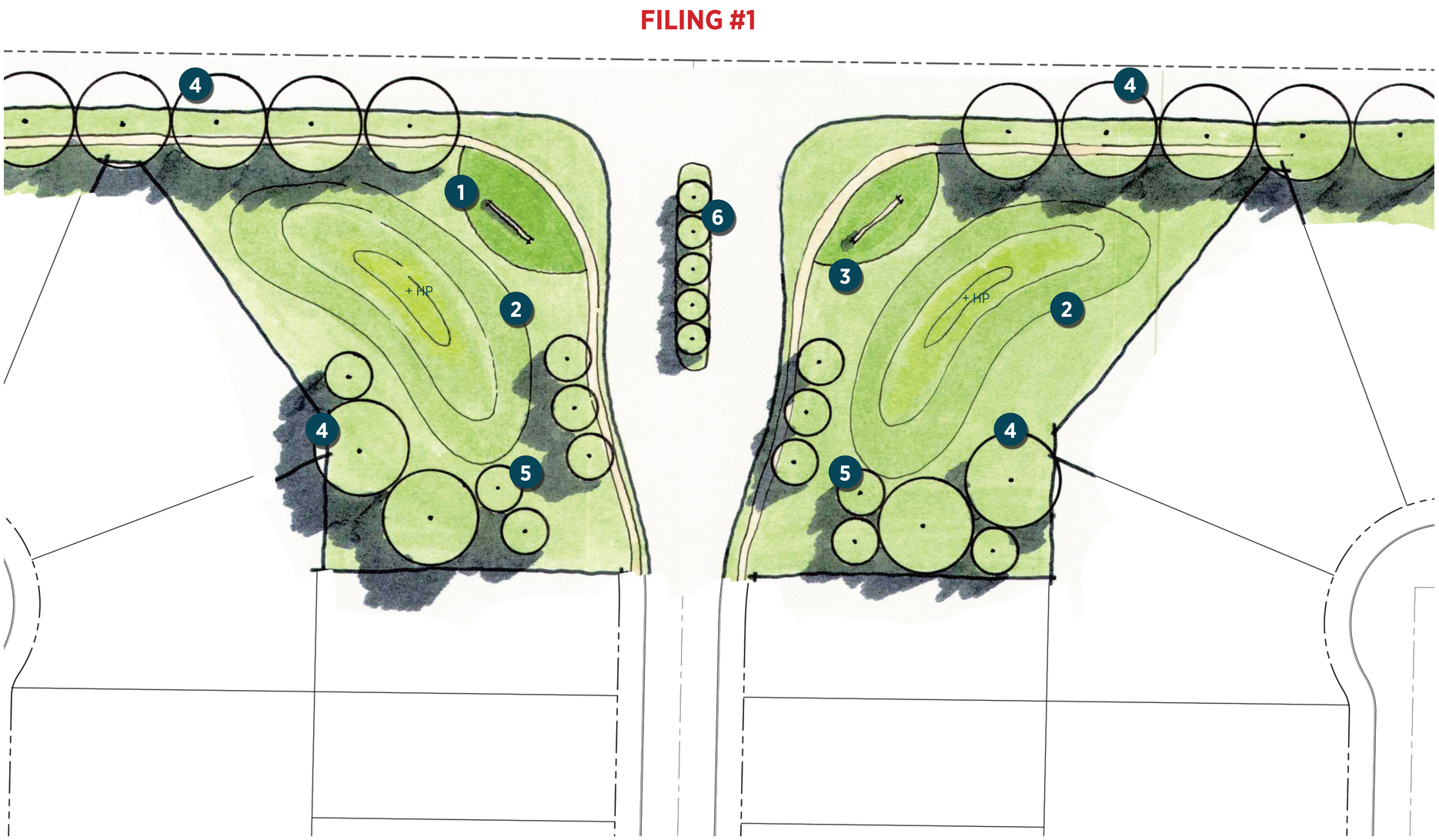
0' 200' 400' 800'

SCALE: 1' = 400'

NORRIS DESIGN

PEOPLE + PLACEMAKING

# PRIMARY ENTRY | SITE PLAN



KEY MAP: NTS

## LEGEND

1. ENTRY MONUMENT SIGNAGE
2. SLOPED BERM
3. ANNUAL COLOR PLANTING BED
4. NATIVE SHADE TREE
5. NATIVE ORNAMENTAL TREE
6. LOW EVERGREEN SHRUBS



