CITY OF ALBUQUERQUE

Hydrology Section Planning Department
Brennon Williams, Acting Director

Timothy M. Keller, Mayor

July 22, 2019

Vince Carrica, P.E.
Tierra West, LLC
5571 Midway Park Place, NE
Albuquerque, NM 87109

RE: **BEK Distribution Facility – 601 Gallatin Pl. NW**
G&D Plan and Drainage Report Engineers Stamp Date: 7/19/2019,
Hydrology File: FJ10D002G1

Dear Mr. Carrica,

Based on the information provided in your submittal received on 7/19/2019 the Conceptual Grading and Drainage Plan and Report are approved for Site Plan for Building Permit and Grading Permit only.

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 (Curtis Cherne, PE, ccherne@cabq.gov, 924-3420) 14 days prior to any earth disturbance.

The following comments must be addressed prior to Building Permit and Work Order approvals.

1. Some reconstruction of the existing Coca-Cola Pond will be required by this project.
   a. Provide written and signed permission from the adjoining property owner for work on their property. Some reconstruction of the sidewalk culvert and dam will likely be required.
   b. Better survey information must be added to the G&D Plan including detailed survey of the dam, the headwall and pipe outfall, and the emergency overflow spillway. A detail of the emergency overflow spillway connection to the new sidewalk culvert must be provided.
   c. The existing Dam may encroach on this site. A minimum 6' wide top of dam must be maintained. Section A-A on sheet C203 may need to be updated with the results of the revised survey and hopefully get the dam off of the BEK property and back onto the Coca-Cola property.
2. Remove the word Conceptual from the sheet Title and the label NOT FOR CONSTRUCTION. Also identify how the future building pads will be graded to drain especially where future roof drains are planned to direct that drainage away from the adjacent public streets and into the ponds.
3. Key note 25 on the Site Plan calls for a 6" temporary header curb that is not shown on the G&D Plan. Please revise one or the other so they agree, and provide a copy of

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

the revised Site Plan when resubmitting to hydrology. If the temporary curb is to remain please add details of the curb on the G&D Plan with spot elevation that show how the parking lot will drain thru the curb.

4. How will drainage get out of the sump in the C&G on the east side of the Staging area?
5. Surface drainage in the future staging area and the future parking lot next to the pond appears to enter the pond in two places but only one has a rundown. Lined conveyance systems should be added to the plan to convey drainage from the paving proposed with this building permit through the future paving area and into the pond. Please revise the G&D Plan adding lined swales and typical sections through the future north parking area and into the north pond.
6. Please label the contours in the north east corner of the parking lot and verify that the spot elevations agree with the contours. If they are not 5141 and 5142 then please revise the grading to decisively contain the parking lot drainage and convey it into the north pond.
7. The contours indicate erratic slopes varying from 1% to 10% with abrupt grade changes in the northwesterly 250' of the staging/parking lot. Please revise the grading.
8. Additional right of way may be needed for the hammerhead turnaround at the west end of Fortuna Rd. Please coordinate with transportation and if additional ROW is required then show the right of way dedication on the G&D plan.
9. Please show the PNM easement adjacent to and on this tract in the west corner. Either revise the plan to eliminate the grading within the easement or provide written permission from PNM for grading inside of their easement.
10. The finished contours are missing between the retaining wall and the street in Los Volcanes Road. Please show proposed contours all of the way to the existing street to indicate the proposed grade of the sidewalk in the public right of way and the landscape area on the private side of the sidewalk. Also please add a few typical sections showing the grade on both sides of the retaining wall, the new sidewalk, the ROW line, the fence, and the slope.
11. HGL calculations are required for the storm drain in the north east corner of the site where failure of the storm drain could result in excessive stormwater runoff to public streets. Also please add a profile and HGL calculations for the storm drain on the south and east side of the building.
12. Please add the Book and Page (B 2019C P 0040) of the plat to note 1 on sheet C201.
13. The south pond must have a non-erosive spillway. Please add a build note and a detail on the G&D Plan. Please check the weir coefficient, 1.6 is for metric units, 2.7 is SI for broad crest, and 3.3 SI for sharp crest.
14. Please revise the pond volume calculations to use the Conic approximation method (the volume of a frustum) = h/3 x [b1 +b2 +sqrt(b1 x b2)] where h is the height between the two areas, and b1 and b2 are the areas of the contours. The equations presented in the report do not make any sense, but the volumes seem to have been calculated by the average end area method. The method used for volume calculations needs to be better documented in the report. Also please provide the excel file.
15. Please revise the Drainage Basin map to include a graphic scale, north arrow, flow arrows indicating the discharge point of each basin and roof drainage patterns. The paper copy must be scalable.
16. It appears that curb opening details and design calculations may be missing. Please identify how the drainage from Basins 8 and 9 gets into Inlet # 3. Also please

identify how the drainage from basin 24 gets into the south pond by including details on the G&D Plan and calculations in the report. The engineering design analysis must demonstrate that the peak 100 year flow rates are intercepted by onsite drainage structures and prevented from entering the public right of way.

17. Please revise the grading of the south pond so a floodwall is not expected to hold back drainage.

PRIOR TO CERTIFICATE OF OCCUPANCY:

18. Engineer's Certification, per the DPM Chapter 22.7: *Engineer's Certification Checklist For Non-Subdivision* is required.

If you have any questions, you can contact me at 924-3986 or jhughes@cabq.gov .

Sincerely,

James D. Hughes, P.E.
Principal Engineer, Planning Dept.
Development and Review Services

DRAINAGE REPORT

For

601Gallatin Pl. NW
ALBUQUERQUE, NEW MEXICO

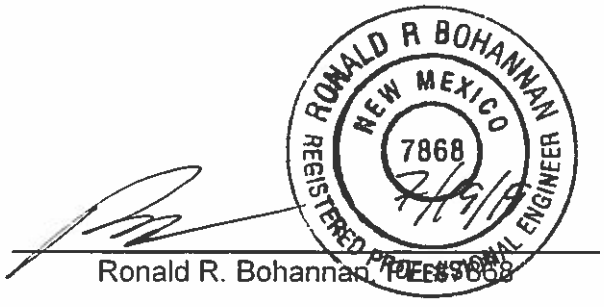
Prepared by

Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, New Mexico 87109

Prepared for

Ben E. Keith
Albuquerque, NM

July 18, 2019



Ronald R. Bohannan, PE #7868

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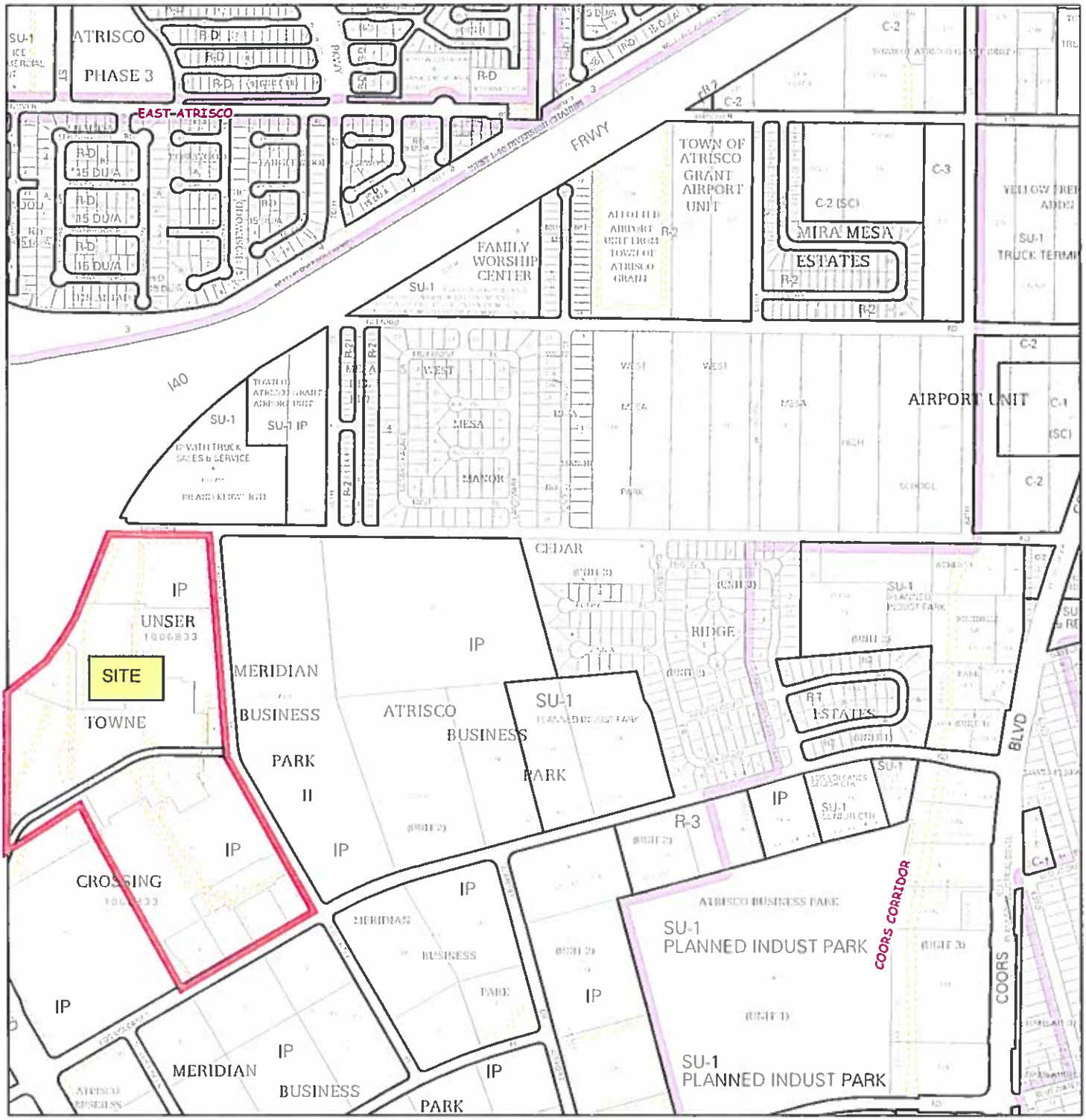
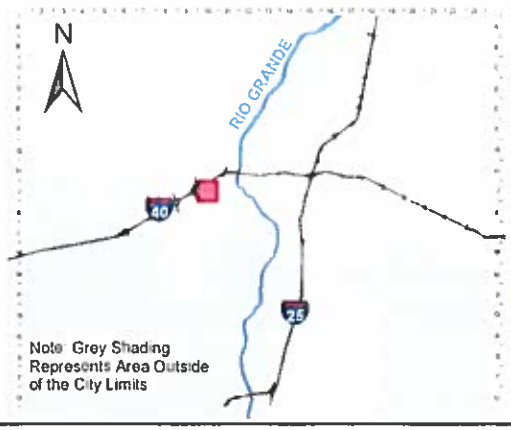


