



July 30, 2024
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: **Stephens Town Crossing Drainage Study -Review #1**

Dear Ms. Hammonds,

Halff Associates, Inc. (Halff) was requested by the City of Sanger to review the drainage study in support of the preliminary plat and engineering plans for the Stephen Town Crossing development located near the intersection of I.H. 35 and FM 455. The subject tract is located within the City of Sanger limits. The drainage study submittal was prepared by Hydrolink Engineering and dated July 2024.

We have completed our review and offer the following comments. Please address comments on attached markups and in the Drainage Study 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 note, an accepted drainage study is required prior to plans acceptance. Additional comments may be added when more data is submitted for review.

Drainage Study

1. Please include summary of modeling and methodology for hydrologic and hydraulic analyses.
2. Please include calculations for existing and proposed drainage areas.
3. Please include supporting hydrologic and hydraulic models to support this analysis and results.
4. Please increase extent of drainage area maps.
5. Please note detention/retention ponds must be designed in accordance with City of Sanger ordinance 10.106.d.10.
6. Please provide additional detail for the proposed ponds:
 - a. Pond Layout details
 - b. Pond must have 1-ft of freeboard for the 100-year storm event and 2-ft sediment storage
 - c. Outfall design and proposed discharge
 - d. Elevation vs Storage table
7. Increase in water surface elevations and/or floodplain width will not be allowed.

If you have any questions or need additional information, please do not hesitate to call me at (214) 937-3953.

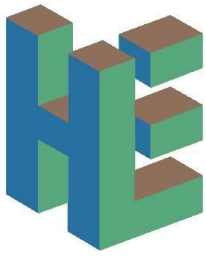
Sincerely,
HALFF
TBPELS Firm No. 312

A handwritten signature in blue ink, appearing to read "Parker C. Moore".

Parker C. Moore, P.E., CFM

Attachments:

- Plans markups



HydroLink Engineering

2121 Midway Road
Suite 310
Carrollton, Texas 75006
TBPE No. F-16629
T.972.738.6111

July 17, 2024

Christopher Wall
JBI Partners, Inc.

**RE: Technical Memo
Stephens Town Crossing
HLE Job No. JBIFOR005**

Dear Mr. Wall:

HydroLink Engineering, LLC. (HLE) has been retained by JBI Partners, Inc. to provide this technical memo for the proposed Stephens Town Crossing development in the City of Sanger. This letter is intended to document the modeling of the floodplain and detention analysis for the proposed development draining to Ranger Branch Tributary 4.

Two separate hydrologic scenarios were prepared for this study. The first model represents the onsite pre-project condition. An additional model represents the onsite post-project condition. Both scenarios consider the offsite land use in the existing condition. These two scenarios are intended to analyze the influence that the proposed development will have on peak discharges in Ranger Branch Tributary 4.

Runoff from the project site discharges onto the downstream property owner at two locations: junction J-B in the southwest corner of the site, and junction J-H in the southeast corner of the site. See the attached Detention Workmap for the location of both flow comparison locations.

In order to ensure that the peak flows at junction J-B are decreasing from pre- to post-project, two ponds with an equalizer pipe between them are proposed at the southwest corner of the site. Both ponds are proposed to have a normal pool elevation of 672.0, and they are to outfall into an existing ditch through 1 - 12'x4' RCB or similar.

In order to detain the peak flows at junction J-H, three wet ponds and two road crossings are proposed along Ranger Branch Tributary 4. The existing wet pond upstream of the site was built as part of the Sanger Circle Phase 6 development in June 2019. This pond is proposed to be improved by extending the normal pool further south to the Stagecoach Trail road crossing. The Stagecoach Trail road crossing is proposed to have 3-7'x3' RCB's. Downstream of the crossing is a 5' tall drop structure which ties the channel in to the second wet pond. This pond is proposed to have a normal pool elevation of 684.0'. Downstream of this pond is a second 4' tall drop structure which ties the second wet pond into the third wet pond. The third wet pond has a normal pool elevation of 680.0' and discharges into the culverts under Joshua Drive. Construction on the Joshua Drive crossing began with the Sanger Circle development but was

not completed. The crossing currently has 3-5'x3' RCB's, but an additional 7'x3' RCB is proposed as part of this development.

The hydrologic modeling shows that by developing the site as detailed above, the 100-year peak flows decrease from pre- to post-project at junctions J-B and J-H. See the attached Detention Workmap for flow comparison tables as well as the location and details on each of the improvements.

