

April 14, 2021

Mr. Oh Sang Kwan, P.E.
Flood Control, Engr. Associate
City of Las Vegas Department of Public Works
333 North Rancho Drive
Las Vegas, NV 89106

RE: Rancho Multi Family Development (DS5380B) (RFCD No. 21-13719).

Dear Mr. Kwon

The purpose of this letter is to address the technical drainage study comments from CLV conditional approval letter dated January 4, 2021 and comments from the CCRFCD letter dated February 10, 2021 regarding the above referenced project (copy attached). The comments are individually addressed. Each comment has been re-typed.

CLV COMMENTS

Comment 1: Sites with a grade difference of 2 feet above or below existing grades are required to have approval from the City of Las Vegas Planning and Development Department. The engineer must submit copies of the grading plans and detail sheet with a letter justifying the grade difference to the City Planning Department (229-6301). The engineer must provide City Planning approval prior to final acceptance of the drainage study.

Response: The approval letter is attached.

Comment 2: This drainage study is acceptable in concept; however, City of Las Vegas will not formally accept the study until the Clark County Regional Flood Control District (CCRFCD) has issued a letter of concurrence. The engineer should contact the CCRFCD to confirm that they have begun their review.

Response: The first review is completed, see attached letter dated February 10, 2021. Below is our response to the CCRFCD comments.

Comment 3: The project proposes to construct facilities and/or increase flows within Nevada Department of Transportation (NDOT) right-of-way. The Engineer must contact NDOT for encroachment permit for the proposed project. NDOT concurrence is required prior to final approval of the drainage study.

Response: NDOT has reviewed and has issued a letter supporting our request for Waiver of the Technical Drainage Study. Copy attached. The NDOT encroachment permit has also been approved and issued. Copy attached.

Comment 4: The proposed storm drain connection to the existing CCRFCD RCB requires a structural detail and calculations. All special structures and mainline storm drain connections require details and structural calculations to be reviewed by the City of Las Vegas Building & Safety Department. Approval by the Building Department must be obtained prior to the final approval of the subject drainage study.

Response: 1st review of structural plans by CLV completed. Revised plans and calculations have been re-submitted to CLV Pubic Works Dept. on 04-14-2021.

Comment 5: 2nd request: Revise the Q100 flow rates shown on the profiles for DI #1 and DI#2.

Response: The Q100 values in the profiles have been corrected.

CCRFCD COMMENTS

Comment 1: Per the City of Las Vegas, the project proposes multiple new penetrations and connection tie-ins to the existing 12'x8" RCB of the District's MPU facility LVRA 0012 and requires structural plans, calculations, and approval by the City of Las Vegas prior to District submittal and concurrence. The Structural Approval Documentation must be provided with the next submittal and prior to District concurrence.

Response: 1st review of structural plans by CLV completed. Revised plans and calculations have been re-submitted to CLV Pubic Works Dept. on 04-14-2021. See CLV comment #4 above.

Comment 2: Address maintenance responsibility for the proposed RCP within the 30-ft CLV drainage easement connection to the existing 12'x8' RCB. Coordinate with the City of Las Vegas on the public/private separation and revise as required.

Response: The plans have been revised to include a call out on plan sheets C2.3 and C2.4 to address the maintenance responsibility of the RCP's within the CLV easement. The notes are as follows: "18/30 inch RCP STORM DRAIN TO BE

PRIVATELY MAINTAINED” with leader pointing to area inside the CLV easement.

Comment 3: The District recommends the angle of confluence from the proposed laterals to the main line facility to not exceed 45° when grading allows and for connections to the main line facility not create conditions of adverse flow in the laterals. Verify with Section 802.6.1 of the HCDDM and revise as required.

