

# MEMORANDUM



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**To: City of Lone Tree**

**From: JR Engineering**

**Date: 3/3/2023**

**Subject: Snow Storage Design for Lokal Condos Site Improvement Plan**

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JR Engineering has provided the required snow storage area for the Lokal Condos Site Improvement Plan (SIP). Because the City of Lone Tree does not have a design standards for snow storage design areas, JR Engineering has provided calculations for the snow storage areas based on the average and maximum snowfall depths.

In order to get volume for the snow storage areas, the average and maximum snow fall depths were used. The average snowfall depth used is 4" and the maximum snow depth used was 12". For the average snow fall depth, the snow compaction that is used will be 20% (with 80% remaining). The maximum compaction for the maximum snow depth would be 80% (with 20% remaining).

The table below provides the calculations for the average snowfall of 4" and 20% compaction.

Area (SF)	Calculations (SF)	Storage (CF.)
84434	$84434 \text{ SF} \times (4/12) \text{ F} \times 0.8$	22515.73

The table below provides the calculations for the average snowfall of 12" and 80% compaction.

Area (SF)	Calculations (SF)	Storage (CF.)
84434	$84434 \text{ SF} \times (12/12) \text{ F} \times 0.2$	16886.80

The table below provides the calculations for the average snowfall.

Average (CF.)	Storage (CF.)
$(22515/73 \text{ CF.} + 16886.80 \text{ CF.})/2$	19701.27

Knowing the total volume of snowfall for the site, the required storage can now be determined. Required storage volume was determined for each storage area based on its paved area.

Total Paved Area (SF)	Total Volume (CF)	Volume/Area
84434	19701.27	0.23

Height was calculated using the volume equation for a trapezoidal prism:

$$V = \frac{(b_1 + b_2) * h * l}{2}$$

$$h = \frac{2 * V}{(b_1 + b_2) * l}$$

The table below provides the summary of the calculations.