Also attached is a Floodplain Workmap which shows the pre- and post-project floodplain delineations along Ranger Branch Tributary 4.

If you have any questions or comments, please contact me using the information provided below.

Sincerely,

HydroLink Engineering, LLC.

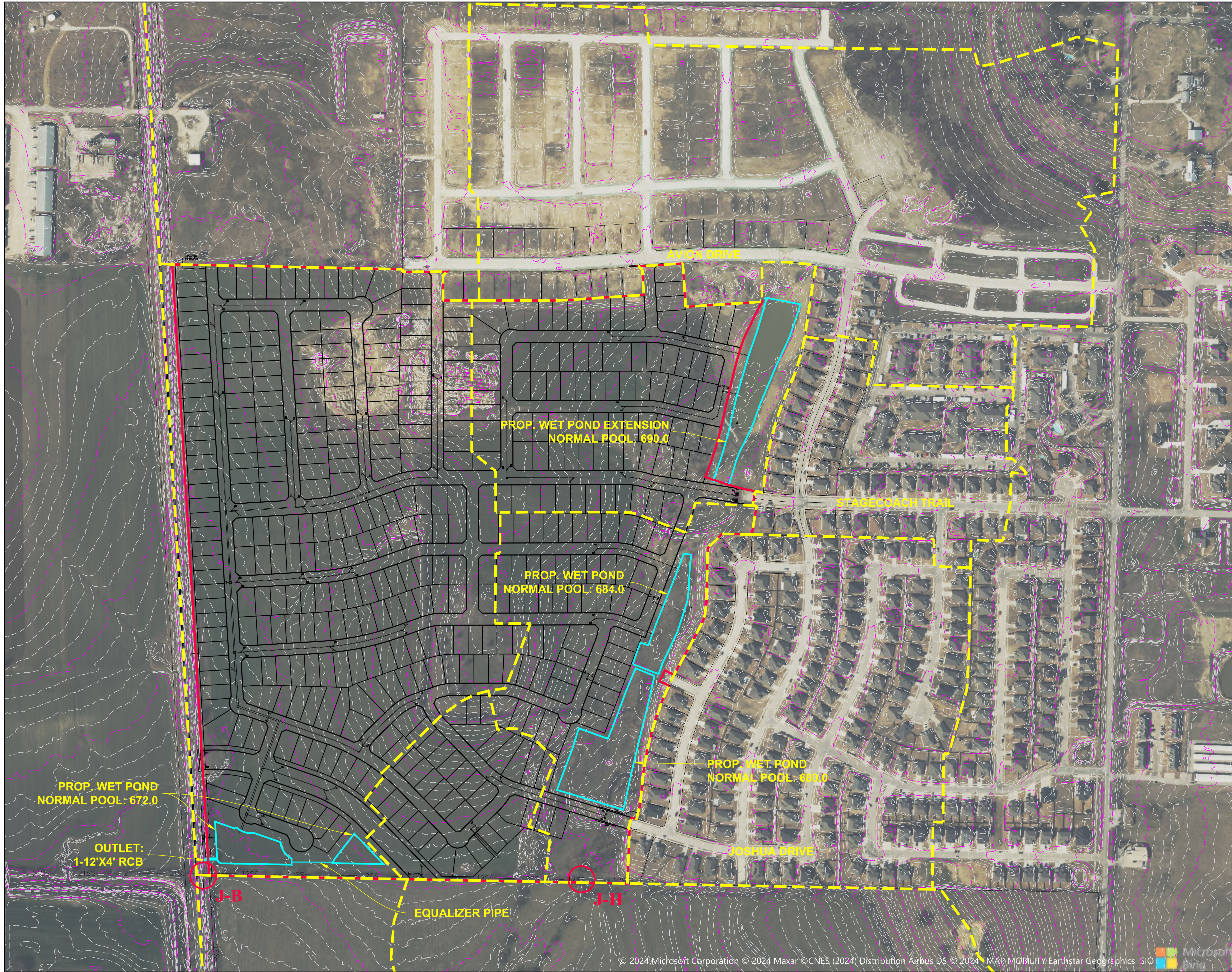


Nicholas R. Grieco, PE, CFM
972-738-0255 Direct
ngrieco@hydrolinkengineering.com

Attachments:

1. Preliminary Detention Workmap
2. Preliminary 100-Year Floodplain Workmap

- Please include summary of modeling methodology and calculations for hydrologic and hydraulic (method, software (if used), calculations, etc) analyses
- Please include calculations table for existing and proposed drainage areas. Be sure to include all necessary input parameters (Tc, C, etc.) and supporting documentation.
- Please include supporting hydrologic and hydraulic models to support this analysis and results.