Response: The total flow from the site is 34 cfs, 6 cfs from the northern most connection and 28 cfs from the southernmost connection. The incoming flows into the box from this development is less than 3% of the existing flow of in the RCB. The energy loss equation in table 803, sheet 3 of 3, of the HCDDM was used to calculate the losses at each of the two points of connections. See attached calculation sheet. The calculated loss at the 90° confluence of the 18” RCP with the 12’x8’ RCB was computed as 3.45 feet. The calculated loss at the 90° confluence of the 30” RCP with the 12’x8’ RCB was computed as 3.50 feet. Since the incoming flows are less than 3% of the existing flow in the RCB, these numbers don’t make much sense as the losses should be much less. The consensus among the other Engineers in the office is that the equation used only produces realistic loss values when the incoming flow is 10%, or more, of the flow in the main line. Re-running the calculation using the factor for a 45° confluence only reduced the losses to 2.31 feet and 2.35 feet respectively. In light of the above, we are requesting to be allowed to keep the design as is with 90° confluences.

Comment 4: The project proposes a Jensen precast drop structure and Detail 20/C5.1 notes “Fore complete design and product information, contact Jensen Precast”. The plan set should be standalone and all structural plans and details should be included on the plan set. Coordinate with the City of Las Vegas and address as required.

Response: The notes referenced in Details 20 and 23 of sheet C5/1 have been changed to read “SEE SHEET C2._ FOR INSTALLATION DETAILS.” It should be noted that that verbiage was part of the original product detail that was provided directly from Jensen Precast.

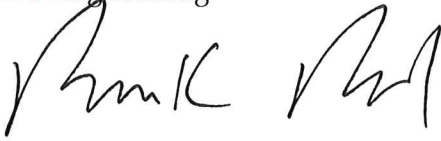
Comment 5: Note that per District’s Policies and Procedures Manual, Section VIII.D.13 Uniform Regulations for the Control of Drainage, the lead Entity shall provide As-Built plans for record drawing to the District after completion and final inspection of such privately installed flood control facilities that have a regional flood control significance.

Response: This requirement has been noted and shared with the Developer.

If you have any questions or require additional information please do not hesitate to contact us.

Sincerely,

RCI Engineering

A handwritten signature in black ink, appearing to read 'Brian K Reed', written over the company name.

Brian K Reed, P.E.
Project Engineer

CITY OF LAS VEGAS			DATE:
INTER-OFFICE MEMORANDUM			January 4, 2021
TO: Land Development Services Department of Building & Safety			FROM: Jennifer Shinn, P.E. Flood Control, Engr. Associate Department of Public Works
SUBJECT:	Drainage Study for:		COPIES TO:
	Rancho Multi Family		RCI Engineering
Cross Streets:	Decatur Boulevard and Airport Drive		Edward Homes
File Number:	F:\Depot\DSMemos\DS5380B.doc		Bart Anderson, P.E., DevCo
Parcel Number:	139-18-410-012		CCRFCD
Zoning Action:	SDR-73295		NDOT
FEMA Flood Zone	YES	NO	X
Proposed Storm Drain	YES	X	NO

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	10/26/2020	11/23/2020	See Comments Below	\$400.00	4044499: \$400
2 nd Submittal	12/16/2020	1/4/2021	Conditionally Approved	\$400.00	4105125: \$400
			TOTAL FEES (LDDRS):	\$800.00	----

REMARKS:

The Drainage Study for the subject project has been reviewed and:

	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
X	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
	is conditionally approved subject to Clark County Public Works Department concurrence.
X	is conditionally approved subject to Nevada Department of Transportation concurrence

***** The Conditional Approval of this Drainage Study is to allow the engineer/developer to submit the Improvement Plans to City Land Development Only**

***** Do not submit the Drainage Study to Clark County Regional Flood Control District (CCRFCD) prior to the Structural Design and Calculations being approved by the City Building & Safety Department**

The following are comments pertaining to the subject site specific drainage study and grading plans:

1. Sites with a grade difference of 2 feet above or below existing grades are required to have approval from the City of Las Vegas Planning and Development Department. The engineer must submit copies of the grading plans and detail sheet with a letter justifying the grade difference to the City Planning Department (229-6301). The engineer must provide City Planning approval prior to final acceptance of the drainage study.
2. **This drainage study is acceptable in concept;** however, *City of Las Vegas* will not formally accept the study until the *Clark County Regional Flood Control District (CCRFCD)* has issued a letter of concurrence. The engineer should contact the CCRFCD to confirm that they have begun their review.