For more current information and details visit: http://www.cabq.gov/gis

Albuquerque Geographic Information System

Map amended through: 1/28/2016



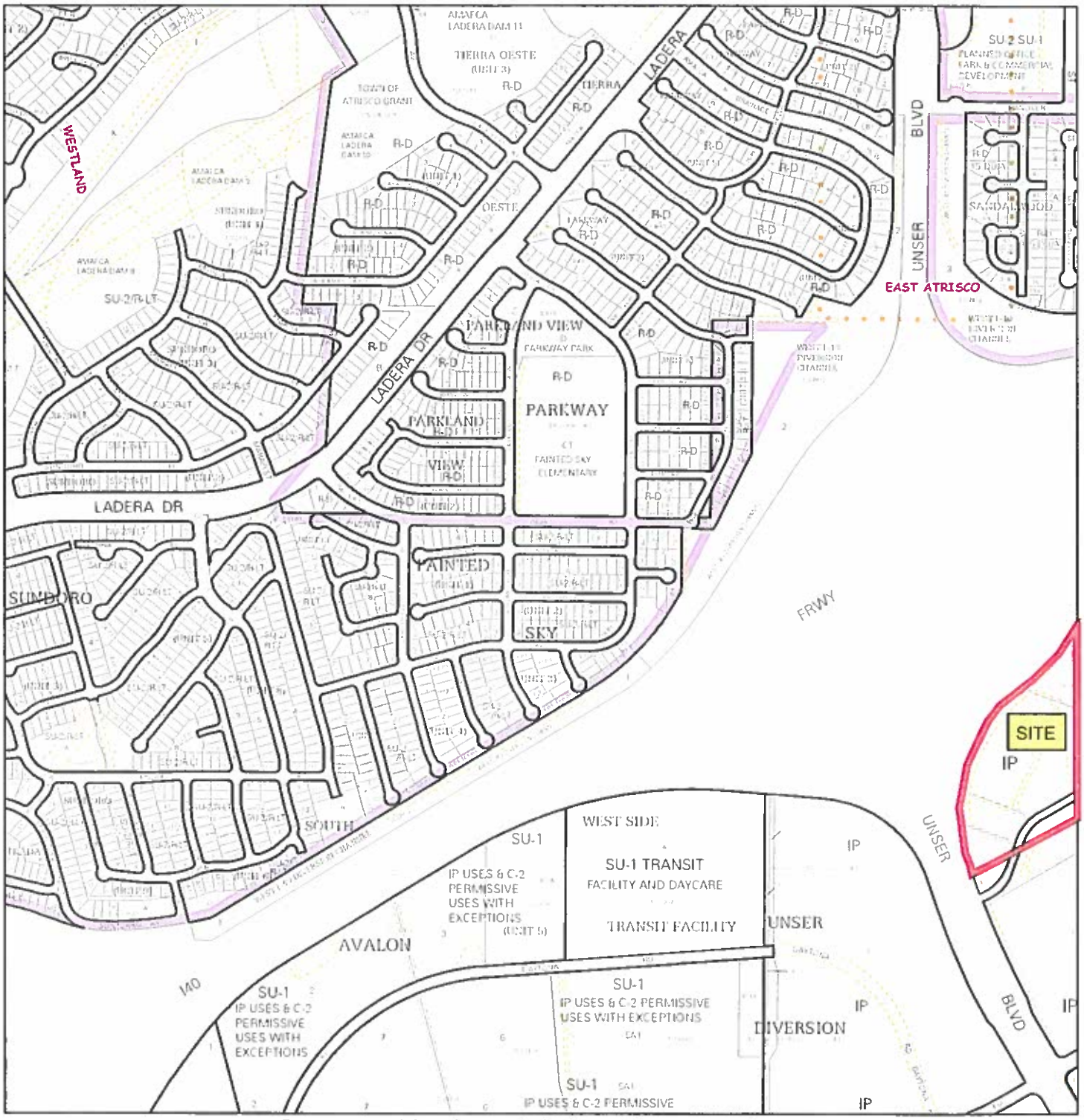
Zone Atlas Page:

J-10-Z

Selected Symbols

- SECTOR PLANS
- Design Overlay Zones
- City Historic Zones
- H-1 Buffer Zone
- Petroglyph Mon.
- Escarpment
- 2 Mile Airport Zone
- Airport Noise Contours
- Wall Overlay Zone

0 750 1,500 Feet



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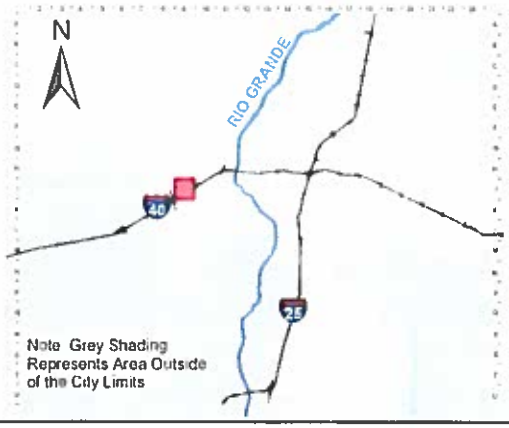

Zone Atlas Page:

J-09-Z

Selected Symbols

- SECTOR PLANS
- Design Overlay Zones
- City Historic Zones
- H-1 Buffer Zone
- Petroglyph Mon.
- Escarpment
- 2 Mile Airport Zone
- Airport Noise Contours
- Wall Overlay Zone

0 750 1,500 Feet

LOCATION

The proposed commercial development is located off Gallatin Place south of Interstate 40, east of Unser Blvd at the corner of Los Volcanes and Gallatin Pl in southwest Albuquerque. It is comprised of approximately 50.35 acres zoned NR-BP. This report represents a drainage management and grading plan for approval by the City of Albuquerque, for Site Plan, grading and Building Permit submittal.

DRAINAGE BASIN DESIGNATION

The drainage basins for proposed conditions are as indicated on the BASIN MAP included in this report. The site is broken into 34 onsite drainage basins and one upland offsite basin to the west within the Coca Cola Lot 16 parcel.

EXISTING DRAINGE CONDITIONS

The site is currently vacant with several earthen detention ponds constructed onsite. It drains predominantly northwest to southeast. Runoff from an upland undeveloped basin that is within the Coca Cola Lot 16 drains onto the site. This runoff is combined with the onsite runoff and routed through existing detention ponds before being released to Los Volcanes Rd, which then drains to the east per the Atrisco Business Park Master Drainage Plan for fully developed conditions, dated February of 1992.

FIRM MAP

The site is not located in a flood plain as is shown on designated Flood Hazard Zone Map No. 35001C0328J dated 11/4/2016.

DESIGN-CRITERIA

The drainage plan presented in this report was prepared in accordance with the City of Albuquerque Drainage Ordinances and the Development Process Manual DPM. The hydrological analysis is based on the 100-year frequency, 6-hour duration storm. The plan will also include retention of the first flush in on-site drainage ponds. See attached Weighted E Table for excess precipitation values calculated for this site.

GRAPHIC SCALE

(IN FEET)
1 inch = 100 ft.

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ALBUQUERQUE, NEW MEXICO 87109
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ESI
DESIGN SERVICES

ENGINEER'S SEAL

RONALD R. BOHANNAN
P.E. 21868

NEW DISTRIBUTION CENTER
BEN E KEITH
601 GALLATIN PL NW
ALBUQUERQUE, NM 87121

Revision No.
△
△
△
△
△

Job No.
2018014

CAD/CHK'D By:
pm / vc

Date
6-27-19

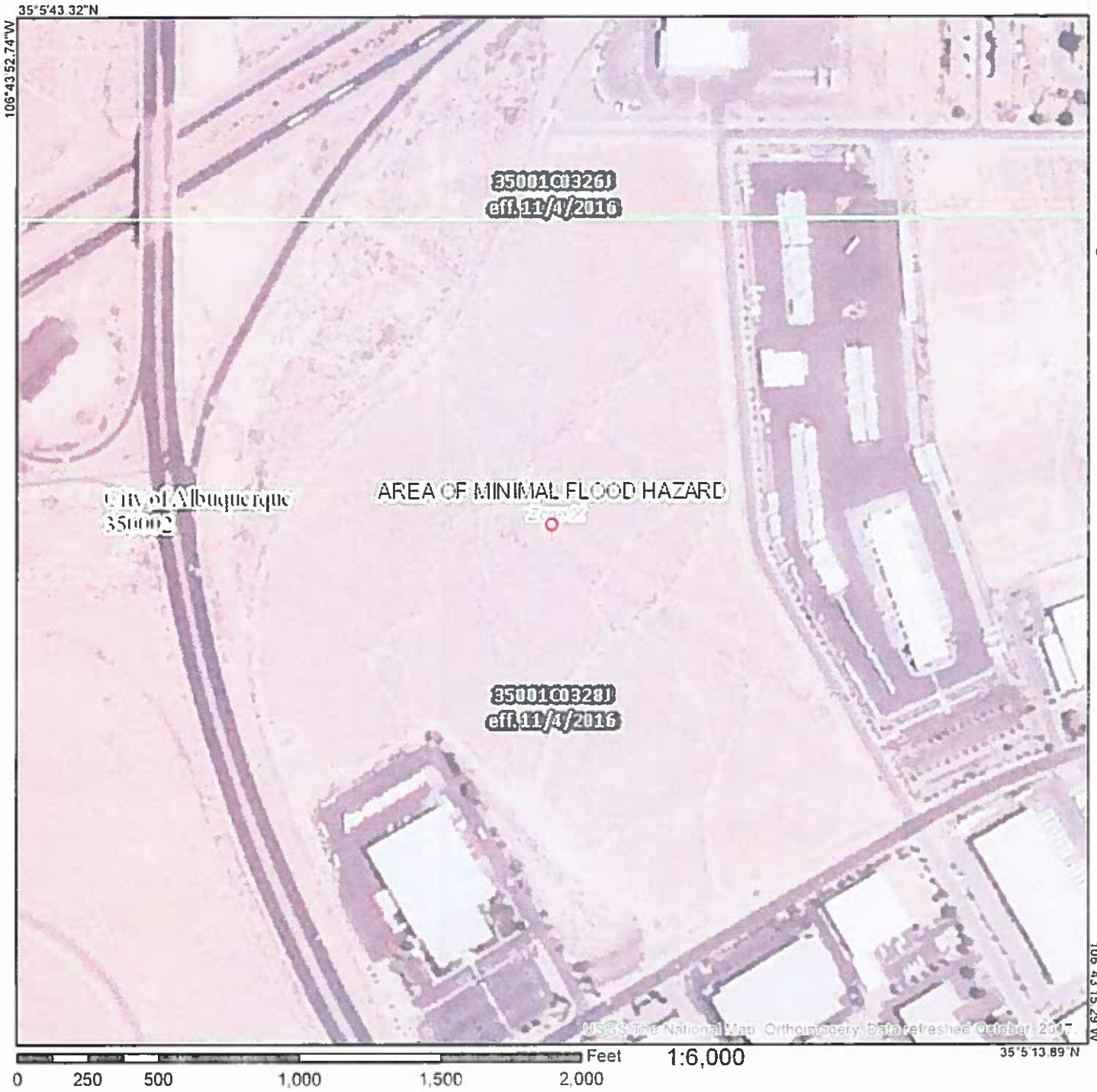
Sheet Title
DEVELOPED DRAINGAGE BASINS

Sheet No.
1

CIVIL

National Flood Hazard Layer FIRMette

FEMA



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/31/2019 at 6:29:47 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

DEVELOPED-DRAINAGE CONDITIONS

The site is proposed to be developed with a single user, Ben E Keith food distribution facility that will be constructed in phases. No offsite flows will enter the site with the exception of the upland basin in the Coca Cola Lot 16 undeveloped portion (approximately 4.2 acres), which will continue to be routed through the subject site until it is developed in the future. Runoff from the site will be routed to four onsite drainage ponds. Discharge from the overall site will be equal to or less than the allowable 0.1 cfs per acre. The total onsite acreage is 50.35 acres. The offsite upland acreage is 4.2 acres. The allowable discharge at 0.1 cfs per acre for the total 54.55 acres is 5.45 cfs. This is in compliance with the Atrisco Business Park Master Drainage Plan for fully developed conditions dated February of 1992. The drainage ponds will retain the first flush retention volumes as required by the drainage ordinance.

Refer to enclosed Weighted E computation spreadsheet for developed runoff conditions. Storm drain capacities are listed in a table in the appendix along with ponding capacities.

SUMMARY

The proposed grading and drainage plan for the proposed development of the existing undeveloped property includes surface flows and an onsite storm drain to convey runoff to retention ponds. Runoff from the overall site will be equal to or less than 0.1 cfs per acre.

