CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director

Mayor Timothy M. Keller

February 11, 2019

Chris Rosol, P.E.
AECOM
6501 Americas Parkway NE Ste 900
Albuquerque, NM 8710

RE: **Woodward Road Improvements**
Drainage Report for Work Order
Engineer's Stamp Date: none (report dated 8/6/18)
Hydrology File: M14D035

Dear Mr. Rosol:

Prior to the City of Albuquerque- Hydrology Section approving the Work Order for this project, the following will need to be corrected:

1. Existing and proposed drainage basins need to be provided. These exhibits will need to be provided on full-size sheet and be supported by existing and proposed grading and storm drain. Ensure the proposed basins accommodate the Sunport Blvd extension and its modifications to the storm drain and drainage patterns, especially around the Broadway/Woodward intersection. The proposed basins need to anticipate future development based on the zoning of the property.

2. Site Hydrology needs to accommodate flows from surrounding sites with previously approved discharges to Woodward/Williams/2nd St. Many of the surrounding properties are required to retain onsite; but there are a few that have limited discharge to the ROW. Hydrology and Transportation files are available online through the City's GIS Viewer 2.0: https://www.cabq.gov/gis/advanced-map-viewer. Turn on the *HydroTrans* layer: *Operational Layers > Albuquerque Layers > Sites > HydroTrans*. Select the desired polygon from the map and click *Link to Project Documents*.

3. Include the design of the proposed pond on 2nd St in the DRC plans and the Drainage Report, unless the alternate plan to discharge to the Riverside Drain is approved by the MRGCD. Who will be maintaining the pond? If County, a maintenance agreement or an Agreement and Covenant will be required prior to work order approval and must address vector control. The pond needs to be sized to retain the 10-day, 100-yr storm below the soffit of the inlet pipe. The 10-yr water surface should be used as the beginning water surface for determining the HGL in the upstream pipes. This control surface should also be used when determining 10-yr velocities in compliance with Ch22.3.B.3.g.

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4. Hydraulic grade lines need to be calculated along the energy grade line per the DPM Ch22.3.B. Provide the EGL on the pipe profiles or in the supporting tables; confirm RCP is the pipe type being modeled. In preparing the pipe network, be sure to comply with Ch22.3.B.3.f and g.: *Minimum Pipe Size* and *Minimum Slope*.

5. Runoff from Basin M needs to be accommodated in the Hydraulic model. The claim that this site will only discharge 2.0cfs is poorly justified; provide supporting calculations and flow routing. Please refer to the approved drainage file for this site as well: http://data.cabq.gov/government/planning/drainage/M14D015/

6. The 10-yr water surface in the San Jose Drain should be used as the beginning water surface for determining the HGL in the upstream pipes along Woodward/Williams. This control surface should also be used when determining 10-yr velocities in compliance with Ch22.3.B.3.g.

7. Provide an exhibit showing the locations of the street capacity calculations and the inlet locations. Street capacity also needs to show that the 100-yr flow is below top of curb and the 100-yr EGL is contained in the ROW.

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8. Inlet calculations will need to be prepared and included in the Drainage Report; inlets in sump location need to be sized for 2x the 100-yr flow.

Albuquerque

9. The Drainage Report needs to be stamped, signed and dated.

10. Maintenance responsibilities for all infrastructure needs to be clearly spelled out in the Drainage Report and on the Work Order set. A separate sheet/exhibit may be the best way to show this. Ensure CoA standards and specifications are used in all areas that are expected to be City-maintained.

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11. For Information. The procedure for making a Hydrology submittal for this type of project is as follows:
    a. Complete the DTIS routing/coversheet. Be sure to indicate this is a DMD/Public project and provide the project manager's contact info- DMD/Public projects are exempt from the Planning Dep't fees.
    b. Turn-in one hardcopy of the stamped Drainage Report with the filled out DTIS coversheet to the west side, ground floor, Plaza del Sol Building (600 2nd St NW).
    c. Turn-in an electronic (.pdf) copy of the stamped Drainage Report. Either email to PLNDRS@cabq.gov (10MB max.), email a dropbox/fileshare link to the same email, or provide on a CD with the hardcopy.
    d. Hydrology review times vary quite a bit depending on backlog; but a reasonable expectation is ~1-month for a first-time submittal and ~1 week for a re-submittal.
    e. The DRC plan review process is managed by the Design Review & Construction Section on the 4th floor- they are a separate section where Hydrology is one of the representatives. The Drainage Report needs to be submitted separately to Hydrology down on the ground floor (DRC generally doesn't need to see the Drainage Report).

f. The Hydrology-Approved Drainage Report is a pre-requisite for Hydrology to sign the DRC-Work Order Plans. The Drainage Report requirement may be waived for minor work, say, restriping an intersection.
g. Additional Info:
   i. Hydrology website: https://www.cabq.gov/planning/development-review-services/hydrology-section
   ii. Hydrology and Transportation files are available online through the City's GIS Viewer 2.0: https://www.cabq.gov/gis/advanced-map-viewer. Turn on the Hydrology Polys layer: *Operational Layers* > *Albuquerque Layers* > *Sites* > *HydroTrans*. Select the desired polygon from the map and click *Link to Project Documents*.
   iii. Drainage Reports are reviewed for compliance with the DPM Ch.22: http://library.amlegal.com/nxt/gateway.dll/New%20Mexico/albuqdpm/volumeii-designcriteria/chapter22drainagefloodcontrolanderosionc?f=templates$fn=default.htm$3.0$vid=amlegal:albuquerque_nm_mc$anc=JD_Chapter22
   iv. And for compliance with the Flood Hazard and Drainage Control Ordinance: http://library.amlegal.com/nxt/gateway.dll/New%20Mexico/albuqwin/chapter14zoningplanningandbuilding/article5floodhazardanddrainagecontrol?f=templates$fn=default.htm$3.0$vid=amlegal:albuquerque_nm_mc$anc=JD_Chapter14Article5

If you have any questions, please contact me at 924-3695 or dpeterson@cabq.gov.

Sincerely,

Dana Peterson, P.E.
Senior Engineer, Planning Dept.
Development Review Services

PO Box 1293

Albuquerque

NM 87103

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Woodward Road Improvements
2nd Street to Broadway Boulevard

Preliminary Drainage Report

CN A300161

Prepared for:

Prepared by:

In Association with:

August 6, 2018

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Introduction

WSP was selected as a subconsultant of AECOM by the Bernalillo County Division of Public Works to perform a preliminary drainage engineering analysis along Woodward Road in Albuquerque, NM between 2nd Street and 100' east of San Jose Drain. A vicinity map for the project area can been seen in Figure 1.

The Woodward Road improvements consist of widening the exiting roadway to two driving lanes and a continuous center turn lane. The proposed Woodward Road typical section includes an urban section with curb, gutter, sidewalk, bike lanes, and an underground storm drain.

In addition to the improvements along Woodward Road and its intersection with 2nd Street, improvements along 2nd Street approximately 700' north of the intersection and 900' south of the intersection will be completed. The proposed 2nd Street typical consists of two driving lanes and a wide median that at times will transition to a left turn lane. The proposed 2nd Street typical also includes curb and gutter in some areas, a varying shoulder width, and roadside ditches.

The Conceptual Drainage Analysis Memo, dated December 4th 2015, evaluated several different alternatives to accommodate the proposed roadway flows resulting from the improvements noted above. The memo recommended the following options for accommodating flows east and west of the railroad tracks. West of the tracks and along 2nd Street, Option A - Storm Drain and Offsite Ponding was the recommended alternative. East of the tracks, Option C - Utilize Existing Storm Drain Trunk Line to San Jose Drain was the recommended alternative.

The primary goal of this report is to ensure that the project can safely accommodate the proposed flows because of the widening, and that the existing drainage conditions are not adversely affected. The following provides a summary of the analysis of existing drainage conditions and the proposed drainage facilities for Woodward Road within the project limits.

Literature Review

The following related approved drainage reports and record drawings for the project area were obtained from the City of Albuquerque (CoA) and Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) and were used for the development of this drainage memo.

- The South Broadway Drainage and Stormwater Quality Management Plan, URS Corporation – April 2013
- The Southeast Valley Drainage and Stormwater Quality Management Plan, Wilson & Company – June 2012
- The South Broadway Sector Drainage Management Plan (DMP), Bohannan-Huston, Inc. – September 1990.
- Sunport Boulevard Extension - Broadway to I-25, Preliminary Drainage Report, URS Corporation – February 2011.
- Record Drawings 10-005-0183, CoA Street Improvements for William Street and San Jose Avenue, CD-4C, Fred Denney & Associates, Inc. – April 1981

Figure 1
Vicinity Map
Woodward Road Improvements

CN A300161

Existing Conditions

2nd Street to the Railroad Tracks

Woodward Road between 2nd Street and the NMDOT Railrunner train tracks (railroad tracks) consists of a two-lane normally crowned roadway typical section. The surrounding terrain is fairly flat, and it generally slopes in a southwesterly direction. The roadway in this segment of the project is perched, and for the most part, roadway drainage sheet flows outside the right-of-way (R/W). The existing R/W is approximately 80' wide, and no existing drainage features exists in this section of the project. There are no defined outfalls for this segment of the project and roadway runoff generally ponds on the adjoining properties.

