CITY OF ALBUQUERQUE

Planning Department
Alan Varela, Director

Mayor Timothy M. Keller

April 9, 2024

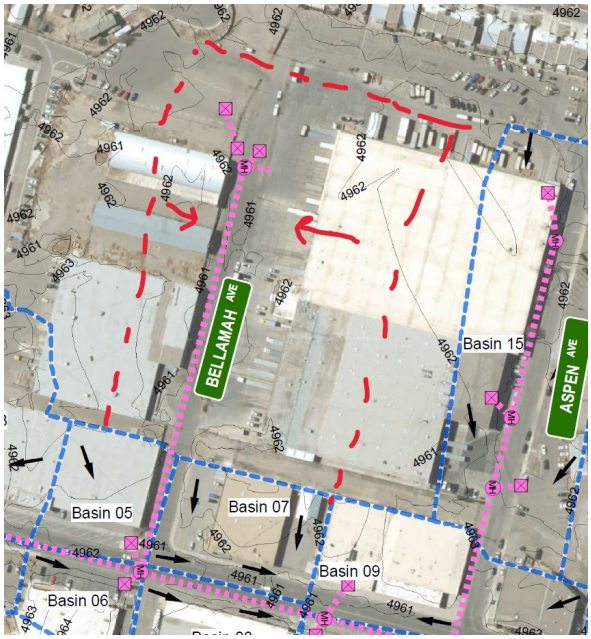
Sheila K. Johnson, P.E.
WHPacific, Inc.
6501 Americas Parkway NE, Suite 400
Albuquerque, NM 87110

RE: 12th Street Road Diet (CPN 718780)
Preliminary Drainage Report
Engineer's Stamp Date: No Date
Hydrology File: H13D120

Dear Ms. Johnson:

Based upon the information provided in your submittal received 03/12/2024, the Final Drainage Report **is not** approved for Work Order. The following comments need to be addressed for approval of the above referenced project:

1. Please provide an engineer's stamp with a signature and date.
2. It appears that the drainage area for Bellahah Ave is missing in both the existing conditions and proposed conditions drainage maps.



PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

3. At the intersection of 12th St and Sawmill, an existing Type A inlet is being replaced with a Type D grate inlet. Whenever this happens, a double Type D grate inlet always in needed. Please check the calculations, a single grate inlet will always only allow about half of the flow that typical inlet allows.

4. This report uses Autodesk Storm and Sanitary Analysis. Please note that this program is not accepted by Hydrology. Hydraulic calculations must be performed along the Energy Grade Line using the Bernoulli Equation, per the DPM. The calculations presented in HEC-22, 3rd Edition agree with the DPM but the earlier editions (1st and 2nd) do not use Bernoulli's correctly. The City of Albuquerque- Hydrology Section accepts the manhole loss methodology presented in HEC-22, 3rd Edition, section 7.1.6.7 and rejects the two methods prescribed in HEC-22, 1st Edition and 2nd Edition. Programs proven to correctly apply HEC-22, 3rd Edition and correctly use Bernoulli's Equation, the momentum equation for junction losses, manhole losses, contraction losses, expansion losses, and bend losses per the DPM include, WSPGW - Water Surface Pressure Gradient by CivilDesign, HydroCAD, and Stormwater Studio by Hydrology Studio. StormCAD v8i SELECTseries5 (build 08.11.05.58) and later, by Bentley, is acceptable provided that the calculations are performed using HEC-22, 3rd Edition and the user selects the "Energy Grade" option for losses. Other software programs may also be used if shown to correctly apply these losses.

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As a reminder, if the project total area of disturbance (including the staging area and any work within the adjacent Right-of-Way) is 1 acre or more, then an Erosion and Sediment Control (ESC) Plan and Owner's certified Notice of Intent (NOI) is required to be submitted to the Stormwater Quality Engineer (Dough Hughes, PE, jhughes@cabq.gov, 924-3420) 14 days prior to any earth disturbance.

If you have any questions, please contact me at 924-3995 or rbrissette@cabq.gov.

Sincerely,

Renée C. Brissette

Renée C. Brissette, P.E. CFM
Senior Engineer, Hydrology
Planning Department

City of Albuquerque

Planning Department
Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (DTIS)

Project Title: 12th Street Road Diet Hydrology File # _____
Legal Description: 12th Street - from Sawmill Road to Railroad Spur (approx 350-ft North of Aspen Avenuye)
City Address, UPC, OR Parcel: same as above

Applicant/Agent: WHPacific, an NV5 Company Contact: Sheila Johnson
Address: 6501 Americas Parkway, Suite 400 Alb, NM 87110 Phone: (505) 348-5227
Email: sheila.johnson@nv5.com

Applicant/Owner: City of Albuquerque Contact: Abe J. Bortz-Johnson
Address: Department of Municipal Development Phone: (505) 768-2778
Email: abortz-johnson@cabq.gov

(Please note that a DFT SITE is one that needs Site Plan Approval & ADMIN SITE is one that does not need it.)

TYPE OF DEVELOPMENT: ☐ PLAT (#of lots) _____ ☐ RESIDENCE
☐ DFT SITE ☑ ADMIN SITE City owned property - Roadway/Drainage Inprovements

RE-SUBMITTAL: ☐ YES ☑ NO

DEPARTMENT: ☐ TRANSPORTATION ☑ HYDROLOGY/DRAINAGE

Check all that apply under Both the Type of Submittal and the Type of Approval Sought:

TYPE OF SUBMITTAL:

- ☐ ENGINEER/ARCHITECT CERTIFICATION
- ☐ PAD CERTIFICATION
- ☐ CONCEPTUAL G&D PLAN
- ☐ GRADING & DRAINAGE PLAN
- ☑ DRAINAGE REPORT -- Preliminary
- ☐ DRAINAGE MASTER PLAN
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL) ADMINISTRATIVE
- ☐ TRAFFIC CIRCULATION LAYOUT FOR DFT APPROVAL
- ☐ TRAFFIC IMPACT STUDY (TIS)
- ☐ STREET LIGHT LAYOUT
- ☐ OTHER (SPECIFY)_____

TYPE OF APPROVAL SOUGHT:

- ☐ BUILDING PERMIT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY
- ☐ CONCEPTUAL TCL DFT APPROVAL
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ SITE PLAN FOR BLDG PERMIT DFT APPROVAL
- ☐ SIA/RELEASE OF FINANCIAL GUARANTEE
- ☐ FOUNDATION PERMIT APPROVAL
- ☐ GRADING PERMIT APPROVAL
- ☐ SO-19 APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ GRADING PAD CERTIFICATION
- ☐ WORK ORDER APPROVAL
- ☐ CLOMR/LOMR
- ☑ OTHER (SPECIFY) Preliminary Drainage Report

DATE SUBMITTED: March 28, 2024

REV. 09/13/23

12TH STREET ROAD DIET

FROM SAWMILL ROAD TO RAILROAD SPUR

City Project No. 718780

PRELIMINARY DRAINAGE REPORT

Prepared for

City of Albuquerque

Department of Municipal Development

March 26, 2024

Prepared by

WHPacific
AN NV5 COMPANY

6501 Americas Parkway NE, Suite 400
Albuquerque, NM 87110
T 505.247.0294

www.nv5.com

SIGNATURE PAGE

12TH STREET ROAD DIET
FROM SAWMILL ROAD TO RAILROAD SPUR

Preliminary Drainage Report

I, Sheila K. Johnson, hereby certify that I am a Registered Professional Engineer, registered in the state of New Mexico, and that the following report was prepared by me or under my direction and is true and correct to the best of my knowledge and belief.

_____

Sheila K. Johnson, PE NMPE No. 19758

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1.0 INTRODUCTION

This project is located within the historic Sawmill Area in the northwest quadrant of the City of Albuquerque (City), New Mexico as shown in Figure 1. The project begins approximately 50-feet south of the intersection of 12th Street and Sawmill Road, extending north approximately 0.27 miles to a Railroad Spur. Within the project, 12th Street is classified as a Minor Arterial by the Mid-Region Council of Governments (2021), and it crosses local connector streets Bellamah Avenue and Aspen Road. The site layout is shown in Figure 2. The roadway currently provides access to businesses and is a link from I-40 to the residential area south of Sawmill Road.

The City Department of Municipal Development (DMD) has identified this project as an opportunity to meet the City's Complete Streets Ordinance and mitigate speed conflicts, as well as provide an option for safe transportation choices for commuter and daily travel needs within the area. The drainage analysis is in support of the roadway project. The intent is to improve roadway drainage, and to the extent possible considering the limitations of the existing area wide storm drain system, bring the local drainage system into compliance with the City Drainage Requirements.

Figure 1: Project Vicinity Map

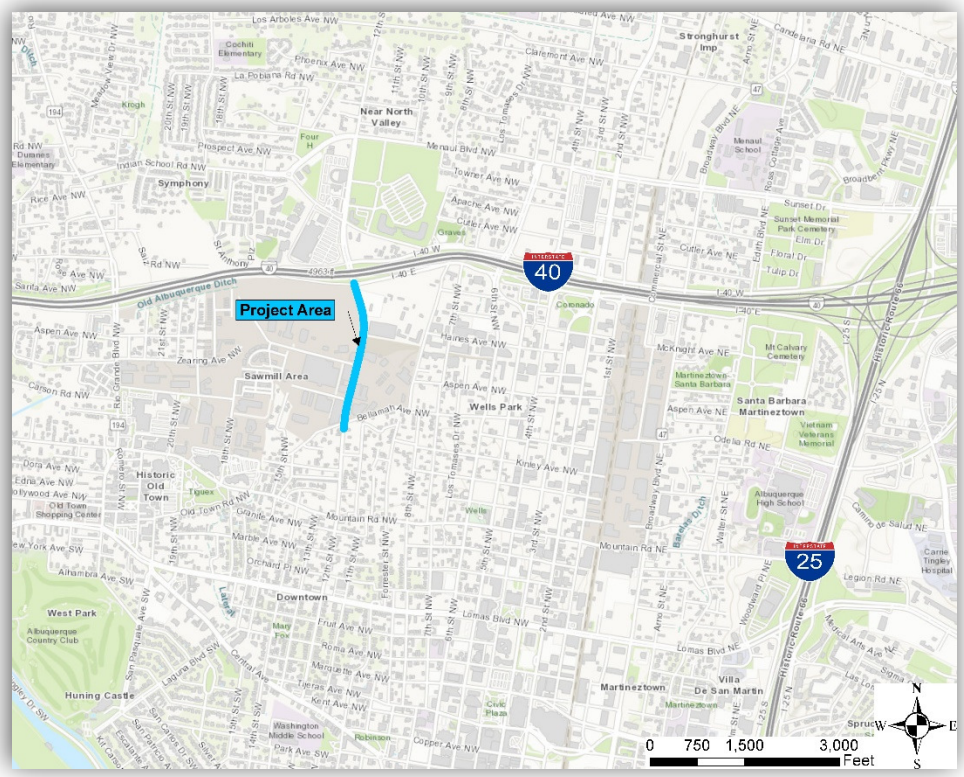


Figure 2: Local Vicinity Map

2.0 DRAINAGE CRITERIA

Drainage analysis for this project follows the procedures outlined in Chapter 6 of the City of Albuquerque, Development Process Manual, June 8, 2020 (DPM). Existing and proposed drainage conditions for the site were evaluated for the 10-year and 100-year storm events.

The local storm drain system consists of many small diameter lines and drop inlets that do not match the current DPM criteria. This is true of both the project system and the downstream outfall system so meeting City requirements for hydraulic grade line (HGL), spread, and depth is challenging or impossible in many locations.