VOLUME CALCULATIONS

BEK
NORTH POND #1

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

Volume = $Ab * D + 0.5 * C * D^2$
C = (At - Ab) / Dt

Ab =	5,511.00	B.O.P. =	5125
Ab =	21,406.00	B.O.P. =	5127
At =	59,609.00	T.O.P.=	5140
Dt =	13.00		
C =	2938.69		

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5125.00	0	0	0.000
5126.00	0	0.2177	0.000
5127.00	0	0.6179	0.000
5128.00	1.00	1.1430	0.000
5129.00	2.00	1.7357	0.000
5130.00	3.00	2.3957	0.000
5131.00	4.00	3.1233	0.000
5132.00	5.00	3.9183	0.000
5132.26	5.26	4.1360	0.000
5133.00	6.00	4.7807	0.000
5134.00	7.00	5.7106	0.000
5135.00	8.00	6.7080	0.000
5136.00	9.00	7.7729	0.000
5137.00	10.00	8.9052	0.000
5138.00	11.00	10.1050	0.000
5139.00	12.00	11.3722	0.000
5140.00	13.00	12.7069	0.000

Orifice Equation
Q = CA SQRT(2gH)

C =	0.6	
Diameter (in)	0	
Area (ft^2)=	0	
g =	32.2	
H (Ft) =		Depth of water above center of orifice
Q (CFS)=		Flow

VOLUME CALCULATIONS

BEK

WEST POND #2

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

Volume = Ab * D + 0.5 * C * D^2
C = (At - Ab) / Dt

Ab =	3,401.00	B.O.P.=	5126
At =	21,542.00	T.O.P. =	5139
Dt =	13.00		
C =	1395.46		
B Elev. =	5,126.00		

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5126.00	0	0	0.000
5127.00	1.00	0.0941	0.000
5128.00	2.00	0.2202	0.000
5129.00	3.00	0.3784	0.000
5130.00	4.00	0.5686	0.000
5131.00	5.00	0.7908	0.000
5132.00	6.00	1.0451	0.000
5133.00	7.00	1.3314	0.000
5134.00	8.00	1.6497	0.000
5135.00	9.00	2.0001	0.000
5136.00	10.00	2.3825	0.000
5137.00	11.00	2.7970	0.000
5138.00	12.00	3.2435	0.000
5138.24	12.24	3.3554	0.000
5139.00	13.00	3.7220	0.000

<u>Orifice Equation</u>
Q = CA SQRT(2gH)

C =	0.6	
Diameter (in)	0	
Area (ft^2)=	0	
g =	32.2	
H (Ft) =	Depth of water above center of orifice	
Q (CFS)=	Flow	

VOLUME CALCULATIONS

BEK

SOUTH POND #3

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

Volume = Ab * D + 0.5 * C * D^2
C = (At - Ab) / Dt

Ab =	14,771.00	B.O.P.=	5120
At =	39,220.00	T.O.P. =	5130
Dt =	10.00		
C =	2444.90		
B Elev. =	5,120.00		

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5120.00	0	0	0.000
5121.00	1.00	0.3672	0.000
5122.00	2.00	0.7904	0.000
5123.00	3.00	1.2699	0.000
5124.00	4.00	1.8054	0.000
5125.00	5.00	2.3971	0.000
5126.00	6.00	3.0449	0.000
5127.00	7.00	3.7488	0.000
5127.21	7.21	3.9037	0.000
5128.00	8.00	4.5088	0.000
5129.00	9.00	5.3250	0.000
5130.00	10.00	6.1973	0.000

Orifice Equation
Q = CA SQRT(2gH)

C =	0.6	
Diameter (in)	0	
Area (ft^2)=	0	
g =	32.2	
H (Ft) =		Depth of water above center of orifice
Q (CFS)=		Flow

BEK Ultimate Buildout

HYDRAULIC GRADES

Culvert Run No.	FROM	RIM ELEV	TO	RIM ELEV	Length (ft)	CONTRIBUTING BASINS	Q (CFS)	Inv In	Inv Out	Slope	D (in)	DEPTH (IN)	DEPTH (FT)	DIA. (IN)	SLOPE (FT/FT)	Q (CFS)	v
1	D4	42.8	M3	44.3	55	3	3.15	37	36	0.0182	18	18.00	1.50	18	0.01	10.53	5.96
2	M3	44.3	NP		445	3,10,11,12	57.64	29.77	25.32	0.01	36	36.00	3.00	36	0.01	66.88	9.46
2A	M4	42.69	M3	44.3	190	10,11,12	54.49	31.67	29.77	0.01	36	36.00	3.00	36	0.01	66.88	9.46
2B	D5	42.1	M4	42.69	90	10,11,12	54.49	32.57	31.67	0.01	36	36.00	3.00	36	0.01	66.88	9.46
3	D3	42	M2	42	113	8,9	11.91	33.85	33.17	0.006	24	24.00	2.00	24	0.006	17.57	5.59
4	D2	42	M2	42	50	7	1.67	38	33.17	0.0966	12	12.00	1.00	12	0.01	3.57	4.55
5	M2	42	M1	43.33	144	7,8,9	13.58	33.17	31.73	0.01	24	24.00	2.00	24	0.01	22.68	7.22
6	D1	42	M1	43.33	126	34	1.29	38	31.73	0.0498	12	12.00	1.00	12	0.01	3.57	4.55
7	M1	43.33	NP		473	7,8,9,34	14.87	31.73	27	0.01	24	24.00	2.00	24	0.01	22.68	7.22
8	D6	42.1	D5	42.1	280	11,12	10.59	35.37	32.57	0.01	24	24.00	2.00	24	0.01	22.68	7.22
9	D7	42	D6	42.1	263	12	3.94	38	35.37	0.01	18	18.00	1.50	18	0.01	10.53	5.96
15	D8	40.2	WP		268	14 THRU18	45.9	28.29	25.61	0.01	36	36.00	3.00	36	0.01	66.88	9.46
16	D9	40.2	D8	40.2	180	15 THRU 18	37.6	30.09	28.29	0.01	30	30.00	2.50	30	0.01	41.13	8.38
17	D10	39.6	D9	40.2	198	15,17,18	34.28	32.07	30.09	0.01	30	30.00	2.50	30	0.01	41.13	8.38
18	D11	39.4	D10	39.6	143	17,18	26.21	33.5	32.07	0.01	30	30.00	2.50	30	0.01	41.13	8.38
19	D12	39.4	D11	39.4	190	18	9.81	35.4	33.5	0.01	24	24.00	2.00	24	0.01	22.68	7.22
21	D14	39.7	D13	39.4	164	19	5.32	35.7	34.06	0.01	18	18.00	1.50	18	0.01	10.53	5.96
22	D13	39.4	M8	40.62	164	19,20	13.85	34.06	32.42	0.01	24	24.00	2.00	24	0.01	22.68	7.22
23	D15	39.9	M8	40.62	24	21	5.1	35.9	35	0.0375	18	18.00	1.50	18	0.01	10.53	5.96
24	M8	40.62	M9	40.11	233	19 THRU 21	18.95	32.42	30.09	0.01	24	24.00	2.00	24	0.01	22.68	7.22
25	M9	40.11	M10	39.81	233	19 THRU 22	22.1	30.09	27.76	0.01	30	30.00	2.50	30	0.01	41.13	8.38
26	M10	39.81	SP		77	19 THRU 23	24.33	27.76	20	0.1008	30	30.00	2.50	30	0.01	41.13	8.38

VOLUME CALCULATIONS

BEK

EAST POND #4

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

Volume = Ab * D + 0.5 * C * D^2
C = (At - Ab) / Dt

Ab =	2,058.00	B.O.P.=	5119.5
At =	5,154.00	T.O.P. =	5122
Dt =	2.50		
C =	1238.40		
B Elev. =	5,119.50		

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5119.50	0	0	0.000
5120.50	1.00	0.0615	0.000
5121.50	2.00	0.1513	0.000
5122.00	2.50	0.2070	0.000
5122.50	3.00	0.2697	0.000
5123.00	3.50	0.3395	0.000

Orifice Equation
Q = CA SQRT(2gH)

C =	0.6
Diameter (in)	0
Area (ft^2)=	0
g =	32.2
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

