



unity

ART PIPELINE



MAYA



SUBSTANCE
PAINTER



SUBSTANCE
DESIGNER



ZBRUSH

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unity

NEUTRAL LIGHT SETUP || **UBER SHADER USAGE**

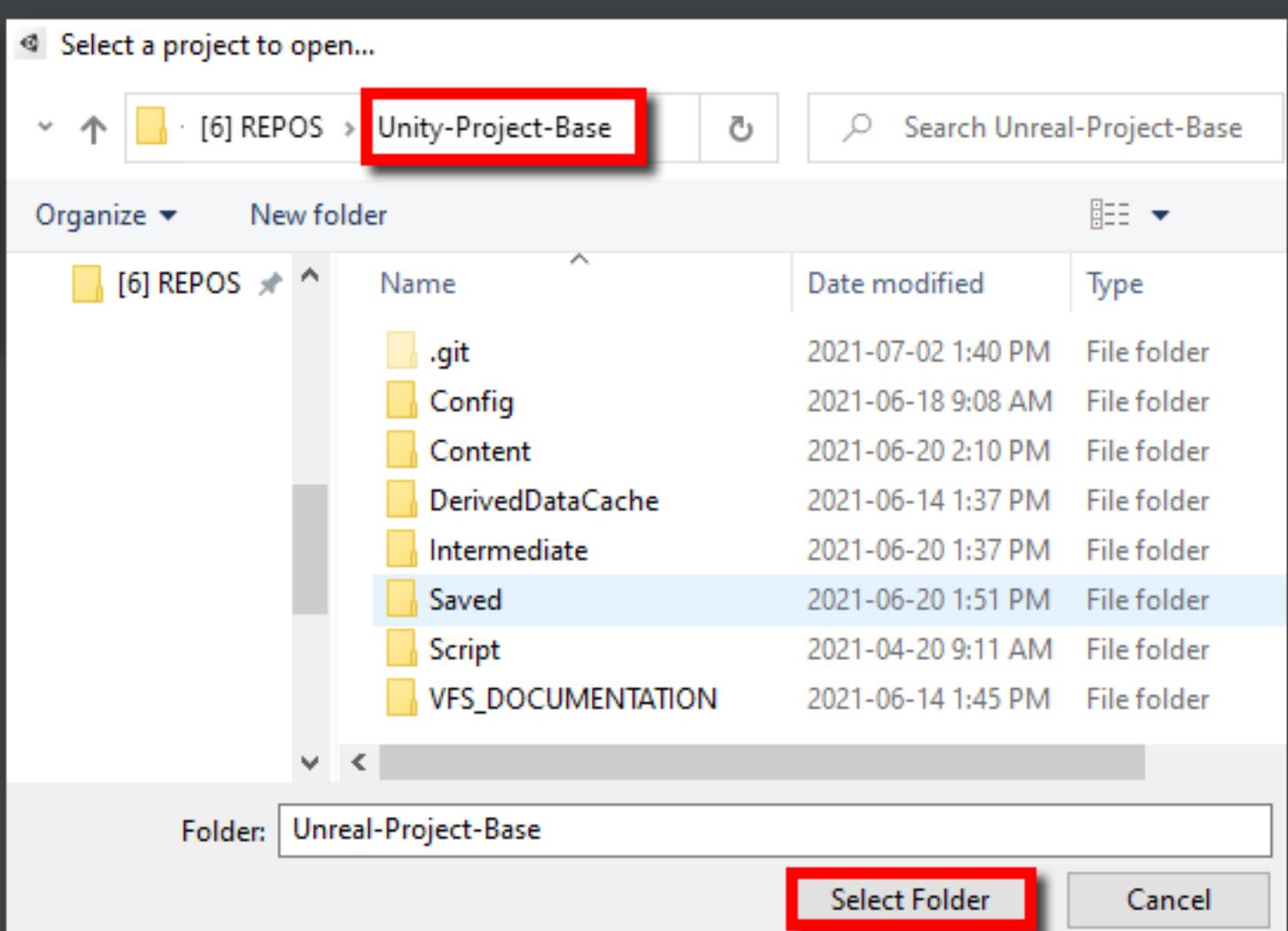
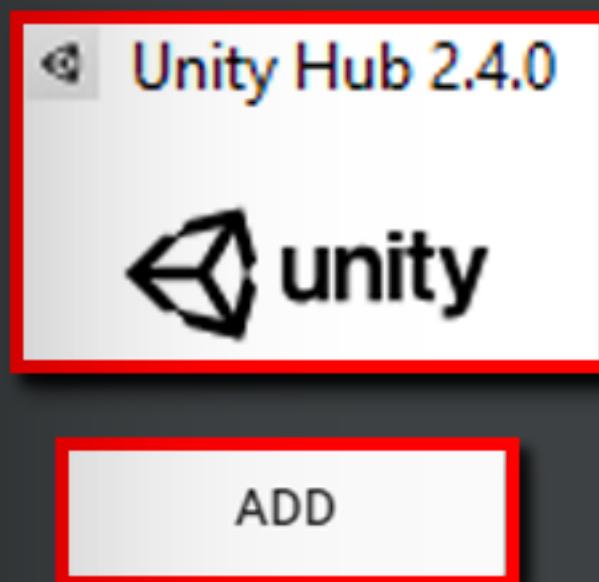
GEOMETRY IMPORT || **TEXTURE IMPORT** || **ANIMATION IMPORT**

NEUTRAL LIGHT SETUP

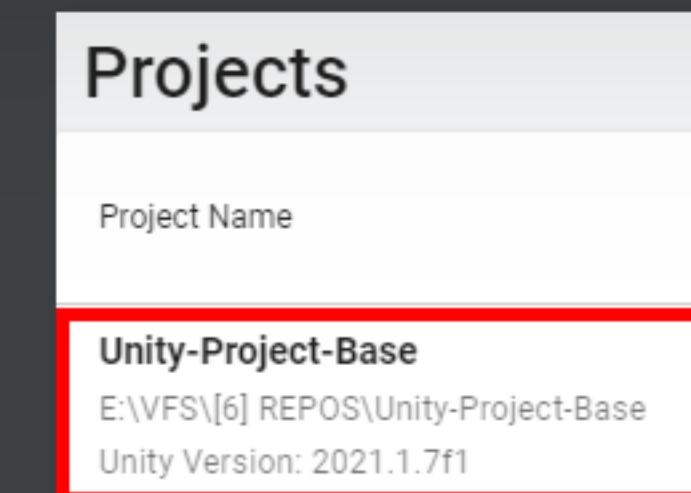
1 OPEN UP SOURCETREE & CLONE THE LINK BELOW