**DESIGN INTENT ONLY, SUBJECT TO CHANGE*

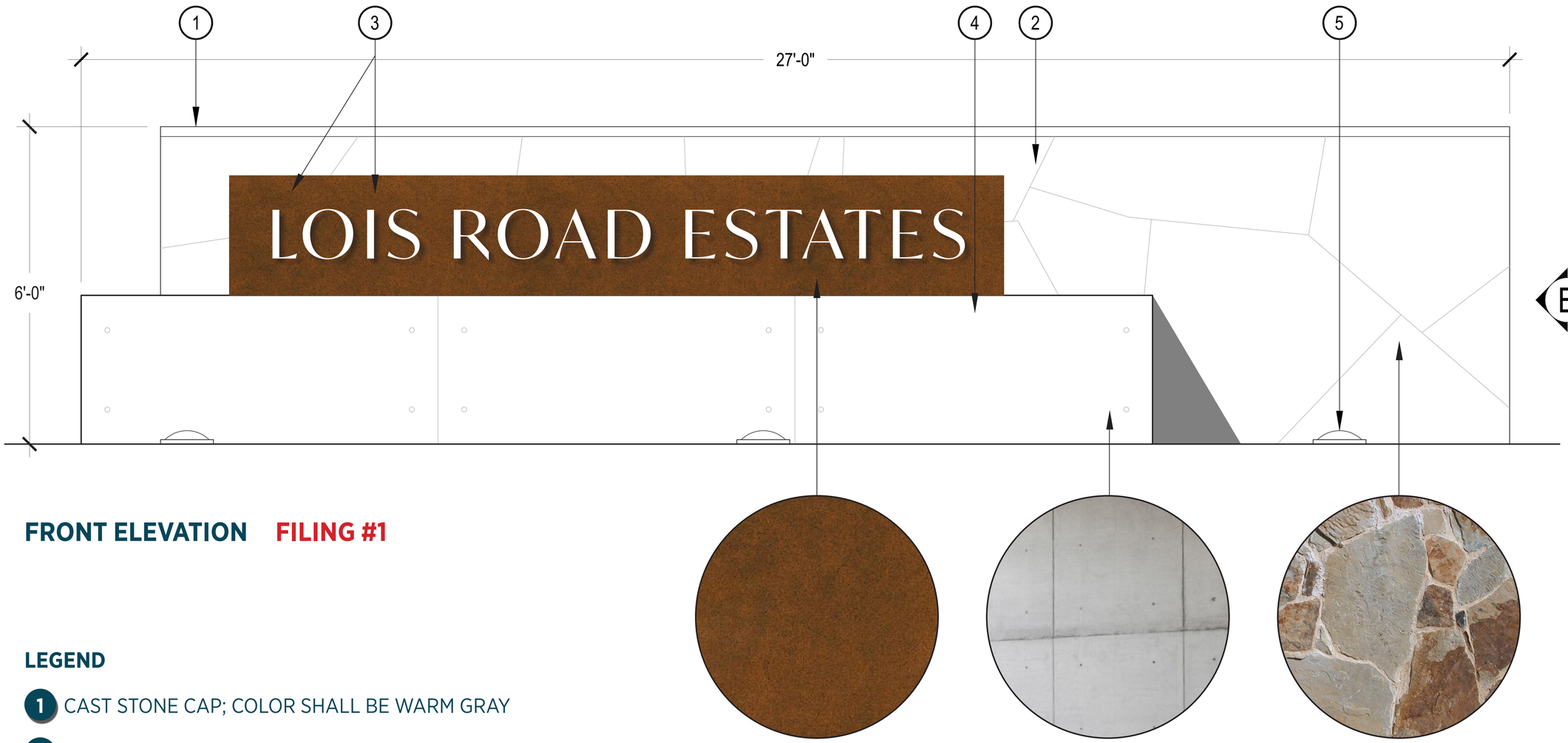
NORTH

0' 10' 20' 40'

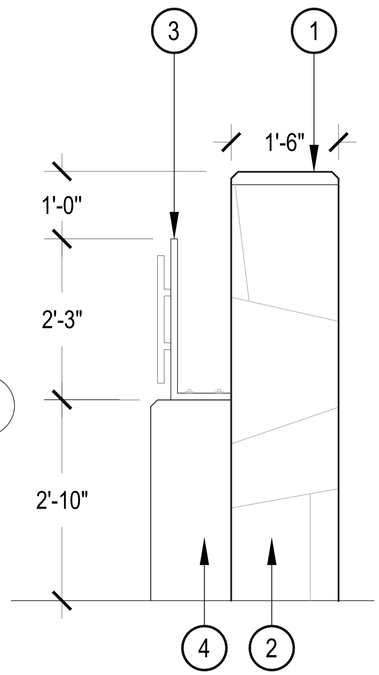
SCALE: 1' = 20'