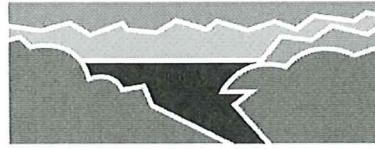
3. The project proposes to construct facilities and/or increase flows within *Nevada Department of Transportation* (NDOT) right-of-way. The engineer must contact NDOT for encroachment permit for the proposed project. NDOT concurrence is required prior to final approval of the drainage study.
4. The proposed storm drain connection to the existing CCRFCD RCB requires a structural detail and calculations. All special structures and mainline storm drain connection require details and structural calculations to be reviewed by the *City of Las Vegas Building & Safety Department*. Approval by the *Building Department* must be obtained prior to the final approval of the subject drainage study.
5. **2nd Request:** Revise the Q_{100} flow rates shown on the Profiles for DI #1 and DI#2.

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the *Nevada Division of Environmental Protection* a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see <http://ndep.nv.gov/bwpc/storm01.htm> or call (775) 687-9429.

END OF REMARKS
HDR/JKS

T/R/S: T20S/R61E/S18
AREA M-18

REGIONAL FLOOD CONTROL DISTRICT



Steven C. Parrish, P.E.
General Manager/Chief
Engineer

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February 10, 2021

Mr. Oh Sang Kwon, P.E.
City of Las Vegas Department of Public Works
333 North Rancho Drive
Las Vegas, NV 89106

DISTRICT COMMENT(S): **RANCHO MULTI FAMILY
(DS5380B) (RFCD No. 21-13719)**

Dear Mr. Kwon:

Clark County Regional Flood Control District (District) reviewed Technical Drainage Study dated October 26, 2020, and Addendum No. 1 dated December 16, 2020 for above-mentioned project as submitted by RCI ENGINEERING. In addition, District is in receipt of the Conditional Letter of Acceptance from City of Las Vegas Department of Public Works dated January 4, 2021.

District has the following comment(s):

1. Per the City of Las Vegas, the project proposes multiple new penetrations and connection ties to the existing 12'X8' RCB of the District's MPU facility LVRA 0012 and requires structural plans, calculations, and approval by the City of Las Vegas prior to District submittal and concurrence. The Structural Approval Documentation must be provided with the next submittal and prior to District concurrence.
2. Address maintenance responsibility for the proposed RCP within the 30-ft CLV drainage easement connecting to the existing 12'x8' RCB. Coordinate with the City of Las Vegas on public/private separation and revise as required.
3. The District recommends the angle of confluence from proposed laterals to the main line facility to not exceed 45° when grading allows and for connections to the main line facility not create conditions of adverse flow in the laterals. Verify with Section 802.6.1 of the HCDDM and revise as required.
4. The project proposes a Jensen precast drop structure and Detail 20/C5.1 notes "For complete design and product information, contact Jensen Precast". The plan set should be standalone and all structural plans and details should be included on the plan set. Coordinate with the City of Las Vegas and address as required.
5. Note that per District's Policies and Procedures Manual, Section VIII.D.13 Uniform Regulations for the Control of Drainage, the Lead Entity shall provide As-Built plans or record drawings to the District after completion and final inspection of such privately installed flood control facilities that have a regional flood control significance.

District's review of this project was limited to issues of Regional Flood Control Significance as defined in *Uniform Regulations for the Control of Drainage*.

The consultant must be advised to submit any revisions to the Technical Drainage Study and Improvement Plans to City of Las Vegas Department of Public Works for review/re-approval. District review of any such revisions will commence upon City of Las Vegas Department of Public Works' acceptance.



Mr. Oh Sang Kwon, P.E.
February 10, 2021
Page 2 of 2

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, information submitted by RCI ENGINEERING may be superseded. Compliance with regulatory elements and design standards specified in *Uniform Regulations for the Control of Drainage* does not imply a guarantee that properties will be free from flooding or flood damage.

The District, its officials, or employees assume no liability for information, data, or conclusions presented by consulting engineers. We, therefore, make no warranties, either expressed or implied, in conducting this review.