<https://github.com/vfs-sct/Unity-Project-Base.git>



2 OPEN UP UNITYHUB & ADD YOUR UNITY-PROJECT-BASE



3 OPEN UP YOUR UNITY-PROJECT-BASE



USE THIS PROJECT AS A STARTING POINT FOR YOUR PROJECT & TO TEST YOUR ASSETS

4

BACK

UBER SHADER USAGE



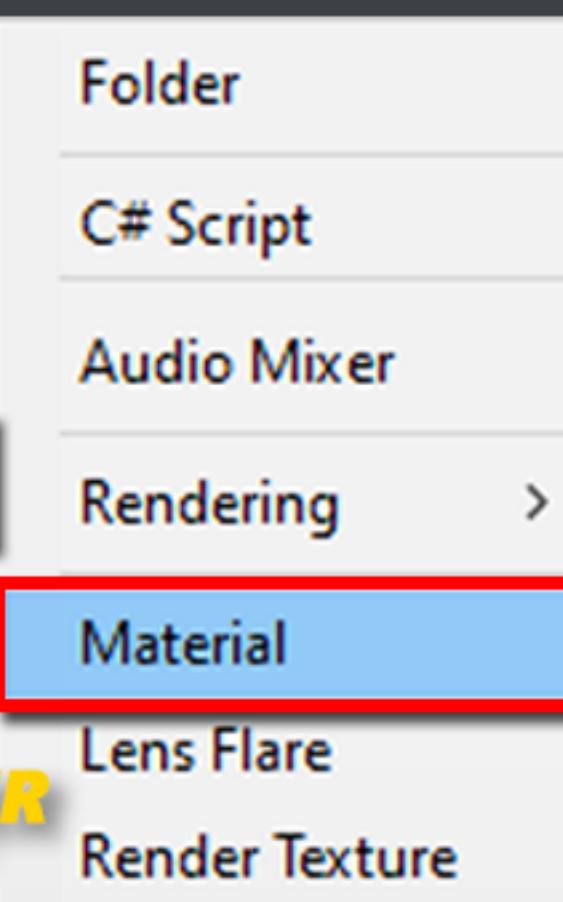
1

FIND THE
SHADERS
FOLDER



USE THE UBER SHADERS
UNLESS YOU NEED
SOMETHING SPECIFIC

2



Create >

3

RIGHT CLICK ON
THE MASTER SHADER
& CREATE A NEW
MATERIAL



Inspector



Steel Keg (Material)

Shader

VFS/UberBaked

Edit...

Surface Options

Surface Inputs

Base

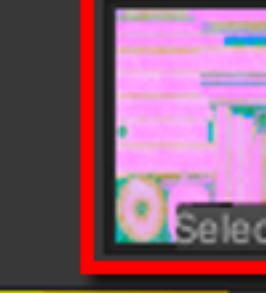
Base Color-Opacity (RGB-



Normal DX (RGB)



Mask AO-Ro-Me-Em (R-G)



Emissive Color



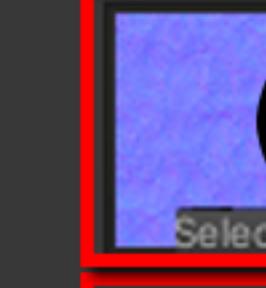
Blend (Procedural Dusting)

Use Blend Layer

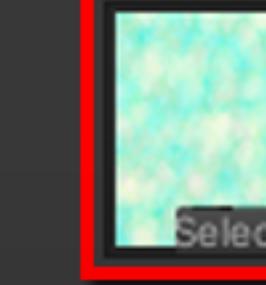
Blend Base Color-Opactor



Blend Normal DX (RGB)



Blend Mask He-Ro-AO-Mi



Falloff

1.5

Contrast



REPLACE EACH
OF THE MAPS
WITH YOUR
NEW ONES

4

USE THIS
SECTION TO
BLEND ANOTHER
SET OF TEXTURES
ON TOP OF YOUR
BASE TEXTURE

5

BACK

GEOMETRY IMPORT

1

**KEEP CONSISTANT NAMING
CONVENTIONS & USE THE PREFIX
SM FOR SEARCHING IN EDITOR**

Shotgun.fbx



2

**SELECT YOUR
STATIC MESH**

Inspector



Shotgun Import Settings

Open

Model Rig Animation Materials

Material Creation Mo Standard

sRGB Albedo Colors

Location

Use Embedded Materials

Textures

Extract Textures...

Materials

Extract Materials...



Materials are embedded inside the imported asset. Material assignments can be remapped below.

Remapped Materials

► On Demand Remap

Shotgun

None (Material)

