

ATTACHMENT J

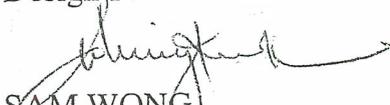
Memorandum

*Flex your power!
Be energy efficient!*

To: MATIN NISHIKAWA
Senior Transportation Engineer
Design IV

Date: July 17, 2007

File: 10-SJ-99 PM 15.0/18.6
EA 10-3A1000

From: 
SAM WONG
Senior Hydraulic Engineer
Branch A
Design III

Subject: Hydraulic Recommendation

This memo is in response to your request for hydraulic recommendation for the above project dated March 12, 2007. It proposes to widen State Route 99 from four lanes to six lanes in the City of Stockton. The project limits are from 0.4 miles north of Arch Road to 0.1 miles south of State Route 4 West. Currently there are three alternatives. This recommendation is based on our field investigation, discussion with Maintenance personnel, our calculation and information you had provided.

Alternative 1:

Install 600mm RCP under the median of SR 99 and place type G1 DIs on shoulders and median for every 100 meters. Additional DIs will be installed at horizontal curves and sag points. All the onsite runoff will be discharged into proposed basins. Additional to basins within proposed and exist SR 99 R/W, there are six proposed basins that would require additional R/W

1. Basin 1A will be at the south of Littlejohns Creek and east of East Frontage Road. The dimension of basin could be 50mX70m and it should have a total area of 3500m². Onsite runoff from Station 239+00 to 245+00 (Littlejohns Creek) will be discharged into this basin. Currently, there is an undeveloped property at the intersection of Imperial Way and East Frontage Road.
2. Basin 1B will be at the north of Littlejohns Creek and east of East Frontage Road. The basin with 60mX75m dimension should have a total area of 4500m². Onsite runoff from Station 245+00 (Littlejohns Creek) to 252+00 will be discharged into this basin. Currently, there is an undeveloped property at south of Clark Drive.
3. Basin 2B will be at the south of Duck Creek. It could be at west of West Frontage Road or between NB off ramp and East Frontage Road. The size of basin could be 75m X 95m (total area of 7215 m²). Onsite runoff from Station 252+00 to 265+40 (Duck Creek) will be discharged into this basin.
4. Basin 5A will be at the south of Mormon Slough and east of SR 99. The dimension of basin could be 70mX90m with a total area of 6300m². The discharge from pump station on SR 99 next to the railroad will be discharged into this basin.

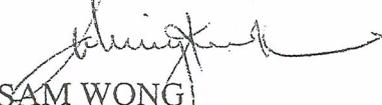
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Alternative 1:

Install 600mm RCP under the median of SR 99 and place type G1 DIs on shoulders and median for every 100 meters. Additional DIs will be installed at horizontal curves and sag points. All the onsite runoff will be discharged into proposed basins. Additional to basins within proposed and exist SR 99 R/W, there are six proposed basins that would require additional R/W

1. Basin 1A will be at the south of Littlejohns Creek and east of East Frontage Road. The dimension of basin could be 50mX70m and it should have a total area of 3500m². Onsite runoff from Station 239+00 to 245+00 (Littlejohns Creek) will be discharged into this basin. Currently, there is an undeveloped property at the intersection of Imperial Way and East Frontage Road.
2. Basin 1B will be at the north of Littlejohns Creek and east of East Frontage Road. The basin with 60mX75m dimension should have a total area of 4500m². Onsite runoff from Station 245+00 (Littlejohns Creek) to 252+00 will be discharged into this basin. Currently, there is an undeveloped property at south of Clark Drive.
3. Basin 2B will be at the south of Duck Creek. It could be at west of West Frontage Road or between NB off ramp and East Frontage Road. The size of basin could be 75m X 95m (total area of 7215 m²). Onsite runoff from Station 252+00 to 265+40 (Duck Creek) will be discharged into this basin.
4. Basin 5A will be at the south of Mormon Slough and east of SR 99. The dimension of basin could be 70mX90m with a total area of 6300m². The discharge from pump station on SR 99 next to the railroad will be discharged into this basin.

5. Basin 5B will be at the north of Mormon Slough and west of SR 99. The dimension of basin could be 50mX125m with a total area of 6250m². The discharge from pump station at Charter Way will be discharged into this basin.
6. Basin 6 will be at the north of Duck Creek Drive at east of Stage Coach Road. It will have 60mX50m dimension with a total area of 3000m². Onsite runoff from Stage Coach will be discharged into this basin.

Please place open ditch along on/off ramps. Also place open ditch along west of West Frontage Road and east of East Frontage Road.

On Mariposa Road; place type G1 DIs along shoulders from Station 10+00 to 25+00 at every 100 meters. Open ditch will be needed from Station 23+60 (Intersection of Mariposa Road and NB ramps) to Station 29+00 (end of the project) and from Station 17+00 (Intersection of West of Frontage Road and Mariposa Road) to Station 19+00 (Intersection of Mariposa Road and SB ramps).

On Farmington Road, perpetuate existing flow pattern by replacing the open ditch from Station 20+00 to 24+00 and city storm drain system at west of SR 99. The ditch should have minimum 1:4 slopes at roadway and R/W sides with minimum bottom width of 2.4 meters and maximum depth of 1 meter. Also replace or place DI along shoulders from Station 10+00 to Station 24+00 at every 100 meters.

Preliminary cost estimates for alternative 1 is \$4,300,000 plus \$1,000,000 for modifying two pump stations.