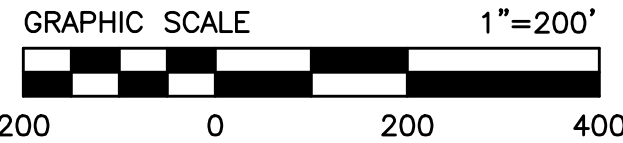
LEGEND

- DRAINAGE BASIN
- PROPERTY LINE
- POND NORMAL POOL
- J-A FLOW COMPARISON POINT
- 600 MAJOR CONTOUR
- MINOR CONTOUR



- Please include existing drainage area map and calculations to support results table below
- Please include proposed drainage area map runoff calculations.
- Please increase extent of drainage area map to include all drainage areas.
- Please include supporting information for proposed retention ponds (required storage, elevation-volume curves, outfall configuration, etc)
- Please note detention/retention ponds must be designed using the criteria outlined in City of Sanger ordinance 10.106.d.10. Provide supporting documentation to prove criteria is being met.

Junction	Pre-Project (cfs)	Post-Project (cfs)	Delta (cfs)
J-B	704.7	695.1	-9.6
J-H	705.3	689.2	-16.1



NOTES:
1. THE TOPOGRAPHY SHOWN WAS CONSTRUCTED USING
LIDAR DATA OBTAINED FROM TNRIS.

DESIGNED BY:

DRAWN BY:

CHECKED BY:

PRELIMINARY
FOR REVIEW ONLY



HydroLink
Engineering

www.hydrolinkengineering.com
Texas Registered Engineering Firm F-16629

2121 Midway Road
Suite 310
Carrollton, Texas 75006
Main 972.738.6111

DETENTION WORKMAP			PROJECT NO.
RANGER BRANCH TRIBUTARY 4			FOR005
STEPHENS TOWN CROSSING			SHEET NO.
CITY OF SANGER, DENTON COUNTY, TEXAS			-

LEGEND

- PRE-PROJECT 100 YR FLOODPLAIN (1% Annual Chance)
- POST-PROJECT 100 YR FLOODPLAIN (1% Annual Chance)
- FEMA EFFECTIVE 100 YR FLOODPLAIN (1% Annual Chance)
- STREAM CENTERLINE
- PROPERTY LINE
- 600