Revert

Apply

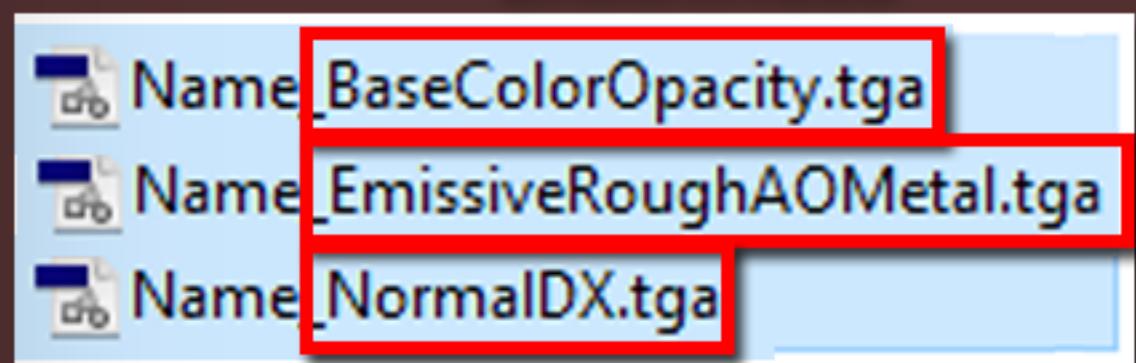
3

**THIS IS WHERE YOU
CAN DRAG & DROP
YOUR MATERIAL ONCE
YOU HAVE SET IT UP**

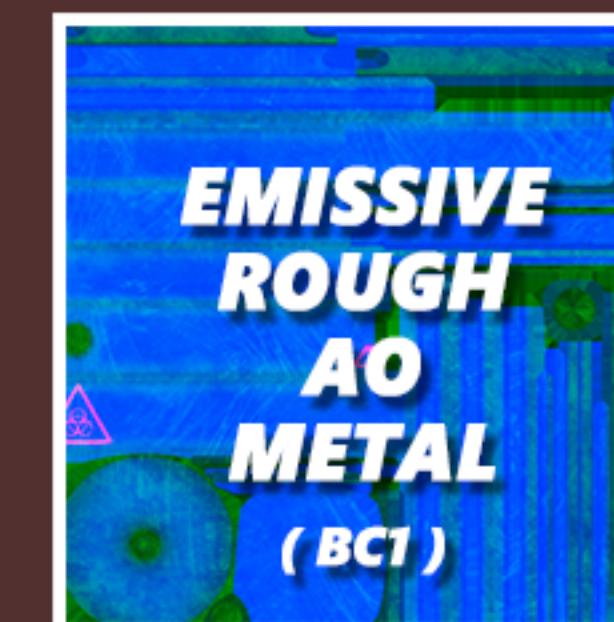
UBERBAKED TEXTURE IMPORT

1 KEEP CONSISTENT NAMING CONVENTIONS