BEK Ultimate Buildout

Weighted E Method

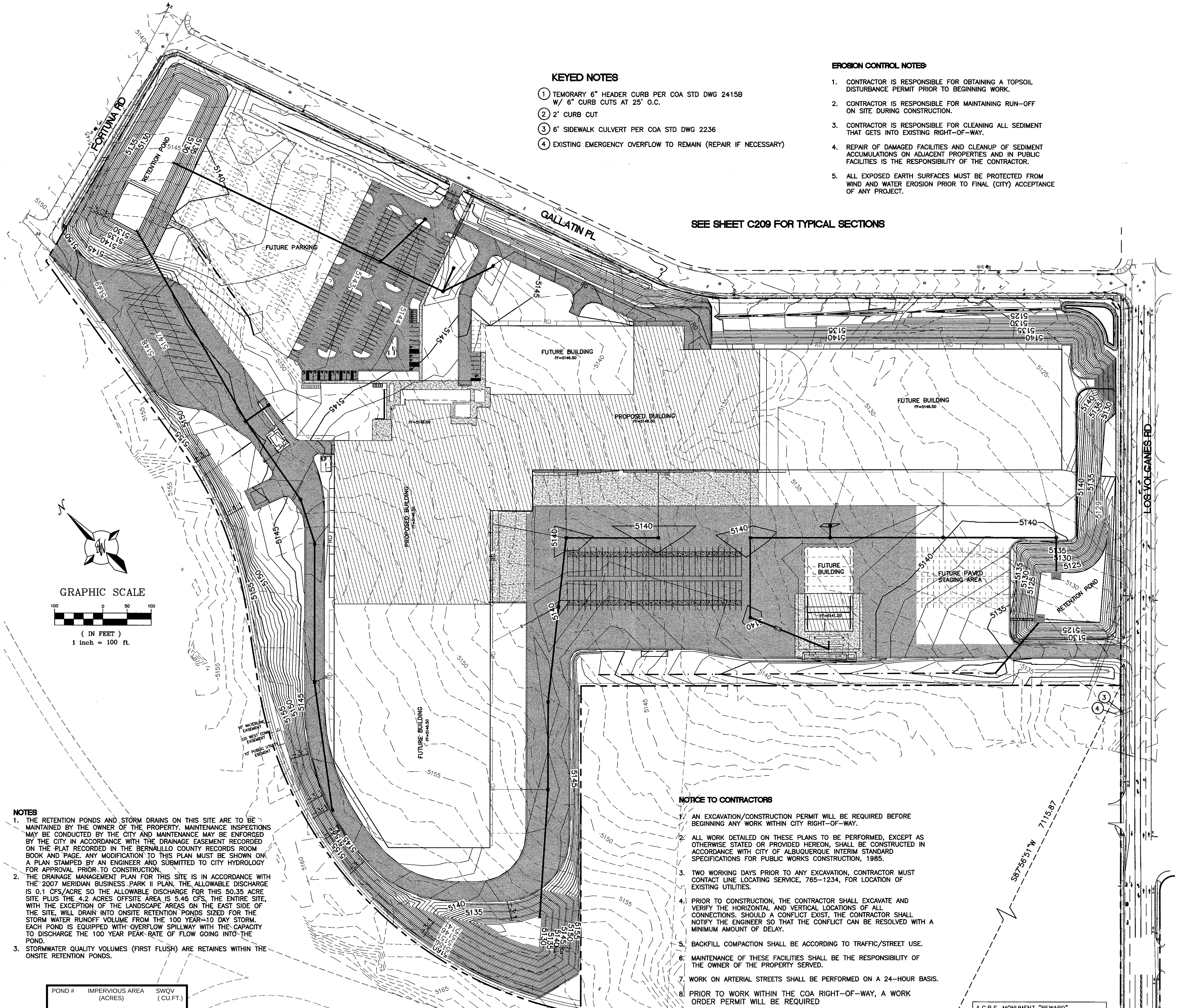
Zone #1

Developed Basins

												100-Year			10-Year			2-Year		
Basin	Area (sf)	Area (acres)	Area (sq miles)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
1	88,955	2.042	0.00319	0%	0	50%	1.021	50%	1.02106	0%	0.000	0.830	0.141	5.00	0.330	0.056	2.30	0.065	0.011	0.51
2	104,765	2.405	0.00376	0%	0	0%	0.000	35%	0.84178	65%	1.563	1.627	0.326	9.25	0.960	0.192	5.77	0.510	0.102	3.04
3	41,508	0.953	0.00149	0%	0	20%	0.191	40%	0.38116	40%	0.381	1.318	0.105	3.15	0.716	0.057	1.81	0.338	0.027	0.83
4	15,458	0.355	0.00055	0%	0	75%	0.266	25%	0.08872	0%	0.000	0.750	0.022	0.79	0.275	0.008	0.33	0.038	0.001	0.05
5	195,280	4.483	0.00700	0%	0	10%	0.448	0%	0	90%	4.035	1.840	0.687	18.54	1.138	0.425	12.00	0.649	0.242	6.83
6	28,217	0.648	0.00101	0%	0	100%	0.648	0%	0	0%	0.000	0.670	0.036	1.31	0.220	0.012	0.49	0.010	0.001	0.02
7	29,072	0.667	0.00104	0%	0	40%	0.267	40%	0.26696	20%	0.133	1.058	0.059	1.89	0.512	0.028	0.99	0.196	0.011	0.36
8	92,495	2.123	0.00332	0%	0	40%	0.849	0%	0	60%	1.274	1.450	0.257	7.29	0.832	0.147	4.33	0.436	0.077	2.18
9	46,069	1.058	0.00165	0%	0	0%	0.000	0%	0	100%	1.058	1.970	0.174	4.62	1.240	0.109	3.06	0.720	0.063	1.79
10	108,502	2.491	0.00389	0%	0	30%	0.747	12%	0.2989	58%	1.445	1.462	0.304	8.69	0.838	0.174	5.19	0.435	0.090	2.60
11	82,142	1.886	0.00295	0%	0	6%	0.113	30%	0.56572	64%	1.207	1.598	0.251	7.13	0.939	0.148	4.42	0.497	0.078	2.31
12	46,504	1.068	0.00167	0%	0	4%	0.043	25%	0.2669	71%	0.758	1.673	0.149	4.17	0.999	0.089	2.62	0.542	0.048	1.41
13	118,308	2.716	0.00424	0%	0	23%	0.625	50%	1.35799	27%	0.733	1.181	0.267	8.37	0.605	0.137	4.62	0.257	0.058	1.90
14	85,002	1.951	0.00305	0%	0	0%	0.000	5%	0.09757	95%	1.854	1.921	0.312	8.38	1.200	0.195	5.50	0.690	0.112	3.18
15	82,626	1.897	0.00296	0%	0	2%	0.038	3%	0.0569	95%	1.802	1.915	0.303	8.12	1.196	0.189	5.32	0.688	0.109	3.07
16	34,431	0.790	0.00124	0%	0	0%	0.000	7%	0.05533	93%	0.735	1.901	0.125	3.37	1.184	0.078	2.21	0.678	0.045	1.27
17	163,508	3.754	0.00587	0%	0	0%	0.000	0%	0	100%	3.754	1.970	0.616	16.40	1.240	0.388	10.85	0.720	0.225	6.34
18	97,763	2.244	0.00351	0%	0	0%	0.000	0%	0	100%	2.244	1.970	0.368	9.81	1.240	0.232	6.49	0.720	0.135	3.79
19	53,031	1.217	0.00190	0%	0	0%	0.000	0%	0	100%	1.217	1.970	0.200	5.32	1.240	0.126	3.52	0.720	0.073	2.06
20	85,009	1.952	0.00305	0%	0	0%	0.000	0%	0	100%	1.952	1.970	0.320	8.53	1.240	0.202	5.64	0.720	0.117	3.30
21	50,827	1.167	0.00182	0%	0	0%	0.000	0%	0	100%	1.167	1.970	0.192	5.10	1.240	0.121	3.37	0.720	0.070	1.97
22	31,395	0.721	0.00113	0%	0	0%	0.000	0%	0	100%	0.721	1.970	0.118	3.15	1.240	0.074	2.08	0.720	0.043	1.22
23	22,198	0.510	0.00080	0%	0	0%	0.000	0%	0	100%	0.510	1.970	0.084	2.23	1.240	0.053	1.47	0.720	0.031	0.86
24	147,654	3.390	0.00530	0%	0	0%	0.000	0%	0	100%	3.390	1.970	0.556	14.81	1.240	0.350	9.80	0.720	0.203	5.73
25	77,984	1.790	0.00280	0%	0	28%	0.501	72%	1.28899	0%	0.000	0.900	0.134	4.72	0.378	0.056	2.30	0.089	0.013	0.62
26	6,339	0.146	0.00023	0%	0	0%	0.000	0%	0	100%	0.146	1.970	0.024	0.64	1.240	0.015	0.42	0.720	0.009	0.25
27	62,581	1.437	0.00224	0%	0	95%	1.365	5%	0.07183	0%	0.000	0.686	0.082	2.98	0.231	0.028	1.14	0.016	0.002	0.07
28	24,636	0.566	0.00088	0%	0	0%	0.000	0%	0	100%	0.566	1.970	0.093	2.47	1.240	0.058	1.63	0.720	0.034	0.96
29	25,739	0.591	0.00092	0%	0	0%	0.000	0%	0	100%	0.591	1.970	0.097	2.58	1.240	0.061	1.71	0.720	0.035	1.00
30	90,025	2.067	0.00323	0%	0	0%	0.000	0%	0	100%	2.067	1.970	0.339	9.03	1.240	0.214	5.97	0.720	0.124	3.49
31	81,636	1.874	0.00293	0%	0	45%	0.843	55%	1.03076	0%	0.000	0.846	0.132	4.67	0.341	0.053	2.18	0.071	0.011	0.51
32	23,372	0.537	0.00084	0%	0	58%	0.311	30%	0.16096	12%	0.064	0.922	0.041	1.38	0.408	0.018	0.66	0.128	0.006	0.19
33	25,847	0.593	0.00093	0%	0	95%	0.564	5%	0.02967	0%	0.000	0.686	0.034	1.23	0.231	0.011	0.47	0.016	0.001	0.03
34	12,809	0.294	0.00046	0%	0	0%	0.000	0%	0	100%	0.294	1.970	0.048	1.29	1.240	0.030	0.85	0.720	0.018	0.50
Total	2,281,687	52.380	0.06029				1.710				4.983		6.998	195.394		4.136	121.516		2.226	64.233
OFFSITE	182,772	4.196	0.00656	100%	4.195868	0%	0.000	0%	0	0%	0.000	0.440	0.154	5.41	0.080	0.028	1.01	0.000	0.000	0.00

REQUIRED VOLUME	100YR 6HR MAX Q		PROVIDED VOLUME		IMPERV. AREA (D)		10-DAY VOLUME	MAX WSE	TOP OF POND	OVERFLOW WEIR	
2.522	71.804	NORTH POND	12.707		13.14		4.132	5132.26	5139		
0.034	1.229	DIRECT DISCHARGE	--		0.06		0.042				
1.992	54.449	WEST POND	3.722		11.12		3.355	5138.24	5140.7		
2.394	61.552	SOUTH POND	6.197		12.32		3.903	5127.21	5130	H=2.5', L=10', CAPACITY=63.25 CFS	
0.173	6.045	EAST POND	0.207		0.00		0.173	5121.73	5122		

V 10-DAY=V6HR+AD(P10DAYS-P6HR)/12 IN/FT
P10DAYS = 3.67 IN
P6HR = 2.20 IN
Q weir = 1.6LH3/2



KEYED NOTES

1. TEMORARY 6" HEADER CURB PER COA STD DWG 2415B W/ 6" CURB CUTS AT 25' O.C.
2. 2' CURB CUT
3. 6' SIDEWALK CULVERT PER COA STD DWG 2236
4. EXISTING EMERGENCY OVERFLOW TO REMAIN (REPAIR IF NECESSARY)

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL (CITY) ACCEPTANCE OF ANY PROJECT.

SEE SHEET C209 FOR TYPICAL SECTIONS

GRAPHIC SCALE

100 0 50 100

(IN FEET)
1 inch = 100 ft.

NOTES

1. THE RETENTION PONDS AND STORM DRAINS ON THIS SITE ARE TO BE MAINTAINED BY THE OWNER OF THE PROPERTY. MAINTENANCE INSPECTIONS MAY BE CONDUCTED BY THE CITY AND MAINTENANCE MAY BE ENFORCED BY THE CITY IN ACCORDANCE WITH THE DRAINAGE EASEMENT RECORDED ON THE PLAT RECORDED IN THE BERNALILLO COUNTY RECORDS ROOM BOOK AND PAGE. ANY MODIFICATION TO THIS PLAN MUST BE SHOWN ON A PLAN STAMPED BY AN ENGINEER AND SUBMITTED TO CITY HYDROLOGY FOR APPROVAL PRIOR TO CONSTRUCTION.
2. THE DRAINAGE MANAGEMENT PLAN FOR THIS SITE IS IN ACCORDANCE WITH THE 2007 MERIDIAN BUSINESS PARK II PLAN. THE ALLOWABLE DISCHARGE IS 0.1 CFS/ACRE SO THE ALLOWABLE DISCHARGE FOR THIS 50.35 ACRE SITE PLUS THE 4.2 ACRES OFFSITE AREA IS 5.45 CFS. THE ENTIRE SITE, WITH THE EXCEPTION OF THE LANDSCAPE AREAS ON THE EAST SIDE OF THE SITE, WILL DRAIN INTO ONSITE RETENTION PONDS SIZED FOR THE STORM WATER RUNOFF VOLUME FROM THE 100 YEAR-10 DAY STORM. EACH POND IS EQUIPPED WITH OVERFLOW SPILLWAY WITH THE CAPACITY TO DISCHARGE THE 100 YEAR PEAK RATE OF FLOW GOING INTO THE POND.
3. STORMWATER QUALITY VOLUMES (FIRST FLUSH) ARE RETAINES WITHIN THE ONSITE RETENTION PONDS.

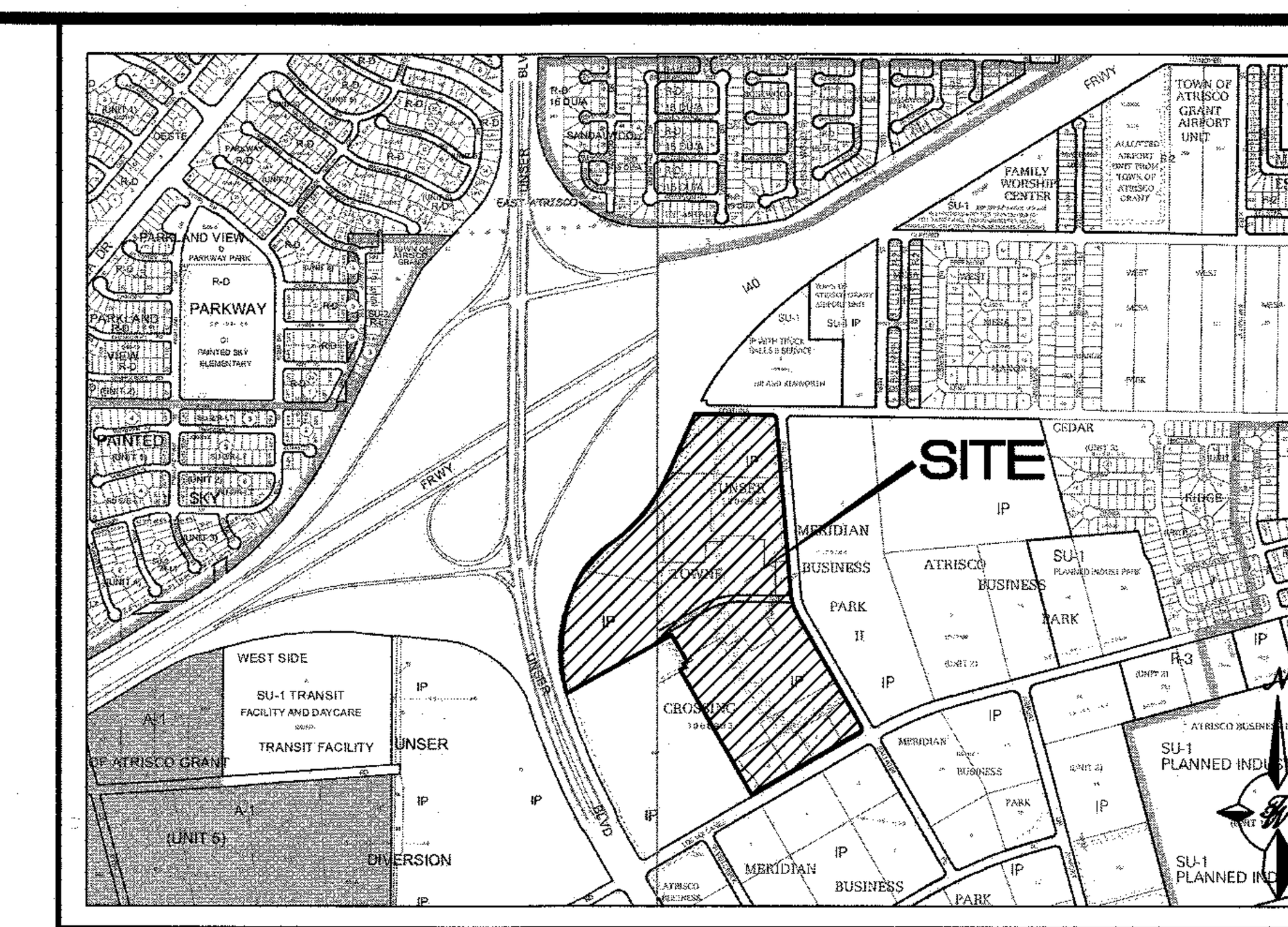
POND #	IMPERVIOUS AREA (ACRES)	SWQV (CU.FT.)
1	12.148	14,993
2	11.122	13,727
3	12.324	15,211
4	0.064	79

STORM WATER QUALITY VOLUME, SWQV =
IMPERVIOUS AREA (ACRES) X43,560 X 0.34"/12

NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
2. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONNECTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.
8. PRIOR TO WORK WITHIN THE COA RIGHT-OF-WAY, A WORK ORDER PERMIT WILL BE REQUIRED
9. ALL DISTURBED AREAS MUST BE STABILIZED PRIOR TO ENGINEERS CERTIFICATION FOR CERTIFICATE OF OCCUPANCY
10. FUTURE BUILDING AND PAVEMENT AREAS ARE TO BA GRADED IN PHASE 1 TO SUBGRADE ELEVATIONS. THESE AREAS SHALL BE STABILIZED IN PHASE 1 WITH GRAVEL MULCH AS NOTED ON THE LANDSCAPE PLAN. SEE SHEET C-208 FOR ULTIMATE BUILD OUT CONPEPTUAL GRADING AND DRAINAGE PLAN

A.G.R.S. MONUMENT "REWARD"
STANDARD USGS. BRASS DISK
NEW MEXICO STATE PLANE COORDINATES
(CENTRAL ZONE-N.A.D. 1983)
N=1,487,364.063
E=1,491,190.819
PUBLISHED EL=5319.688 (NAVD 1988)
GROUND TO GRID FACTOR=0.999675005
DELTA ALPHA ANGLE=-0°17'12.26"



VICINITY MAP J-29-Z,J-30-Z

FLOOD MAP 35001C0326J, 35001C0328J

LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION (FLOWLINE)
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 5010 EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR
- ASPHALT PAVING
- PROPOSED BUILDING
- x PROPOSED FENCE

CAUTION:

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ENGINEER'S SEAL

RONALD R. BOHANNAN
NEW MEXICO
7868
REGISTERED PROFESSIONAL ENGINEER

RONALD R. BOHANNAN
P.E. #7868

NEW DISTRIBUTION CENTER
BEN E KEITH
601 GALLATIN PL NW
ALBUQUERQUE, NM 87121

Revision No.

