

Memorandum

To: Jim Sanders, Dave Wilwerding
City of Johnston

Date: 6/1/2017

From: Mark Perington, P.E., PTOE

CC:

RE: May 2, 2017 Working Group Meeting Follow Up
SW Area Road & Traffic Working Group
S&A Project No.: 116.0848.01

Per the May 2nd Working Group meeting and the follow up staff coordination meeting May 18th, please consider the following comments on several different items you asked us to review.

Option C (red alignment) – Hydraulic/Drainage Issues

Although the red alignment provides an alternative to Option B (green line) for an offset to the Foxboro Rd direct alignment/extension concerns, it does present several challenges in constructability with the current private pond and downstream channel.

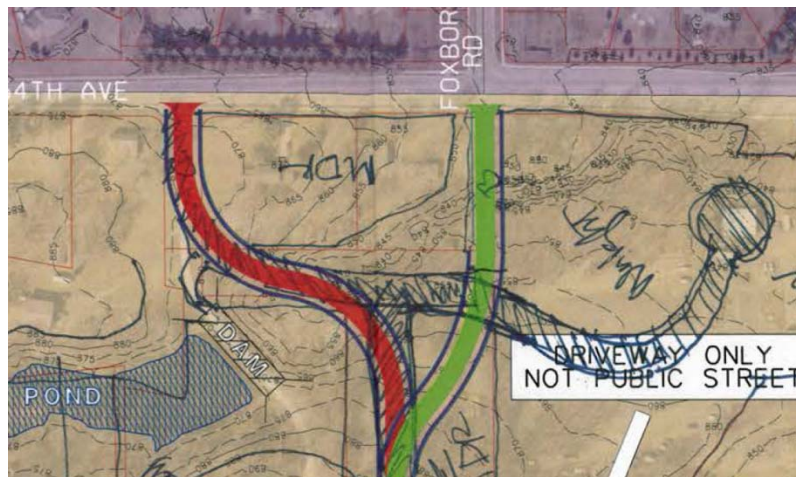
1. Per review of historic aerials, pond seems to date back in to late 60's or early 70's at least.
2. Could it have been built with any sort of federal aid, soil conservation funding grants?
3. Doesn't appear to be a detention facility.
4. Appears to lack a spillway, just a pipe which releases water once it reaches that elevation upstream of dam.
5. Appears size would require permitting by today's standards (Iowa DNR).
6. Uncertainty as to original construction and material/soil make up of current dam.
7. Building the road per exhibit alignment would place earthwork "burden" on existing dam. Would need to understand soils, geotechnical engineering to determine if feasible.
8. Stream channel and wetland mitigation potential, environmental review / 404 permitting.
9. Best choice for Option C would be to take the place of the existing dam. However, construct in an alignment slightly further downstream, perhaps "flatten" the curves a little from the exhibit alignment. Some additional items:
 - a. Assumes Woodsmall property would have interest and willingness
 - b. Impacts on multiple property owners in upstream area (4-6 minimum)
 - c. Reanalyze the drainage area and hydraulics (possible 0.25 SQ mile area - see attached map)
 - d. Greater potential ROW acquisition for City, if City does not purchase still drainage easement issues

- e. Update standards of the dam, potential permitting
- f. Likely ownership by City with public street
- g. This would require extensive geotechnical work, more extensive engineering for roadway
- h. Likely a situation of draining current pond, start over with construction of dam to guarantee design and construction materials
- i. Long term maintenance for City
- j. Significant cost increase for the similar portions of Option C or Option B from the point at the “Y split”. Per prior cost opinions for roadway, could result in \$400k to \$750k cost increase (see attached spreadsheet)

Alternate Option C alignment w/ Tee intersection

The idea of the Tee intersection connection for properties to the east, and roadway extension to the south was discussed per the sketch below. Considerations for this alignment include the following.