Bringing the downstream system to the current city standards is well beyond the scope of this project. Based on agreement with the City Project Manager, due to the limitations of the existing system outfall and in compliance with the way drainage for new developments in the area is being accomplished, it was decided this project will connect to the existing storm drain system using City standard drop inlets, but HGL, depth, and spread are dependent on the downstream system and may not always strictly meet all the requirements of the City drainage criteria.

Any new drop inlets will meet current design criteria. 12th Street is heavily used and the City wishes to have minimal traffic disruption with the project – both in construction time and construction traffic control closures. To meet this project need, lateral lines will not be fully replaced. Instead of replacing the line from the new, relocated inlet to the existing manhole, a junction box will be placed on the existing lateral to tie the new inlet to the existing manhole. In

this way, trenching can be kept within the driving lane adjacent to the curb. The existing storm drain is located in the center of 12th Street which would entail much more restrictive traffic control.

3.0 EXISTING DRAINAGE ANALYSIS

3.1. EXISTING SITE CONDITIONS

The terrain in and around the 12th Street corridor is extremely flat and stormwater tends to pond in any available low area. Drainage is accomplished via the existing storm drain that drains south to Sawmill Road then turns eastward within Sawmill Road. Adjacent properties also drain to the 12th Street storm drain. The Sawmill Road storm drain is the outfall for this project. Figure 3 is an Existing Conditions Drainage Map showing drainage basins and the location of the existing storm drain, manholes, and drop inlets.

The project is within an older part of Albuquerque and record drawings, drainage reports, or drainage analyses are not available for the original components of the system. The only drainage reports or record drawings available are for recent developments that connect to the system. Existing storm drain information is primarily based on the project field survey and data gleaned from the 2002 City Facilities Maps. These maps indicated that many of the lines and drop inlets were built in the late 1960's or possibly earlier (noted as "no record" in City Facility Maps).

As noted in the project survey, the existing storm drain lines are a variety of sizes and materials. The trunk line pipe sizes vary from 12-inch, 14-inch, 18-inch and 24-inch pipes. Materials such as reinforced concrete pipe (RCP), asbestos cement pipe (AC), ductile iron pipe (DI), wrapped steel, or other unknown pipe materials are found throughout the project area. Drop inlets in the project vary in size and type depending on the era in which they were constructed. Most are not City standard inlets and many are quite small and clogged with sediment.

Referring to Figure 3, Basins 11 and 13 drain to drop inlets located just north of the railroad spur and from there to the drainage ditch parallel to the railroad and draining eastward.

The remaining basins, 03-10 and basin 15, all drain to the 12th Street storm drain as shown in Figure 3. The Bellamah Avenue storm drain has been redesigned in support of a roadway improvement project City Project 7703.72.

A site visit was held on April 27, 2021 with City Staff and WHPacific staff to review and confirm existing conditions. At this meeting, it was acknowledged that it is unlikely the downstream system has the capacity to pass the design storms and does not meet the City's standard drainage criteria.

HYDROLOGIC ANALYSIS

Drainage basins are shown on Figure 3. All basins are less than 40-acres and the Procedure for Small Basins as shown in the DPM was used to determine peak flow rates. The basins consist nearly entirely of impervious area and 100% land treatment D has been used throughout. All of the basins are within Zone 2 and a minimum time of concentration of 12 minutes was used. The proposed condition is the same as existing; some inlets are adjusted to match the low point, adjusted away from a handicap ramp, or an additional inlet added. However, the high points and basin limits are identical in the existing and proposed conditions and both are fully land treatment D, so a separate hydrologic analysis for the proposed condition was not done. Table 1 below shows the basin areas and peak flow rates. Detailed information is provided in the Appendix.

Table 1: Existing / Proposed Condition Peak Runoff

Basin ID	Area (acres)	10-year Peak Discharge (cfs)	100-year Peak Discharge (cfs)
1	0.50	1.34	2.15
2	0.58	1.57	2.51
3	2.75	7.46	11.95
4	0.61	1.65	2.65
5	0.89	2.41	3.86
6	0.66	1.79	2.87
7	1.69	4.57	7.32
8	1.90	5.16	8.26
9	1.86	5.03	8.06
10	2.19	5.92	9.49
11	1.14	3.10	4.96
12	Not Used		
13	3.36	9.12	14.60
14	3.27	8.87	14.21
15	3.25	8.79	14.08

HYDRAULICS

A hydraulic analysis of the existing storm drain line was performed using the Storm and Sanitary Analysis (SSA) program that works within AutoCAD/Civil3D. In addition to the non-standard pipe sizes, the inlets within the project are small with small grates typical of inlets installed in older sections of Albuquerque prior to the use of City standard inlets.

Inlet capacity was evaluated, based on the surveyed size, within the SSA model and included a 15% clogging factor. Pipe sizes shown in the survey file were modeled. The SSA software

calculated the hydraulic grade line, depth of water and spread. Downstream conditions are unknown for the existing storm drain line in 12th Street and the downstream starting point for the model was set at the top of pipe in 12th Street.

The results of the analysis indicate the existing system is significantly undersized for a 10-year storm and severely undersized for the 100-year storm. Existing inlets do not have capacity for the 10- or 100-year design storms and stormwater ponds on the streets until it can eventually drain. Within the gutter flowline water is intercepted by intermediate inlets and the remaining stormwater ponds at the inlets located in sags. The storm drain pipes cannot convey the design storm flowrate. As a result, the time to drain and depth of ponding at these locations is controlled by the downstream capacity of the storm drain system and runoff slowly drains out of the system as the downstream pipes drain. Anecdotal information from an area resident noted that stormwater that ponds at the drop inlets can last 24-hours or longer.

As seen in the model results, the computed HGL is much higher than the inlet grates, thus much of the stormwater will not be intercepted by the inlets and will drain on the surface during the design storm. Some runoff will pond in the sag areas until the downstream systems drains.

Hydraulic results are shown in the Appendix – including the profile and a table with depth, spread, and velocity.

4.0 PROPOSED DRAINAGE ANALYSIS

The proposed roadway improvements will include narrowing of the roadway width while providing driving lanes and bicycle lanes in each direction. The proposed drainage system is very similar to the existing system. Drop inlets are proposed at the low points and on grade as needed generally replacing an existing inlet. Existing drop inlets were replaced with current City standard structures to match the new roadway width and configuration and, in some cases, a revised elevation. Typically elevations remained essentially the same or were changed only minimally. In general, the flow line elevations needed to remain as existing in order to properly tie to the existing development. A Proposed Condition Drainage Map is shown on Figure 4 indicating new drop inlets and line extensions schematically. 60% construction plans are shown in the Appendix. The drainage basins are the same as in the Existing Condition.

The current storm drain main line is shallow (manhole depth varying from approximately 3-feet to 4.8 feet) and the resulting pipe cover is very shallow. This makes it impossible in some locations to achieve a minimum cover of 1-foot if using City minimum pipe size of 24-inch.

In a previous project (Bellamah Avenue Extension City Project No. 7703.72) The shallow cover available for a gravity storm drain was discussed with the City Maintenance Supervisor. WHPacific explained that the cover requirement could not be met using the City minimum pipe size of 24-inch diameter, and what was maintenance's opinion on using arch pipe versus smaller capacity round pipe.

He noted that while the many varied pipe sizes and materials that exist in this older part of town can occasionally be a challenge, the City maintenance crews are able to maintain and clean the

storm drain. He recommended that we select the best option for the project and maintenance crews would work with it, however, round pipes are less costly and easier to obtain for both pipe and fittings and preferred over arch pipes.

Pipe class calculations were made and as a result all new lateral pipes will be round, Class IV Reinforced Concrete Pipe (RCP) and match the size of the downstream connector pipe.

The lateral lines are configured to connect to the existing lateral line using a short length of pipe, connecting to the lateral line using a prefabricated junction box. This was done for two reasons:

- to avoid many of the utility conflicts and required relocations that would arise from placing a new lateral line from a new, relocated drop inlet to the existing manhole in the center of the street. There are numerous existing utilities throughout the area.
- to avoid the complications for traffic during construction due a trench extending to the center of the street. Several of the existing manholes are not only in the center of 12th Street, but also at the center intersections, thereby impacting either Sawmill Road, Bellamah Avenue, or Aspen Road. The construction time frame would also be lengthened.

The storm drain performance was modeled using SSA as with the existing system. Due to the unknown conditions in the outfall system, the hydraulic grade line was set at the top of pipe at the connecting existing manhole in 12th Street for the downstream control. Street velocity and depth, and spread was calculated using the proposed street section.

Results from the SSA model indicate the 10-year and the 100-year storm runoff will pond at the inlets but will be contained within the 8-inch curb with the exception of an existing inlet CDI-10 north of Bellamah Avenue in which the ponding depth exceeds the curb height in the 100-year storm event. See the 10-year and 100-year profiles and inlet tables in the Appendix. Depth and spread are shown in the Inlet tables and HGL and main line pipe characteristics are shown in the SSA profiles.

5.0 CONCLUSION

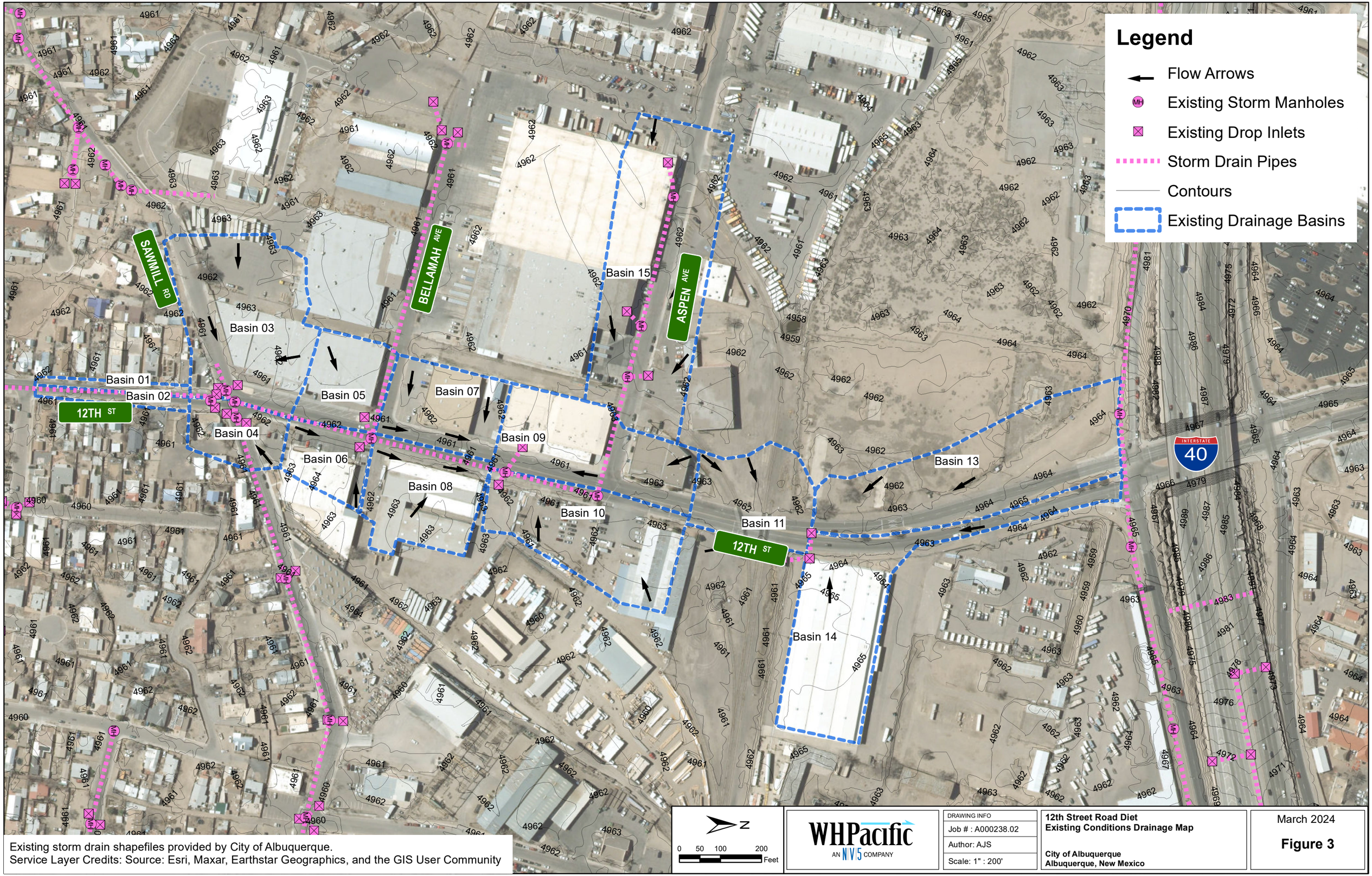
The drainage system planned for construction in the project area will update the current non standard drop inlets to current City standard and place them in standard locations to match the newly narrower road.