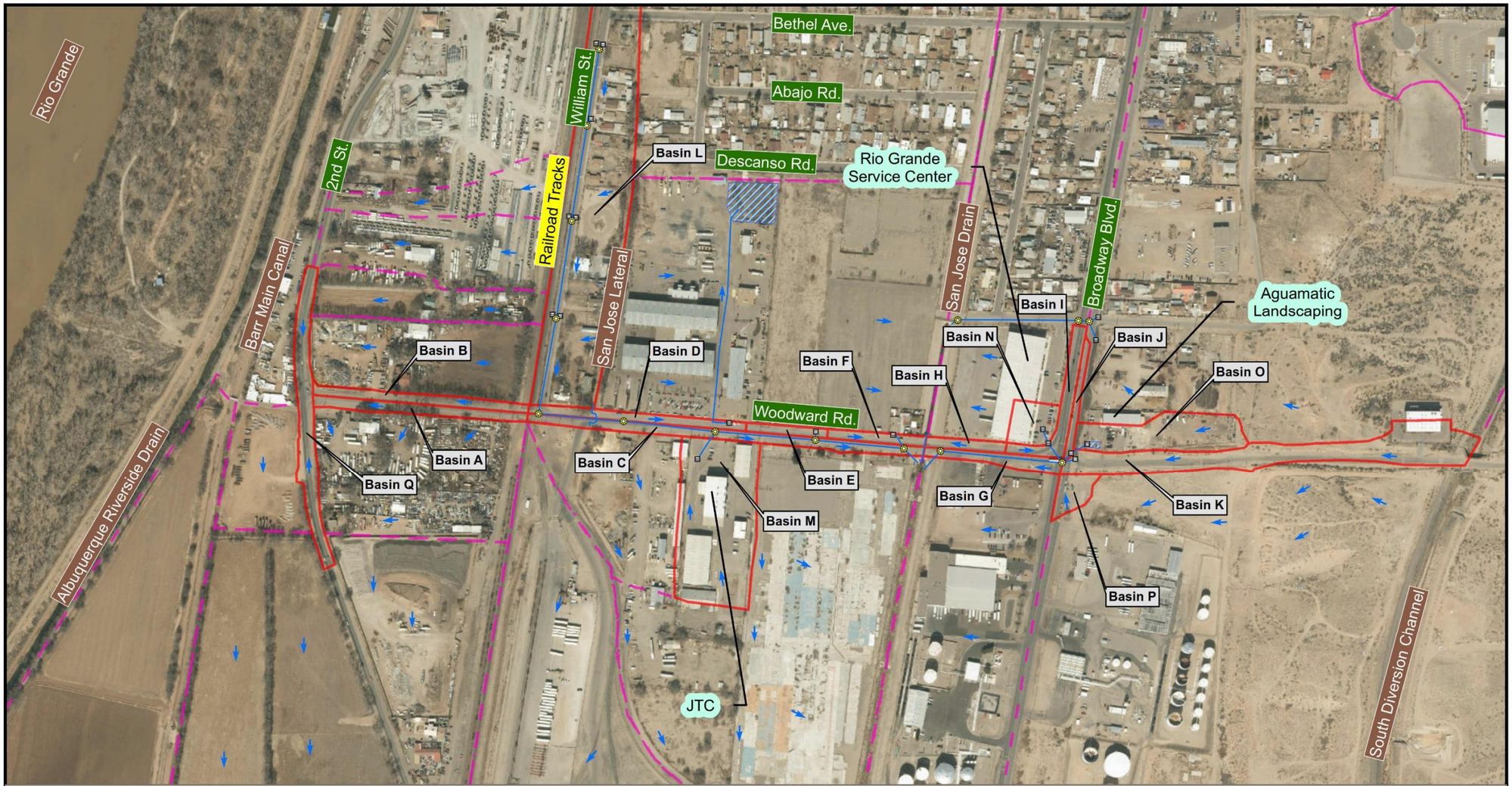
Railroad Tracks to 100' East of San Jose Drain

Woodward Road between the railroad tracks and the San Jose Drain consists of a two-lane normally crowned roadway typical section. The surrounding terrain is fairly flat. The roadway in this segment of the project is at approximately the same level as the surroundings and the roadway drainage typically ponds on the wide swales located on both side of the roadway within the R/W. The R/W in this section of the roadway is approximately 80' wide. An existing 36" diameter reinforced concrete pipe (RCP) exists under Woodward Road in this segment of the project. This 36" diameter trunk line starts just south of the intersection of William Street and Bethel Avenue (a street parallel to and approximately 1500' north of Woodward Road) and extends south to Woodward Road. From there it stretches east to its outfall in the San Jose Drain (see Figure 2). The majority of the runoff collected by this system is from William Street. Eight standard CoA drop inlets, as shown in Basin L, collect the roadway drainage from William Street. These inlets are located on both sides of the street and are spaced evenly at approximately 400' intervals. The runoff contribution from Woodward Road and its surroundings to this system is minimal. An existing drop inlet located in the parking lot of JTC, Inc. (see Basin M) collects the runoff from a portion of JTC's parking lot and diverts it via a 12" diameter RCP into the system. Only two other drop inlets, located approximately 150' and 450' west of the San Jose Drain, connect to this system. These inlets only collect the roadway drainage from the westbound lane of Woodward Road within the existing R/W (see Basins E & F).

The San Jose Lateral also crosses Woodward Road in this area. Flows are carried underneath the road via a 30" diameter RCP. The need for the extension of this irrigation structure will be evaluated during final design.

2nd Street

2nd Street near the 2nd Street/Woodward Road intersection consists of a two-lane normally crowned roadway typical section. The surrounding terrain is fairly flat. The roadway in this segment of the project is at approximately the same level as the surroundings and the roadway drainage typically ponds along both side of the roadway within the R/W. The R/W in this section of the roadway ranges from 60' to 75' wide. Drainage from the surrounding basins typically flows in a westerly direction east of 2nd Street and in a southerly direction west of 2nd Street. No existing drainage features exist within this portion of the project.



Legend

- Existing Drop Inlet
- Existing Manhole
- Existing Trunk Line
- Flow Direction

Basin Boundary

- Contributing Area
- Non-contributory Area
- Existing Pond

2010 LiDAR 2' Contour

0 187.5 375 750 1,125 1,500 Feet

N

Figure 2
Drainage Basin Map
Woodward Road Improvements
CN A300161

San Jose Drain

The San Jose Drain is the main outflow drainage conveyance for the eastern portion of the project. An existing 1-144" corrugated metal pipe (CMP) carries the Drain under Woodward Road. The Middle Rio Grande Conservancy District (MRGCD) is the owner of the Drain, and an existing agreement transfers part of the responsibilities of this segment of the San Jose Drain to CoA.

Hydrology

Criteria and Methodology

The basis for this analysis is the South Broadway and the Southeast Valley Drainage and Stormwater Quality Management Plans. The design flood for this assessment is the 100-year recurrence interval storm based on the *CoA's Development Process Manual* (DPM). For smaller basins, the Rational Method was used to determine peak flowrates and runoff volumes; the 6-hour storm duration was used for the peak flowrate and the 24-hour duration storm was utilized for runoff volume computations. The 100-year rainfall data for Bernalillo County Precipitation Zone 2 was obtained from the DPM. The 100-year, 24-hour duration precipitation for Zone 2, which is defined as the area between the Rio Grande and San Mateo Boulevard, is 2.75 inches.

For inlet spacing, the 10-year water spread was restricted to half of a driving lane. For the analysis/design of the storm drain trunk line, the 100-year Hydraulic Grade Line (HGL) elevation was limited to the top of grate.

Drainage Basin and Land Use Maps

ArcGIS, version 10.1 was used to prepare the drainage basin map for this assessment. Resources used to define basin areas include the South Broadway and the Southeast Valley Drainage and Stormwater Quality Management Plans, aerial photos, and Bernalillo County's 2010 Light Detection and Ranging (LiDAR) mapping data. A field investigation was conducted to verify drainage patterns and basin boundaries. The drainage basin map also includes the adjoining non-contributing basins that were shown in other studies. These non-contributing basins are included to show the surrounding drainage patterns. Refer to Figure 2.

The existing and proposed roadway typical sections were used to estimate the land treatment percentages for the onsite basins. For the most part, the existing roadway typical section consists of two 11' wide paved lanes (land treatment D) and compacted soil (land treatment C) for the remaining area within the R/W. The proposed roadway typical section includes two 12' wide paved lanes, two 5' or 8' wide bike lanes, curb and gutter, and 5' wide sidewalks (land treatment D). The remaining R/W will be treated as compacted soil (land treatment C). See Appendix A for the proposed Woodward Road

typical section. The land treatment assumptions for the offsite basins were based on previous reports, aerial photographs, and field observations. Future developed land use estimates are based on the land use designations from the CoA GIS Data website. See Figure 3 for a Land Use Map of the study area.

Results

The existing and proposed conditions peak flowrate and runoff volume estimates for the project are shown in Tables 1 and 2.

Table 1: Estimated Discharge Rates and Runoff Volumes – Existing Conditions

Basin ID	Basin Area (acres)	Land Treatment A (%)	B (%)	C (%)	D (%)	Peak Discharge (100-yr)	Volume 100-yr, 6-hr (acre-ft)	Volume 100-yr, 24-hr (acre-ft)
A	0.86	0.0	0.0	30.0	70.0	3.64	0.13	0.15
B	0.86	0.0	0.0	30.0	70.0	3.64	0.13	0.15
C	1.51	0.0	0.0	30.0	70.0	6.39	0.23	0.26
D	0.74	0.0	0.0	10.0	90.0	3.36	0.12	0.15
E	0.28	0.0	0.0	30.0	70.0	1.18	0.04	0.05
F	0.36	0.0	0.0	30.0	70.0	1.52	0.05	0.06
G	0.61	0.0	0.0	30.0	70.0	2.58	0.09	0.11
H	0.32	0.0	0.0	30.0	70.0	1.35	0.05	0.06
I	0.82	0.0	0.0	15.0	85.0	3.66	0.13	0.16
J	0.30	0.0	0.0	10.0	90.0	1.36	0.05	0.06
K	3.72	0.0	0.0	50.0	50.0	14.58	0.50	0.57
L	10.43	*From South Broadway DMP*				15.00	------	0.94
M	4.72	0.0	0.0	10.0	90.0	21.45	0.79	0.94
N	0.71	0.0	0.0	15.0	85.0	3.17	0.12	0.14
O	2.00	0.0	100.0	0.0	0.0	4.56	0.13	0.13
P	0.48	0.0	0.0	80.0	20.0	1.66	0.05	0.06
Q	1.62	0.0	0.0	30.0	70.0	6.86	0.25	0.28