2 REMOVE THE OPACITY OR EMISSIVE SECTIONS IF YOUR ASSETS DO NOT USE THESE CHANNELS



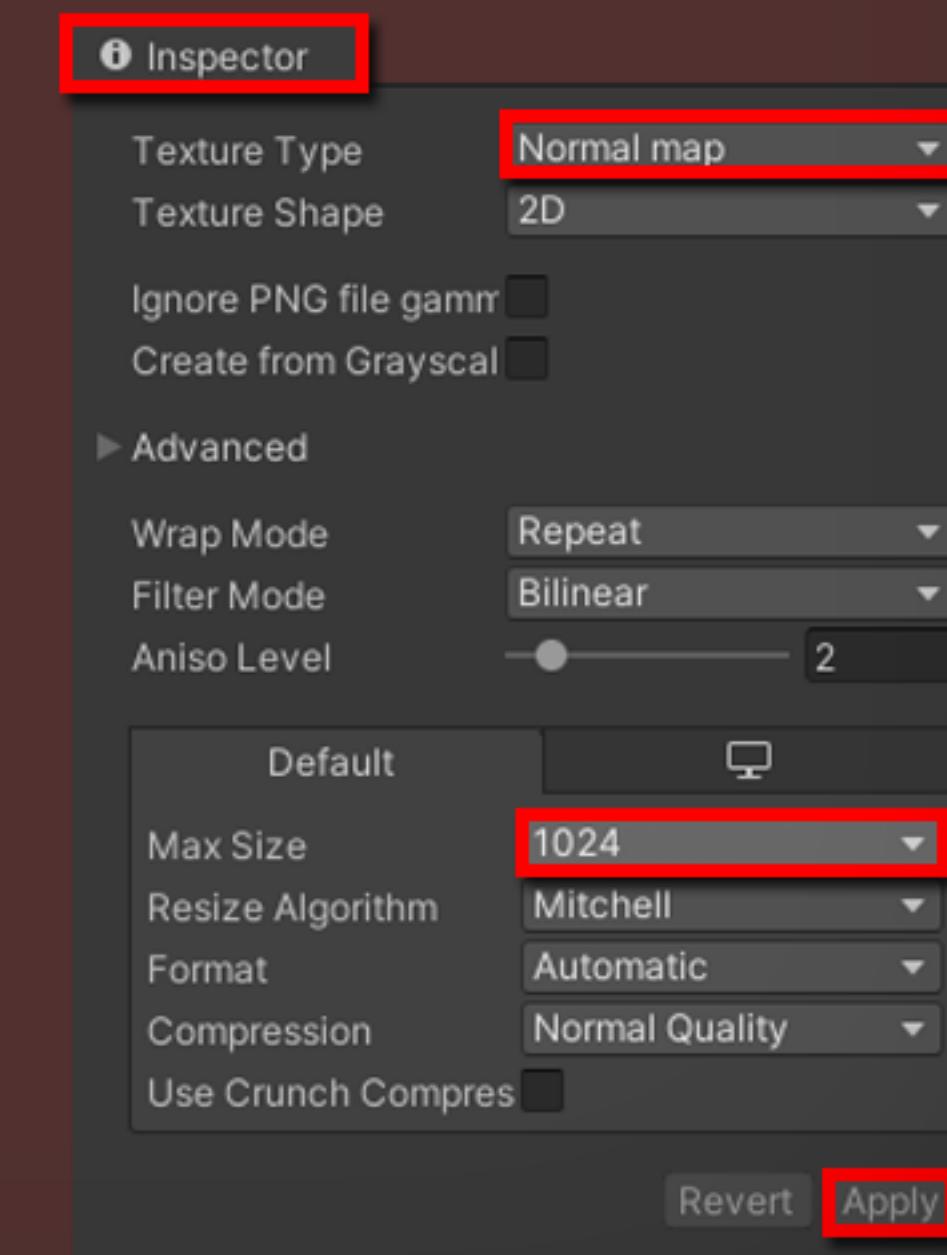
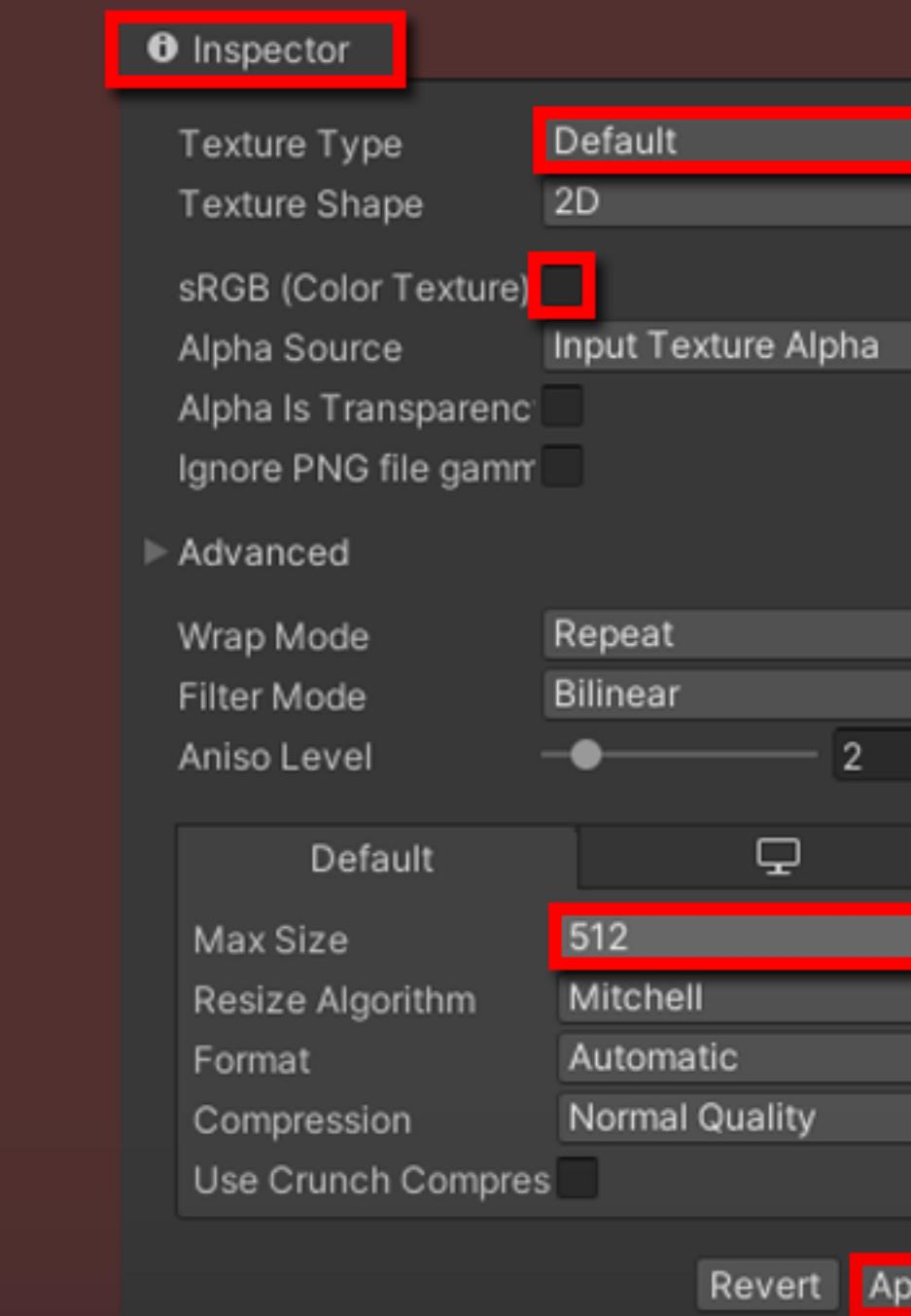
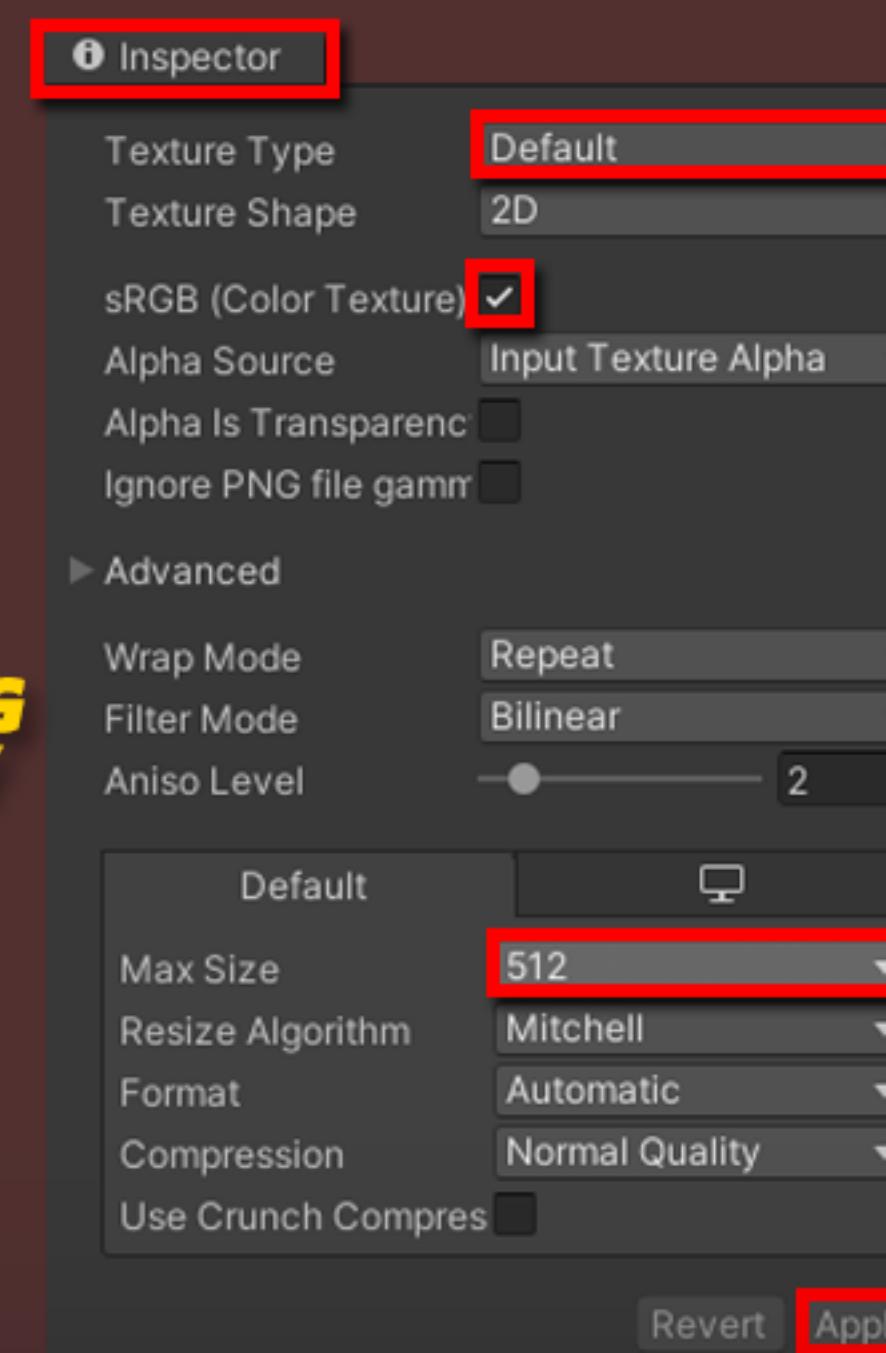
3 EACH TEXTURE WAS IMPORTED RAW AT 2048X2048, THEN IN ENGINE WAS REDUCED FOR RUN-TIME OPTIMIZATIONS