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△
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△

Job No.
2018014

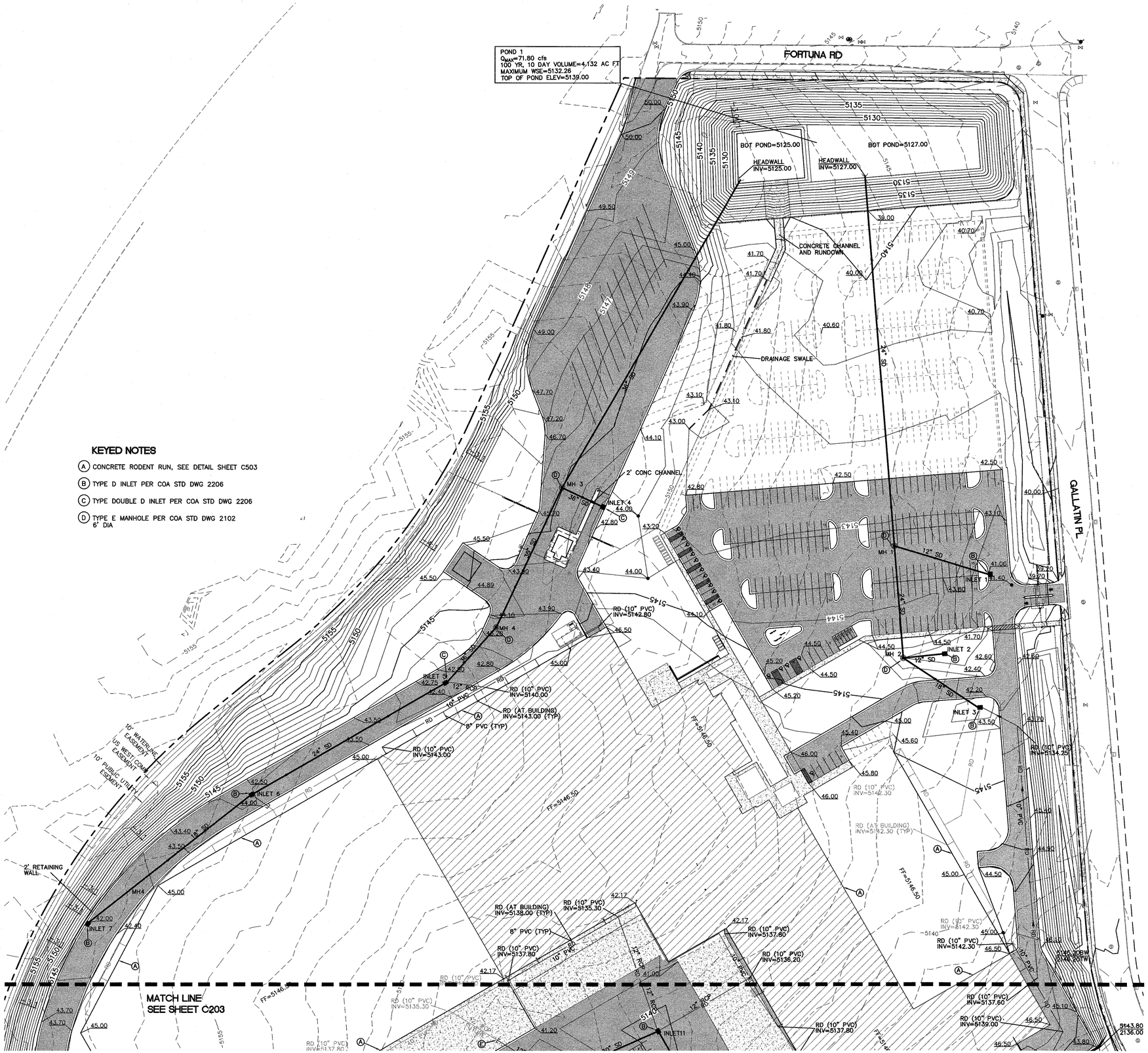
CAD/CHK'D By:
pm / vc

Date
7-19-19

Sheet Title
OVERALL GRADING PLAN

Sheet No.
C201

CIVIL



KEYED NOTES

(A) CONCRETE RODENT RUN, SEE DETAIL SHEET C503

(B) TYPE D INLET PER COA STD DWG 2206

(C) TYPE DOUBLE D INLET PER COA STD DWG 2206

(D) TYPE E MANHOLE PER COA STD DWG 2102
6' DIA

LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- RETAINING WALL
- 5010 CONTOUR MAJOR
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- EXISTING CONTOUR MINOR
- ASPHALT PAVING
- PROPOSED BUILDING
- RD ROOF DRAIN
- x PROPOSED FENCE

STRUCTURE TABLE

STRUCTURE	SIZE/TYPE	RIM	INVERT
MH 1	6' DIA	5143.33	5131.73
MH 2	6' DIA	5142.00	5133.17
MH 3	6' DIA	5144.30	5129.77
MH 4	6' DIA	5142.69	5131.67
INLET 1	TYPE D	5142.00	5138.00
INLET 2	TYPE D	5142.00	5138.00
INLET 3	TYPE D	5142.00	5133.85
INLET 4	TYPE DOUBLE D	5142.80	5137.00
INLET 5	TYPE DOUBLE D	5142.10	5132.57
INLET 6	TYPE D	5142.10	5135.37
INLET 7	TYPE D	5142.00	5138.00

GRAPHIC SCALE

60 0 30 60

(IN FEET)
1 inch = 60 ft.

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Revision No.

Job No.
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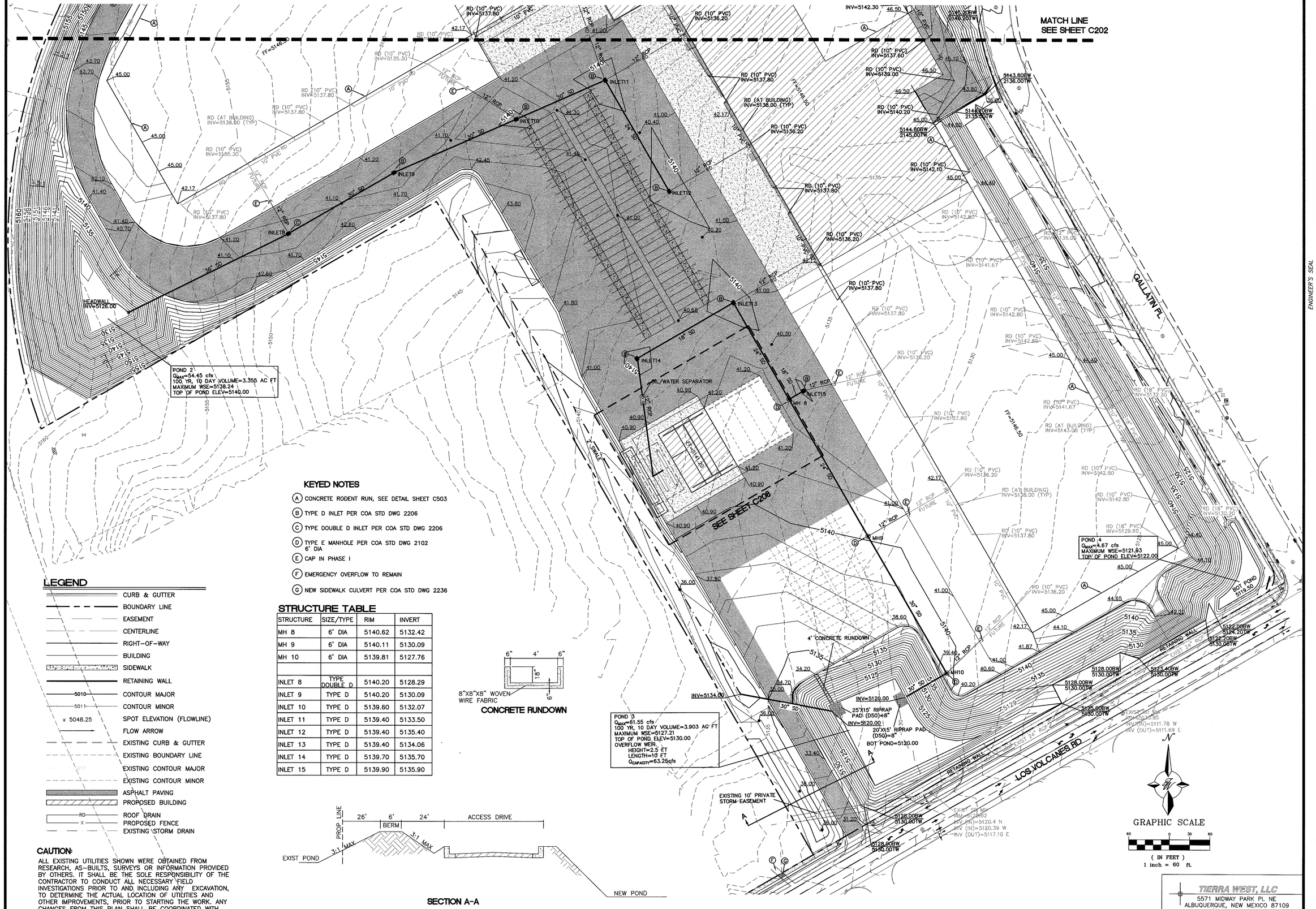
CAD/CHK'D By:
pm / vc

Date
7-19-19

Sheet Title
GRADING AND DRAINAGE PLAN

Sheet No.
C202

CIVIL



KEYED NOTES

- (A) CONCRETE RODENT RUN, SEE DETAIL SHEET C503
- (B) TYPE D INLET PER COA STD DWG 2206
- (C) TYPE DOUBLE D INLET PER COA STD DWG 2206
- (D) TYPE E MANHOLE PER COA STD DWG 2102 6' DIA
- (E) CAP IN PHASE I
- (F) EMERGENCY OVERFLOW TO REMAIN
- (G) NEW SIDEWALK CULVERT PER COA STD DWG 2236

STRUCTURE TABLE

STRUCTURE	SIZE/TYPE	RIM	INVERT
MH 8	6' DIA	5140.62	5132.42
MH 9	6' DIA	5140.11	5130.09
MH 10	6' DIA	5139.81	5127.76
INLET 8	TYPE DOUBLE D	5140.20	5128.29
INLET 9	TYPE D	5140.20	5130.09
INLET 10	TYPE D	5139.60	5132.07
INLET 11	TYPE D	5139.40	5133.50
INLET 12	TYPE D	5139.40	5135.40
INLET 13	TYPE D	5139.40	5134.06
INLET 14	TYPE D	5139.70	5135.70
INLET 15	TYPE D	5139.90	5135.90

CONCRETE RUNDOWN

LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION (FLOWLINE)
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR
- ASPHALT PAVING
- PROPOSED BUILDING
- RD ROOF DRAIN
- X PROPOSED FENCE
- EXISTING STORM DRAIN

SECTION A-A

CAUTION:

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Revision No.