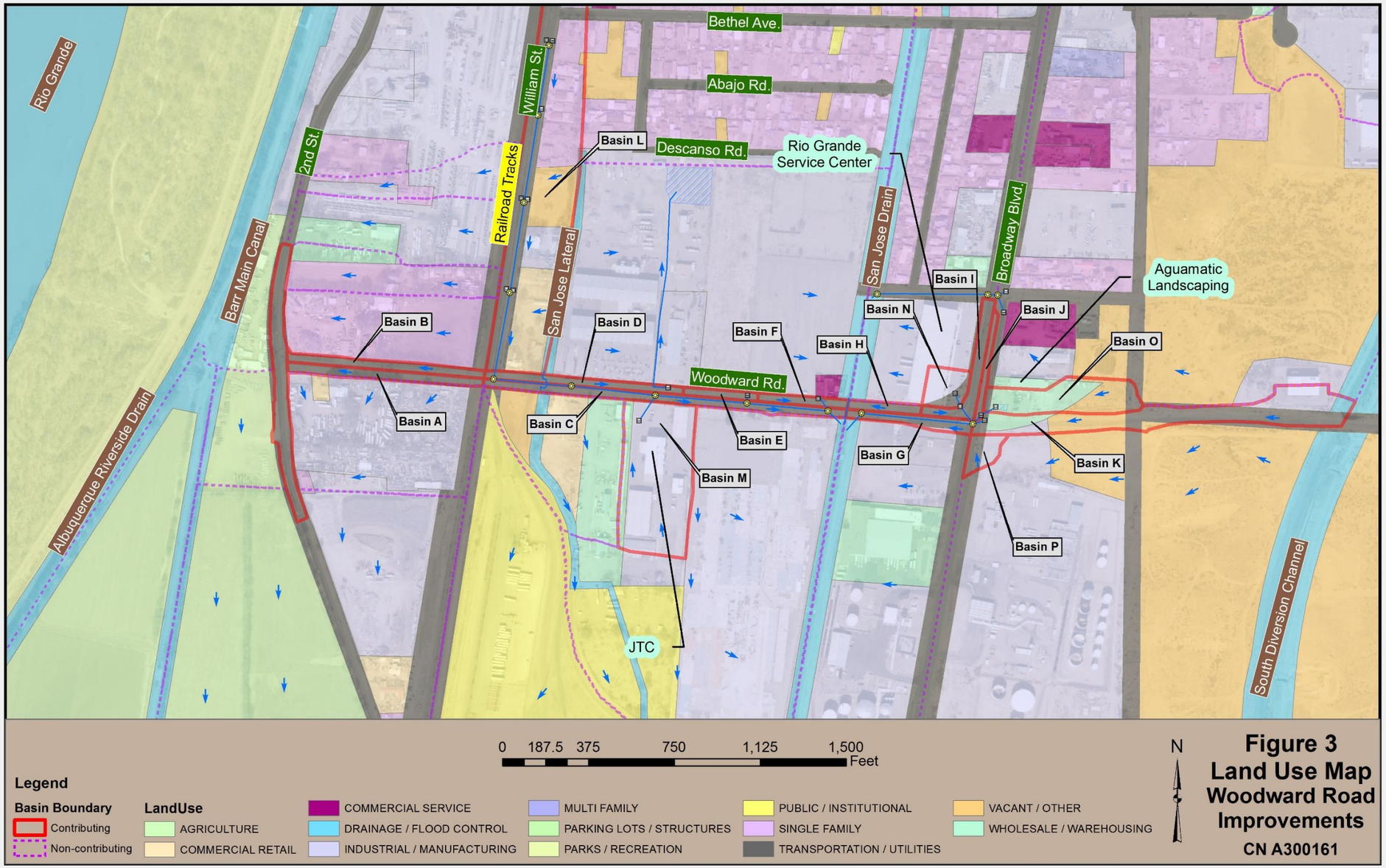


Figure 3
Land Use Map
Woodward Road Improvements
CN A300161

Table 2: Estimated Discharge Rates and Runoff Volumes – Proposed Conditions

Basin ID	Basin Area (acres)	Land Treatment				Peak Discharge (100-yr)	Vol 100yr-6hr (acre-ft)	Vol 100-yr, 24-hr (acre-ft)
		A (%)	B (%)	C (%)	D (%)			
A	0.86	0.0	0.0	10.0	90.0	3.91	0.14	0.17
B	0.86	0.0	0.0	10.0	90.0	3.91	0.14	0.17
C	1.51	0.0	0.0	10.0	90.0	6.86	0.25	0.30
D	0.74	0.0	0.0	10.0	90.0	3.36	0.12	0.15
E	0.28	0.0	0.0	10.0	90.0	1.27	0.05	0.06
F	0.36	0.0	0.0	10.0	90.0	1.64	0.06	0.07
G	0.61	0.0	0.0	10.0	90.0	2.77	0.10	0.12
H	0.32	0.0	0.0	10.0	90.0	1.45	0.05	0.06
I	0.82	0.0	0.0	10.0	90.0	3.73	0.14	0.16
J	0.30	0.0	0.0	10.0	90.0	1.36	0.05	0.06
K	3.72	0.0	0.0	50.0	50.0	14.57	0.50	0.57
L	10.43	*From South Broadway DMP*				15.00	------	0.94
M	4.72	0.0	0.0	10.0	90.0	21.45	0.79	0.94
N	0.71	0.0	0.0	15.0	85.0	3.17	0.12	0.14
O	2.00	0.0	100.0	0.0	0.0	4.56	0.13	0.13
P	0.48	0.0	0.0	80.0	20.0	1.66	0.05	0.06
Q	1.62	0.0	0.0	10.0	90.0	7.36	0.27	0.32

Hydraulics

The Bentley StormCAD V8i computer program was used to evaluate the capacity of the existing drainage system along Woodward Road east of the railroad tracks and to estimate the capacity of the proposed storm drain system from the railroad tracks to 2nd Street.

Proposed Improvements and Analysis

The following preliminary drainage improvements are recommended to ensure that the project can safely accommodate the proposed flows as well as not adversely affecting the existing drainage conditions.

2nd Street and Woodward Road (West of the Railroad Tracks)

The 100-year peak flows and runoff volumes for this segment of the project will increase along both Woodward Road and 2nd Street. Flows and runoff volumes along 2nd Street and Woodward Road are

expected to increase by approximately 1.04 cfs and 0.08 acre-feet (Basins A, B, and Q) because of the widening of Woodward Road and 2nd Street.

A new storm drain will be constructed along Woodward Road and 2nd Street to collect runoff from the proposed roadway. The system will consist of new inlets, a storm drain trunk line and a retention pond located along 2nd Street for its outfall. The inlets constructed along Woodward Road and 2nd Street would be a combination of curb drop inlets where curb and gutter exist and median drop inlets where there is no curb and gutter. Analysis shows that a 24" diameter trunk line would be required to carry the runoff from the inlets to the proposed retention pond. The proposed pond will be located on 2nd Street, approximately 700' south of the intersection of 2nd Street and Woodward Road. See the StormCAD analysis in Appendix B.

To determine the minimum number of new inlets required, a water spread analysis was performed using Manning's Equation. The analysis showed 6 CoA Type "A" or "C" inlets are required along Woodward Road and 2nd Street to limit water spread to half the driving lane during the 10-yr storm. See Appendix C for spread calculations. Additional Type D inlets would be required along the roadside ditches where no curb and gutter exists.

The total 100-year discharge and runoff volume for this portion of the project are 15.81 cfs and 0.66 acre-feet, respectively. The proposed retention pond would need to be approximately ½ an acre in surface area and approximately 4' deep so that the 24" diameter trunk line could daylight into it. The maximum water surface in the pond would be approximately 1.5' deep. See attached Figure 4 for a plan view of the proposed storm drain and offsite retention pond.

According to well drilling reports published by the Office of the State Engineer, the groundwater is estimated to be approximately 20' deep near the location of the proposed pond. Therefore, infiltration of the storm drain flows should not be inhibited by the groundwater. See Appendix D for the well drilling reports.

In lieu of the pond improvement noted above, the County has expressed interest in draining this system to the Albuquerque Riverside Drain. However, as of the writing of this report, MRGCD has not given their approval. Additional discussion between the County and MRGCD is required to determine if this is a viable option. This option will be further investigated and a recommendation will be made in the final drainage report.

Railroad Tracks to 100' East of San Jose Drain

The 100-year peak flows and runoff volumes for this segment of the project will increase by approximately 0.67 cfs and 0.05 acre-feet (Basins C, E, F, L, and M) because of the widening of Woodward Road to the proposed roadway section.

New inlets would be constructed to connect to the existing 36" diameter storm drain under Woodward Road, between the railroad tracks and the San Jose Drain. The existing storm drain trunk line will be

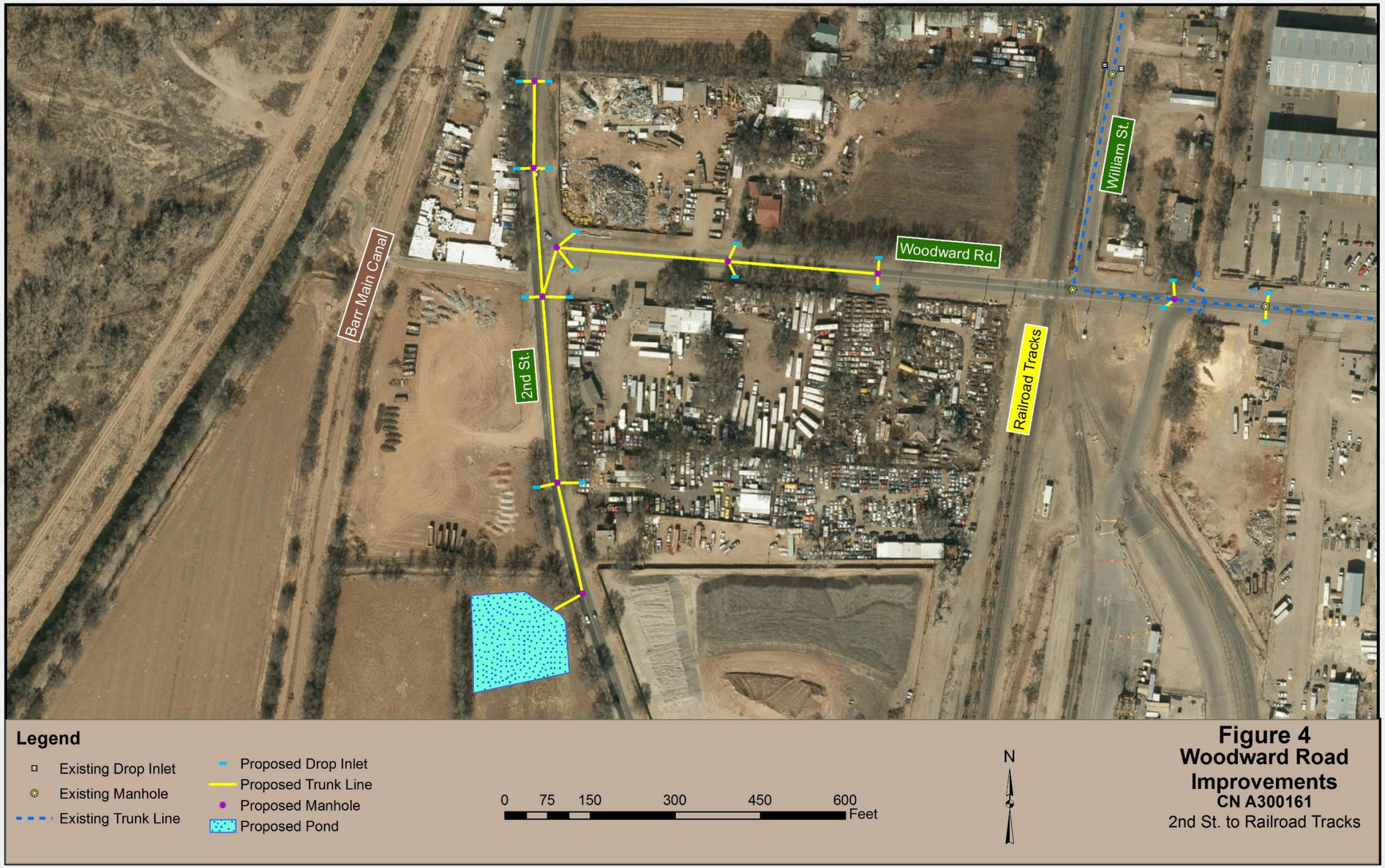


Figure 4
Woodward Road Improvements
CN A300161
2nd St. to Railroad Tracks

used to carry runoff from the new inlets to the San Jose Drain. A water quality feature would be installed in the system to treat flows before they outfall into the drain.