Alternative 2:

Install 600mm RCP under the median of SR 99 and place type G1 DIs on shoulders and median for every 100 meters. Additional type G1 DIs will be installed at horizontal curves and sag points. All the onsite runoff will be discharged into proposed basins. Additional to basins within proposed and exist SR 99 R/W, there are five proposed basins that would require additional R/W

1. Basin 1A will be at the south of Littlejohns Creek and east of East Frontage Road. The dimension of basin could be 50mX70m and it should have a total area of 3500m². Onsite runoff from Station 239+00 to 245+00 (Littlejohns Creek) will be discharged into this basin. Currently, there is an undeveloped property at the intersection of Imperial Way and East Frontage Road.
2. Basin 1B will be at the north of Littlejohns Creek and east of East Frontage Road. The basin with 60mX75m dimension should have a total area of 4500m². Onsite runoff from Station 245+00 (Littlejohns Creek) to 252+00 will be discharged into this basin. Currently, there is an undeveloped property at south of Clark Drive.
3. Basin 2B will be at the south of Duck Creek and west of West Frontage Road. The size of basin could be 75m X 95m (total area of 7215 m²). Onsite runoff from Station 252+00 to 265+40 (Duck Creek) will be discharged into this basin.
4. Basin 4C will be at the south of Mormon Slough and east of SR 99. The dimension of basin could be 70mX90m with a total area of 6300m². The discharge from pump station on SR 99 next to railroad will be discharged into this basin.

5. Basin 5A will be at the north of Mormon Slough and west of SR 99. The dimension of basin could be 50mX125m with a total area of 6250m². The discharge from pump station at Charter Way will be discharged into this basin.

Please place open ditch along on/off ramps. Also place open ditch along west of West Frontage Road and east of East Frontage Road.

On Mariposa Road, place type G1 DIs along shoulders from Station 15+00 to 25+00 at every 100 meters. Open ditch will be needed from Station 23+60 (Inter section of Mariposa Road and NB ramps) to Station 29+00 (end of the project) and from Station 17+00 (Intersection of West of Frontage Road and Mariposa Road) to Station 19+00 (Intersection of Mariposa Road and SB ramps).

On MK, open ditch will be needed from Station 00+00 to Station 8+00 (Intersection of Golden Gate and NB on ramp) and from Station 11+80 (Intersection of Golden Gate and SB off ramp) to Station 18+00. Perpetuate existing flow pattern at north side of existing Farmington Road by replacing the open ditch with minimum bottom width of 2.4 meters and maximum depth of 1 meter. If there is no enough room for the open ditch at north of existing Farmington Road (MKL from Station 0+00 to 4+00) due to R/W constraints, place pipe line at this location.

The pump station at north of railroad track would need to be relocated.

Preliminary cost estimates for alternative 2 is \$4,350,000 plus \$2,000,000 for relocating one pump station and modifying another one.

Alternative 3:

Install 600mm RCP under the median of SR 99 and place type G1 DIs on shoulders and median for every 100 meters. Additional type G1 DIs will be installed at horizontal curves and sag points. All the onsite runoff will be discharged into proposed basins. Additional to basins within proposed and exist SR 99 R/W, there are five proposed basins that would need additional R/W

1. Basin 1A will be at the south of Littlejohns Creek and east of East Frontage Road. The dimension of basin could be 50mX70m and it should have a total area of 3500m². Onsite runoff from Station 239+00 to 245+00 (Littlejohns Creek) will be discharged into this basin. Currently, there is an undeveloped property at the intersection of Imperial Way and East Frontage Road.
2. Basin 1B will be at the north of Littlejohns Creek and east of East Frontage Road. The basin with 60mX75m dimension should have a total area of 4500m². Onsite runoff from Station 245+00 (Littlejohns Creek) to 252+00 will be discharged into this basin. Currently, there is an undeveloped property at south of Clark Drive.
3. Basin 2B will be at the south of Duck Creek and west of West Frontage Road. The size of basin could be 75m X 95m (total area of 7215 m²). Onsite runoff from Station 252+00 to 265+40 (Duck Creek) will be discharged into this basin.

4. Basin 4E will be at south of Mormon Slough and east of SR 99. The dimension of basin could be 70mX90m with a total area of 6300m². The discharge from pump station on SR 99 next to railroad will be discharged into this basin.
5. Basin 5A will be at the north of Mormon Slough and west of SR 99. The dimension of basin could be 50mX125m with a total area of 6250m². The discharge from pump station at Charter Way will be discharged into this basin.

Please place open ditch along on/off ramps and West/East Couplet Road. Also place open ditch along west of West Frontage Road and east of East Frontage Road.

On Mariposa Road, place type G1 DIs along shoulders from Station 16+60 to 25+00 at every 100 meters. Open ditch will be needed from Station 23+00 (Inter section of Mariposa Road and NB ramps) to Station 29+00 (end of the project).

On Farmington Road, perpetuate existing flow pattern by replacing the open ditch from Station 19+00 to 24+00 and city storm drain system at west of SR 99. The ditch should have minimum 1:4 slopes at roadway and R/W sides with minimum bottom width of 2.4 meters and maximum depth of 1 meter. Also replace or place DI along shoulders from Station 14+00 to Station 24+00.

Preliminary cost estimates for alternative 3 is \$4,330,000 plus \$1,000,000 for modifying two pump stations.

All basins are designed as retention basin to store two 10-years storm events. Rock wells will be required at bottom of each basin to meet 72 hours draw down time required for treatment BMP. The exact locations of DIs will be provided in PS&E stage. The further impact study to pump stations is needed after the final alternative has been decided. All open ditch should have minimum 1:4 slopes at roadway and R/W side with 1meter maximum depth except specified otherwise.

If you have any question, please contact me at (559) 243-3507 or Xiaoxiong (James) Yan at (559) 243-3522

Attachment / Enclosure [as required]

c:

bc:

Author's name / typist's initials / file name [shown on file copies only]