Job No.
2018014

CAD/CHK'D By:
pm / vc

Date
7-19-19

Sheet Title
GRADING AND DRAINAGE PLAN

Sheet No.
C203

CIVIL

GRAPHIC SCALE
60 0 30 60
(IN FEET)
1 inch = 60 ft.

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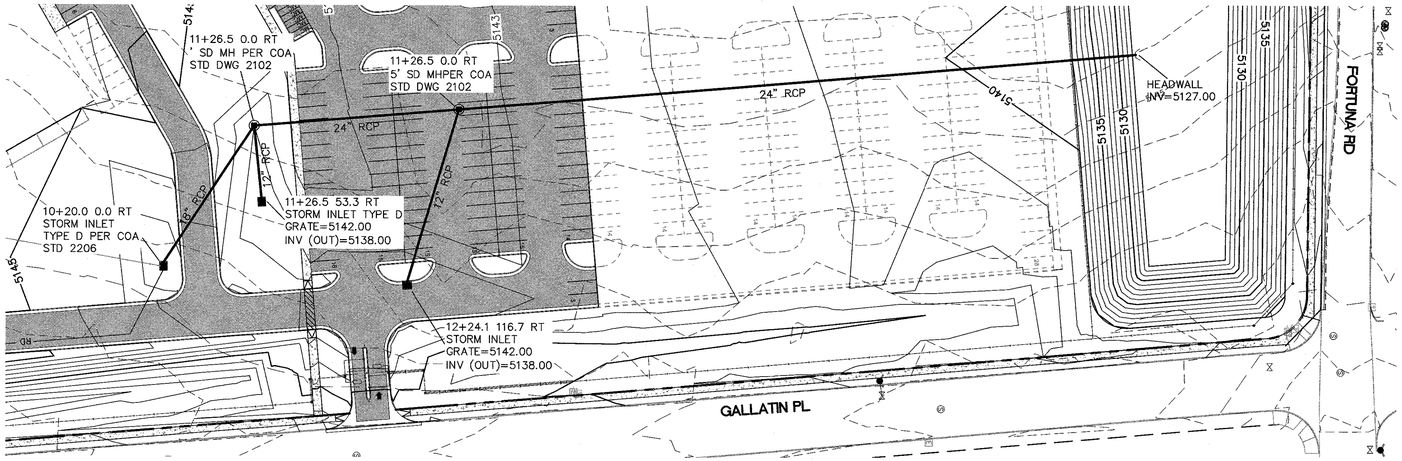

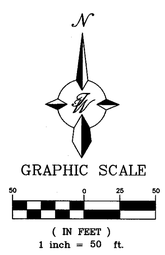

LEGEND

- CURB & GUTTER
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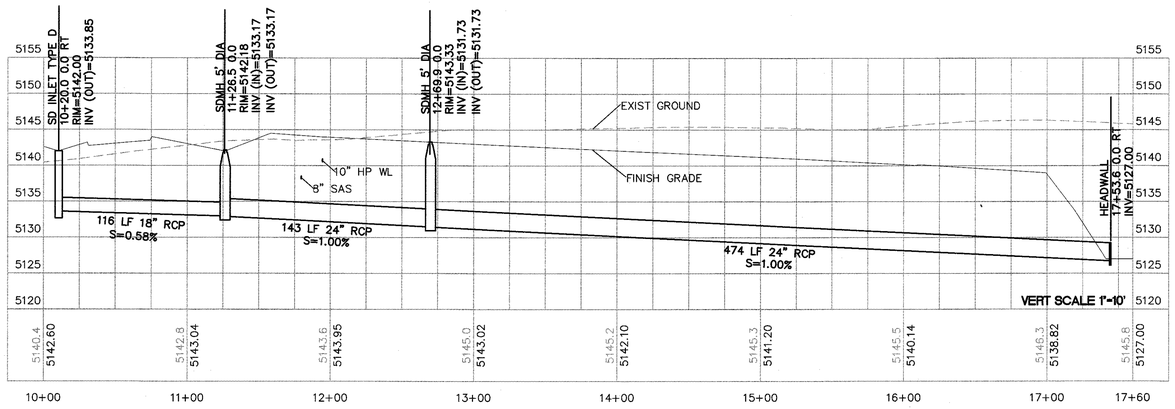
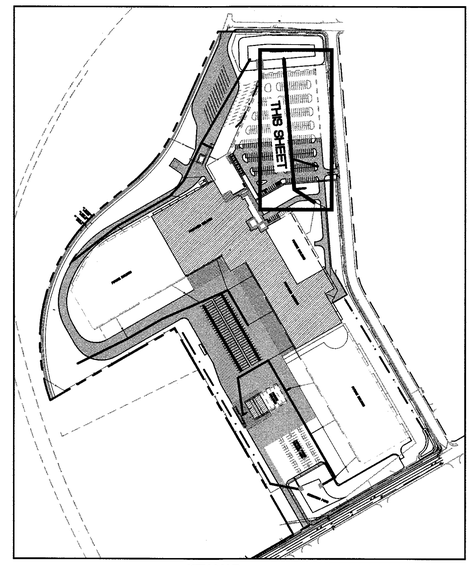
- PROPOSED BUILDING
- RD ROOF DRAIN





KEY MAP

CAUTION:

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NEW MEXICO
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REGISTERED PROFESSIONAL ENGINEER

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Revision No.

Job No.
2018014

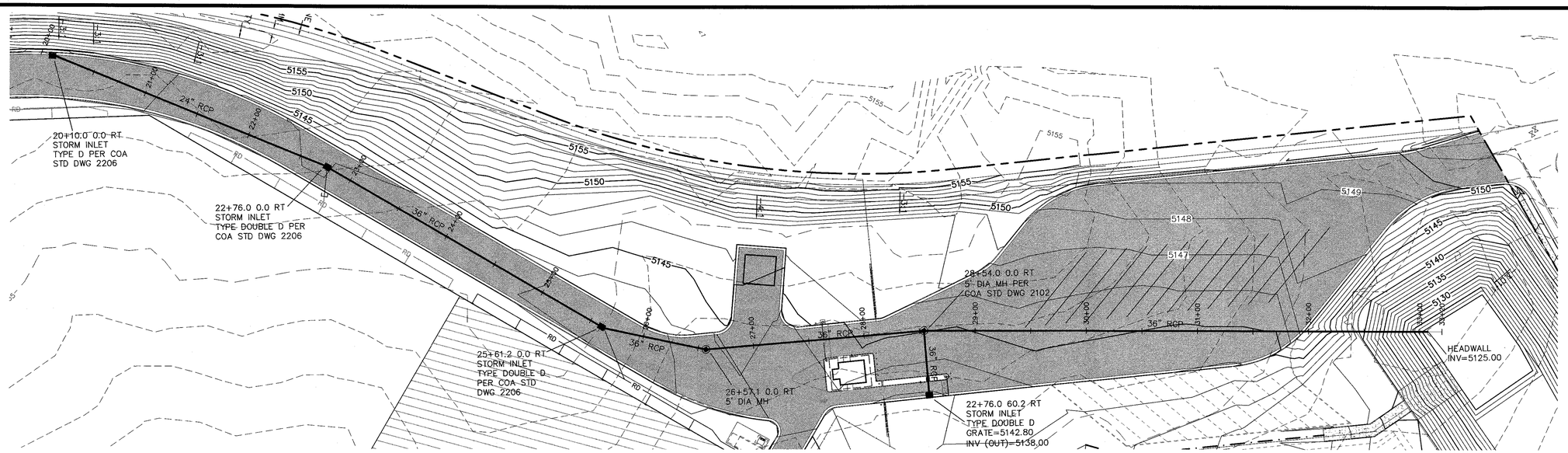
CAD/CHK'D By:
pm / vc

Date
7-19-19

Sheet Title
STORM SEWER
PLAN AND PROFILE

Sheet No.
C204

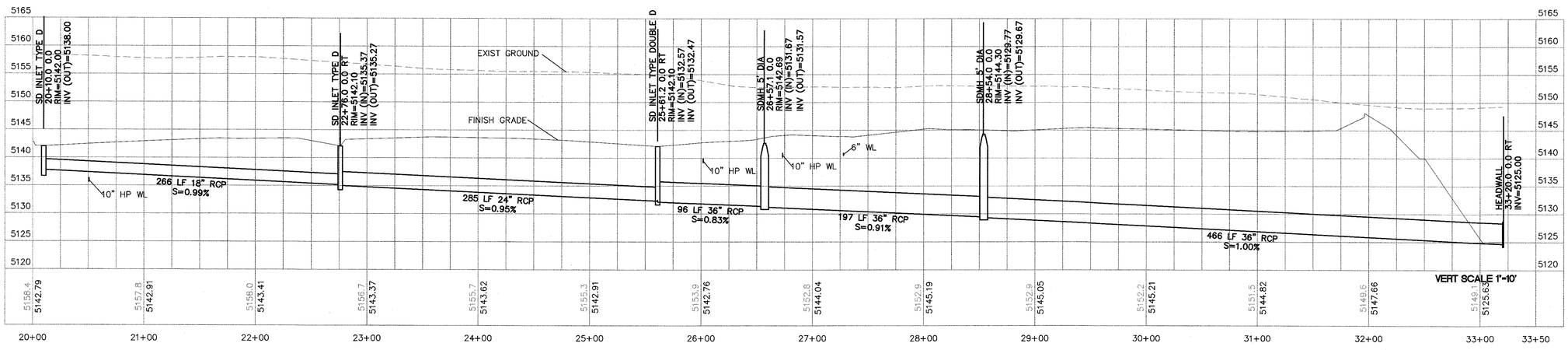
CIVIL



GRAPHIC SCALE

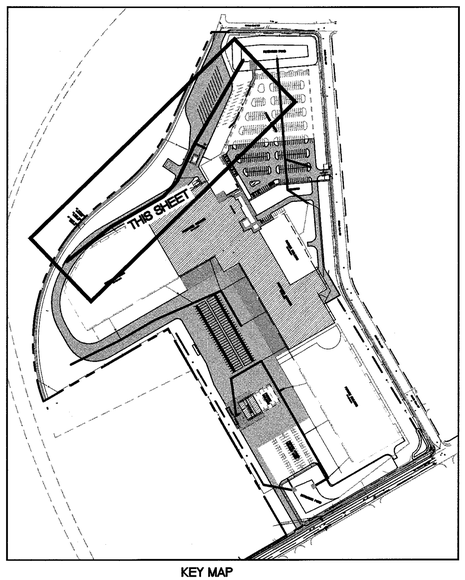
50 0 25 50

(IN FEET)
1 inch = 50 ft.



LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION (FLOWLINE)
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR
- ASPHALT PAVING
- PROPOSED BUILDING
- RD ROOF DRAIN



KEY MAP

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10868
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7/19/19

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Revision No.