The total 100-year discharge for the 36" diameter trunk line under the existing conditions is 19.7 cfs and with the proposed improvements, the 100-year flow increases to 26.7 cfs, an increase of 7.0 cfs. Analysis shows that the existing 36" diameter trunk line has adequate capacity for the proposed flows. See attached Figure 5, for a plan view of this option. See the StormCAD analysis in Appendix B.

To determine the minimum number of new inlets required, a water spread analysis was performed using Manning's Equation. The analysis showed 10 CoA Type "A" or "C" inlets are required along Woodward Road, east of the railroad tracks to limit water spread to half the driving lane during a 10-year storm. See Appendix C for spread calculations.

As shown on Tables 1 and 2, Basin M is expected to generate a 100-year flow of 21.5 cfs; however, it should be noted that an onsite drop inlet and parking area swale within the basin is likely to detain most the flow. The parking area swale/drop inlet is drained by a 12" diameter RCP, connected to the existing Woodward Road storm drain trunk line. A comparison of the 100-year hydraulic grade line (HGL) in the existing 36" trunk line under Woodward Road and the elevation of the top of the parking area swale within Basin M reveals that the contribution from this basin during the 100-year storm would be approximately 2.0 cfs.

As indicated above, the 100-year discharge outfalling into the San Jose Drain increases under the proposed conditions. To determine the feasibility of discharging additional flows into the Drain, two meetings one with MRGCD and a subsequent one with the CoA and MRGCD was held. See Appendix E for a summary of the meeting notes. At these meetings, it was decided that the Drain has sufficient capacity and can accommodate the additional flows, provided the flows are treated before discharging into the Drain.

Figure 5
Woodward Road Improvements
CN A300161
Railroad Tracks to Broadway Blvd.

Conclusion

This preliminary drainage report contains the analysis results for Woodward Road between 2nd Street and 100' east of Broadway Boulevard. Peak flows for existing and proposed conditions were estimated, existing drainage features were analyzed, and recommendations were made. Proposed structures have been designed in accordance with the procedures defined in the CoA's Development Process Manual.

For Woodward Road west of the railroad tracks, a new storm drain system with its outfall into a retention pond located along 2nd Street, approximately 700' south of the 2nd Street/Woodward Road intersection was recommended.

For Woodward Road east of the railroad tracks, the construction of additional inlets connecting to the existing 1-36" trunk line under Woodward Road was recommended. The existing system outfalls into the San Jose Drain, and coordination with MRGCD and the CoA revealed that the additional discharge into the drain is acceptable, provided the flows are treated first.

Additional recommendations for the design of the pond, ditch design, erosion, and sediment control will be provided in the final drainage report.

References

City of Albuquerque Development Process Manual (DPM), Chapter 22

The South Broadway Drainage and Stormwater Quality Management Plan, URS Corporation – April 2013

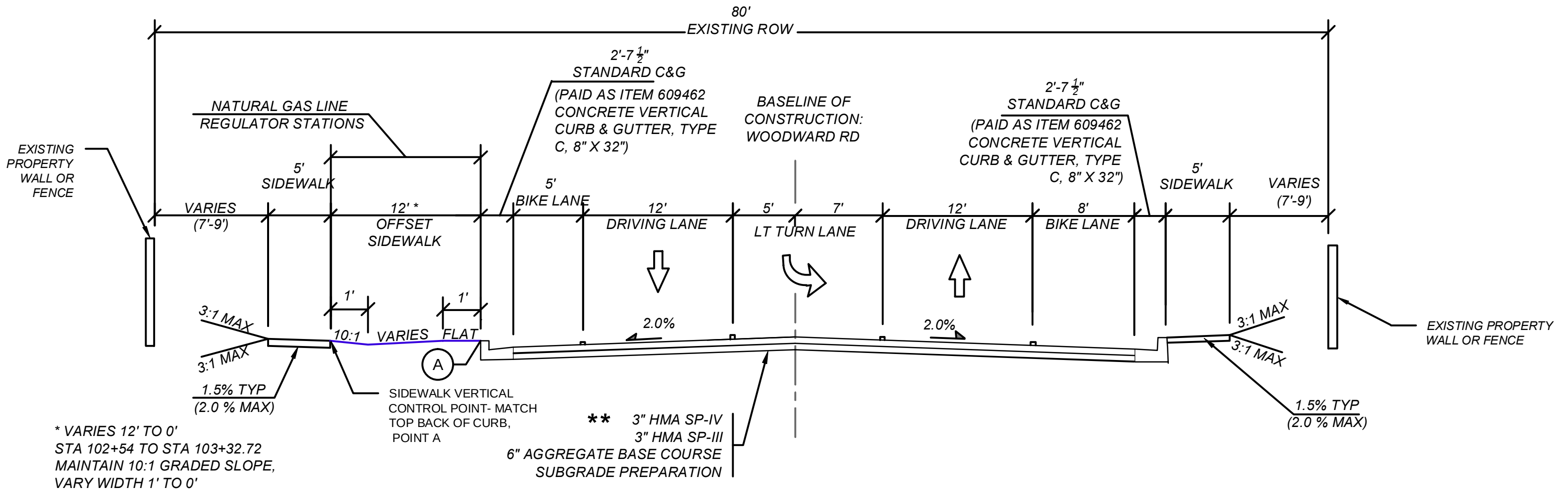
The Southeast Valley Drainage and Stormwater Quality Management Plan, Wilson & Company – June 2012

The South Broadway Sector Drainage Management Plan (DMP), Bohannan-Huston, Inc. – September 1990.

Sunport Boulevard Extension - Broadway to I-25, Preliminary Drainage Report, URS Corporation – February 2011.

Record Drawings 10-005-0183, CoA Street Improvements for William Street and San Jose Avenue, CD-4C, Fred Denney & Associates, Inc. – April 1981

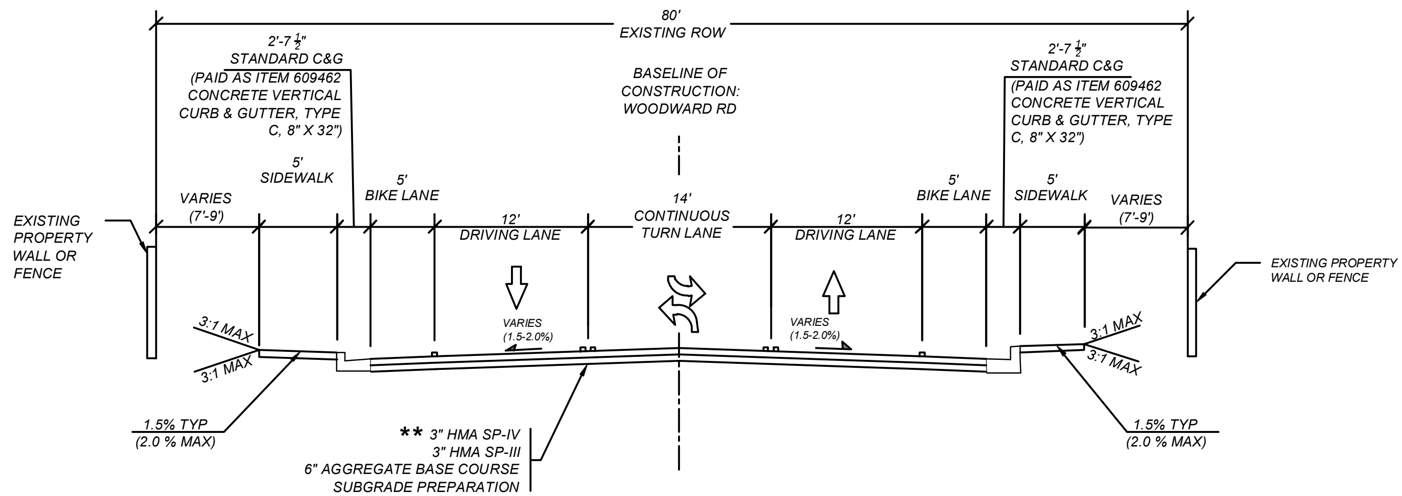
Appendix A
Proposed Typical Sections



* VARIES 12' TO 0'
STA 102+54 TO STA 103+32.72
MAINTAIN 10:1 GRADED SLOPE,
VARY WIDTH 1' TO 0'

PROPOSED TYPICAL SECTION A: WOODWARD RD

STA 101+20 TO STA 103+90
STA 103+90 TO STA 105+00 TRANSITION TO PROPOSED TYPICAL SECTION B



PROPOSED TYPICAL SECTION B: WOODWARD RD

STA 105+00 TO STA 126+75

** ASSUMED PAVEMENT SECTION-DESIGN
SECTION TO BE DETERMINED AFTER
PENDING GEOTECHNICAL
EXPLORATIONS

30% DESIGN NOT
FOR CONSTRUCTION

REVISIONS		
6		
5		
4		
3		
2		
1		
NO	DATE	DESCRIPTION

AECOM

AECOM TECHNICAL SERVICES, INC
6501 AMERICAS PKWY NE STE 900
ALBUQUERQUE, NM 87110
(505) 855-7500 www.aecom.com

AECOM PROJECT NO.: 60572657

COUNTY OF BERNALILLO
PUBLIC WORKS DIVISION
TECHNICAL SERVICES DEPARTMENT

WOODWARD ROAD IMPROVEMENTS
PROPOSED TYPICAL SECTIONS
WOODWARD RD

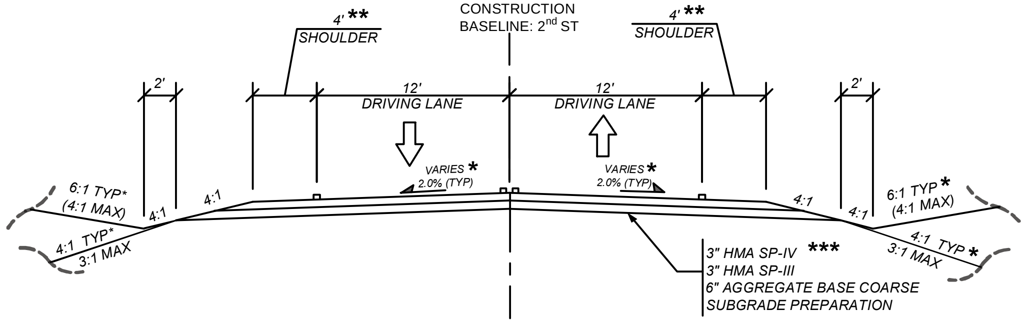
BC PN: TS.2015.WOODWD
ZONE ATLAS: M-14, M-15

SHEET 2-2 OF

DESIGNED BY:

DRAWING SCALE:

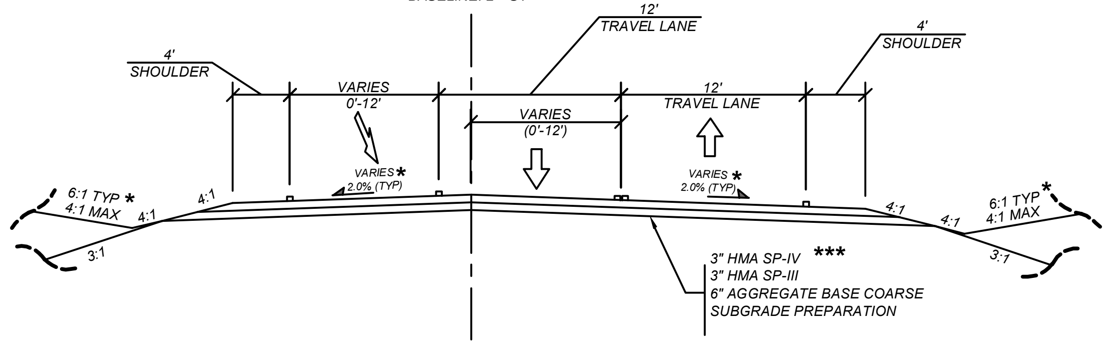
NMDOT CN: A300161



PROPOSED TYPICAL SECTION D: 2nd ST

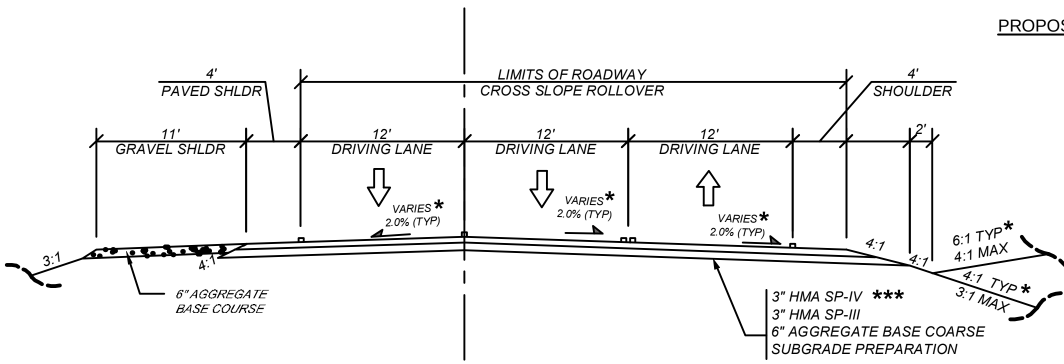
STA 202+00 TO STA 202+80

** STA 202+00 TO 202+25- SHOULDER WIDTH TRANSITION FROM 1' TO 4'



PROPOSED TYPICAL SECTION E: 2nd ST

STA 202+80 TO STA 205+52



PROPOSED TYPICAL SECTION F: 2ND ST

STA 205+52 TO STA 207+40

* SEE CROSS SECTIONS IN 13-SERIES FOR MORE INFORMATION

*** PAVEMENT STRUCTURAL SECTION IDENTIFIED IS FOR INFORMATION ONLY. ACTUAL SECTION TO BE DETERMINED AFTER GEOTECHNICAL ANALYSIS IS COMPLETE

30% DESIGN NOT FOR CONSTRUCTION

REVISIONS		
6		
5		
4		
3		
2		
1		
NO	DATE	DESCRIPTION

AECOM

AECOM TECHNICAL SERVICES, INC
6501 AMERICAS PKWY NE STE 900
ALBUQUERQUE, NM 87110
(505) 855-7500 www.aecom.com

AECOM PROJECT NO.: 60572657

COUNTY OF BERNALILLO
PUBLIC WORKS DIVISION
TECHNICAL SERVICES DEPARTMENT

WOODWARD ROAD IMPROVEMENTS

PROPOSED TYPICAL SECTIONS

2nd ST

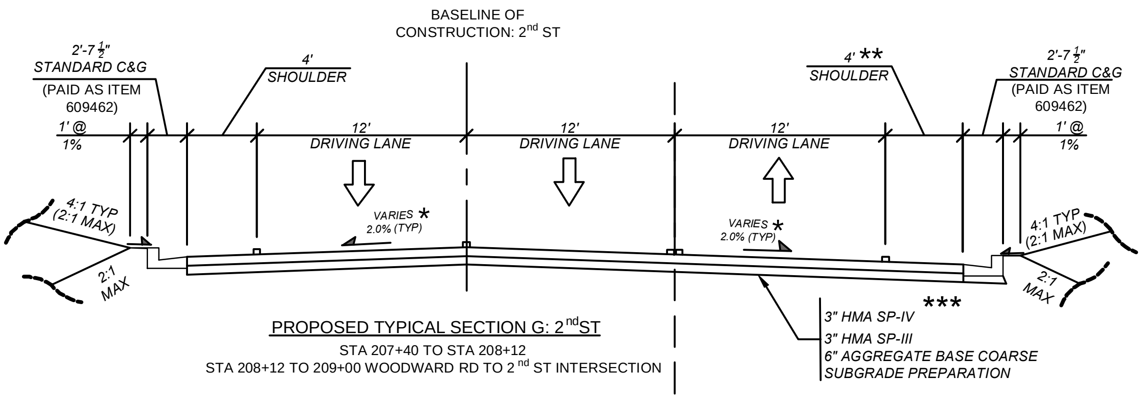
BC PN: TS.2015.WOODWD
ZONE ATLAS: M-14, M-15

SHEET 2-4 OF

DESIGNED BY:

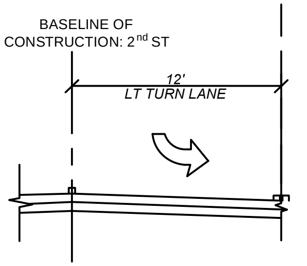
DRAWING SCALE:

NMDOT CN: A300161



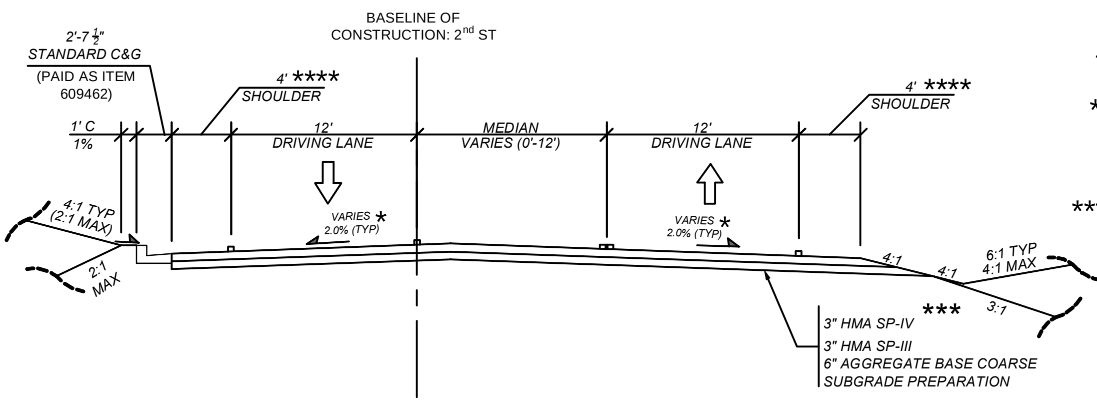
PROPOSED TYPICAL SECTION G: 2nd ST

STA 207+40 TO STA 208+12
STA 208+12 TO 209+00 WOODWARD RD TO 2nd ST INTERSECTION



PROPOSED TYPICAL SECTION H: 2nd ST

STA 209+60 TO STA 210+60



PROPOSED TYPICAL SECTION I: 2nd ST

STA 210+60 TO 215+15

* SEE 13-SERIES, ROADWAY CROSS-SECTIONS FOR MORE INFORMATION

** STA 209+60 TO 210+60 SHOULDER WIDTH VARIES 11'-8" TO 4'-0"

*** PAVEMENT STRUCTURAL SECTION IDENTIFIED IS FOR INFORMATION ONLY. ACTUAL SECTION TO BE DETERMINED AFTER GEOTECHNICAL ANALYSIS IS COMPLETE