NORRIS DESIGN
PEOPLE + PLACEMAKING

# ENTRY MONUMENT SIGNAGE | DESIGN + MATERIALS




## FRONT ELEVATION FILING #1




## ELEVATION B

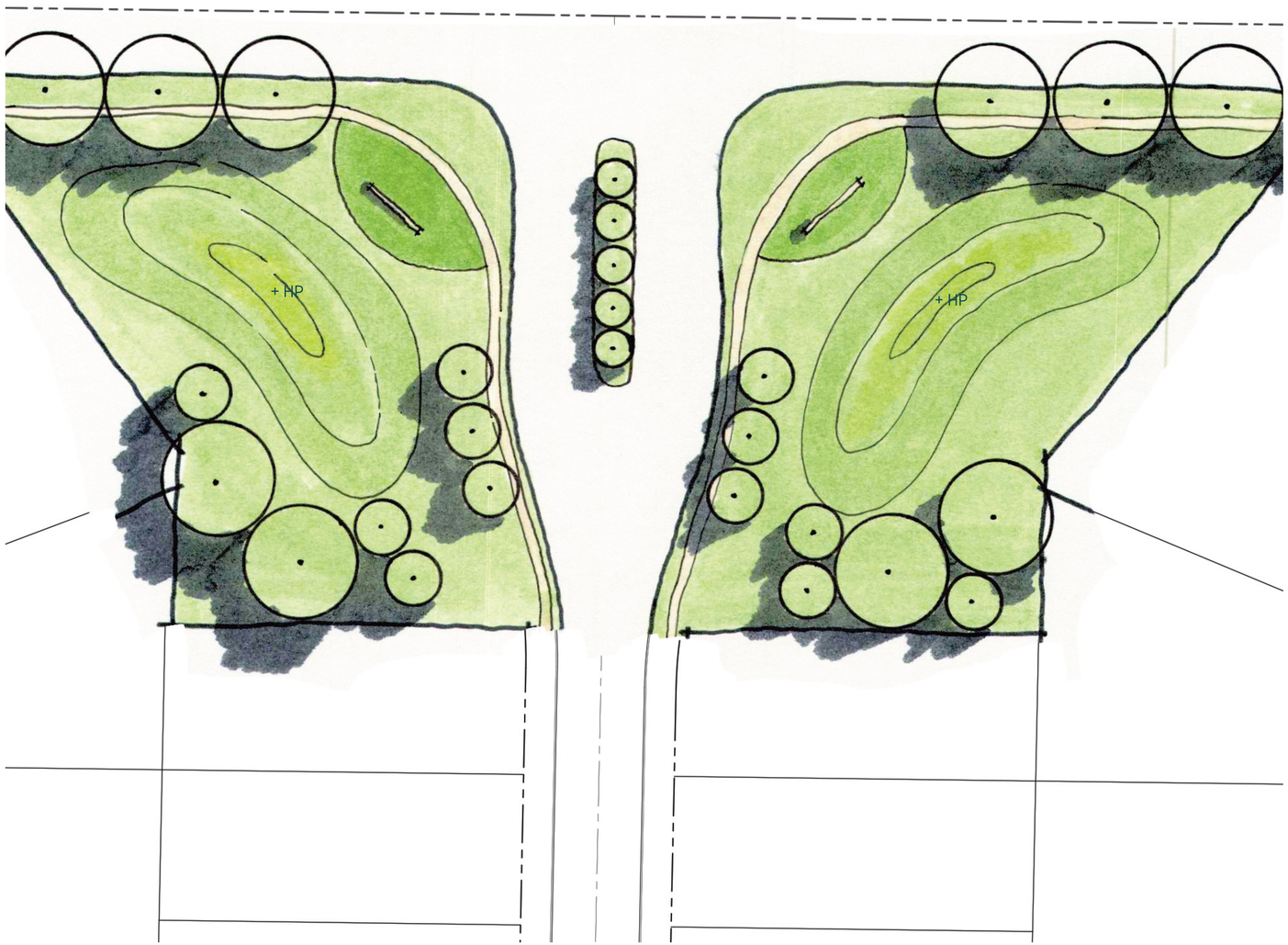
## LEGEND

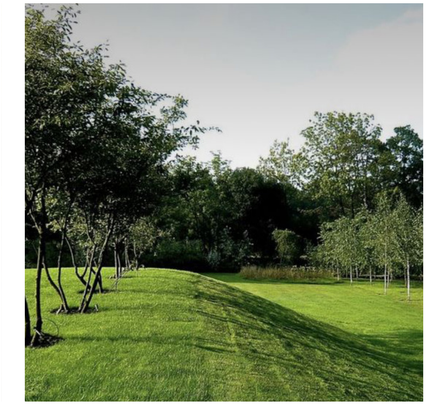
1. CAST STONE CAP; COLOR SHALL BE WARM GRAY
2. FLAGSTONE VENEER
3. ALUMINUM PANEL WITH CORTEN STEEL FINISH; WHITE PIN-MOUNTED LETTERING