Job No.
2018014

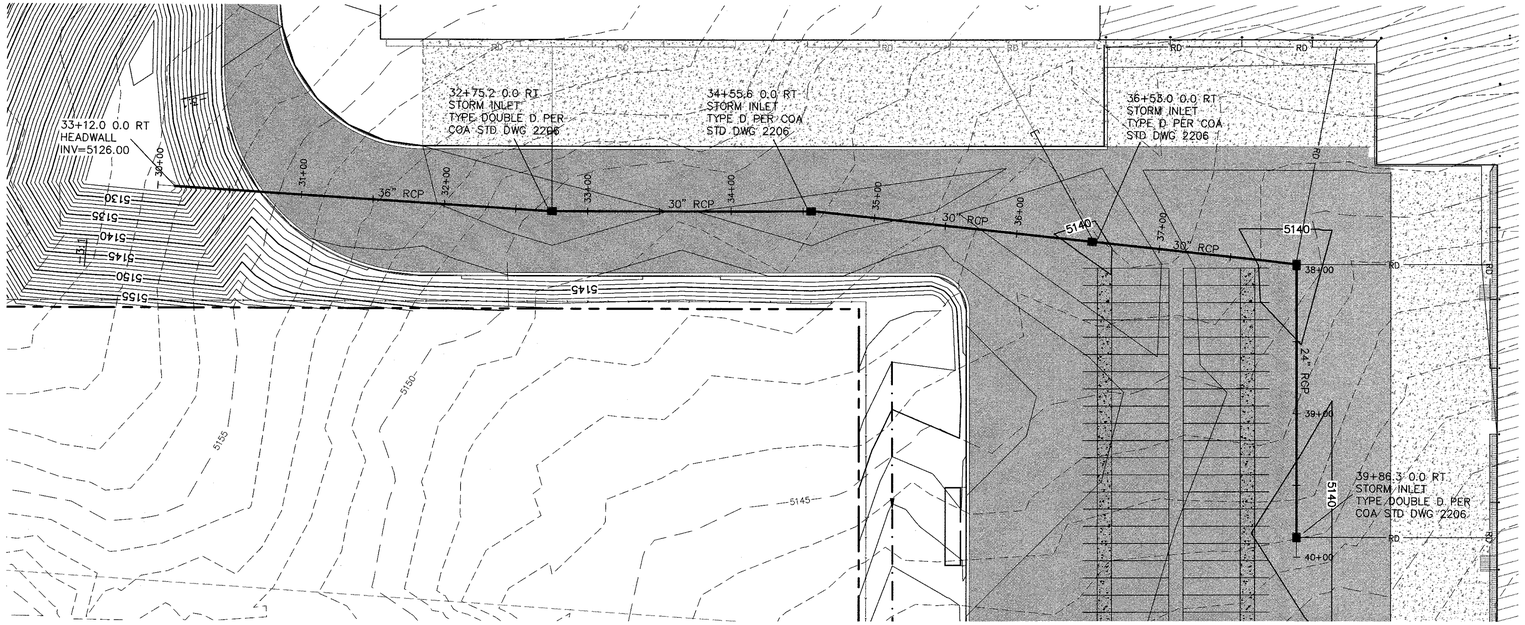
CAD/CHK'D By:
pm / vc

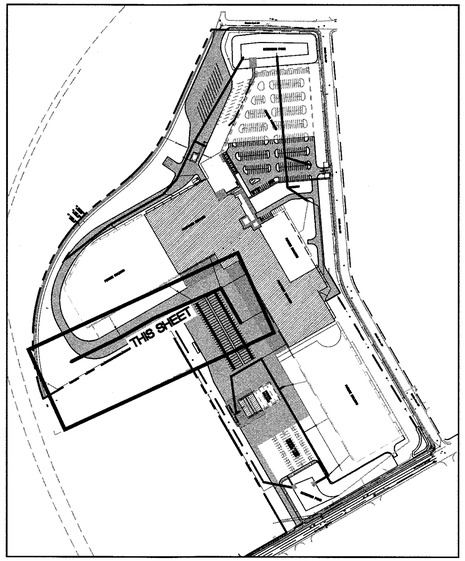
Date
7-19-19

Sheet Title
STORM SEWER PLAN AND PROFILE

Sheet No.
C205

CIVIL



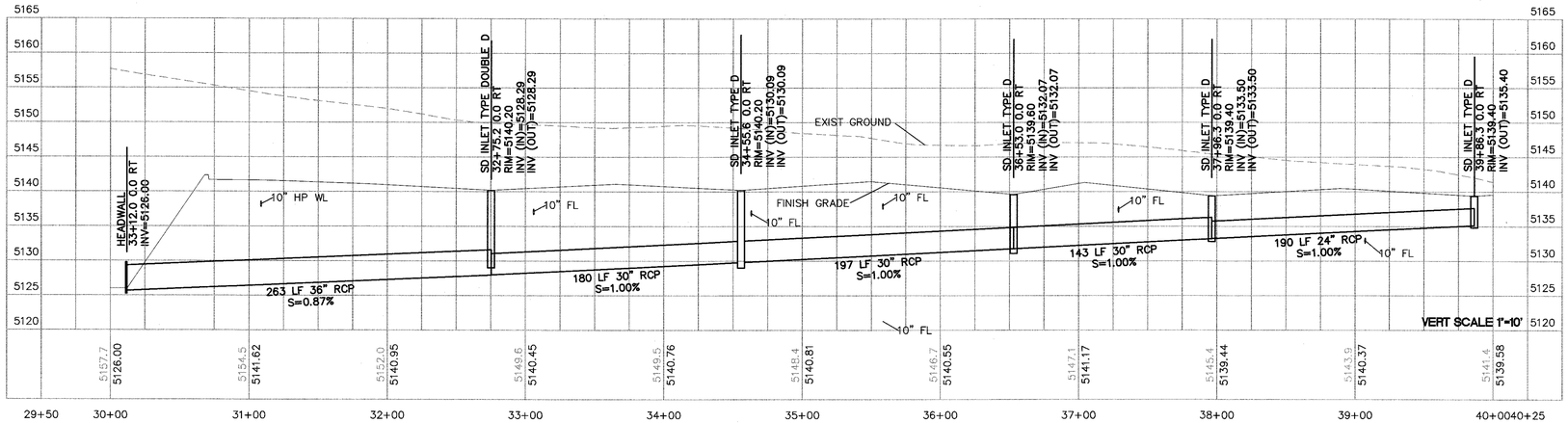


KEY MAP

GRAPHIC SCALE

50 0 25 50

(IN FEET)
1 inch = 50 ft.



LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT–OF–WAY
- BUILDING
- SIDEWALK
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION (FLOWLINE)
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 5010 EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR
- ASPHALT PAVING
- PROPOSED BUILDING
- RD ROOF DRAIN

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Revision No.

Job No.
2018014

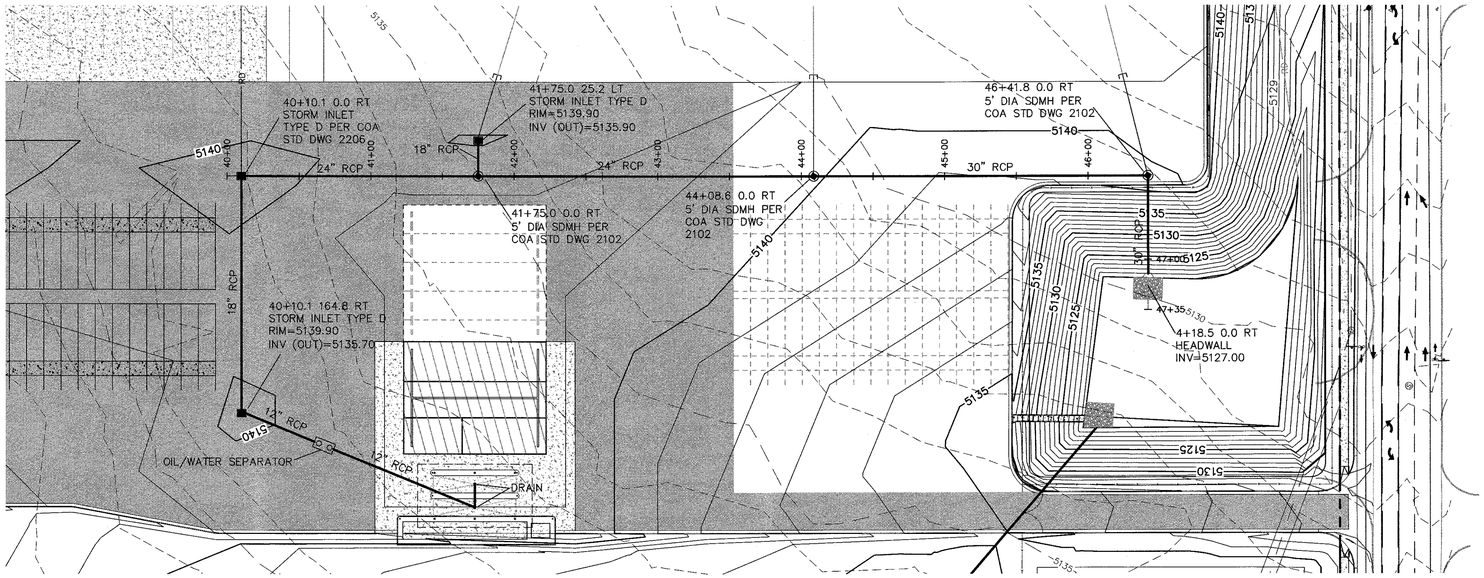
CAD/CHK'D By:
pm / vc

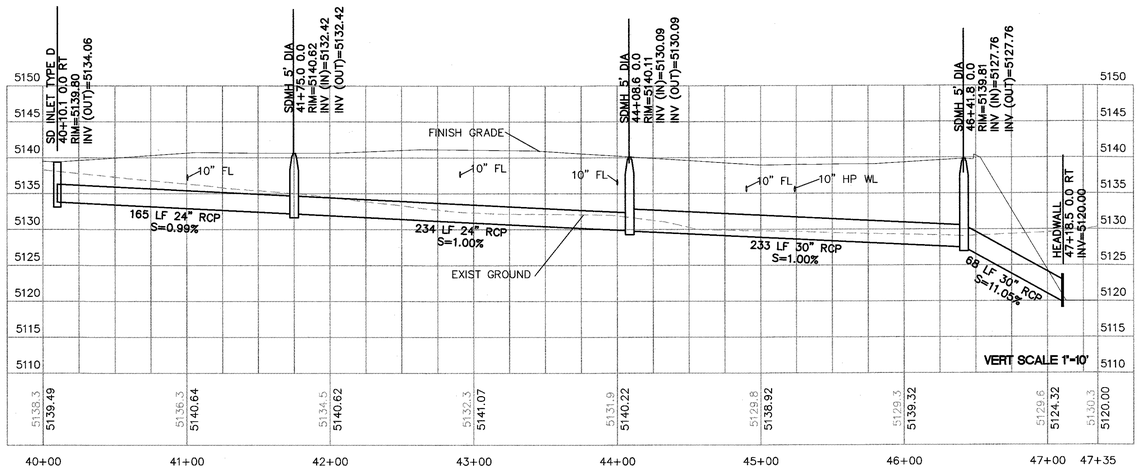
Date
7-19-19

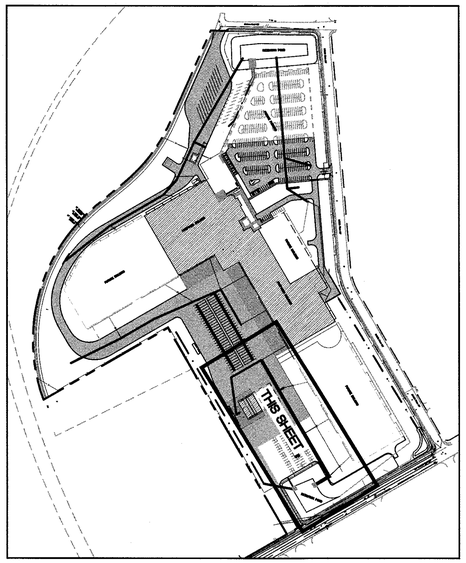
Sheet Title
STORM SEWER
PLAN AND PROFILE

Sheet No.
C206

CIVIL







KEY MAP

GRAPHIC SCALE

50 0 25 50

(IN FEET)
1 inch = 50 ft.

LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION (FLOWLINE)
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
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- ASPHALT PAVING
- PROPOSED BUILDING
- RD ROOF DRAIN

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Revision No.