The outfall for the system is the storm drain line in Sawmill Road draining eastward. This line does not have capacity for the design flow rates reaching it. The new system will allow the storm runoff to pond and drain out as the downstream system allows.

6.0 REFERENCES

- CITY OF ALBUQUERQUE, DEVELOPMENT PROCESS MANUAL (DPM), JUNE 8, 2020

FIGURES



Existing storm drain shapefiles provided by City of Albuquerque.
Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

N

0 50 100 200 Feet

WHPacific
AN NV5 COMPANY

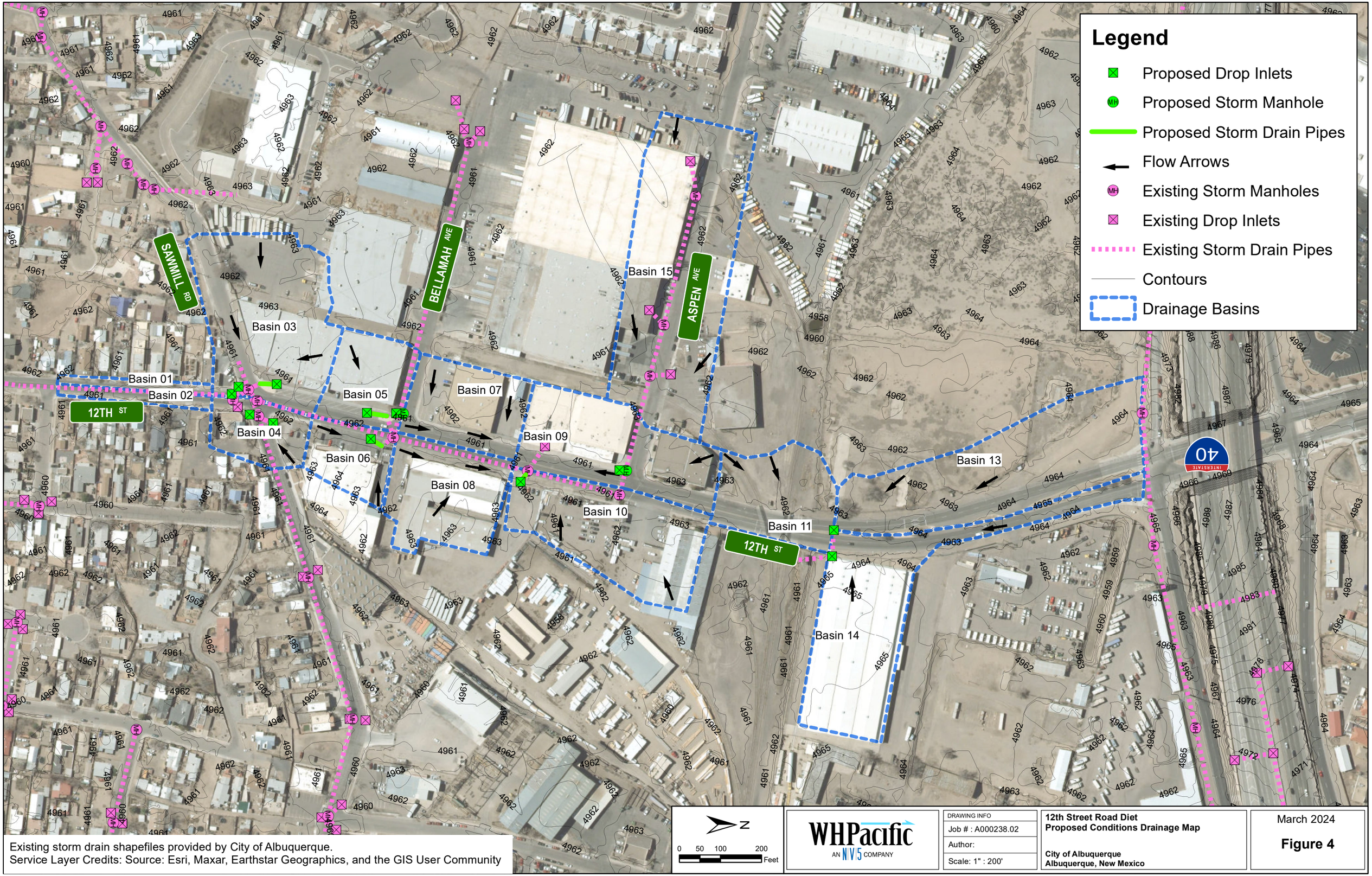
DRAWING INFO
Job # : A000238.02
Author: AJS
Scale: 1" : 200'

12th Street Road Diet
Existing Conditions Drainage Map

City of Albuquerque
Albuquerque, New Mexico

March 2024

Figure 3



Existing storm drain shapefiles provided by City of Albuquerque.
Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

N

0 50 100 200 Feet

WHPacific
AN NV5 COMPANY

DRAWING INFO	
Job # :	A000238.02
Author:	
Scale:	1" : 200'

12th Street Road Diet
Proposed Conditions Drainage Map

City of Albuquerque
Albuquerque, New Mexico

March 2024

Figure 4

APPENDIX

Land Treatment information from DPM 2020

Project Name: ***12th and Sawmill*** ***Analysis:*** ***Hydrology***
WHP Project No: ***229022-A000238.02***
City Project No: ***7150-593***
Site Location: ***Albuquerque, NM***

The following table is from DPM 2020

Section 6-2(A)(2) Land Treatments

All land areas are described by one of four basic land treatments or by a combination of the four land treatments. Land treatments are provided in TABLE 6.2.9.

TABLE 6.2.9 **Land Treatments**

Treatment	Land Condition
A (CN=77)	Soil uncompacted by human activity with 0 to 10% slopes. Native grasses, weeds, and shrubs in typical densities with minimal disturbance to grading, ground cover, and infiltration capacity.
B (CN=79)	Irrigated lawns, parks and golf courses with 0 to 10% slopes. Native grasses, weeds and shrubs, and soil uncompacted by human activity with slopes greater than 10% and less than 20%.
C (CN=86)	Soil compacted by human activity. Minimal vegetation. Unpaved parking, roads, trails. Most vacant lots. Gravel or rock (desert landscaping). Irrigated lawns and parks with slopes greater than 10%. Native grasses, weeds and shrubs, and soil uncompacted by human activity with slopes at 20%or greater. Native grass, weed and shrub areas with clay or clay loam soils, and other soils of very low permeability as classified by SCS Hydrologic Soil Group D.
D (CN=98)	Impervious areas, pavement, and roofs. Ponds, channels, and wetlands, even if seasonally dry.

Most watersheds contain a mix of land treatments. To determine proportional treatments, measure respective subareas. For large developed basins, the areal percentages in TABLE 6.2.10 may be used instead of specific measurement for treatment D.

TABLE 6.2.10 **Percent Treatment D (Impervious)**

Land Use	Percent
Commercial*	90
Single Family Residential N=units/acre, N≤6	$7*[(N^2) + (5N)]^{0.5}$
Multiple Unit Residential	
Detached*	60
Attached*	70
Industrial	
Light*	70
Heavy*	80
Parks, Cemeteries	7
Playgrounds	13
Schools	50
Collector & Arterial Streets	90

**Includes local streets*

TABLE 6.2.10 does not provide areal percentages for land treatments A, B, and C. Use of TABLE 6.2.10 will require additional analysis to determine the appropriate areal percentages of these land treatments.

10 & 100-Year Discharge for Small Watersheds

Project Name: 12th and Sawmill

WHP Project No: ***229022-A000238.02*** ***Analysis:*** ***Hydrology***

City Project No: ***7150-593***

Site Location: ***Albuquerque, NM***

Existing Conditions Zone2, 10 YR - USES A TIME OF CONCENTRATION OF 12 MINUTES

Basin ID	Land Treatment	q(cfs/acre)	A (sq ft)	Area (acres)	Q Peak (cfs)
1	D	2.71	21572	0.50	1.34
2	D	2.71	25181	0.58	1.57
3	D	2.71	119972	2.75	7.46
4	D	2.71	26580	0.61	1.65
5	D	2.71	38741	0.89	2.41
6	D	2.71	28806	0.66	1.79
7	D	2.71	73520	1.69	4.57
8	D	2.71	82902	1.90	5.16
9	D	2.71	80883	1.86	5.03
10	D	2.71	95209	2.19	5.92
11	D	2.71	49829	1.14	3.10
12	D	2.71	64162	1.47	3.99
13	D	2.71	146530	3.36	9.12
14	D	2.71	142637	3.27	8.87
15 (offsite)	D	2.71	141356	3.25	8.79

Existing Conditions Zone2, 100 YR - USES A TIME OF CONCENTRATION OF 12 MINUTES

Basin ID	Land Treatment	q(cfs/acre)	A (sq ft)	Area (acres)	Q Peak (cfs)
1	D	4.34	21572	0.50	2.15
2	D	4.34	25181	0.58	2.51
3	D	4.34	119972	2.75	11.95
4	D	4.34	26580	0.61	2.65
5	D	4.34	38741	0.89	3.86
6	D	4.34	28806	0.66	2.87
7	D	4.34	73520	1.69	7.32
8	D	4.34	82902	1.90	8.26
9	D	4.34	80883	1.86	8.06
10	D	4.34	95209	2.19	9.49
11	D	4.34	49829	1.14	4.96
12	D	4.34	64162	1.47	6.39
13	D	4.34	146530	3.36	14.60
14	D	4.34	142637	3.27	14.21
15 (offsite)	D	4.34	141356	3.25	14.08

10 & 100-Year Discharge for Small Watersheds

Project Name: 12th and Sawmill

WHP Project No: ***229022-A000238.02*** ***Analysis:*** ***Hydrology***

City Project No: ***7150-593***

Site Location: ***Albuquerque, NM***

Section 6-2(A)(5) Peak Discharge Rate for Small Watersheds

The peak discharge rate is given in *TABLE 6.2.14* for small watersheds, less than or equal to 40 acres, where the time of concentration is assumed to be 12 minutes.