4 THE NORMAL MAP IS USUALLY 4 TIMES LARGER THAN THE OTHER TEXTURES

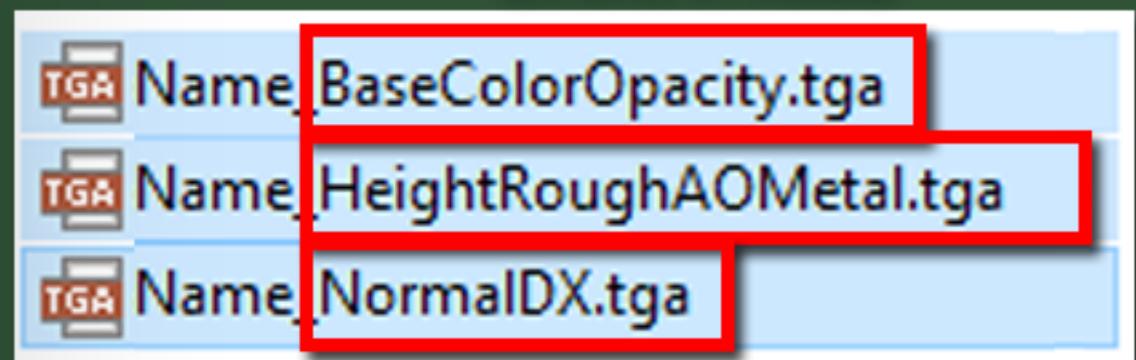


5 THESE SETTINGS ARE CRUCIAL IF YOU WANT YOUR SHADERS & LIGHTING TO WORK PROPERLY

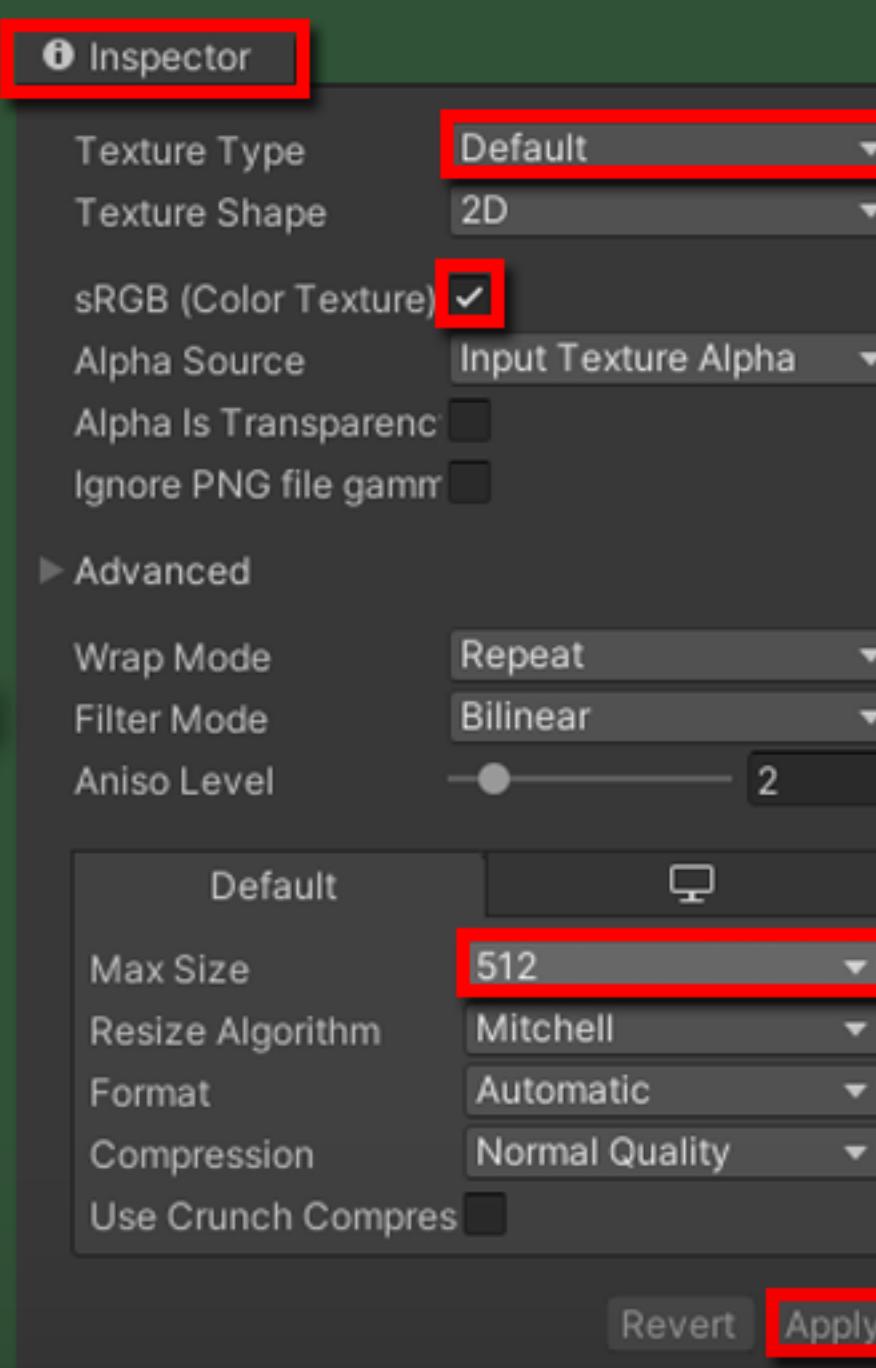


UBERTILED TEXTURE IMPORT

- 1 KEEP CONSISTENT NAMING CONVENTIONS
- 2 REMOVE THE OPACITY OR EMISSIVE SECTIONS IF YOUR ASSETS DO NOT USE THESE CHANNELS