**** STA 214+90 TO STA 215+15 SHOULDER WIDTH VARIES 4'-0" TO ± 1'-0" (MATCH EXISTING)

30% DESIGN NOT FOR CONSTRUCTION

REVISIONS		
NO	DATE	DESCRIPTION
6		
5		
4		
3		
2		
1		

AECOM

AECOM TECHNICAL SERVICES, INC
6501 AMERICAS PKWY NE STE 900
ALBUQUERQUE, NM 87110
(505) 855-7500 www.aecom.com

AECOM PROJECT NO.: 60572657

COUNTY OF BERNALILLO
PUBLIC WORKS DIVISION
TECHNICAL SERVICES DEPARTMENT

WOODWARD ROAD IMPROVEMENTS

PROPOSED TYPICAL SECTIONS
2nd ST

BC PN: TS.2015.WOODWD
ZONE ATLAS: M-14, M-15

SHEET 2-5 OF

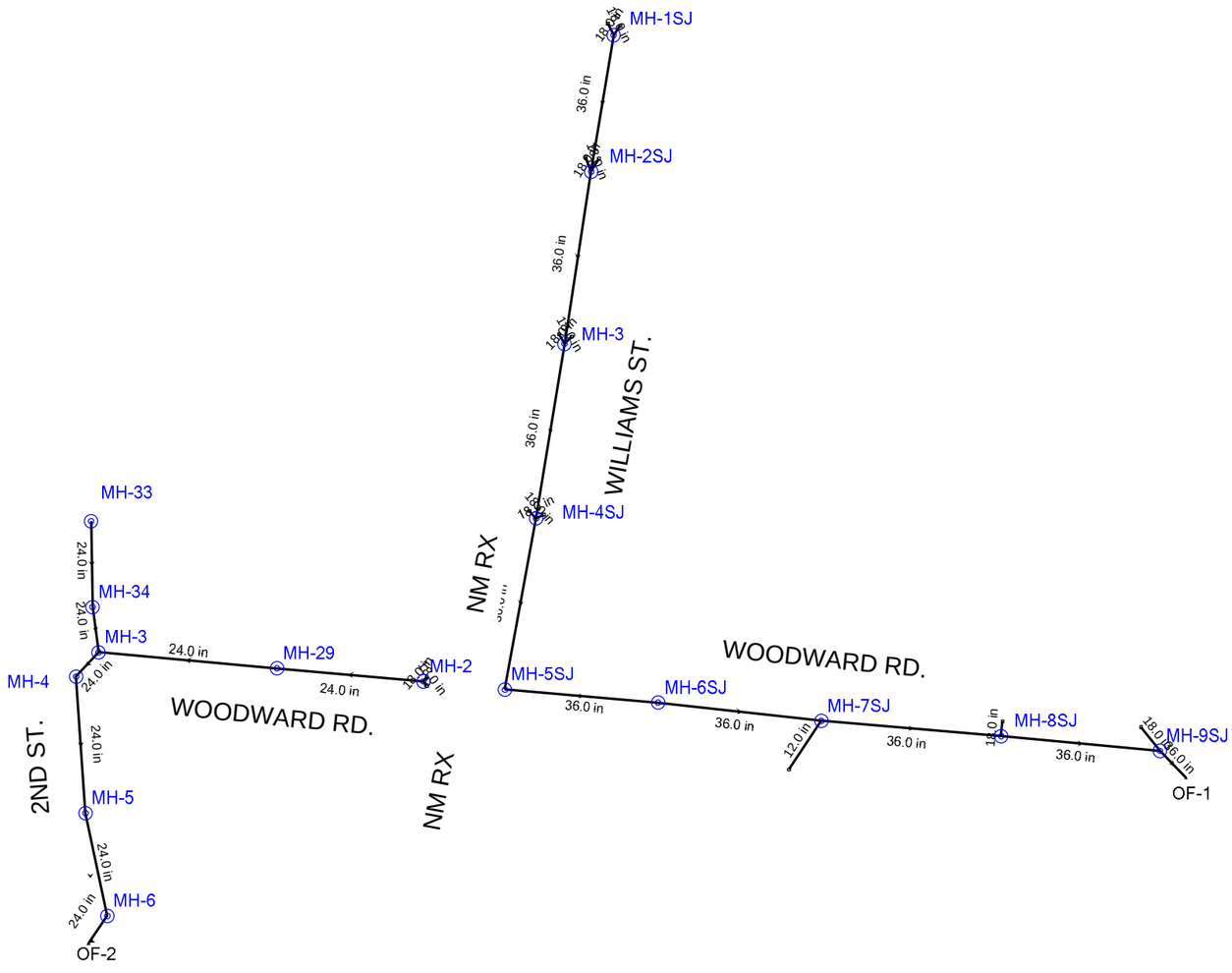
DESIGNED BY:

DRAWING SCALE:

NMDOT CN: A300161

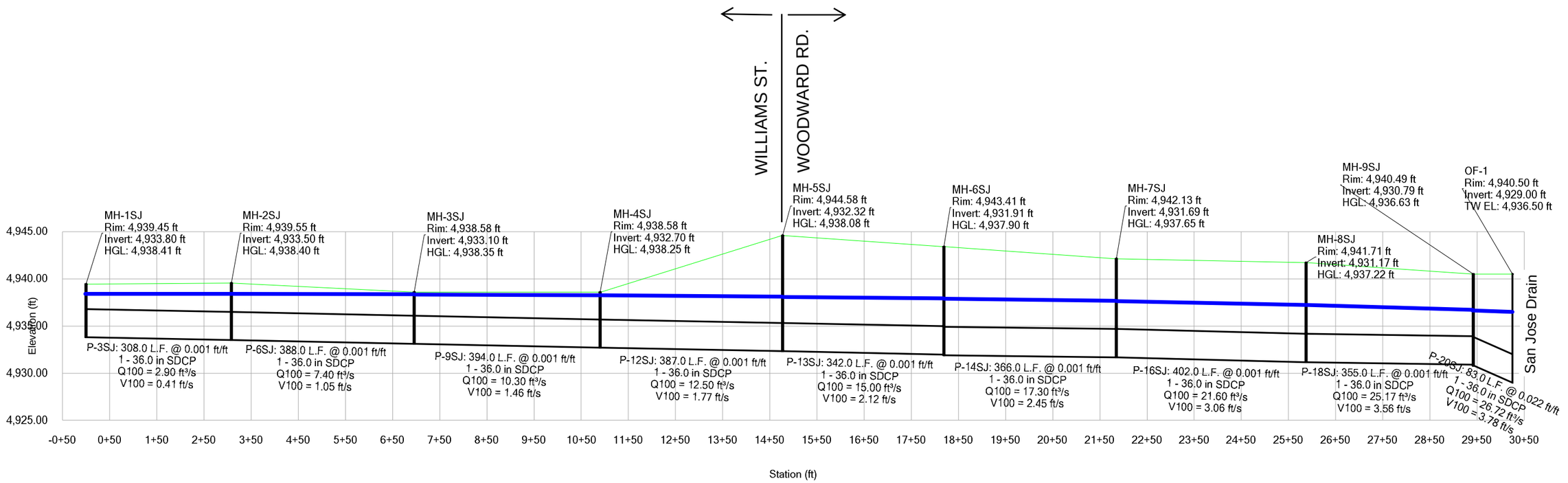
Appendix B
StormCAD Analysis

WOODWARD ROAD
PROPOSED STORM DRAIN
IMPROVEMENTS - PLAN



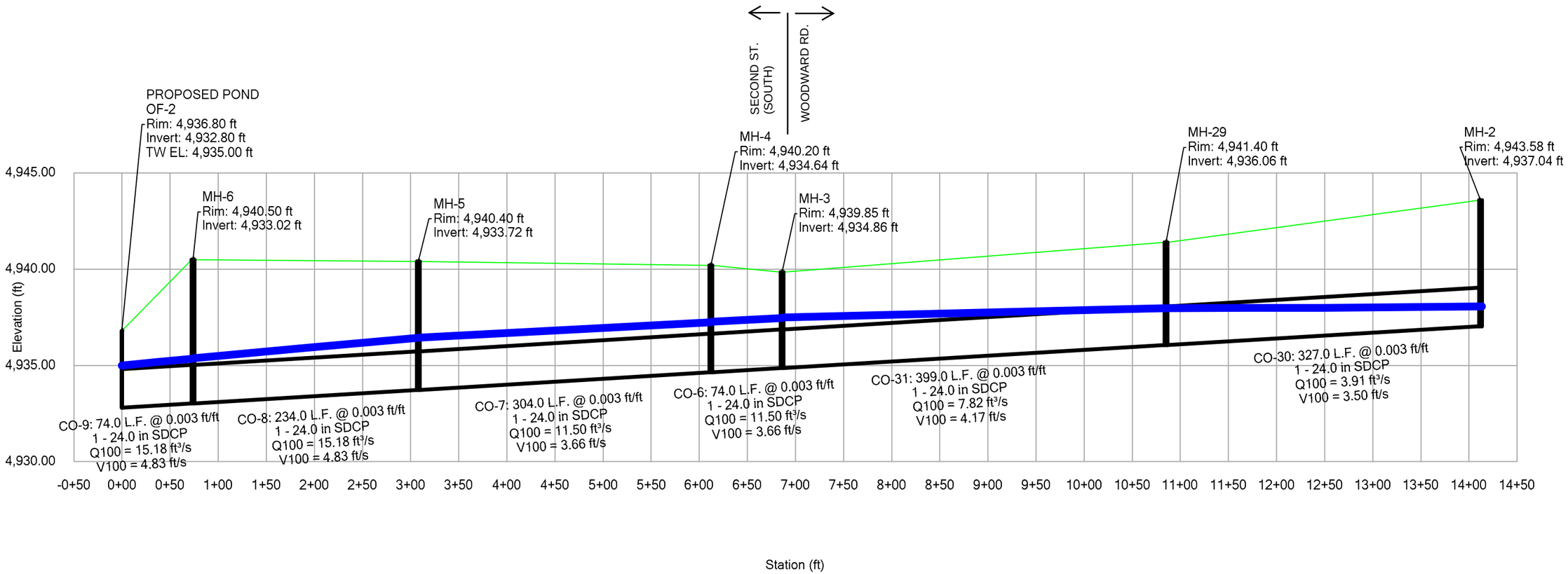
Profile Report

Engineering Profile - WilliamToWoodward (Woodward-Proposed.stsw)



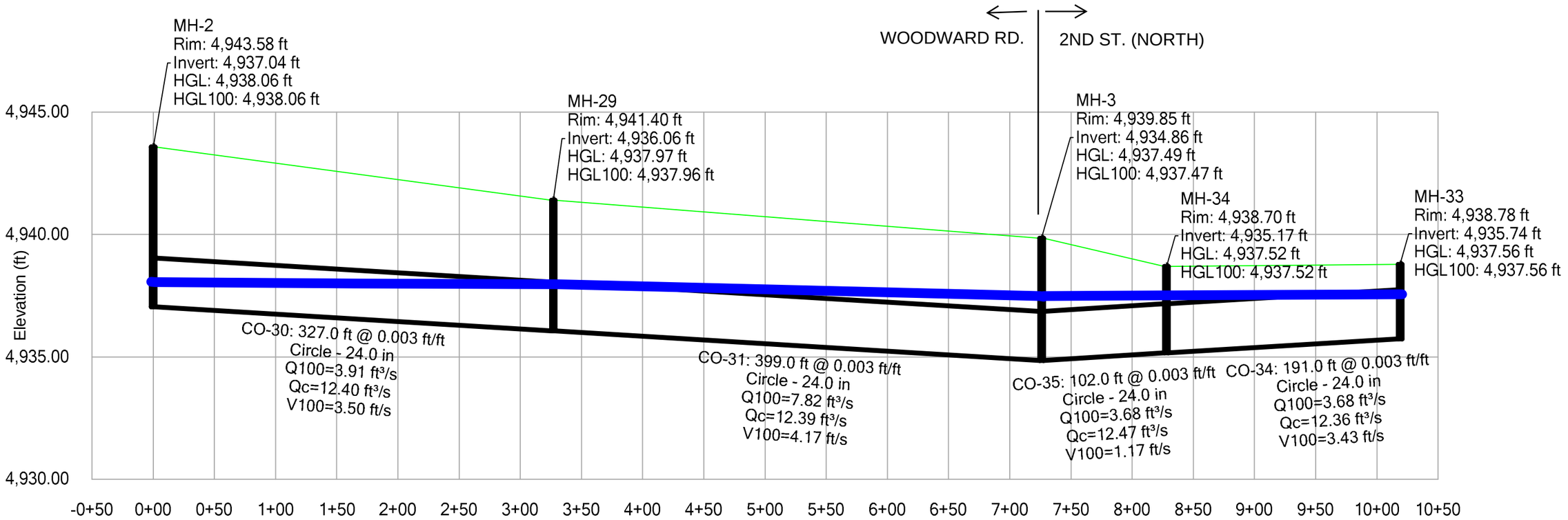
Profile Report

Engineering Profile - WoodwardToSecondSouth (Woodward-Proposed.stsw)



Profile Report

Engineering Profile - WoodwardToSecondNorth (Woodward-Proposed.stsw)