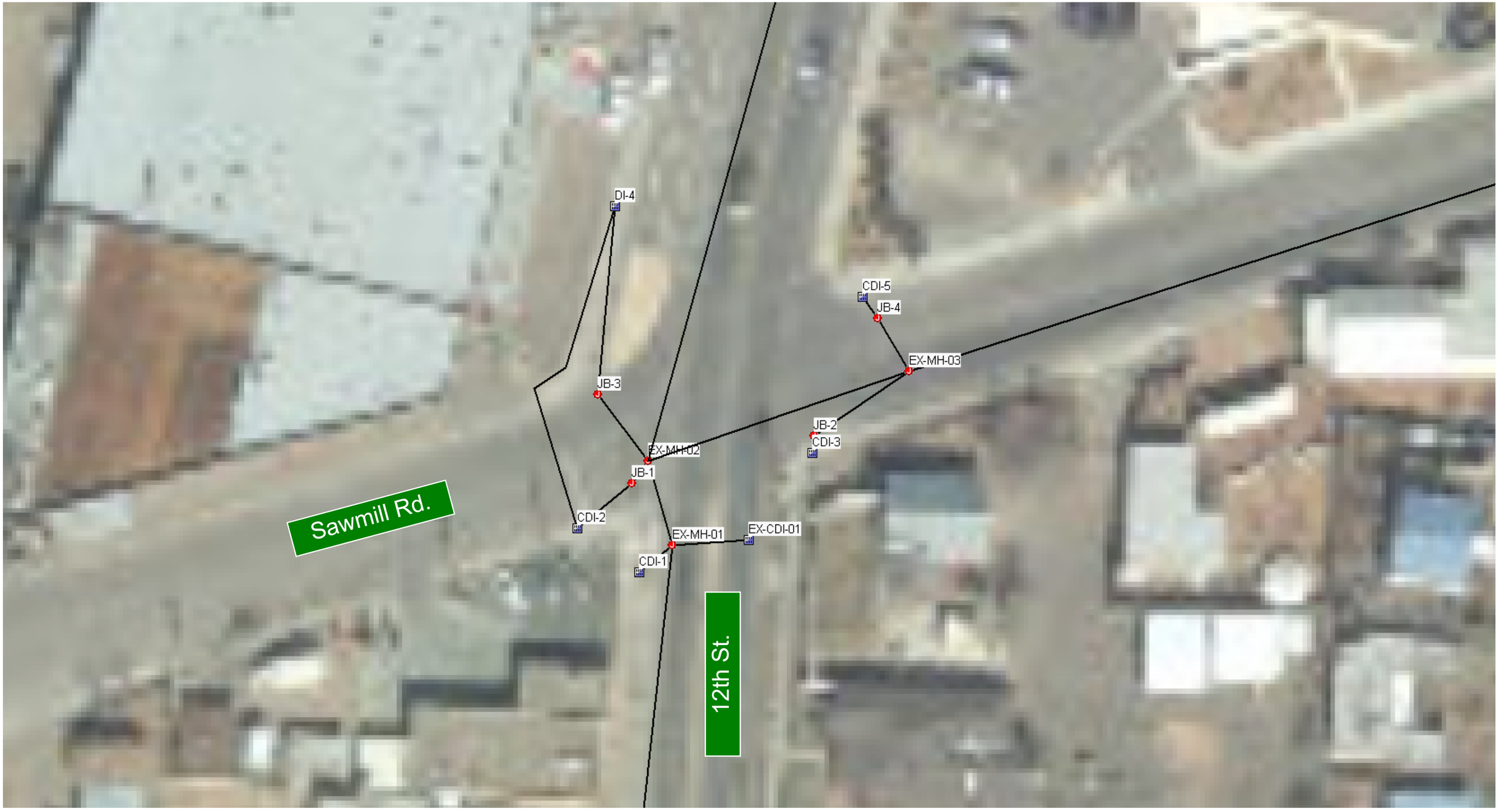
TABLE 6.2.14 **Peak Discharge**

Zone	Land Treatment			
	A	B	C	D
100-YEAR PEAK DISCHARGE (CSF/ACRE)				
1	1.54	2.16	2.87	4.12
2	1.71	2.36	3.05	4.34
3	1.84	2.49	3.17	4.49
4	2.09	2.73	3.41	4.78
2-YEAR PEAK DISCHARGE (CSF/ACRE)				
1	0.00	0.02	0.50	1.56
2	0.00	0.08	0.61	1.66
3	0.00	0.15	0.71	1.73
4	0.00	0.28	0.87	1.88
10-YEAR PEAK DISCHARGE (CSF/ACRE)				
1	0.30	0.81	1.46	2.57
2	0.41	0.95	1.59	2.71
3	0.51	1.07	1.69	2.81
4	0.70	1.28	1.89	3.04

To determine the peak rate of discharge,

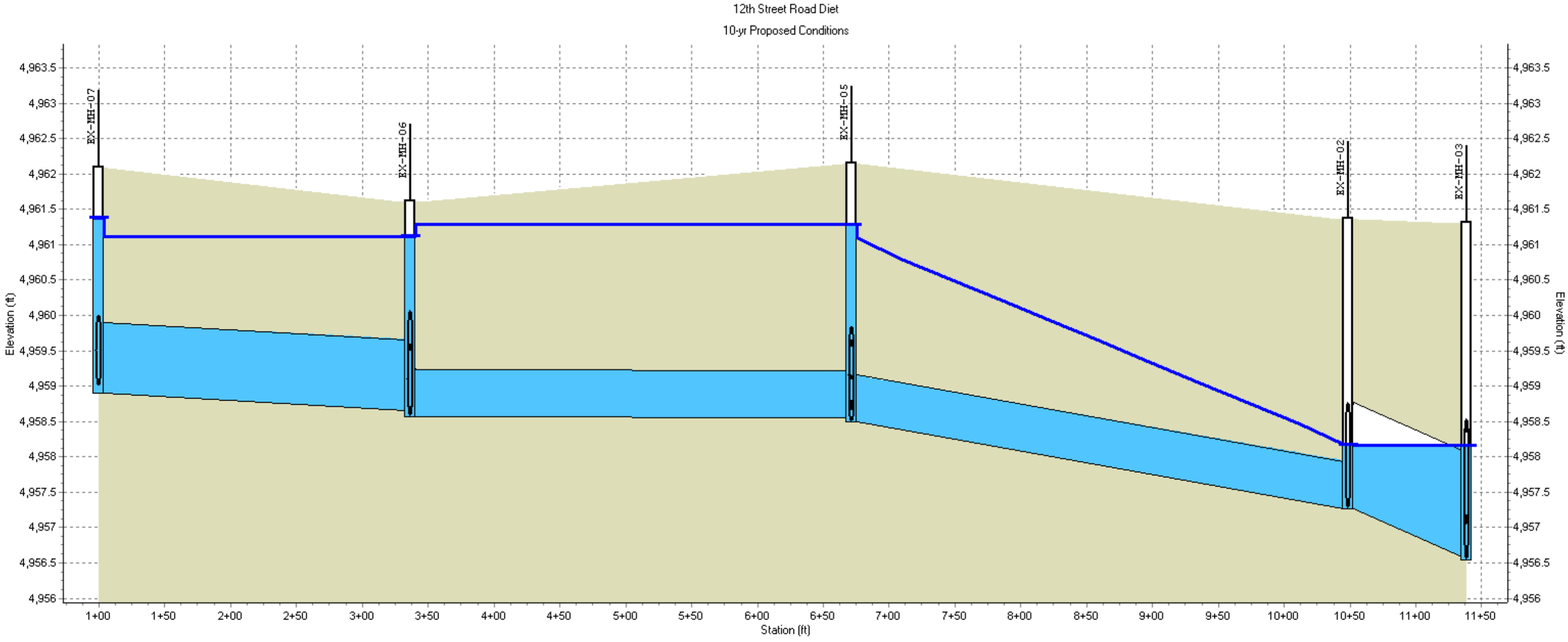
1. Determine the area in each treatment, A_A, A_B, A_C, A_D
2. Multiply the peak rate for each treatment by the respective areas and sum to compute the total Q_P.

EQUATION 6.6 **Total Q_P** = $Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$


DI-4
CDI-5
JB-4
EX-MH-03
JB-3
JB-2
CDI-3
EX-MH-02
JB-1
Sawmill Rd.
CDI-2
EX-MH-01
EX-CDI-01
CDI-1
12th St.

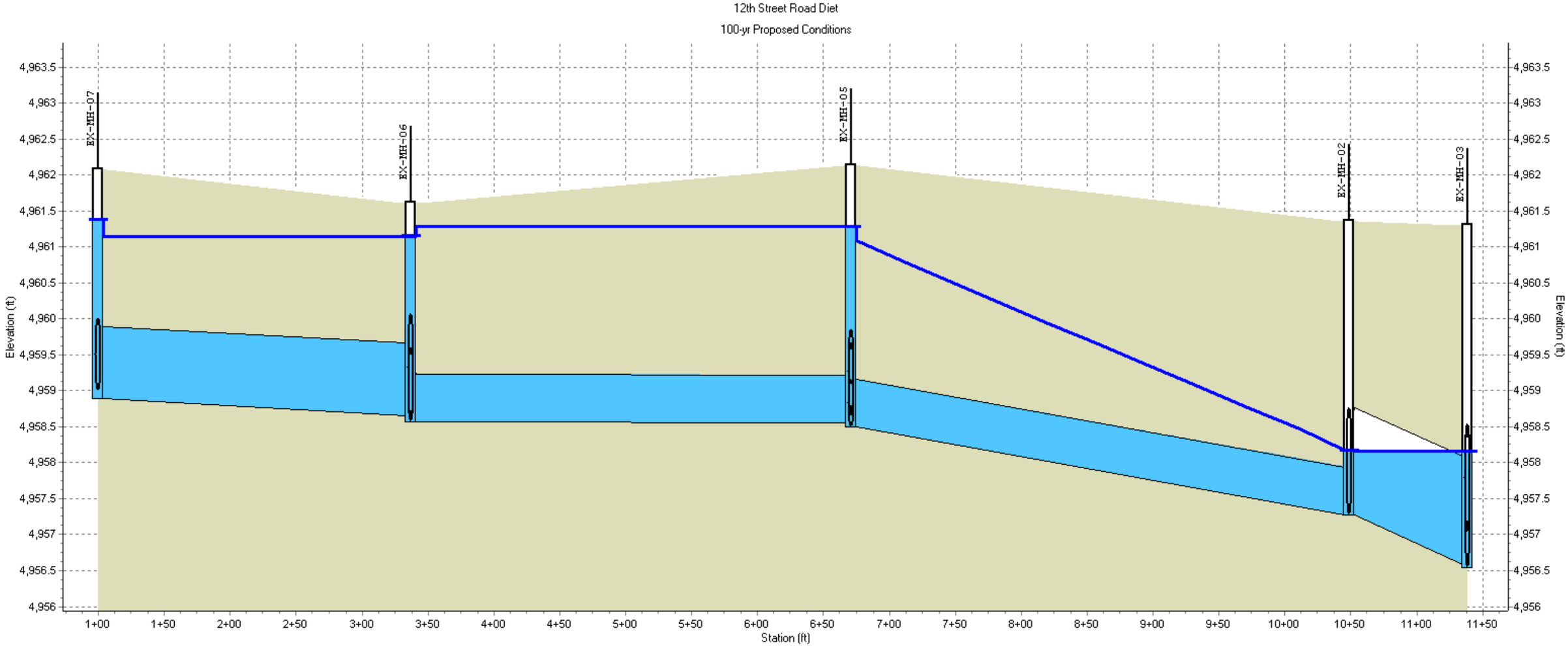

Bellamah Ave.
12th St.
MH-1
CDI-8
EX-MH-05
JB-5
JB-6
CDI-6
CDI-7


Aspen Ave.
MH-2
CDI-11
EX-MH-07
12th St.
EX-CDI-10
EX-MH-06
CDI-10



	EX-MH-07	EX-MH-06	EX-MH-05	EX-MH-02	EX-MH-03
Rim (ft):	4962.09	4961.62	4962.15	4961.37	4961.32
Invert (ft):	4958.90	4958.57	4958.50	4957.27	4956.54
Min Pipe Cover (ft):	2.09	1.55	2.30	2.60	2.78
Max HGL (ft):	4962.09	4961.30	4962.15	4960.35	4959.17