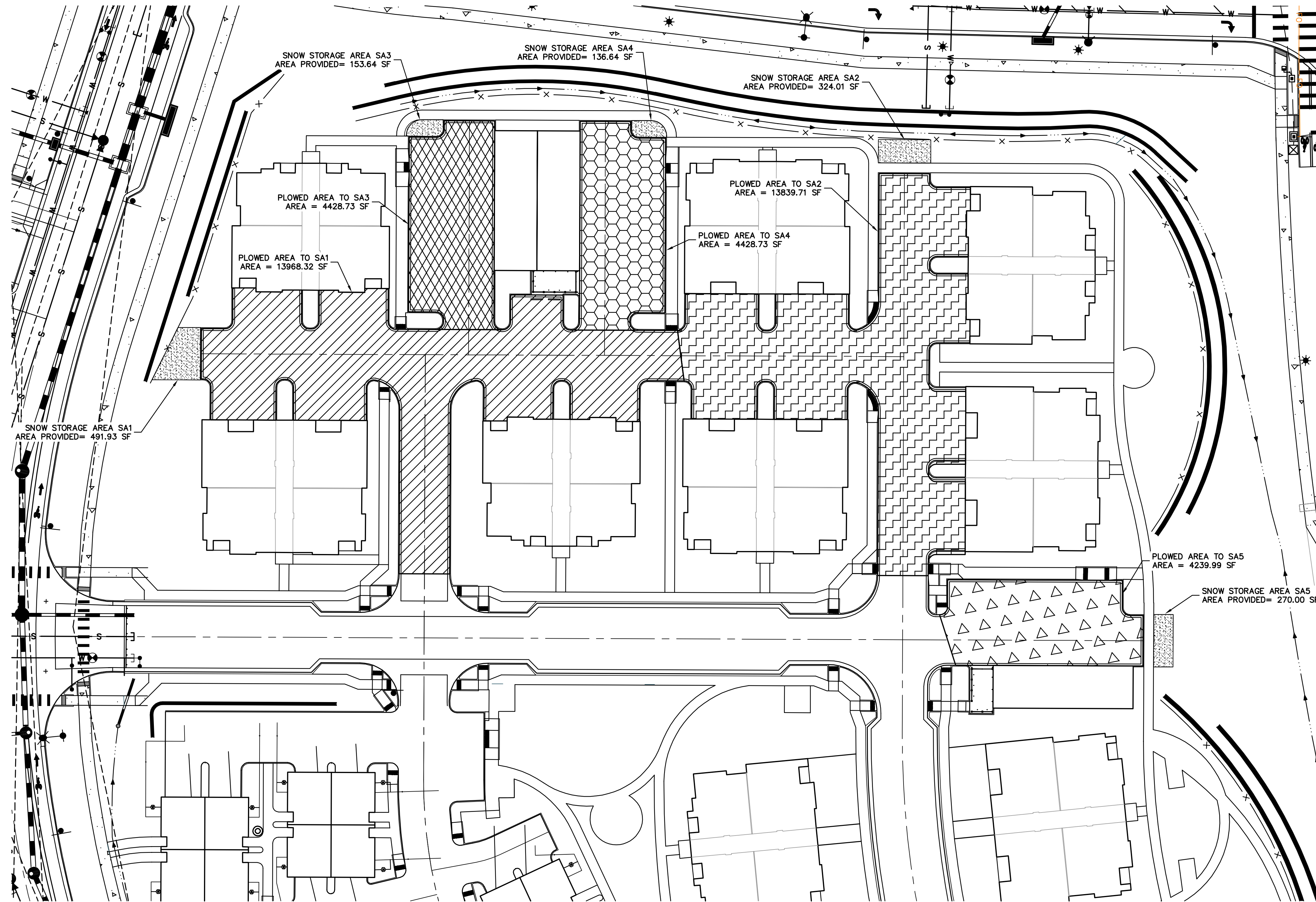
Location	Paved Area (SF.)	Storage Provided (SF.)	Trapezoidal Calculations	Storage (CF.)
SA1	13968	491.40	b1=10, b2=18.2, l=27, h=8.56	3259.27
SA2	13840	324.00	b1=8, b2=12, l=27, h=11.96	3229.31
SA3	4429	153.00	b1=6, b2=8.5, l=18, h=7.92	1033.43
SA4	4429	136.00	b1=6, b2=8.5, l=16, h=8.91	1033.43
SA5	4240	270.00	b1=6, b2=10, l=27, h=4.58	989.33
SA6	8087	486.00	b1=10, b2=18, l=27, h=4.99	1886.97
SA7	3800	160.20	b1=4, b2=8.9, l=18, h=7.64	886.67
SA8	3806	160.20	b1=4, b2=8.9, l=18, h=7.65	888.07
SA9	9266	513.00	b1=12, b2=19, l=27, h=5.17	2162.07
SA10	7448	333.00	b1=12, b2=18.5, l=18, h=6.33	1737.87
SA11	11121	480.00	b1=8, b2=16, l=30, h=7.51	2594.90
TOTAL:	84434	3026.80		19701.32

As shown by these calculations, the provided snow storage areas are adequate for the Lokal Townhomes at Ridgeway site.

# LYRIC CONDOS AT RIDGEGATE

A PORTION OF THE RIDGEGATE PLANNED DEVELOPMENT DISTRICT, EAST SIDE PROPERTY  
 A PART OF SECTION 14, SECTION 22, SECTION 23, AND SECTION 24, TOWNSHIP 6 SOUTH, RANGE 67 WEST  
 OF THE 6TH P.M., CITY OF LONE TREE, COUNTY OF DOUGLAS, STATE OF COLORADO

## SNOW STORAGE EXHIBIT



4" Snowfall

Area (SF)	Calculations (SF)	Storage (CF.)
84434	$84434 \text{ SF} \times (4/12) \text{ F} \times 0.8$	22515.73

12" Snowfall

Area (SF)	Calculations (SF)	Storage (CF.)
84434	$84434 \text{ SF} \times (12/12) \text{ F} \times 0.2$	16886.80

Average

Average (CF.)	Storage (CF.)
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SA2	13839.89	324.00	$b1=8, b2=12, l=27, h=11.96$	3229.31
SA3	4429	153.00	$b1=6, b2=8.5, l=18, h=7.92$	1033.43
SA4	4429	136.00	$b1=6, b2=8.5, l=16, h=8.91$	1033.43
SA5	4240	270.00	$b1=6, b2=10, l=27, h=4.58$	989.33