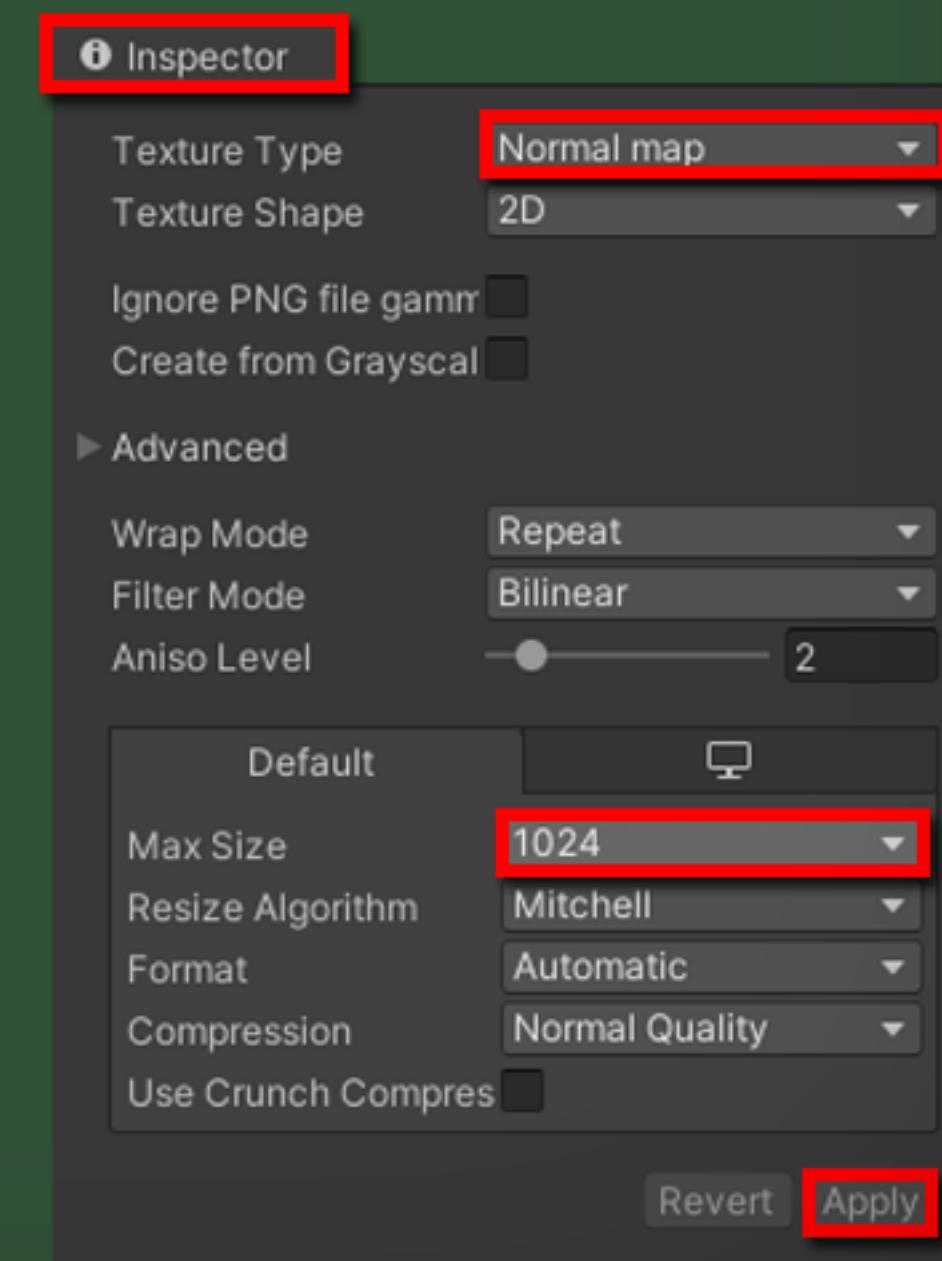
- 5 THESE SETTINGS ARE CRUCIAL IF YOU WANT YOUR SHADERS & LIGHTING TO WORK PROPERLY