Link ID:	Pipe - (14)	Pipe - (15)	Pipe - (20)	Pipe - (5)
Length (ft):	236.93	334.54	377.67	89.28
Dia (in):	12.00	8.00	8.00	18.00
Slope (ft/ft):	0.0010	0.0001	0.0033	0.0076
Up Invert (ft):	4958.90	4958.57	4958.50	4957.27
Dn Invert (ft):	4958.66	4958.55	4957.27	4956.59
Max Q (cfs):	2.12	0.97	1.12	8.68
Max Vel (ft/s):	2.70	2.91	3.60	4.91
Max Depth (ft):	1.00	0.67	0.67	1.20



:	EX-MH-07	EX-MH-06	EX-MH-05	EX-MH-02	EX-MH-03
Rim (ft):	4962.09	4961.62	4962.15	4961.37	4961.32
Invert (ft):	4958.90	4958.57	4958.50	4957.27	4956.54
Min Pipe Cover (ft):	2.09	1.55	2.30	2.60	2.78
Max HGL (ft):	4962.03	4961.30	4963.06	4960.46	4959.25

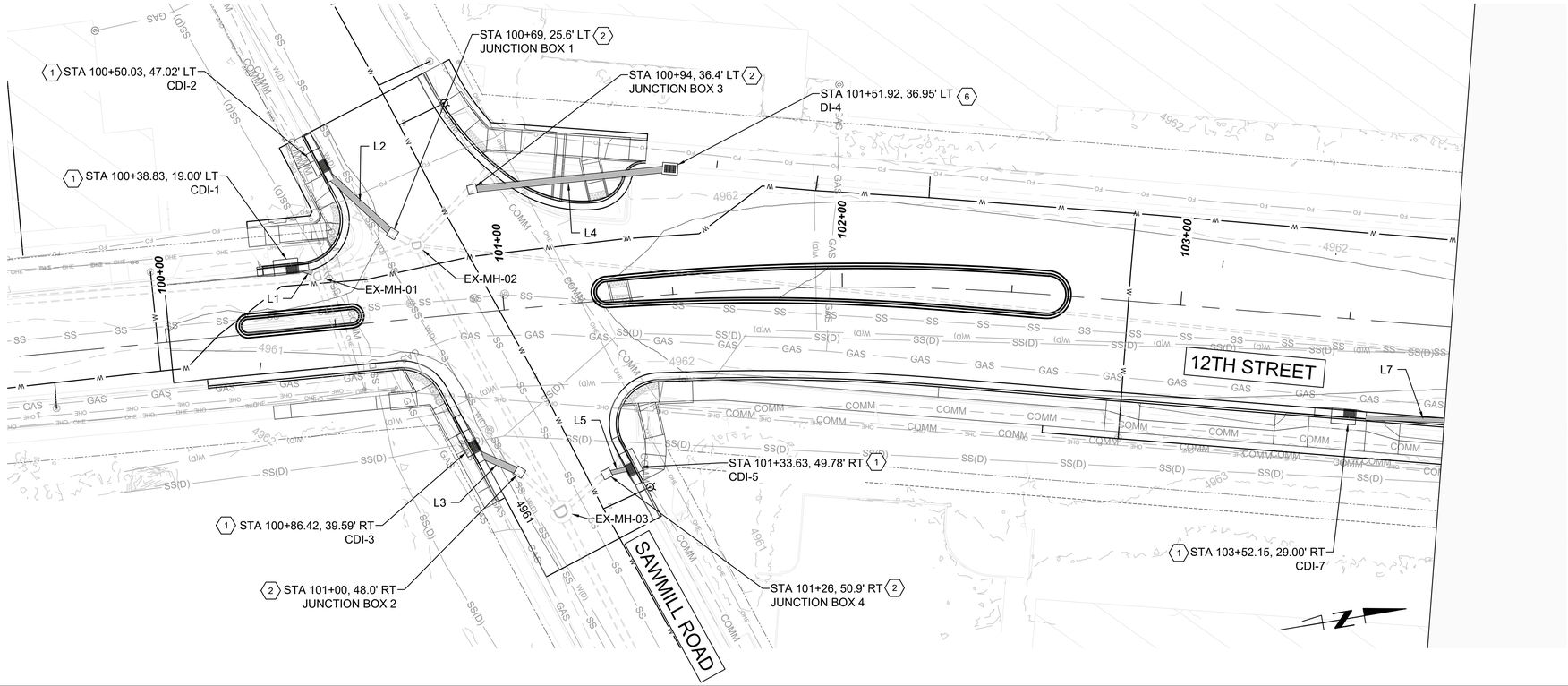
Link ID:	Pipe - (14)	Pipe - (15)	Pipe - (20)	Pipe - (5)
Length (ft):	236.93	334.54	377.67	89.28
Dia (in):	12.00	8.00	8.00	18.00
Slope (ft/ft):	0.0010	0.0001	0.0033	0.0076
Up Invert (ft):	4958.90	4958.57	4958.50	4957.27
Dn Invert (ft):	4958.66	4958.55	4957.27	4956.59
Max Q (cfs):	1.96	1.00	1.12	8.79
Max Vel (ft/s):	2.49	2.92	3.48	4.98
Max Depth (ft):	1.00	0.67	0.67	1.20

10-YR Proposed Storm Drain Inlet Table

SN	Element ID	Description	Inlet Location	Peak Flow (cfs)	Peak Lateral Inflow (cfs)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)
1	CDI-1	Basin1	On Sag	0.57	0.57	5.35	4961.01	0.21
2	CDI-10	Basin10+8	On Sag	11.16	11.08	16.64	4961.20	0.31
3	CDI-11	Basin 15 (partial)	On Grade	2.20	2.20	8.94	4961.73	0.26
4	CDI-12	Basin13	On Sag	9.12	9.12	16.20	4963.45	0.43
5	CDI-13	Basin14	On Sag	8.87	8.87	9.47	4963.06	0.29
6	CDI-2	Basin3A	On Sag	3.87	1.05	16.58	4961.12	0.44
7	CDI-3	Basin4A	On Sag	0.78	0.78	6.09	4960.58	0.10
8	CDI-5	Basin4B	On Sag	0.87	0.87	6.47	4961.77	0.23
9	CDI-6	Basin5	On Grade	1.21	1.21	11.02	4961.58	0.22
10	CDI-7	Basin6	On Grade	1.80	1.80	12.83	4961.99	0.26
11	CDI-8	Bellamah	On Sag	1.42	1.21	6.50	4961.49	0.24
12	DI-4	Basin3B	On Grade	6.41	6.41	18.14	4961.78	0.36
13	EX-CDI-01	Basin2	On Sag	0.71	0.71	4.79	4960.87	0.20
14	EX-CDI-10	Basin7+9	On Sag	9.85	9.60	20.32	4961.80	0.51

100-YR Proposed Storm Drain Inlet Table

SN	Element ID	Description	Inlet Location	Peak Flow (cfs)	Peak Lateral Inflow (cfs)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)
1	CDI-1	Basin1	On Sag	0.91	0.91	6.94	4961.04	0.24
2	CDI-10	Basin10+8	On Sag	18.07	17.80	18.43	4961.24	0.35
3	CDI-11	Basin 15 (partial)	On Grade	3.52	3.52	10.96	4961.77	0.30
4	CDI-12	Basin13	On Sag	14.60	14.60	19.17	4963.51	0.49
5	CDI-13	Basin14	On Sag	14.20	14.20	11.70	4963.11	0.34
6	CDI-2	Basin3A	On Sag	6.87	1.70	23.86	4961.27	0.58
7	CDI-3	Basin4A	On Sag	1.30	1.30	8.15	4960.62	0.14
8	CDI-5	Basin4B	On Sag	1.40	1.40	8.51	4961.81	0.28
9	CDI-6	Basin5	On Grade	1.95	1.95	13.23	4961.62	0.26
10	CDI-7	Basin6	On Grade	2.90	2.90	15.35	4962.04	0.31
11	CDI-8	Bellamah	On Sag	2.40	1.95	9.65	4961.55	0.30
12	DI-4	Basin3B	On Grade	10.30	10.30	21.69	4961.85	0.43
13	EX-CDI-01	Basin2	On Sag	1.13	1.13	1.28	4960.80	0.13
14	EX-CDI-10	Basin7+9	On Sag	16.01	15.40	55.41	4962.50	1.21



GENERAL NOTES

1. ALL STATIONS AND OFFSETS REFERENCE 12TH STREET CENTERLINE OF CONSTRUCTION UNLESS OTHERWISE NOTED.
2. ALL NEW STORM DRAIN WILL BE CLASS IV RCP.

KEYED NOTES

1. BUILD COA TYPE A CURB DROP INLET STD DWG 2201.
2. INSTALL PREFABRICATED CONCRETE JUNCTION BOX, ABQ VAULT 2X2XVB OR APPROVED EQUAL. SEE DETAIL ON SHEET 6-6.
3. BUILD 4' DIA MH PER COA STD DWG 2101.
4. BUILD 6' DIA MH PER COA STD DWG 2101.
5. BUILD COA TYPE C CURB DROP INLET STD DWG 2205.
6. BUILD COA TYPE D DROP INLET STD DWG 2206.

LEGEND

- TELEPHONE/COMM. - CENTURYLINK
- ELECTRIC - PNM
- CATV - COMCAST
- FIBER OPTIC - CENTURYLINK
- NATURAL GAS - NM GAS CO
- WATER - ABCWUA
- SANITARY SEWER - ABCWUA
- STORM DRAIN - ABCWUA
- OH ELECTRIC - PNM
- EXISTING STORM DRAIN
- EXISTING STORM DRAIN MANHOLE
- EXISTING CDI
- PROPOSED TYPE A CDI
- PROPOSED TYPE D CDI
- PROPOSED JUNCTION BOX
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED STORM DRAIN PIPE

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

CALL NM ONE-CALL
SYSTEM SEVEN (7) DAYS
PRIOR TO ANY EXCAVATION

CONSULTANTS
NV5
6501 AMERICAS PKWY NE, SUITE 400
ALBUQUERQUE, NM 87110
P: 505.247.0294 WWW.NV5.COM

BENCH MARKS
TO REACH THE STATION FROM THE INTERSECTION OF CENTRAL AVENUE AND 14TH STREET, TRAVEL NORTH ON 14TH STREET 0.8 MILE TO LOMAS BOULEVARD AND THE STATION ON THE LEFT IN THE NORTHWEST QUADRANT OF THE INTERSECTION.THE STATION MARK IS A CITY OF ALBUQUERQUE SURVEY CONTROL 3 1/4 INCH ALUMINUM DISC STAMPED " 12-J13 1983 " SET FLUSH WITH TOP OF THE CURB.