4. ARCHITECTURAL CONCRETE WITH TIE HOLE FINISH
5. MONUMENT SIGNAGE UPLIGHT

*FONT: IVYMODE - REGULAR*

# PRIMARY ENTRY | MATERIALS + COMPONENTS

## FILING #1





SLOPED BERMS FOR SCREENING

ANNUAL COLOR PLANTING BED

SHADE TREES + ORNAMENTAL TREES + EVERGREEN SHRUBS



**DESIGN INTENT ONLY, SUBJECT TO CHANGE*

NORTH

0' 10' 20' 40'

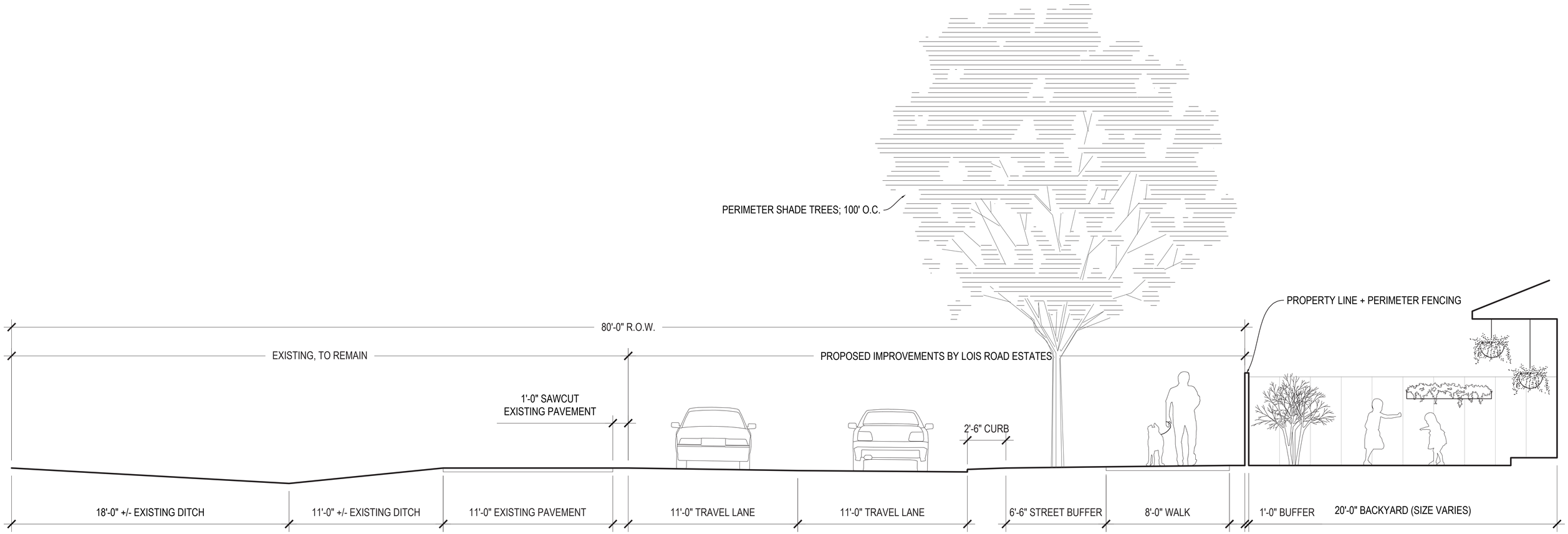
SCALE: 1' = 20'