STORM CAD - PIPES

	ID	Diameter (in)	Velocity (ft/s)	Flow (ft³/s)	Capacity (Full Flow) (ft³/s)	Slope (Calculated) (ft/ft)	Hydraulic Grade Line (In) (ft)	Headloss (ft)	Manning's n
19: P-20SJ	19	36.0	3.78	26.72	97.94	0.022	4,936.63	0.13	0.013
25: P-12SJ	25	36.0	1.77	12.50	20.90	0.001	4,938.25	0.14	0.013
45: CO-6	45	24.0	3.66	11.50	12.33	0.003	4,937.47	0.19	0.013
47: CO-7	47	24.0	3.66	11.50	12.44	0.003	4,937.24	0.79	0.013
49: CO-8	49	24.0	4.83	15.18	12.35	0.003	4,936.43	1.05	0.013
51: CO-9	51	24.0	4.83	15.18	12.39	0.003	4,935.33	0.33	0.013
55: P-19SJ	55	18.0	0.00	0.00	1.27	0.000	4,936.65	0.00	0.013
59: P-18SJ	59	36.0	3.56	25.17	18.39	0.001	4,937.22	0.51	0.013
61: P-17SJ	61	18.0	0.00	0.00	16.66	0.025	4,937.22	0.00	0.013
65: P-16SJ	65	36.0	3.06	21.60	23.99	0.001	4,937.65	0.42	0.013
67: P-15SJ	67	12.0	0.00	0.00	3.58	0.010	4,937.67	0.00	0.013
71: P-13SJ	71	36.0	2.12	15.00	21.34	0.001	4,938.08	0.17	0.013
72: P-14SJ	72	36.0	2.45	17.30	16.35	0.001	4,937.90	0.25	0.013
76: P-10SJ	76	18.0	0.00	0.00	37.47	0.127	4,938.26	0.00	0.013
78: P-11SJ	78	18.0	0.00	0.00	40.32	0.147	4,938.26	0.00	0.013
81: P-3SJ	81	36.0	0.41	2.90	20.82	0.001	4,938.41	0.01	0.013
83: P-6SJ	83	36.0	1.05	7.40	21.41	0.001	4,938.40	0.05	0.013
84: P-9SJ	84	36.0	1.46	10.30	21.25	0.001	4,938.35	0.09	0.013
86: P-7SJ	86	18.0	0.00	0.00	39.19	-0.139	4,938.35	0.00	0.013
88: P-8SJ	88	18.0	0.00	0.00	40.86	-0.151	4,938.35	0.00	0.013
90: P-4SJ	90	18.0	0.00	0.00	28.82	0.075	4,938.40	0.00	0.013
92: P-5SJ	92	18.0	0.00	0.00	28.82	0.075	4,938.40	0.00	0.013
94: P-2SJ	94	18.0	0.00	0.00	26.89	0.066	4,938.41	0.00	0.013
96: P-1SJ	96	18.0	0.00	0.00	28.39	0.073	4,938.41	0.00	0.013
98: CO-30	98	24.0	3.50	3.91	12.40	0.003	4,938.06	0.10	0.013
99: CO-31	99	24.0	4.17	7.82	12.39	0.003	4,937.96	0.47	0.013
102: CO-32	102	18.0	2.55	2.00	37.63	-0.128	4,938.10	0.04	0.013
104: CO-33	104	18.0	2.55	2.00	36.15	-0.118	4,938.11	0.04	0.013
121: CO-34	121	24.0	3.43	3.68	12.36	0.003	4,937.56	0.05	0.013
122: CO-35	122	24.0	1.17	3.68	12.47	0.003	4,937.52	0.03	0.013

STORM CAD - MANHOLES

	Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	HEC-22 Benching Method	Headloss Method	Headloss (ft)	Diameter (in)	Flow (Known) (ft³/s)	Flow (Total Out) (ft³/s)
41: MH-2	MH-2	4,943.58	4,937.04	4,938.06	Half	HEC-22 Energy (Second Edition)	0.00	36.0	3.91	3.91
42: MH-3	MH-3	4,939.85	4,934.86	4,937.47	Half	HEC-22 Energy (Second Edition)	0.02	36.0	11.50	11.50
44: MH-4	MH-4	4,940.20	4,934.64	4,937.24	Half	HEC-22 Energy (Second Edition)	0.04	36.0	0.00	11.50
46: MH-5	MH-5	4,940.40	4,933.72	4,936.43	Half	HEC-22 Energy (Second Edition)	0.02	36.0	15.18	15.18
48: MH-6	MH-6	4,940.50	4,933.02	4,935.33	Half	HEC-22 Energy (Second Edition)	0.05	36.0	0.00	15.18
53: MH-9SJ	MH-9SJ	4,940.49	4,930.79	4,936.63	Half	HEC-22 Energy (Second Edition)	0.02	36.0	26.72	26.72
57: MH-8SJ	MH-8SJ	4,941.71	4,931.17	4,937.22	Half	HEC-22 Energy (Second Edition)	0.00	36.0	25.17	25.17
63: MH-7SJ	MH-7SJ	4,942.13	4,931.69	4,937.65	Half	HEC-22 Energy (Second Edition)	0.01	36.0	21.60	21.60
70: MH-6SJ	MH-6SJ	4,943.41	4,931.91	4,937.90	Half	HEC-22 Energy (Second Edition)	0.00	36.0	17.30	17.30
73: MH-5SJ	MH-5SJ	4,944.58	4,932.32	4,938.08	Half	HEC-22 Energy (Second Edition)	0.03	36.0	15.00	15.00
74: MH-4SJ	MH-4SJ	4,938.58	4,932.70	4,938.25	Half	HEC-22 Energy (Second Edition)	0.00	36.0	12.50	12.50
79: MH-1SJ	MH-1SJ	4,939.45	4,933.80	4,938.41	Half	HEC-22 Energy (Second Edition)	0.00	36.0	2.90	2.90
80: MH-2SJ	MH-2SJ	4,939.55	4,933.50	4,938.40	Half	HEC-22 Energy (Second Edition)	0.00	36.0	7.40	7.40
82: MH-3SJ	MH-3SJ	4,938.58	4,933.10	4,938.35	Half	HEC-22 Energy (Second Edition)	0.00	36.0	10.30	10.30
97: MH-29	MH-29	4,941.40	4,936.06	4,937.96	Half	HEC-22 Energy (Second Edition)	0.00	36.0	7.82	7.82
119: MH-33	MH-33	4,938.78	4,935.74	4,937.56	Half	HEC-22 Energy (Second Edition)	0.00	36.0	3.68	3.68
120: MH-34	MH-34	4,938.70	4,935.17	4,937.52	Half	HEC-22 Energy (Second Edition)	0.00	36.0	0.00	3.68

Appendix C
Water Spread Calculations

Woodward Road - 10-year Storm Spread Analysis (Proposed Conditions)

FROM	TO	Min S_L in Reach (%)	S_X (%)	Allow. SPREAD (ft)	Manning's n	Q_{CAP} (cfs)	Contributing Area			C	10-year Intensity (in/hr)	Bypass from previous Inlet (cfs)	Q_{total} (cfs)	Spread Criterion Met	Comments
							Length (ft)	Width (ft)	Area (ac.)						
Woodward - West															
110+53	109+00	0.320	1.5	13.0	0.017	1.580	153.00	40.00	0.14	0.95	3.31	0.00	0.442	Yes	No inlet required
110+53	108+00	0.370	1.5	13.0	0.017	1.699	253.00	40.00	0.23	0.95	3.31	0.00	0.731	Yes	No inlet required
110+53	106+00	0.370	1.5	13.0	0.017	1.699	453.00	40.00	0.42	0.95	3.31	0.00	1.308	Yes	Station 106+00 - Place 1 COA Type A inlet per side of the road
106+00	102+09	0.370	1.5	13.0	0.017	1.699	391.00	40.00	0.36	0.95	3.31	0.14	1.269	Yes	Station 102+09 - Place 1 COA Type A, double throat, inlet per side of the road in sag vertical
212+17	208+05	0.330	1.5	12.0	0.017	1.296	412.00	30.00	0.28	0.95	3.31	0.00	0.892	Yes	No inlet required
208+05	206+00	0.300	2.0	12.0	0.017	1.997	205.00	30.00	0.14	0.95	3.31	0.00	0.444	Yes	Station 208+05 - Place 1 COA Type A, double throat, inlet per side of the road in sag vertical
Woodward - East															
110+53	114+00	0.300	1.5	13.0	0.017	1.530	347.00	40.00	0.32	0.95	3.31	0.50	1.502	Yes	Station 114+00 - Place 1 COA Type A inlet per side of the road, 2 Total
114+00	117+75	0.300	1.5	13.0	0.017	1.530	375.00	40.00	0.34	0.95	3.31	0.20	1.283	Yes	Station 117+75 - Place 1 COA Type C inlet per side of the road, 2 Total
117+75	121+60	0.300	1.5	13.0	0.017	1.530	385.00	40.00	0.35	0.95	3.31	0.26	1.372	Yes	Station 121+60 - Place 1 COA Type C inlet per side of the road, 2 Total
121+60	124+75	0.300	1.5	13.0	0.017	1.530	315.00	40.00	0.29	0.95	3.31	0.30	1.210	Yes	Station 124+75 - Place 1 COA Type C inlet per side of the road, 2 Total
124+75	126+93	0.300	1.5	13.0	0.017	1.530	218.00	40.00	0.20	0.95	3.31	0.23	0.859	Yes	Station 126+93 - Place 1 COA Type A inlet per side of the road, 2 Total

Appendix D
Well Drill Reports

OSE POD Locations Points of Diversion visible at 1:18,000 with 1,000 features per view Water Rights Look Up

Well Number RG-02439

Point of Diversion: RG-02439

Water Right Summary Report	More info
Basin	RG
Number	02439
Suffix	
Reference	
Grant	
Legal	
County	BE
Drilling Start Date	10/12/1958
Plug Date	
Elevation	
Depth of Well	48
Scheduled Date	
Pump Type	
Discharge	
Aquifer	
System Date	5/28/2003
Restrictions	
POD Status	ACT
Ditch Name	
POD File	RG-02439
Sub-Basin	MRG
Status	PMT
Use	DOM
Total Diversion Amout	3.00
Sub-File	
Owner Last Name	LOTT
Owner First Name	JAMES A.
Address 1	712 1/2 MADISON, N.E.
Address 2	
City	ALBUQUERQUE
State	NM

Address 2	
City	ALBUQUERQUE
State	NM
Zip	
Well Tag	
Drilling Finish Date	10/17/1958, 6:00 PM
Proof Completion of Well Received	
Groundwater Source	S
% Shallow	100
Depth to Water	40
Drill Log File Date	10/22/1985
Use of Well	DOMESTIC
Pump Serial Number	
Estimated Yield	
Casing Size	2.00
Static Water Level	
Contact Last Name	
Contact First Name	

Well Number RG-44213-POD1

(1 of 2)