60%
NOT FOR CONSTRUCTION

SEAL

NO.	DATE	DESCRIPTION	BY
		AS-BUILT INFORMATION	
		CONTRACTOR:	
		WORK STAKED BY: DATE:	
		INSPECTOR'S ACCEPTANCE BY: DATE:	
		FIELD VERIFICATION BY: DATE:	
		DRAWINGS CORRECTED BY: DATE:	

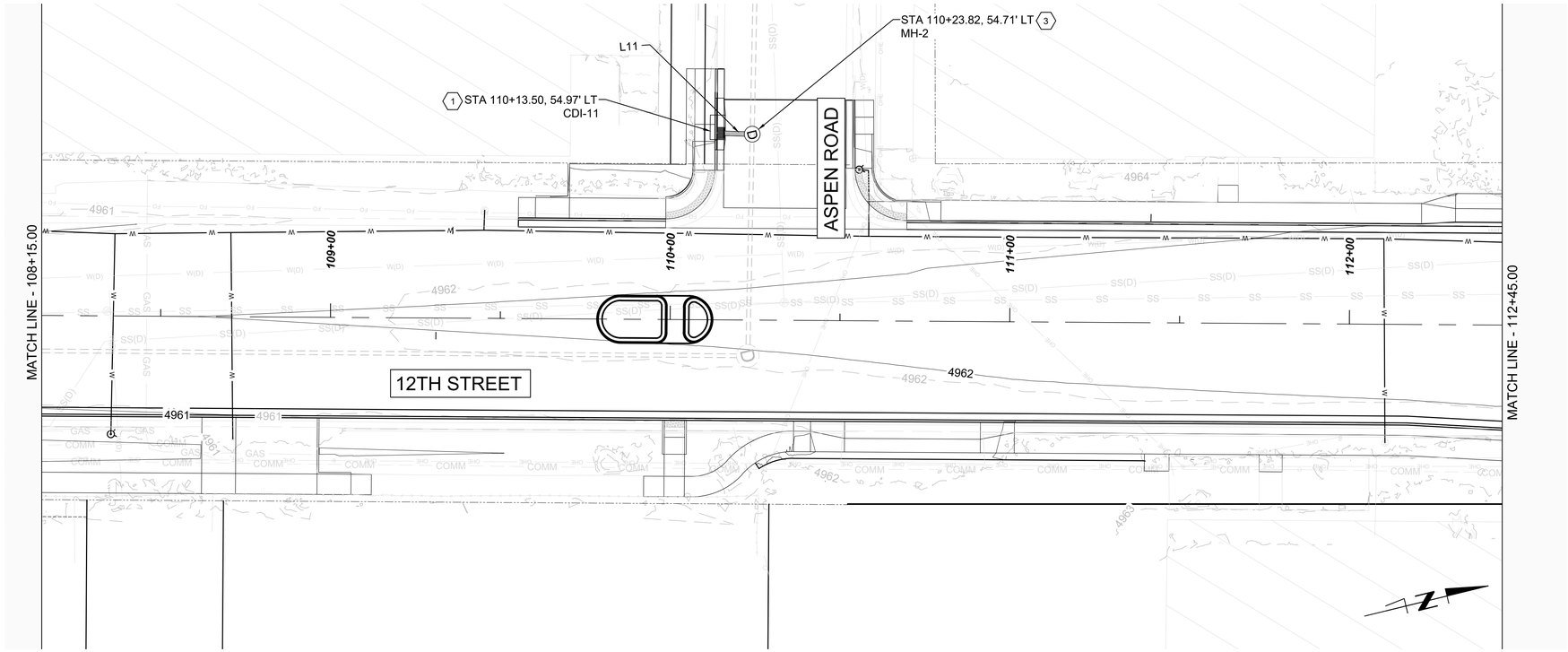
DESIGNED BY: SPH
DRAWN BY: CPB
CHECKED BY: ---
DATE 3/2024

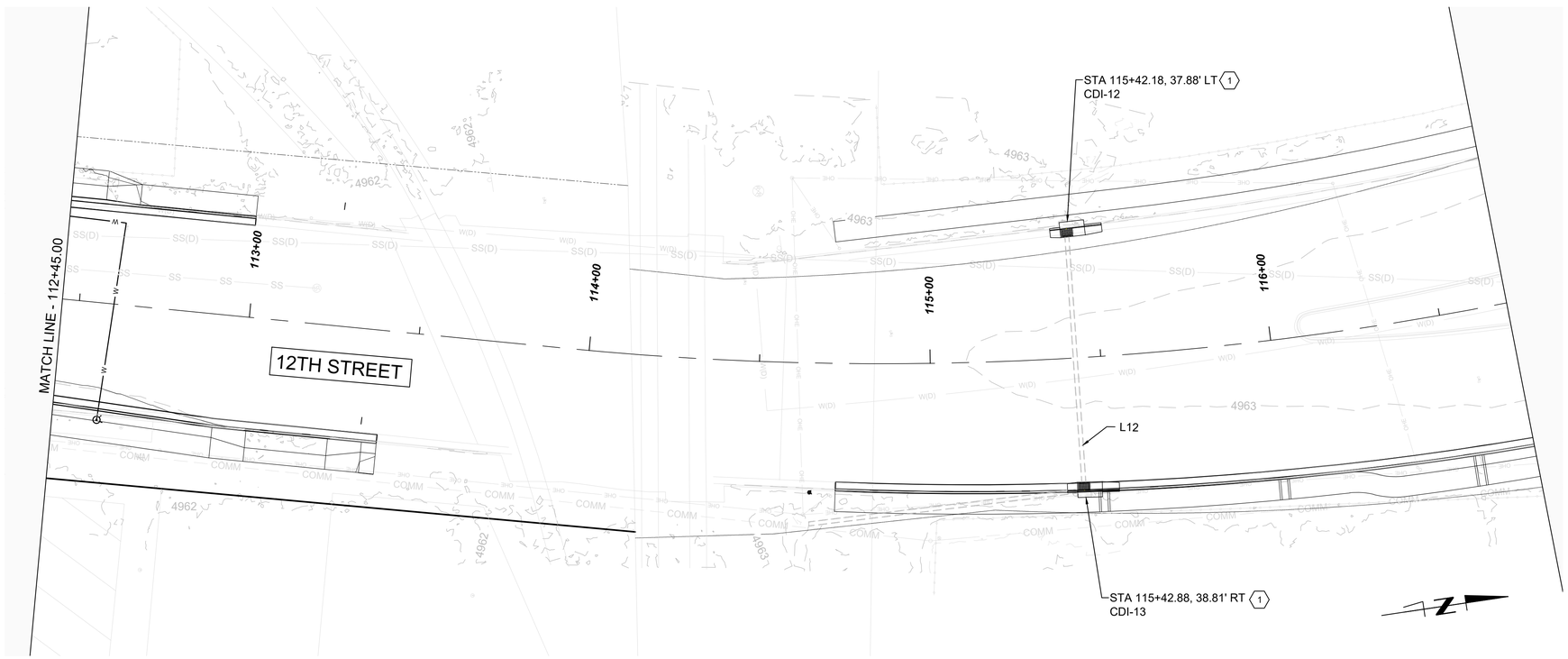
CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

12TH STREET ROAD DIET

DRAINAGE PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	ZONE MAP NO. H-13, J-13
		CITY PROJECT NO. 718780
		SHEET NO. 6 - 1





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KEYED NOTES

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4. BUILD 6' DIA MH PER COA STD DWG 2101.
5. BUILD COA TYPE C CURB DROP INLET STD DWG 2205.
6. BUILD COA TYPE D DROP INLET STD DWG 2206.

LEGEND

- TELEPHONE/COMM. - CENTURYLINK
- ELECTRIC - PNM
- CATV - COMCAST
- FIBER OPTIC - CENTURYLINK
- NATURAL GAS - NM GAS CO
- WATER - ABCWUA
- SANITARY SEWER - ABCWUA
- STORM DRAIN - ABCWUA
- OH ELECTRIC - PNM
- EXISTING STORM DRAIN
- EXISTING STORM DRAIN MANHOLE
- EXISTING CDI
- PROPOSED TYPE A CDI
- PROPOSED TYPE D CDI
- PROPOSED JUNCTION BOX
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED STORM DRAIN PIPE

20 10 0 20 40

SCALE: 1" = 20'

811

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

CONSULTANTS

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		FIELD VERIFICATION BY: DATE:	
		DRAWINGS CORRECTED BY: DATE:	

DESIGNED BY:	SPH
DRAWN BY:	CPB
CHECKED BY:	---
DATE	3/2024

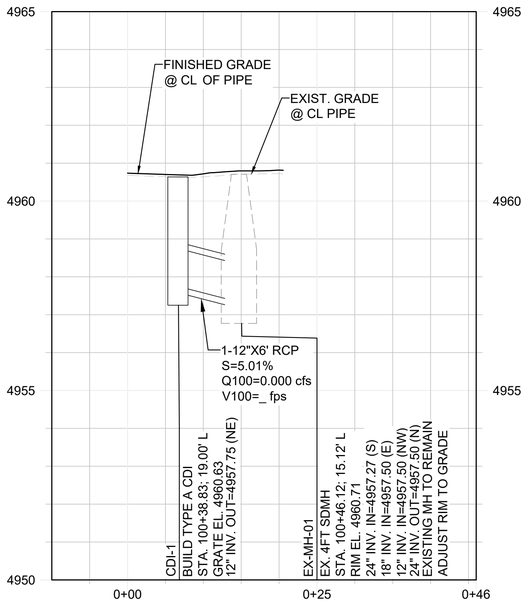
CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

12TH STREET ROAD DIET

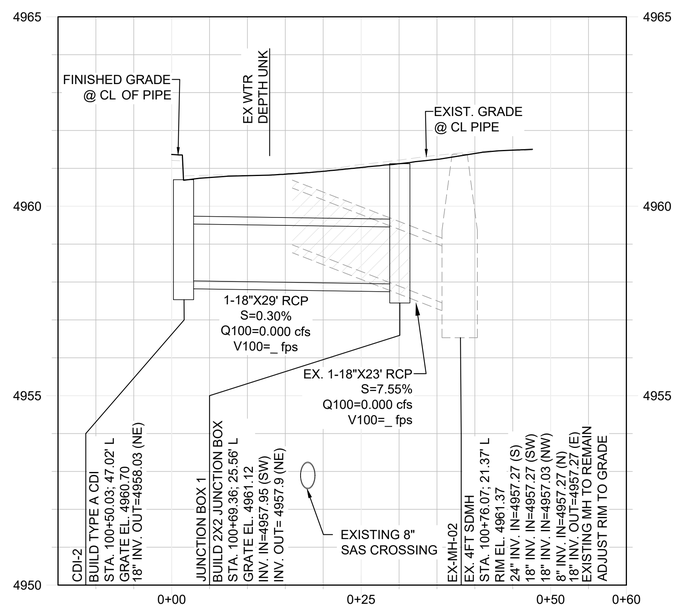
DRAINAGE PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	ZONE MAP NO. H-13, J-13
		CITY PROJECT NO. 718780
		SHEET NO. 6 - 2