3 EACH TEXTURE WAS IMPORTED RAW AT 2048X2048, THEN IN ENGINE WAS REDUCED FOR RUN-TIME OPTIMIZATIONS



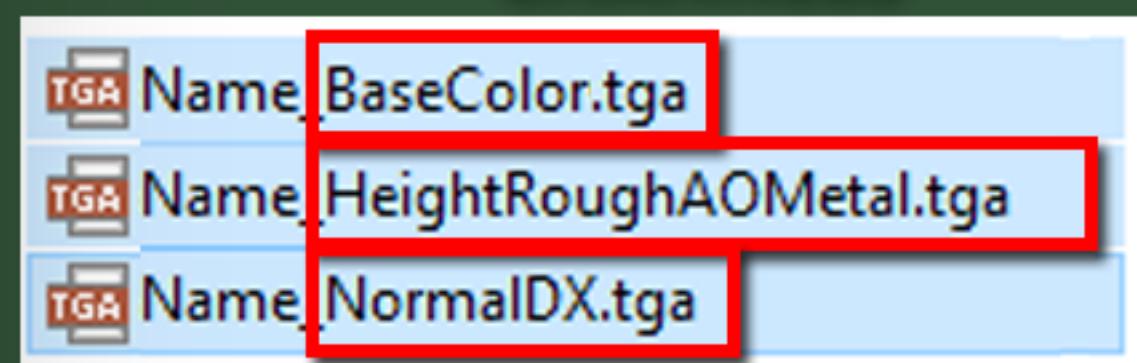
4 THE NORMAL MAP IS USUALLY 4 TIMES LARGER THAN THE OTHER TEXTURES



LANDSCAPE TEXTURE IMPORT

1 KEEP CONSISTENT NAMING CONVENTIONS