Point of Diversion: RG-44213-POD1

Water Right Summary Report	More info
Basin	RG
Number	44213
Suffix	POD1
Reference	RG-44213-/
Grant	
Legal	
County	BE
Drilling Start Date	8/4/1985
Plug Date	
Elevation	
Depth of Well	420
Scheduled Date	
Pump Type	
Discharge	
Aquifer	
System Date	6/8/2014
Restrictions	
POD Status	ACT
Ditch Name	
POD File	RG-44213-POD1
Sub-Basin	MRG
Status	PMT
Use	DOM
Total Diversion Amout	3.00
Sub-File	
Owner Last Name	SCHWARTZMAN PACKING COMPANY
Owner First Name	
Address 1	PO BOX 2227
Address 2	
City	ALBUQUERQUE
State	NM
Owner First Name	
Address 1	PO BOX 2227
Address 2	
City	ALBUQUERQUE
State	NM
Zip	87103
Well Tag	
Drilling Finish Date	8/27/1985, 6:00 PM
Proof Completion of Well Received	
Groundwater Source	S
% Shallow	100
Depth to Water	20
Drill Log File Date	9/2/1985
Use of Well	
Pump Serial Number	
Estimated Yield	60
Casing Size	4.50
Static Water Level	
Contact Last Name	
Contact First Name	

Well Number RG-59494-POD2

(1 of 2)

Point of Diversion: RG-59494-POD2

Water Right Summary Report	More info
Basin	RG
Number	59494
Suffix	POD2
Reference	RG-59494-CLW/
Grant	
Legal	
County	BE
Drilling Start Date	7/4/1994
Plug Date	
Elevation	
Depth of Well	208
Scheduled Date	
Pump Type	
Discharge	
Aquifer	
System Date	6/7/2016
Restrictions	
POD Status	ACT
Ditch Name	
POD File	RG-59494-POD2
Sub-Basin	MRG
Status	PMT
Use	DOM
Total Diversion Amout	3.00
Sub-File	
Owner Last Name	APODACA
Owner First Name	FRANK
Address 1	151 WOODWARD RD SW
Address 2	
City	ALBUQUERQUE
State	NM

City	ALBUQUERQUE
State	NM
Zip	87102
Well Tag	
Drilling Finish Date	7/6/1994, 6:00 PM
Proof Completion of Well Received	
Groundwater Source	S
% Shallow	100
Depth to Water	20
Drill Log File Date	7/11/1994
Use of Well	
Pump Serial Number	
Estimated Yield	15
Casing Size	4.50
Static Water Level	
Contact Last Name	
Contact First Name	

Appendix E
Meeting Minutes

Meeting Minutes

DATE	14 June 2018
VENUE	MRGCD Offices
MEETING TITLE	Woodward Road Improvements Project – 2nd Street to Broadway Boulevard
CONTRACT NO	CN/PN A300161
PURPOSE	Coordination with MRGCD

ITEM

1.0	ATTENDEES
1.1 1.2 1.3 1.4 1.5 1.6	Jason Casuga, MRGCD Alicia Lopez, MRGCD Brian Lopez, Bernalillo County PM Roxanne Blatz, AECOM PM Farshad Omidvaran, WSP PM Carlos Romo, WSP
2.0	PROJECT MEETING MINUTES
MRGCD · Additional flows into the San Jose Drain are not allowed unless they have been treated and the capacity of the drain is verified with the City of Albuquerque (COA). · The use of water quality inlets with baffles is a possibility once MRGCD has had a chance to evaluate the magnitude of the flows. · Coordination meeting with Kevin Daggett at the COA is required. Jason would like to be present at this meeting. · Per a 1958 agreement, the City of Albuquerque is responsible for the maintenance on this section of the San Jose Drain · MRGCD does not want to lose MS4 exemption · MRGCD would like the existing inlets in the project area to be upgraded to water quality inlets · Project flows east of the RR would need to be retained in the proposed pond and are not allowed to be discharged into the Barr Main Canal. · Culvert crossings at the San Jose Drain and San Jose Lateral need to be licensed to the COA AECOM · AECOM is not planning to extend the crossing culvert at the San Jose drain. A pedestrian railing and culvert headwall may be placed instead.	
3.0	ACTION ITEMS
· WSP to set up a meeting with Kevin Dagget (COA) to be held within 1-2 weeks · MRGCD will send a copy of the latest agreement. Subsequent to the 1958 agreement	

WSP USA
Suite 700
6100 Uptown Boulevard NE
Albuquerque, NM 87110

Tel.: +1 505 881-5357
Fax: +1 505 881-7602
wsp.com

MRGCD Coordination Meeting

June 14, 2018

Project Meeting Attendees			
Name	**Representing**	**Phone**	**Email**
Carlos Romo	WSP	505-878-6588	carlos.romo@wsp.com
Roxanne Bebee Blatz	AECOM	505-855-7438	roxanne.blatz@aecom.com
Brian Lopez	Bern. County	848-1525	bjlopez@bernco.gov
Alicia Lopez	MRGCD	247-0234 263-0983	alicia@mrgcd.us
Jason M. Casuga	MRGCD	259-1005	jason@mrgcd.us
Farshad Omidvaran	WSP	505-878-6562	farshad.omidvaran@wsp.com

Meeting Minutes

DATE	05 July 2018
VENUE	COA, DMD Conference Room
MEETING TITLE	Woodward Road Improvements Project – 2nd Street to Broadway Boulevard
CONTRACT NO	CN/PN A300161
PURPOSE	Coordination with COA and MRGCD

ITEM

1.0	**ATTENDEES**
1.1	Kevin Daggett, COA
1.2	Alicia Lopez, MRGCD
1.3	Brian Lopez, Bernalillo County PM
1.4	Rodrigo Eichwald, Bernalillo County PM
1.5	Roxanne Blatz, AECOM PM
1.6	Farshad Omidvaran, WSP PM
1.7	Carlos Romo, WSP

2.0 PROJECT MEETING NOTES

- WSP described the existing drainage patterns and proposed drainage improvements. The runoff between the RR tracks and 2nd Street will be collected in a new storm drain system that outfalls to a proposed retention pond, located approximately 600' south of Woodward Road and just west of 2nd Street. The runoff between the RR tracks and Broadway Blvd. will be collected with new inlets that would tie into the existing 36" diameter trunk line under Woodward Road; this existing system discharges into the San Jose Drain. Additional flows from the proposed project to the San Jose Drain would be minimal due to the widening of the typical section.
- COA stated that the San Jose Drain is likely to have additional capacity to carry project flows based on the South Broadway Drainage and Storm Water Quality Management Plan. COA also noted that the peak flows from the project would likely not influence the peak flow in the Drain due to timing. COA will verify these assumptions and will get back with us.
- The COA concern is mostly water quality for the MS4 requirements. Three options for water quality were discussed; these consisted of water quality inlets, the AMAFCA water quality manhole near the outfall of the system, and stromceptor type systems. COA and Bernalillo County's preference would be the use of the AMAFCA's water quality manhole.
- WSP will move forward with the assumption that additional discharge from the project into the San Jose Drain is acceptable and will develop the plans using the AMAFCA's water quality manhole near the outfall into the Drain. The design will be revised if additional capacity in the San Jose Drain is not available.
- MRGCD would like to get the San Jose Drain and San Jose Lateral under a license agreement with the COA.
- For the license agreement, MRGCD will need a completed application, application fee, and design plans.

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- Letting date for the project is proposed for October 2019.
- WSP stated that the proposed pond on 2nd St. will be constructed to retain the water. WSP will verify ground water elevation to ensure that the proposed pond can drain.
- Bernalillo County would like to discuss the possibility of discharging flows into the ABQ Riverside Drain instead of the proposed retention pond on 2nd Street. The pond will take up space for the proposed animal care facility. MRGCD will let us know if discharge into the ABQ Riverside Drain is acceptable.

3.0 ACTION ITEMS

- COA to determine if additional capacity is available in the San Jose Drain.
- MRGCD to forward license agreement to AECOM (Completed).
- AECOM to complete the license agreement application and provide MRGCD will all necessary information.
- MRGCD evaluate whether discharge into the ABQ Riverside Drain is feasible.

COA & MRGCD Coordination Meeting

July 5, 2018 – COA, DMD

Project Meeting Attendees			
Name	**Representing**	**Phone**	**Email**
KEVIN DAGGETT	COA	768-2778	kdaggett@cabq.gov
Rodney Eichwald	BCPW	848-1574	rleichwald@bernco.gov
Brian Lopez	Bern Co. PW	848-1525	bj lopez @ bernco.gov
Alicia Lopez	MRGCD	247-0234	alicia@mrgcd.us
Carlos Romo	WSP	878-6588	carlos.romo@wsp.com
RoxanneBakerBlatz	AECOM	855-7438	roxanne.blatz@aecom.com
Farshad Omidvaran	WSP	878-6562	Farshad.Omidvaran@wsp.com

Omidvaran, Farshad

From:	Daggett, Kevin <kdaggett@cabq.gov>
Sent:	Thursday, July 19, 2018 10:35 AM
To:	Omidvaran, Farshad; Alicia Lopez; Rodrigo L. Eichwald (rleichwald@bernco.gov); 'Brian J. Lopez'; 'roxanne.blatz@aecom.com'; Romo, Carlos D.
Cc:	Jason Casuga; Heimann, James
Subject:	RE: Woodward Road Improvements Project - Meeting Summary of the MRGCD Coordination Meeting
Attachments:	San Jose Mannings at Woodward.JPG; San Jose As-built.JPG

Farshad,

I found the as-builts for the San Jose Drain. They identify 700 cfs in the channel at Woodward (roughly 3 ft of freeboard and a flow depth of 6 ft). The attached Manning's calculation corroborates that information and shows that the channel has adequate capacity to accept the minor flow contribution from the Woodward project.

Let me know if you have questions.

Kevin Daggett, P.E., P.S.
Storm Drainage Section Manager

Department of Municipal Development
City of Albuquerque
(505) 768-2778

From: Omidvaran, Farshad [mailto:Farshad.Omidvaran@wsp.com]
Sent: Wednesday, July 18, 2018 11:44 AM
To: Daggett, Kevin; Alicia Lopez; Rodrigo L. Eichwald (rleichwald@bernco.gov); 'Brian J. Lopez'; 'roxanne.blatz@aecom.com'; Romo, Carlos D.
Cc: Jason Casuga; Heimann, James
Subject: Woodward Road Improvements Project - Meeting Summary of the MRGCD Coordination Meeting

All,

The summary of our coordination meeting with the City of Albuquerque and MRGCD on July 5, 2018, for the Woodward Road Improvements Project is attached. Please review and let me know of any errors and/or omissions.

Thank you,

Farshad Omidvaran
Senior Drainage Engineer

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Please note I have a new email address.

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WSP | Parsons Brinckerhoff is now WSP.

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