Job No.
2018014

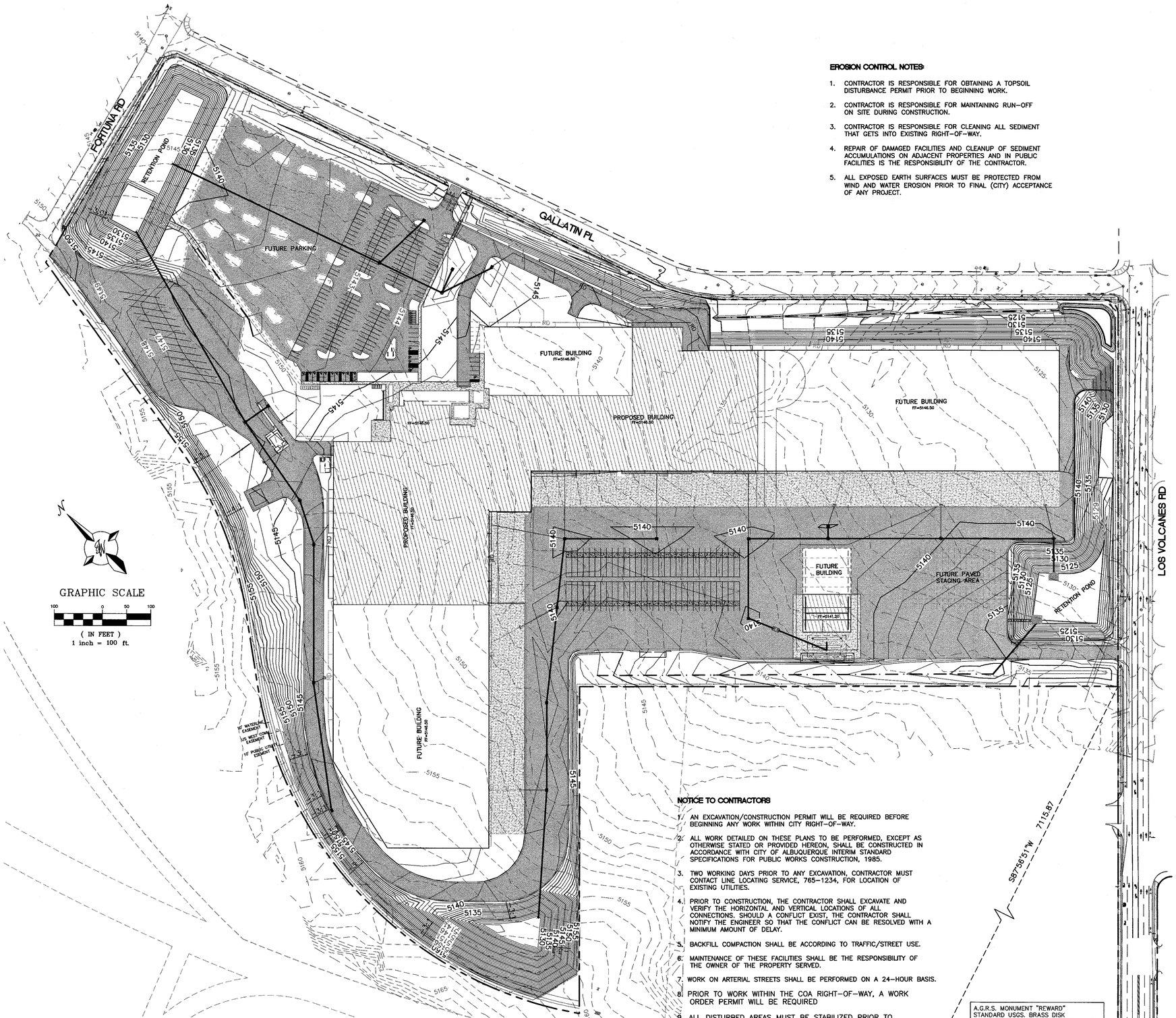
CAD/CHK'D By:
pm / vc

Date
7-19-19

Sheet Title
STORM SEWER
PLAN AND PROFILE

Sheet No.
C207

CIVIL



GRAPHIC SCALE

100 0 50 100

(IN FEET)
1 inch = 100 ft.

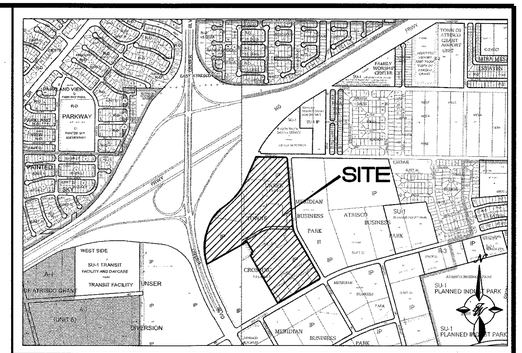
EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL (CITY) ACCEPTANCE OF ANY PROJECT.

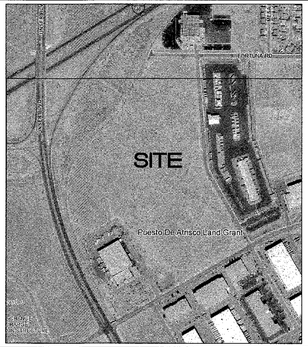
NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
2. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONNECTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.
8. PRIOR TO WORK WITHIN THE COA RIGHT-OF-WAY, A WORK ORDER PERMIT WILL BE REQUIRED
9. ALL DISTURBED AREAS MUST BE STABILIZED PRIOR TO ENGINEERS CERTIFICATION FOR CERTIFICATE OF OCCUPANCY

A.G.R.S. MONUMENT "REWARD"
STANDARD USGS. BRASS DISK
NEW MEXICO STATE PLANE COORDINATES
(CENTRAL ZONE-N.A.D. 1983)
N=1,487,364.063
E=1,491,190.819
PUBLISHED EL=5319.688 (NAVD 1988)
GROUND TO GRID FACTOR=0.999675005
DELTA ALPHA ANGLE=-0°17'12.26"



VICINITY MAP J-29-Z,J-30-Z



FLOOD MAP 35001C0326J, 35001C0328J

LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION (FLOWLINE)
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR
- ASPHALT PAVING
- PROPOSED BUILDING
- x PROPOSED FENCE

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Revision No.

Job No.
2018014

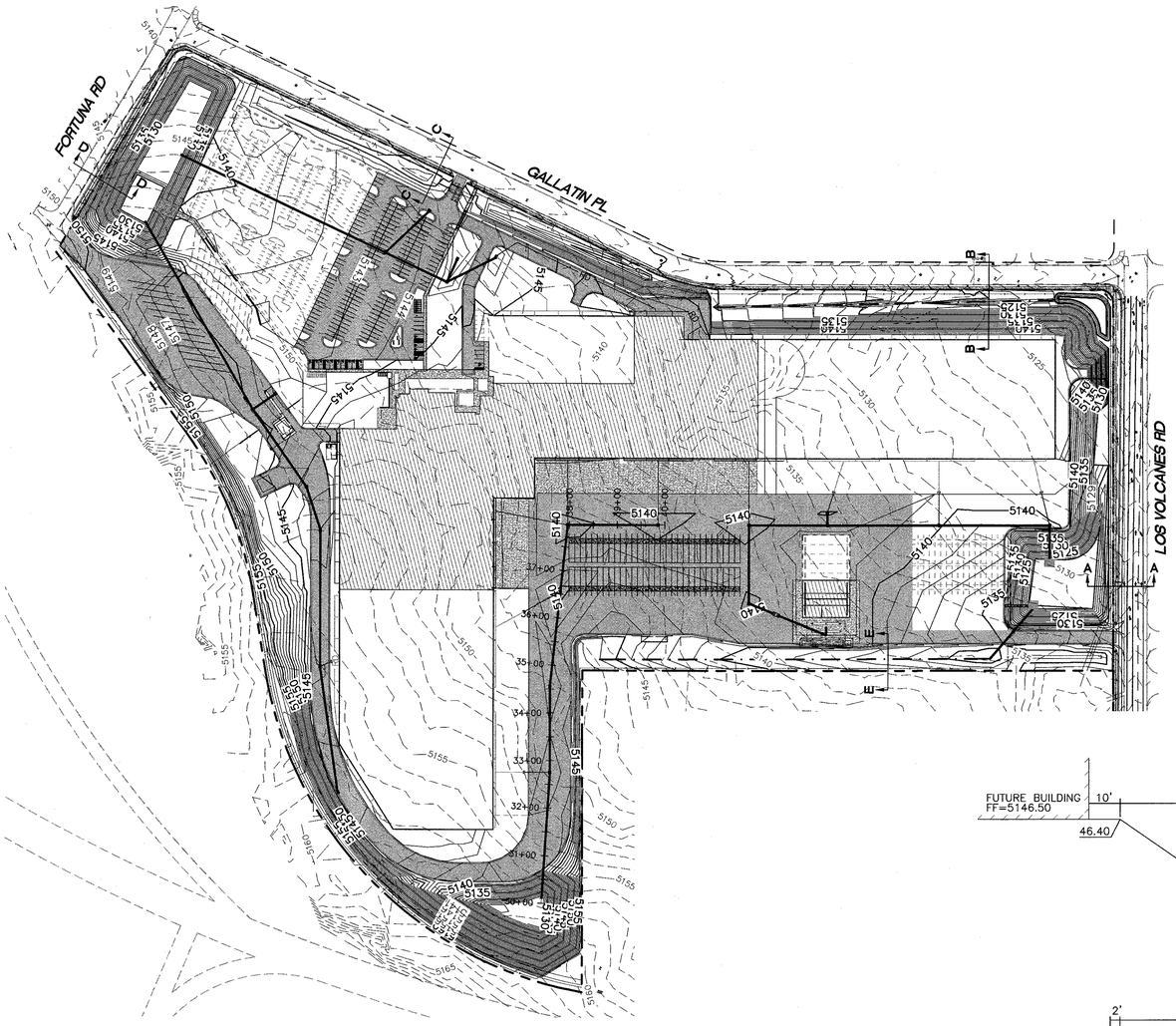
CAD/CHK'D By:
pm / vc

Date
7-19-19

Sheet Title
ULTIMATE BUILD OUT CONCEPTUAL GRADING AND DRAINAGE PLAN

Sheet No.
C208

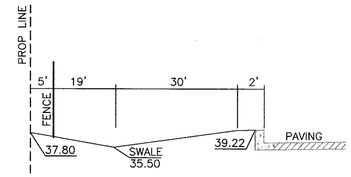
CIVIL



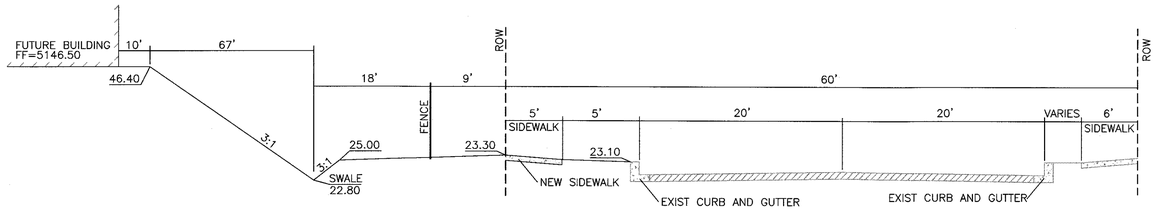
GRAPHIC SCALE

150 0 75 150

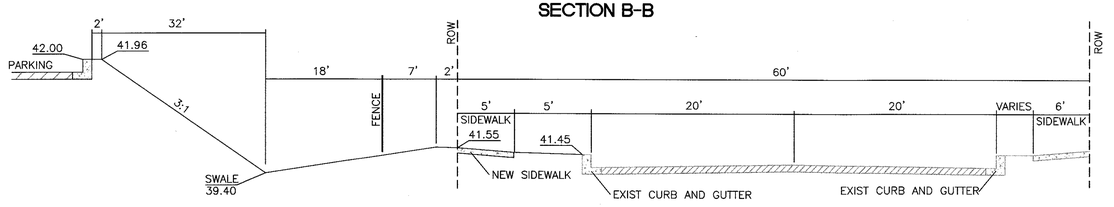
(IN FEET)
1 inch = 150 ft.



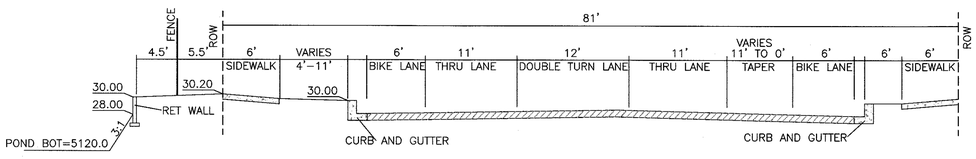
SECTION E-E



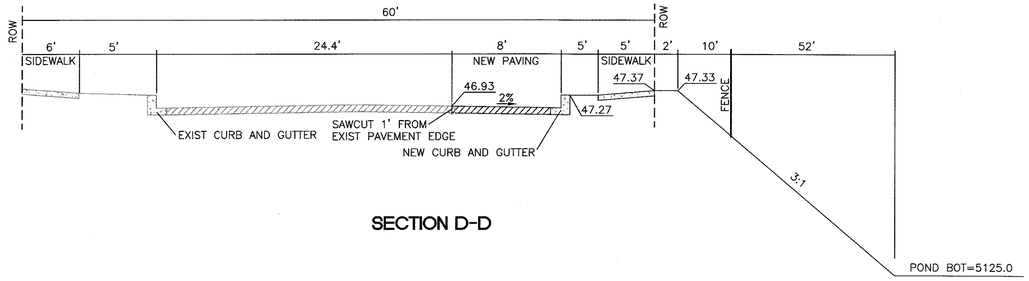
SECTION B-B



SECTION C-C



SECTION A-A



SECTION D-D

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Revision No.

Job No.
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Date
7-19-19

Sheet Title
TYPICAL SECTIONS

Sheet No.
C209

CIVIL

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Date
6-27-19

Sheet Title
DEVELOPED DRAINGAGE BASINS

Sheet No.
1

CIVIL