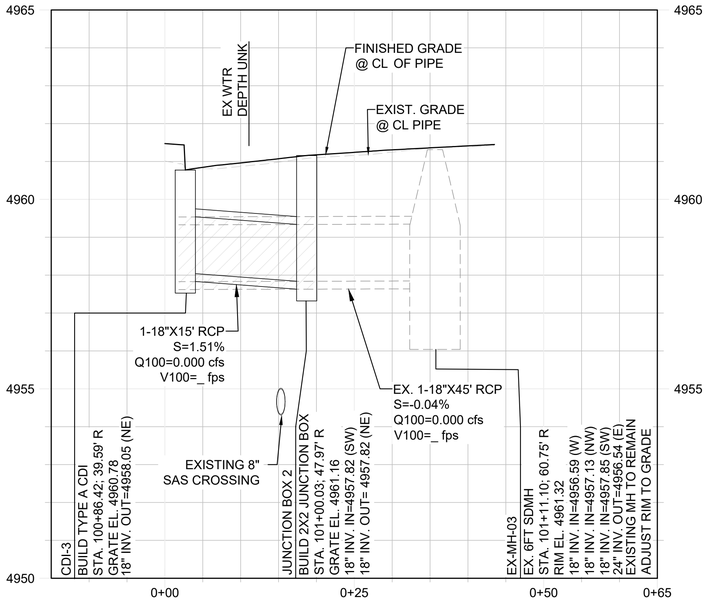
L1: CDI-01 -> EX-MH-01



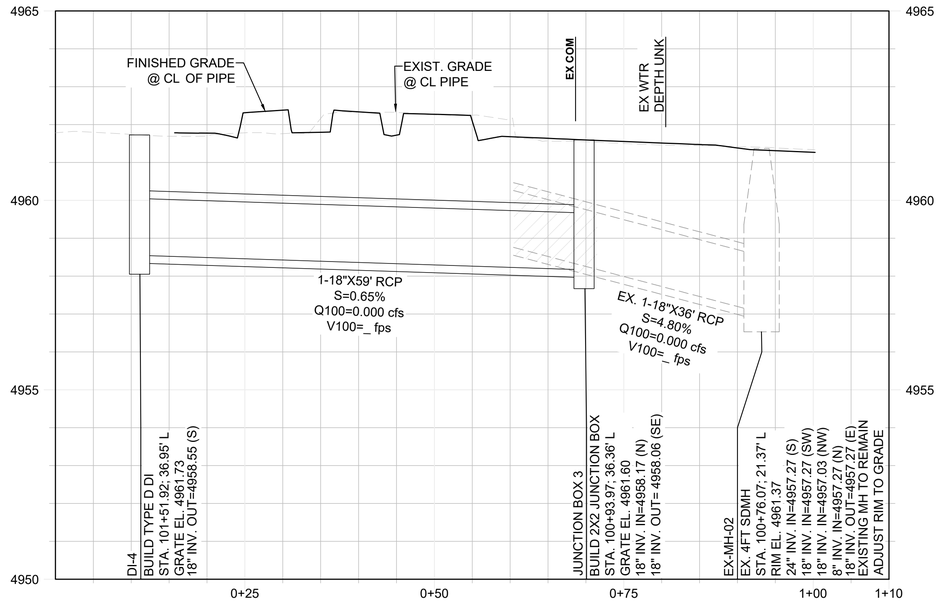
L2: CDI-02 -> EX-MH-02



L3: CDI-03 -> EX-MH-03



L4: CDI-04 -> EX-MH-02



GENERAL NOTES

1. ALL STATION AND OFFSETS REFERENCE12TH STREET CENTERLINE OF CONSTRUCTION UNLESS OTHERWISE NOTED.
2. PROFILES ARE ALONG THE ALIGNMENTS FROM PROPOSED PIPES CONNECTING TO EXISTING PIPES AND STRUCTURES.
3. HATCHED AREA OF PIPES ARE LENGTHS OF PIPES TO BE REMOVED OR ABANDONED IN PLACE.

10 5 0 10 20

SCALE: 1" = 10'

VERTICAL SCALE:1"=2'
WHEN PLOTTED AT 22X34

811

CALL NM ONE-CALL
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CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

12TH STREET ROAD DIET

STORM DRAIN LATERAL PROFILES

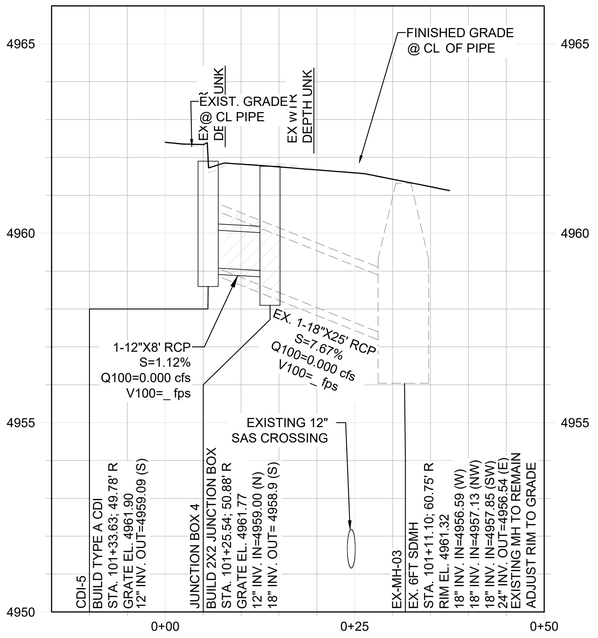
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. H-13, J-13

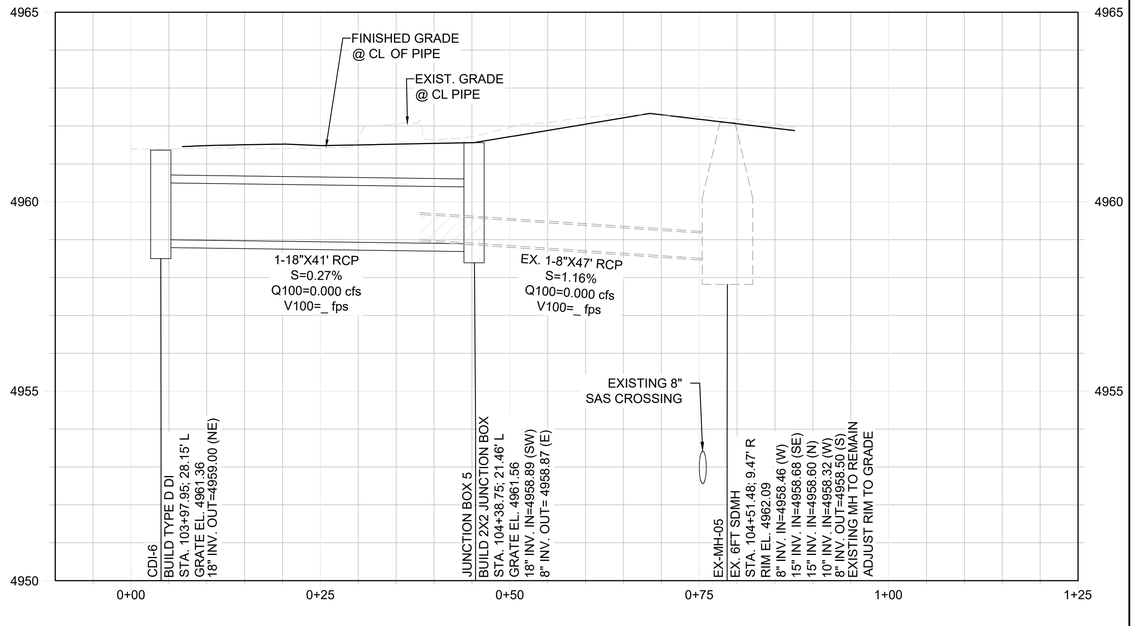
CITY PROJECT NO. 718780

SHEET NO. **6 - 3**

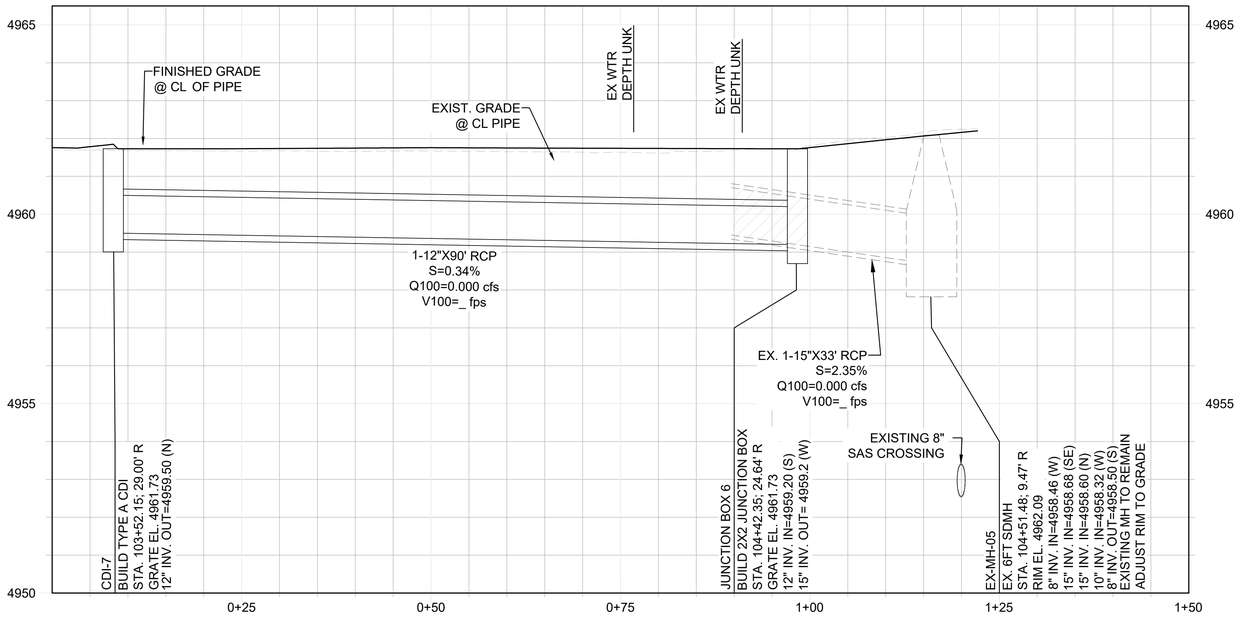
L5: CDI-05 -> EX-MH-03



L6: CDI-06-> EX-MH-05



L7: CDI-07 -> EX-MH-05



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10 5 0 10 20

SCALE: 1" = 10'

VERTICAL SCALE:1"=2'
WHEN PLOTTED AT 22X34

CALL NM ONE-CALL
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BENCH MARKS

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CHECKED BY:	---
DATE	3/2024

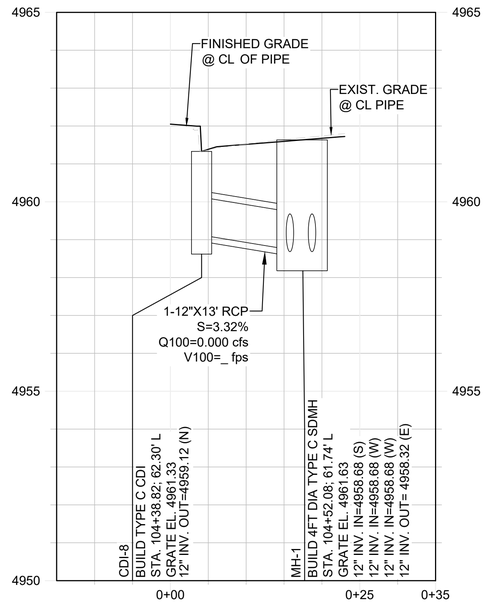
CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

12TH STREET ROAD DIET

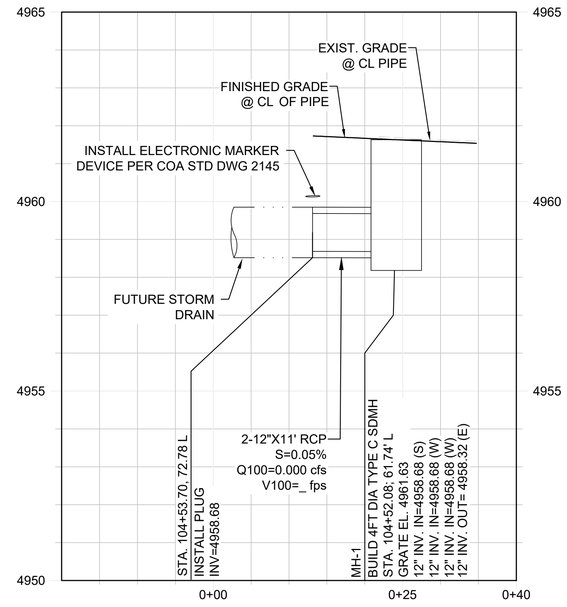
STORM DRAIN LATERAL PROFILES

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	ZONE MAP NO. H-13, J-13
		CITY PROJECT NO. 718780
		SHEET NO. 6 - 4