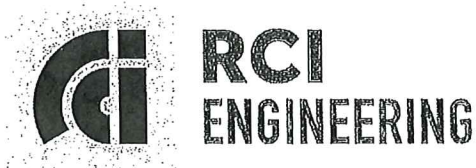
STEVEN C. PARRISH, P.E.
General Manager/Chief Engineer

BY: 
Ching Wang (Feb 11, 2021 15:27 PST)
Ching C. Wang, P.E.
Senior Civil Engineer

CCW:jr

c: BRIAN REED, P.E., RCI ENGINEERING

P:\Letters and Memos\Local Drainage\Land Development & Drainage\2021\L-21-13719comment.doc



December 8, 2020

City of Las Vegas
Planning Department
333 N. Rancho Drive
Las Vegas, NV 89106

PLANS APPROVED
PLANNING
Dept. of Planning
City of Las Vegas, Nevada

LHM 12/10/20
2' GRADE DIFFERENCE ONLY
Conforms to the minimum requirement of
LVMC Title 19.06.030.B.1. Grading Plan
Development shall meet the Conditions of
Approval. Make this a final plan for approval.
Plan is Not a Permit to Violate Any Ordinance.

RE: Justification Letter for Rancho Apartments
APN 139-18-410-012

On behalf of our client, Edward Homes, we have prepared the following justification letter in support of a vertical grade difference of two (2) feet or greater adjacent to existing grade for the subject parcel located in the Rancho Air Center, aka Smoke Ranch Commercial Development, being the north portion of APN 139-18-410-012.

Per City of Las Vegas Title 19 Section 19.06.030.B.1 *when the natural grade of a lot is proposed to be raised more than two feet at any point from existing grade a review of the proposed grading plan is required by the Department of Public Works to determine if the proposed grading plan will not be incompatible or out of harmony with the surrounding area.*

This letter and attached grading plans for the subject development are intended to provide clarification of the areas of grade difference in excess of two feet as well as identify that there will be no negative impact to adjacent developments in relation to Title 19 requirements. The proposed development has direct frontage on Decatur Blvd right of way and Rancho Drive (NDOT Business Route 95) right of way. On the north is a church and to the south is Airport Drive, a private street that is part of the Rancho Air Center.

There are several existing conditions and constraints that required the site to be in a fill condition along most of its boundary. First, there is an existing CCRFCD 8'x12' box culvert that is located inside the parcel along Rancho. This facility is well within the developable area of the site and was installed with just 3' feet of cover. As we intend to construct private drive isles and parking over the box, adequate cover must be maintained. Second, the site is relatively flat at approximately 1.2% draining from the northwest to the southeast. In addition, existing off site conditions don't allow for much if any on-site runoff to enter any of the perimeter streets. Therefore the site must drain to the southeast corner and all onsite runoff must be captured and delivered into the above mentioned box culvert via catch basins and underground storm drain pipes. As all onsite runoff must be captured, the use of retaining walls is necessary along the perimeter to the site to bring it into the onsite drive isle and swale system that takes it to the said catch basins.

SDE-73295
RPP19
PRJ-73073

500 South Rancho Drive, Suite 17 - Las Vegas, NV 89106
Main 702.453.0800 www.RCINEVADA.com Fax 702.453.0801



Worst case along the north boundary (adjacent to existing church) is 4 feet of fill. Worst case along the east boundary (Rancho Drive) is 2.2 feet of fill which. Worst case along the south boundary (Airport Drive - Private) is 3.5 feet of fill. Worst case along the west boundary (Decatur Drive) is 4.5 feet of fill. Note, all retaining walls will extend 1 foot above the highest adjacent finished grade (fill). There will be a 6 foot high perimeter view fence on top the retaining walls.

This development is in compliance with all other City of Las Vegas zoning and development requirements. Should you have any questions or wish to further discuss this application please contact me at (702) 453-0800.

Sincerely,

RCI Engineering

A handwritten signature in black ink, appearing to read 'Brian Reed', written over the printed name.

Brian Reed, P.E.