MAJOR CONTOUR
- MINOR CONTOUR
- 1000

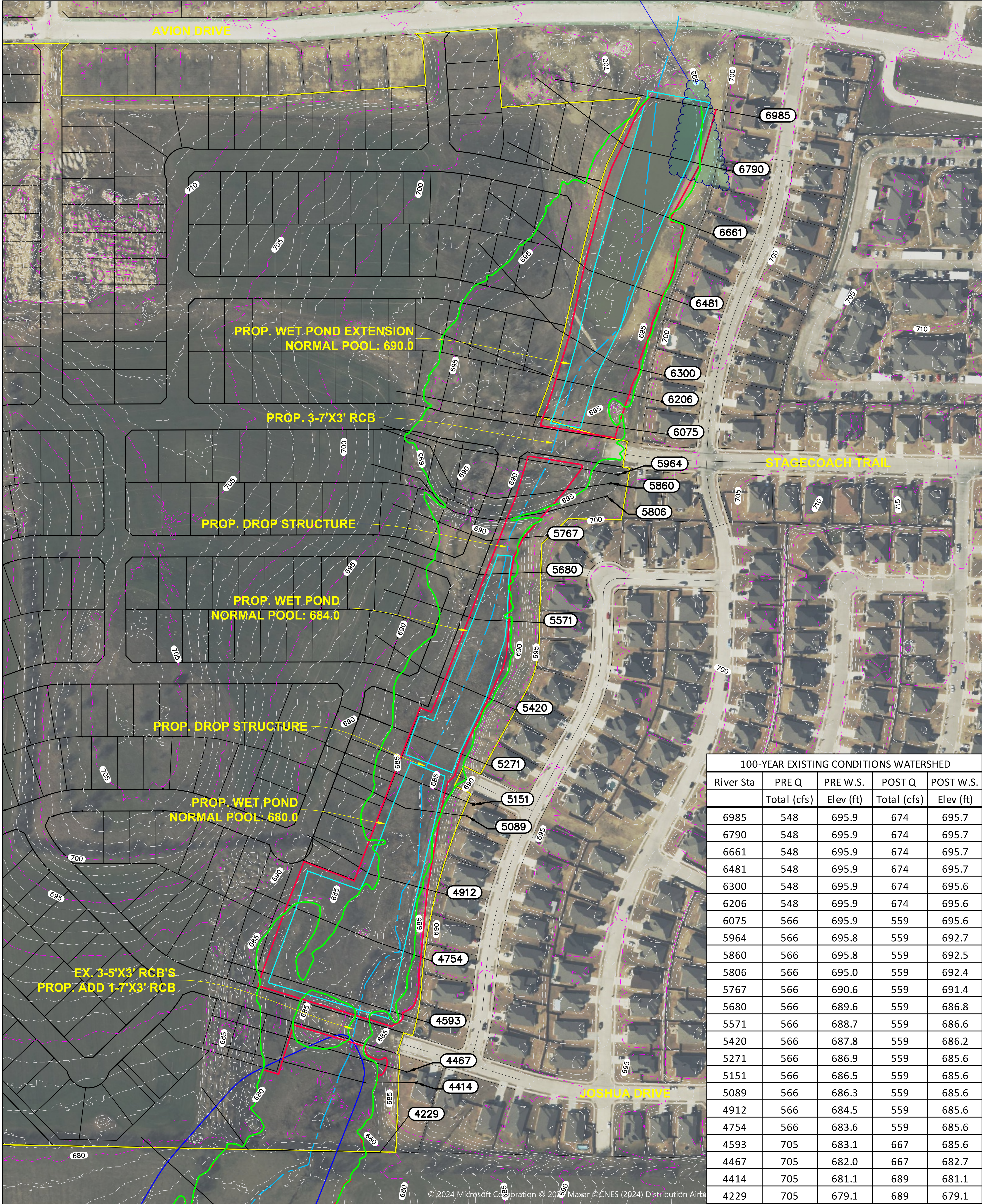
CROSS SECTION NAME



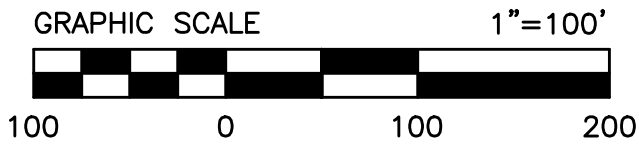
-What does the other light blue symbol represent? Not the centerline
-Increases in water surface elevations will not be allowed.

Increase in floodplain appears to occur outside project site. This is not allowed.

NOTES:
1. THE EFFECTIVE FLOODPLAIN SHOWN IS PER FEMA FIRM PANEL 48121C0210G DATED APRIL 18, 2011.
2. THE TOPOGRAPHY SHOWN WAS CONSTRUCTED USING LIDAR DATA OBTAINED FROM TNRIS.



100-YEAR EXISTING CONDITIONS WATERSHED				
River Sta	PRE Q	PRE W.S.	POST Q	POST W.S.
	Total (cfs)	Elev (ft)	Total (cfs)	Elev (ft)
6985	548	695.9	674	695.7
6790	548	695.9	674	695.7
6661	548	695.9	674	695.7
6481	548	695.9	674	695.7
6300	548	695.9	674	695.6
6206	548	695.9	674	695.6
6075	566	695.9	559	695.6
5964	566	695.8	559	692.7
5860	566	695.8	559	692.5
5806	566	695.0	559	692.4
5767	566	690.6	559	691.4
5680	566	689.6	559	686.8
5571	566	688.7	559	686.6
5420	566	687.8	559	686.2
5271	566	686.9	559	685.6
5151	566	686.5	559	685.6
5089	566	686.3	559	685.6
4912	566	684.5	559	685.6
4754	566	683.6	559	685.6
4593	705	683.1	667	685.6
4467	705	682.0	667	682.7
4414	705	681.1	689	681.1
4229	705	679.1	689	679.1



DESIGNED BY:
DRAWN BY:
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100-YEAR FLOODPLAIN WORKMAP

RANGER BRANCH TRIBUTARY 4

STEPHENS TOWN CROSSING

CITY OF SANGER, DENTON COUNTY, TEXAS

PROJECT NO.
FOR005
SHEET NO.