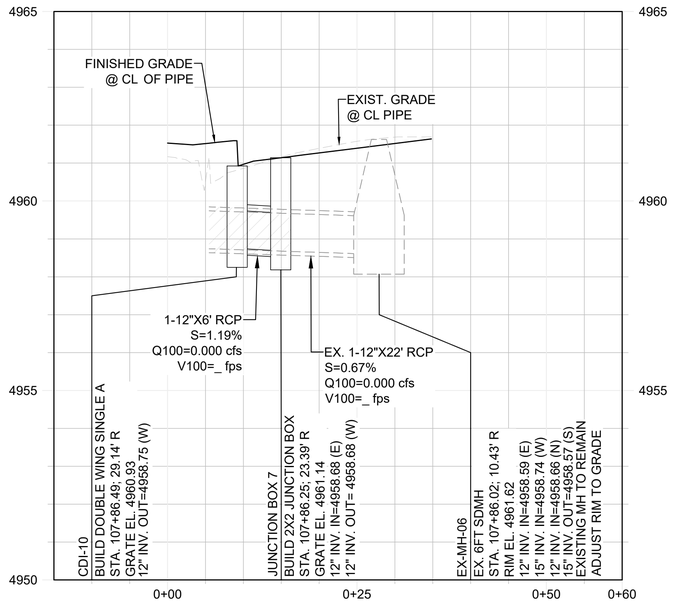
L8: CDI-08-> MH-1



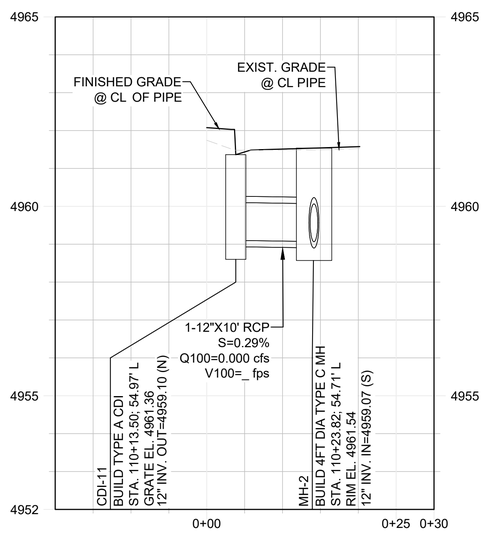
L9: BELLAMAH STUB OUT> MH-1



L10: CDI-10 -> EX-MH-06



L11: CDI-11-> MH-1



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10 5 0 10 20

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CONSULTANTS

NV5
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BENCH MARKS

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DRAWN BY:	CPB
CHECKED BY:	---
DATE	3/2024

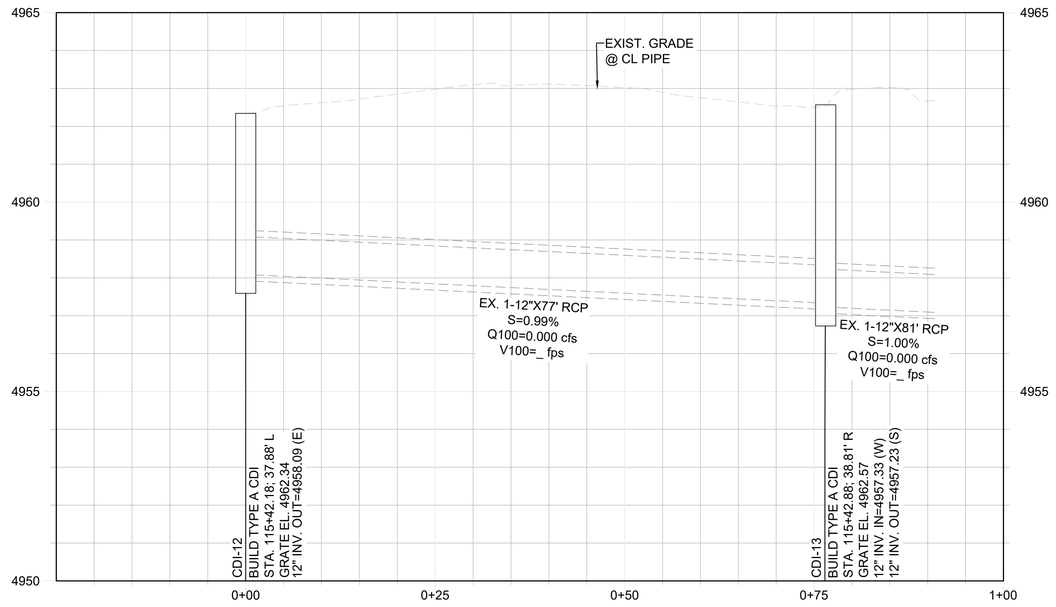
CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

12TH STREET ROAD DIET

STORM DRAIN LATERAL PROFILES

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	ZONE MAP NO. H-13, J-13
		CITY PROJECT NO. 718780
		SHEET NO. 6 - 5

L12: CDI-13->CDI-12



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6501 AMERICAS PKWY NE, SUITE 400
ALBUQUERQUE, NM 87110
P: 505.247.0294 WWW.NV5.COM

BENCH MARKS

TO REACH THE STATION FROM THE INTERSECTION OF CENTRAL AVENUE AND 14TH STREET, TRAVEL NORTH ON 14TH STREET 0.8 MILE TO LOMAS BOULEVARD AND THE STATION ON THE LEFT IN THE NORTHWEST QUADRANT OF THE INTERSECTION.THE STATION MARK IS A CITY OF ALBUQUERQUE SURVEY CONTROL 3 1/4 INCH ALUMINUM DISC STAMPED "12-J13 1983" SET FLUSH WITH TOP OF THE CURB.

60%
NOT FOR CONSTRUCTION

SEAL

NO.	DATE	DESCRIPTION	BY
		AS-BUILT INFORMATION	
		CONTRACTOR:	
		WORK STAKED BY:	DATE:
		INSPECTOR'S ACCEPTANCE BY:	DATE:
		FIELD VERIFICATION BY:	DATE:
		DRAWINGS CORRECTED BY:	DATE:

DESIGNED BY:	SPH
DRAWN BY:	CPB
CHECKED BY:	---
DATE	3/2024

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

12TH STREET ROAD DIET

STORM DRAIN LATERAL PROFILES

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	ZONE MAP NO. H-13, J-13
		CITY PROJECT NO. 718780
		SHEET NO. 6 - 6

ALBUQUERQUE VAULT COMPANY

PRE-CAST CONCRETE PRODUCTS

300 Airport Dr., NW * Albuquerque, NM 87121 * Phone: 505-836-4404 / Fax: 505-836-5663

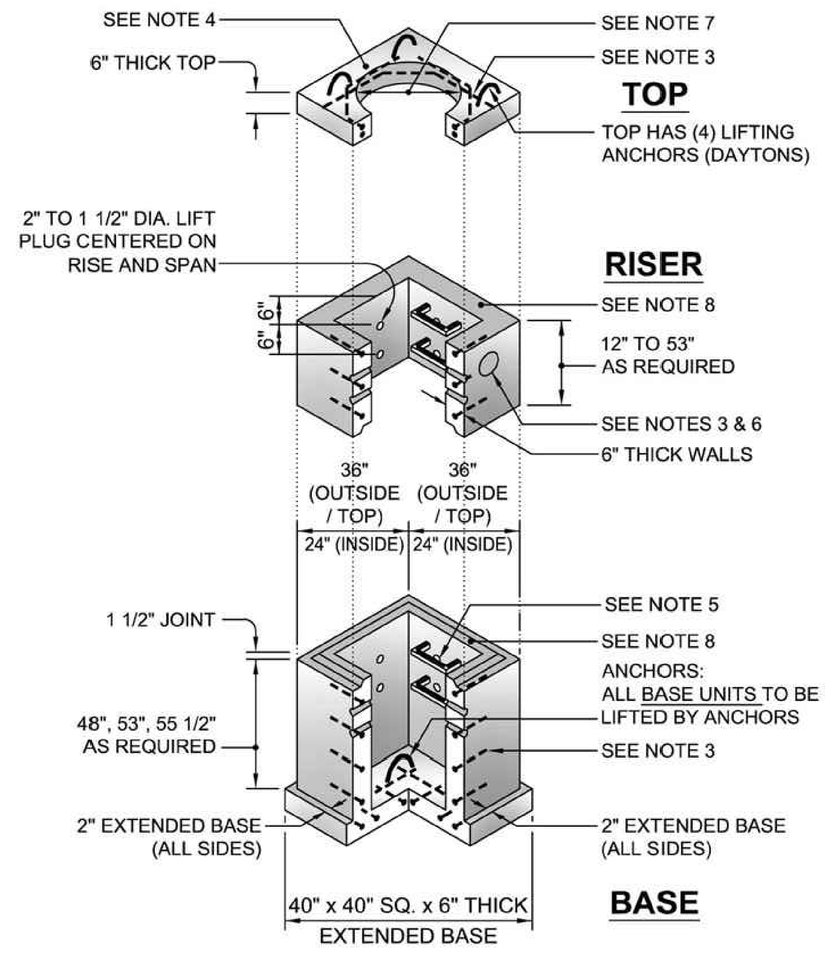
Detail # 2X2VB

Not To Scale | Dec., 2012

2 x 2 CONCRETE BOX

GENERAL NOTES:

1. Design specifications conform to latest ASTM C913 specifications for "Precast Concrete Water and Wastewater Structures."
2. Concrete compressive strength 4,000 psi minimum at 28 days.
3. Steel reinforcing design to conform to the requirements of ASTM C890 specifications for "Structural Design Loading for Water and Wastewater Structures" and shall utilize grade 60 rebars conforming to the requirements of ASTM A615 or WWF conforming to the requirements of ASTM A185 or both. As per C.O.A. Additional reinforcing provided at all openings. - Base slab: #4 rebar on 12" O/C - Walls: #4 rebar on 12" O/C - Top: (2) mats of #4 rebar on 6" O/C.
4. Designed for H-20-44 loading.
5. Steps per job requirements. Steps shall be steel reinforced copolymer polypropylene plastic and meet the requirements of ASTM C478. Center on access. Vertical spacing = 12".
6. Pipe penetration to be per job requirements. Pipe to be installed by contractor as per DOT requirements for mortar joint connections.
7. Access size, location and type per job requirements and to conform to C.O.A. standards or as otherwise specified. Supplied by either Albuquerque Vault or customer.
8. Joints to be sealed with butyl rubber joint stick sealant conforming to the requirements of ASTM C990, or mortar as per C.O.A. requirements, or both.
9. Excavation hole bottom shall be 2' wider & 2' longer than extended base dimensions.



CONSULTANTS

NV5

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811

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

DESIGNED BY:	SPH
DRAWN BY:	CPB
CHECKED BY:	---
DATE	3/2024

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

12TH STREET ROAD DIET

JUNCTION BOX DETAIL

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	ZONE MAP NO. H-13, J-13
		CITY PROJECT NO. 718780
		SHEET NO. 6 - 7