NORRIS DESIGN

PEOPLE + PLACEMAKING

# PHASE 01 | DESIGN SECTION | PERIMETER FENCING + LANDSCAPE ALONG LOIS ROAD

## FILING #1



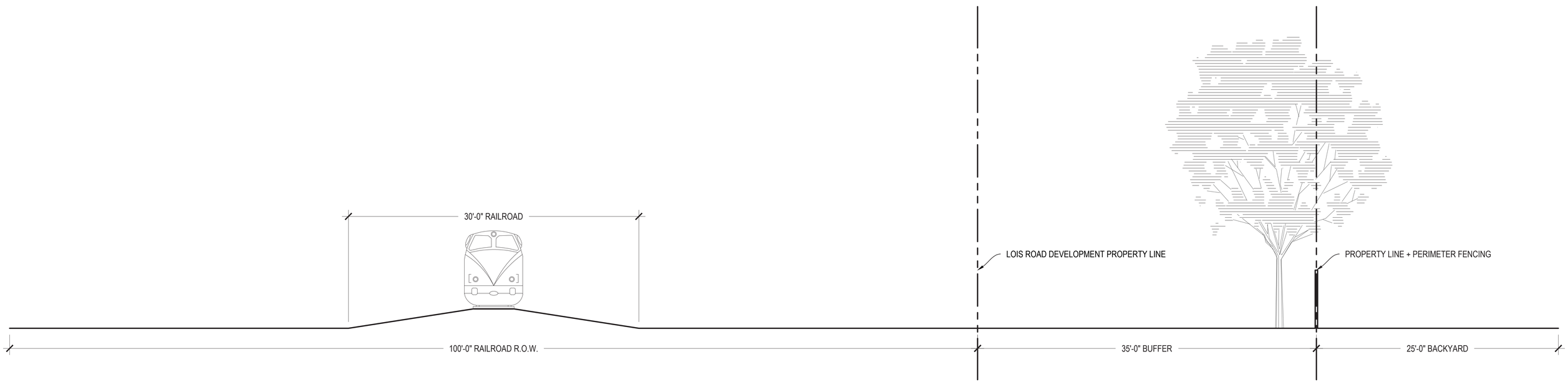



**DESIGN INTENT ONLY, SUBJECT TO CHANGE*

SCALE: 1/4" = 1'-0"

NORRIS DESIGN
PEOPLE + PLACEMAKING

## FILING #1 and #2






**DESIGN INTENT ONLY, SUBJECT TO CHANGE*

SCALE: 3/16" = 1'-0"

NORRIS DESIGN
PEOPLE + PLACEMAKING

# PHASE 01 PARK | SITE PLAN

KEY MAP: NTS

## LEGEND

1. ENHANCED CONCRETE PARK ENTRY
2. CONCRETE WALKING PATH
3. PLAYGROUND
4. SLOPED BERM
5. IRRIGATED GRASS LAWN
6. NATIVE PLANTING BED
7. NATIVE SHADE TREE



**DESIGN INTENT ONLY, SUBJECT TO CHANGE*

NORTH

0' 10' 20' 40'

SCALE: 1' = 20'

NORRIS DESIGN
PEOPLE + PLACEMAKING

FILING #2

## DOUBLE TOWER WITH VALLEY BRIDGE

*AGES 5-12 | 25 USERS*
*KOMPAN*

## DOUBLE SWING COMBINATION

*AGES 2-12 | 9 USERS*
*KOMPAN*

## FOREST BUG SPRINGER + BEE SPRINGER

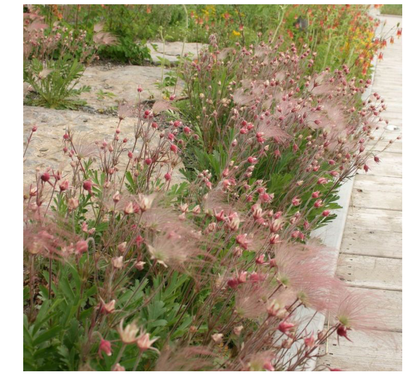
*AGES 2-12 | 1 USER EACH*
*KOMPAN*

**DESIGN INTENT ONLY, SUBJECT TO CHANGE*

NORTH 0' 10' 20' 40' SCALE: 1' = 20'

NORRIS DESIGN
PEOPLE + PLACEMAKING

# PHASE 01 PARK | LANDSCAPE + MATERIALS



NATIVE PLANTING BEDS

ENHANCED PARK ENTRY - CONCRETE PAVERS

CONCRETE PATHS + IRRIGATED GRASS LAWN

SHADE TREES + ORNAMENTAL TREES + EVERGREEN SHRUBS



**DESIGN INTENT ONLY, SUBJECT TO CHANGE*

NORTH

0' 10' 20' 40'
SCALE: 1' = 20'

NORRIS DESIGN
PEOPLE + PLACEMAKING