STEVE SISOLAK
Governor

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

1263 S. Stewart Street
Carson City, Nevada 89712

Kristina L. Swallow, P.E., *Director*

In Reply Refer to:

December 29, 2020

BRIAN K. REED
RCI ENGINEERING
500 SOUTH RANCHO DRIVE, SUITE 17
LAS VEGAS, NV 89106

TECHNICAL DRAINAGE STUDY

RANCHO MULTI FAMILY
RANCHO DRIVE
CLARK COUNTY

Mr. Reed:

The Nevada Department of Transportation (NDOT) Hydraulics Division has received and reviewed the following document(s) for the above-referenced project.

Document:	Dated:
Technical Drainage Study for Rancho Multi Family	October 2020
Plan sheets C0.0-0.1, C2.0-2.5, C4.0-4.1, C5.0-5.1	10/22/2020
NDOT Drainage Information Form	12/11/2020
Technical Drainage Study Waiver Request Letter	12/11/2020

The drainage design information presented in the reviewed document(s):

	is acceptable in concept. Final Hydraulic Division approval will be based on review of final design documents submitted with the NDOT Right-Of-Way Occupancy Permit application that must be submitted for this project.
	is acceptable in concept. Final Hydraulic Division approval will be based on review of final design documents submitted with the NDOT Right-Of-Way Occupancy Permit application that must be submitted for this project. The following comments should be addressed with the permit application:
	must be supplemented or modified to satisfy the following comment(s) before preliminary Hydraulic Division approval can be granted:
X	is acceptable in concept. The NDOT hydraulics division supports the Request for Waiver of Technical Drainage Study for the subject property.

All submittals regarding this project must be forwarded through (or copied to) the local NDOT District permitting office. All pertinent drainage design documents (including those previously submitted for preliminary review) must be submitted to the

local NDOT District permitting office with the Right-of-Way Occupancy Permit Application. All plans and reports must be signed and stamped by a Nevada registered civil engineer.

This waiver of Technical Drainage Study for the subject property is based on the above cited documents that were reviewed by NDOT hydraulics staff. Any changes to these documents would require additional review. Please submit this letter, along with the original Waiver Request Letter, to the local NDOT District permitting office as part of the Right-of-Way Occupancy Permit Application.

No liability is assumed by the Department in performing this review. Verification and acceptance of all background information, design data and conclusions is the responsibility of the consulting engineer.

Please call me at (775) 888-7720 or email me at ckuhn@dot.nv.gov should you have any questions.

PLEASE NOTE THAT DUE TO THE CURRENT HEALTH SITUATION, WE WILL ONLY BE SENDING ELECTRONIC VERSIONS OF TECHNICAL DRAINAGE STUDY APPROVALS/DENIALS UNTIL FURTHER NOTICE. PLEASE CONSIDER THIS LETTER AS FORMAL APPROVAL/DENIAL OF THE SUBJECT TECHNICAL DRAINAGE STUDY. WHEN THE CURRENT HEALTH SITUATION IS RESOLVED, WE WILL RESUME SENDING BOTH ELECTRONIC AND HARD COPIES OF CORRESPONDENCE REGARDING TECHNICAL DRAINAGE STUDIES.

Sincerely,

DocuSigned by:


B37B9DADAEFF4EA...

Christopher Kuhn, P.E.
Professional Engineer

c: Mario Gomez, District 1 Assistant Engineer
Charles Molisee, District I Permits
Mike Alameda, Associate Engineer Right of Way Carson City
Linda Olguin, District I Permits
Brian K. Reed, RCI ENGINEERING (email: breed@rcinevada.com)

ENERGY LOSS EQUATION

$$H_L = (V_2^2 / 2g) - K_j (V_1^2 / 2g)$$

18" PIPE to 12x8' Box

$$V_1 \text{ of Box} = 17.187 \text{ ft/s}^2$$

$$V_2 \text{ of Box} = 17.208 \text{ ft/s}^2$$

$$K_j \text{ for } 90^\circ = 0.25$$

$$H_L = \left(\frac{17.208^2 \text{ ft/s}^2}{2 \times 32.2 \text{ ft/s}^2} \right) - 0.25 \left(\frac{17.187^2 \text{ ft/s}^2}{2 \times 32.2 \text{ ft/s}^2} \right) = 4.60 - 1.15 = 3.45 \text{ ft}$$