- 1. Tee intersection could function appropriately for traffic demands, the direct alignment from south to NW 54th Ave not absolute need.
- 2. Many similar issues for drainage/stream channel like original Option C.
- 3. Location provides additional difficulty building in stream channel and at skew to natural channel.
- 4. Stream channel and wetland mitigation potential, environmental review / 404 permitting.
- 5. May improve any ROW needs for current property ownership and developer interest.
- 6. Neutral benefit to access with Wright property and future development street connection between modified Option C and Option B green alignment.
- 7. Costly construction versus original Option B green alignment.



100th Street Interchange Impacts on 86th St

Regarding relationship of new 100th Street interchange impacts on 86th Street traffic, the interchange justification report prepared for Iowa DOT had some limited discussion about future land use and traffic volume growth on 86th Street. No specifics related to 86th & Birchwood Court intersection but some basics on traffic demand.

- 1. Existing p.m. peak hour demand between Birchwood Ct & the north ramp intersection is approximately 2,800 – 2,900 vehicles per hour (vph).

2. By the year 2040 with land use growth, peak hour traffic was forecast to 3,600 -3,700 vph without a NW 100th interchange. Approximately 29% total growth beyond existing peak hour, or about 1% per year for next 25 years.
3. By the year 2040 with land use growth, peak hour traffic was forecast to 3,200 – 3,300 vph with a NW 100th interchange. Approximately 14% total growth beyond existing peak hour, or about 0.5% per year for next 25 years.
4. Thus new interchange will help to reduce growth on 86th Street, but still some moderate growth at intersection.

Pedestrian Crossing Issues – NW 54th Ave

1. With respect to intersection width or lack of sidewalk separation at Foxboro intersection we believe there are opportunities for roadway narrowing at the intersection if a more significant crossing were established at this intersection if a new roadway would connect to the south. (Reference the aerial image of current conditions below).
 - a. In the NE quadrant, based on traffic volumes collected, the right turn deceleration lane WB provides a much greater amount of traffic capacity than needed per volume demand. This lane could be removed and eliminated. Any increase in delay or conflict for WB traffic through vs. right turn would be minimal. This could allow for a much larger buffer between traffic lane and sidewalk on north side.
 - b. The overall width of 54th is approximately 45-46 feet for three lanes west of the intersection to provide three lanes. There are 2.5' – 3' wide curb & gutters. As a minimum the painted median of 4' of width could be removed, as well as some lane width reduction from 12' to 11'. As such additional 7' – 8' could be reduced to improve total intersection width for reduced pedestrian crossing distance and to also create a traffic calming effect on speeds through the corridor with narrower lanes. Drainage and storm sewer features would need further review for impacts if curbs moved inward.



2. At Lew Clarkson/Timber Ridge School driveways, similar concepts could be considered.
 - a. The east/west left turn lanes are valuable, however the WB right turn lane in to Lew Clarkson Park could be eliminated based on limited need during baseball/softball activities during the year. Note currently not a crosswalk on the each approach.
 - b. The EB right turn lane in to school driveway still has significant peak hour usage, so best to remain. Again median removal and lane narrowing could be applied to reduce crossing time and intersection size.
 - c. Regarding a grade separated type structure for pedestrians under or over 54th Ave. a box culvert would be very difficult due to grade and existing drainage issues in area. A bridge over requires approximately 17 feet of vertical clearance and with ADA ramp grade considerations would require lengthy approach ramps or corkscrew type approaches. In all a bridge could easily be in the \$750k +/- cost range.
3. Traffic signalization at either intersection is unlikely based on overall traffic demand. Some consideration for its application as a pedestrian crossing at the current driveway intersection or Foxboro intersection could be made, or a potential to move it between intersections is possible. Another option would be a mid-block pedestrian crossing with a center refuge island that utilizes a pedestrian activated flashing beacon (similar to device on NW 72nd just south of I-35/80 underpass in Urbandale). This would then take the place of temporary STOP sign control at the park/school driveway intersection. Main issue would be utilization by pedestrians using trail along Park driveway to/from north & south for possible small backtracking to the west to cross 54th Ave.