LYRIC CONDOS AT RIDGEGATE  
 JOB NO. 15950.10  
 3/3/2023  
 SHEET 1 OF 2

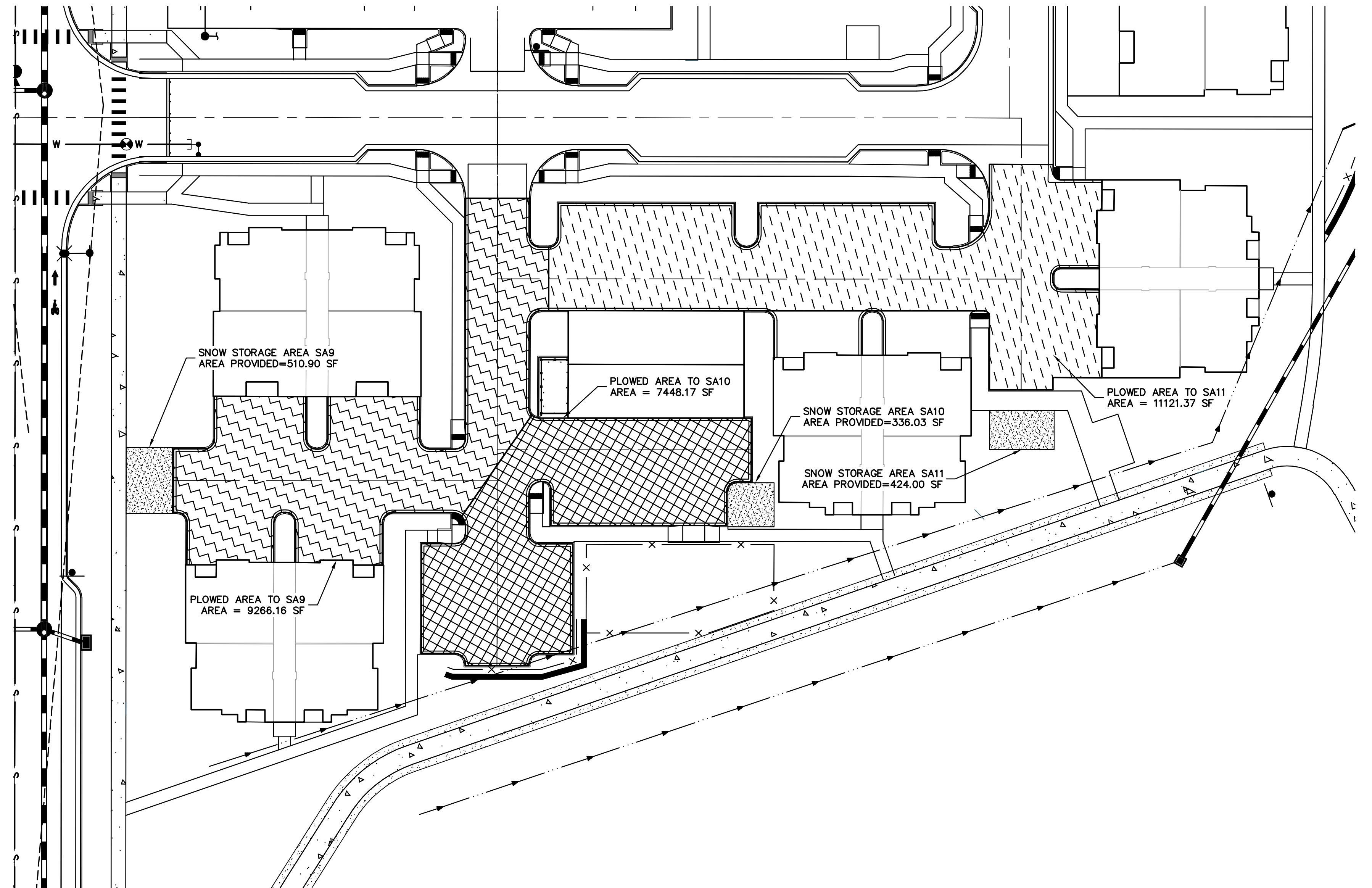
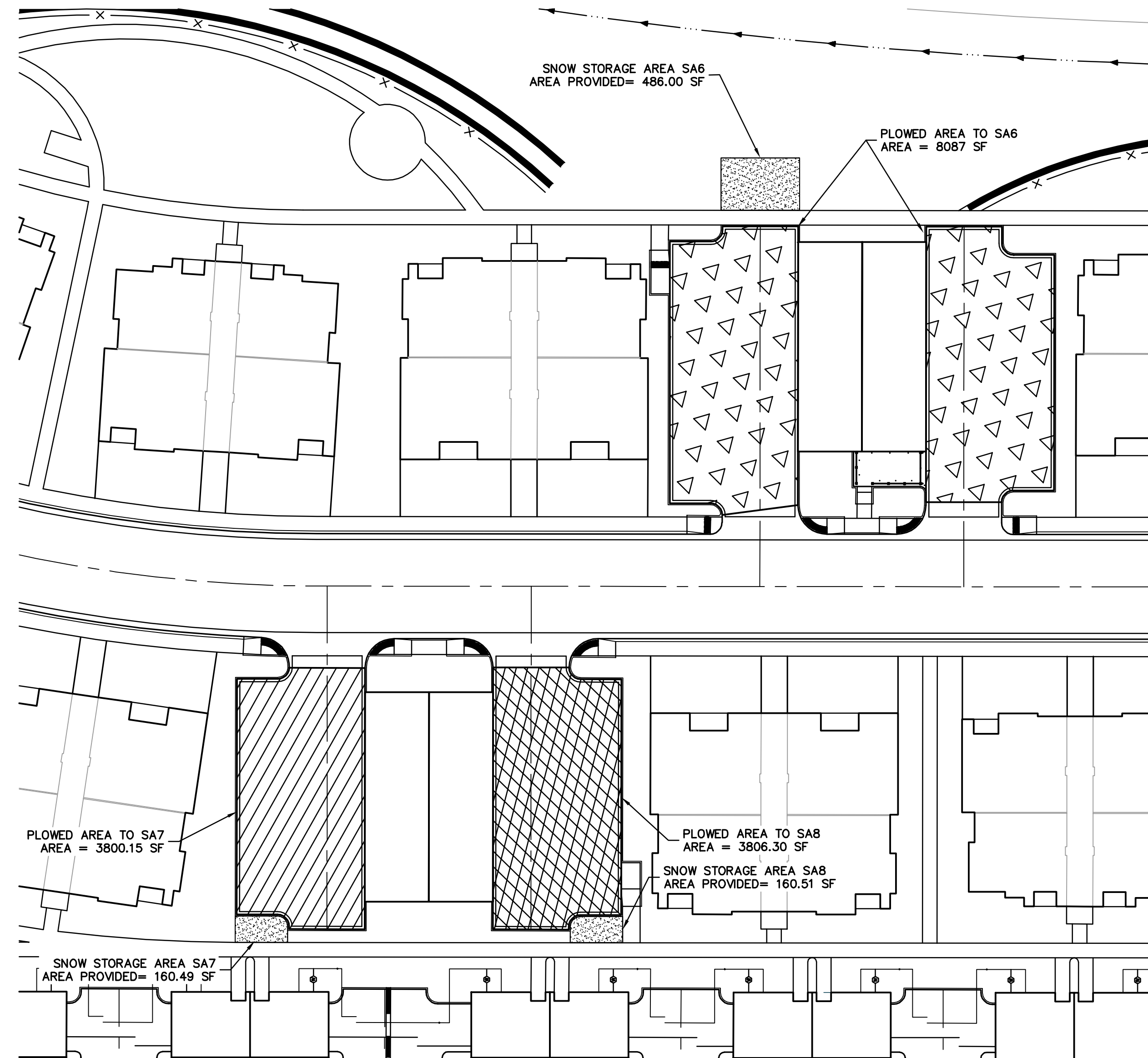


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 OF THE 6TH P.M., CITY OF LONE TREE, COUNTY OF DOUGLAS, STATE OF COLORADO  
**SNOW STORAGE EXHIBIT**



4" Snowfall

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 SHEET 2 OF 2



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