$$\text{If .50 for } 45^\circ \text{ used, } H_L = 2.31 \text{ ft}$$

30" PIPE to 12x8' Box

$$V_1 \text{ of Box} = 17.208 \text{ ft/s}^2$$

$$V_2 = 17.300$$

$$K_j \text{ for } 90^\circ = 0.25$$

$$H_L = \left(\frac{17.300^2 \text{ ft/s}^2}{2(32.2 \text{ ft/s}^2)} \right) - 0.25 \left(\frac{17.208^2 \text{ ft/s}^2}{2(32.2 \text{ ft/s}^2)} \right) = 4.65 - 1.15 = 3.50 \text{ ft}$$

$$\text{If .50 for } 45^\circ \text{ used, } H_L = 2.35 \text{ ft}$$

Total flow entering 12x8' Box = 32 cfs

$$\frac{32 \text{ cfs}}{1,256 \text{ cfs}} = 0.025$$

30 Flow from site entering
box = 2.5% of Total Flow

BEFORE DEVELOPMENT

Channel Analysis

Type: Rectangular

Define...

Side Slope 1 (Z1): 0.0

H : 1V

Side Slope 2 (Z2): 0.0

H : 1V

Channel Width (B): 12.0

(ft)

Pipe Diameter (D): 0.0

(ft)

Longitudinal Slope: 0.006

(ft/ft)

☐ Override Default

Manning's Roughness: 0.0140

☐ Use Lining

Lining Type: Woven Paper Net

☒ Enter Flow: 1256.000 (cfs)

☐ Enter Depth: 6.090 (ft)

Calculate

Plot...

Compute Curves...

OK

Cancel

AFTER 18" PIPE

Channel Analysis

Type: Rectangular Define...

Side Slope 1 (Z1): 0.0 H: 1V

Side Slope 2 (Z2): 0.0 H: 1V

Channel Width (B): 12.0 (ft)

Pipe Diameter (D): 0.0 (ft)

Longitudinal Slope: 0.006 (ft/ft)

☐ Override Default

Manning's Roughness: 0.0140

☐ Use Lining

Lining Type: Woven Paper Net

☒ Enter Flow: 1262.000 (cfs)

☐ Enter Depth: 6.111 (ft)

Calculate

Plot... Compute Curves...

OK Cancel

Parameter	Value	Unit
Flow	1262.0...	cfs
Depth	6.111	ft
Area of Flow	73.337	sq ft
Wetted Perimeter	24.223	ft
Hydraulic Radius	3.028	ft
Average Velocity	17.208	fps
Top Width (T)	12.000	ft
Froude Number	1.227	
Critical Depth	7.003	ft
Critical Velocity	15.017	fps
Critical Slope	0.00419	ft/ft
Critical Top Width	12.000	ft
Max Shear Stress	2.288	lb/ft ²
Avg Shear Stress	1.134	lb/ft ²

AFTER 30" PIPE

Channel Analysis

Type: **Rectangular** Define...

Side Slope 1 (Z1): **0.0** H : 1V

Side Slope 2 (Z2): **0.0** H : 1V

Channel Width (B): **12.0** (ft)

Pipe Diameter (D): **0.0** (ft)

Longitudinal Slope: **0.006** (ft/ft)

☐ Override Default

Manning's Roughness: **0.0140**

☐ Use Lining

Lining Type: **Woven Paper Net**

☒ Enter Flow: **1290.000** (cfs)

☐ Enter Depth: **6.214** (ft)

Calculate

Plot... **Compute Curves...** **OK** **Cancel**

Parameter	Value	Unit
Flow	1290.0...	cfs
Depth	6.214	ft
Area of Flow	74.567	sq ft
Wetted Perimeter	24.428	ft
Hydraulic Radius	3.053	ft
Average Velocity	17.300	fps
Top Width (T)	12.000	ft
Froude Number	1.223	
Critical Depth	7.106	ft
Critical Velocity	15.127	fps
Critical Slope	0.00421	ft/ft
Critical Top Width	12.000	ft
Max Shear Stress	2.326	lb/ft ²
Avg Shear Stress	1.143	lb/ft ²