2 REMOVE THE OPACITY OR EMISSIVE SECTIONS IF YOUR ASSETS DO NOT USE THESE CHANNELS



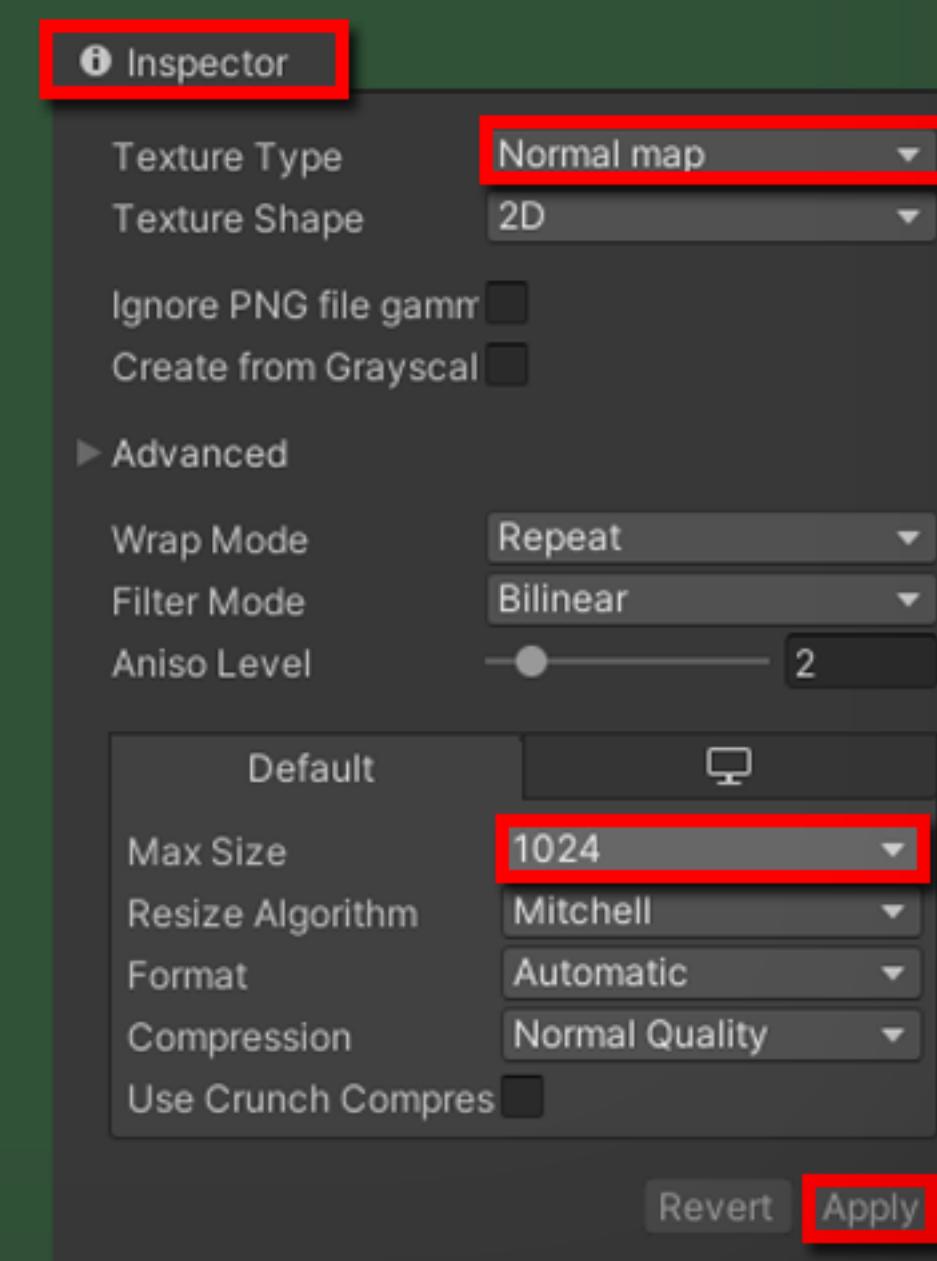
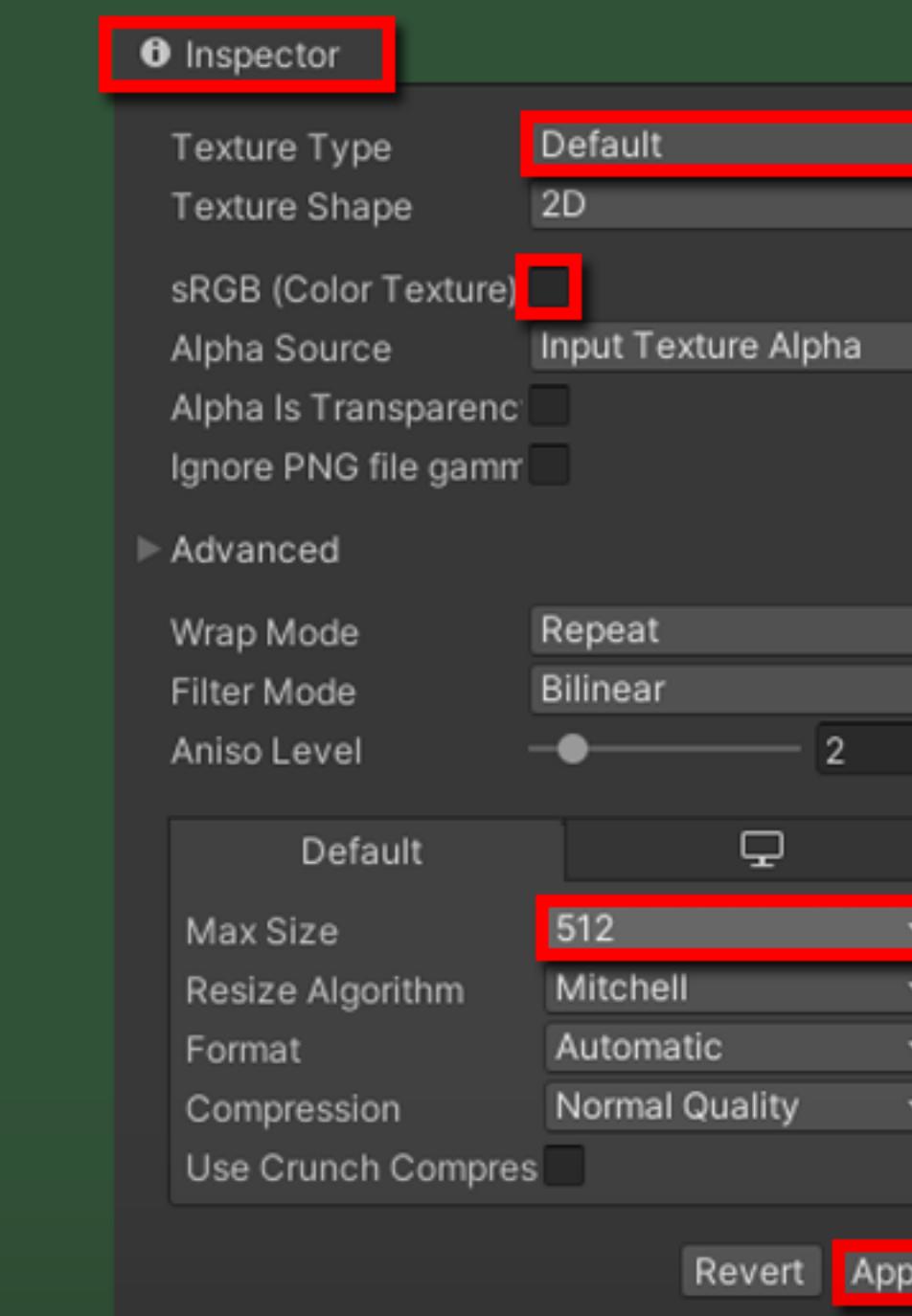
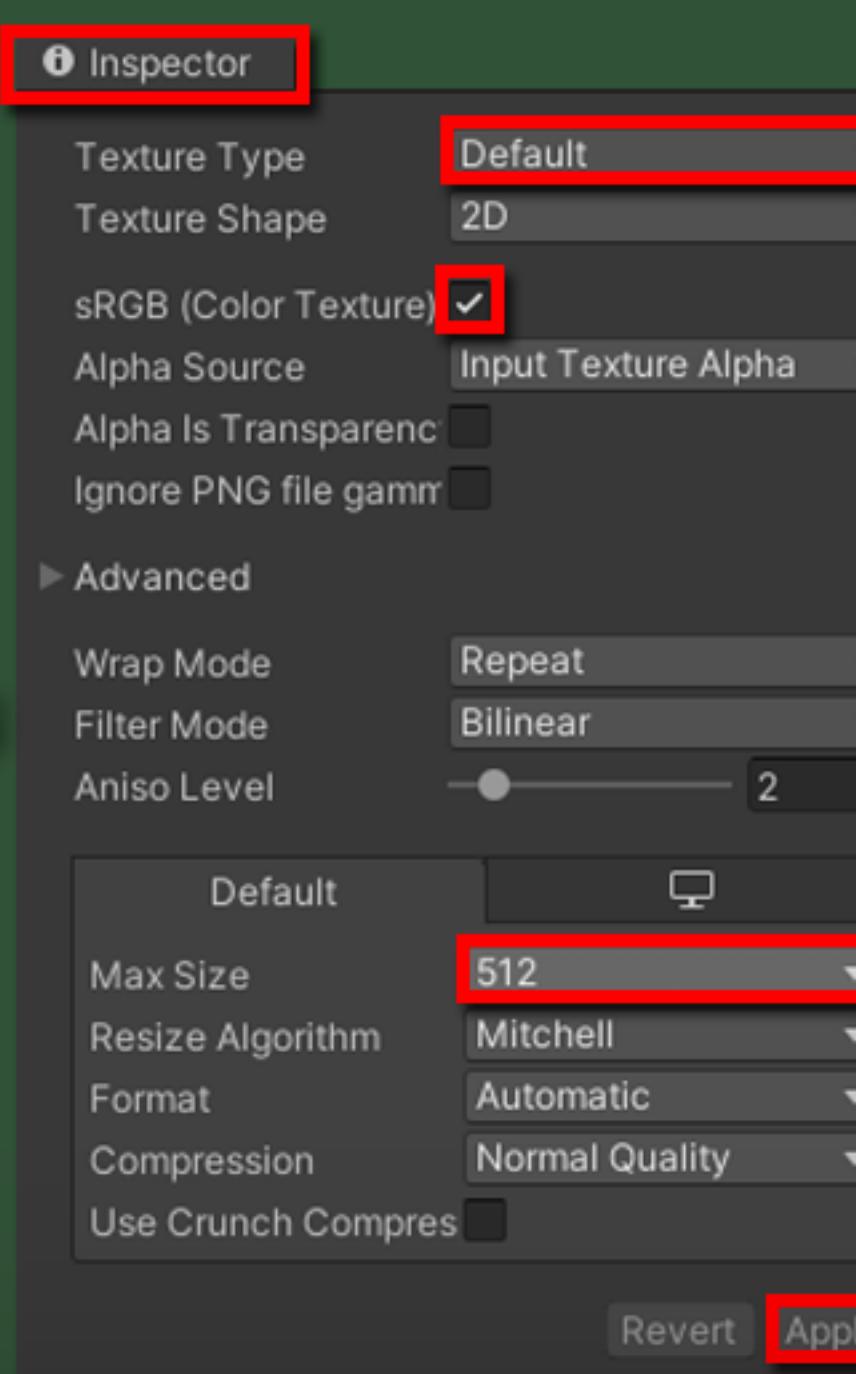
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5 THESE SETTINGS ARE CRUCIAL IF YOU WANT YOUR SHADERS & LIGHTING TO WORK PROPERLY

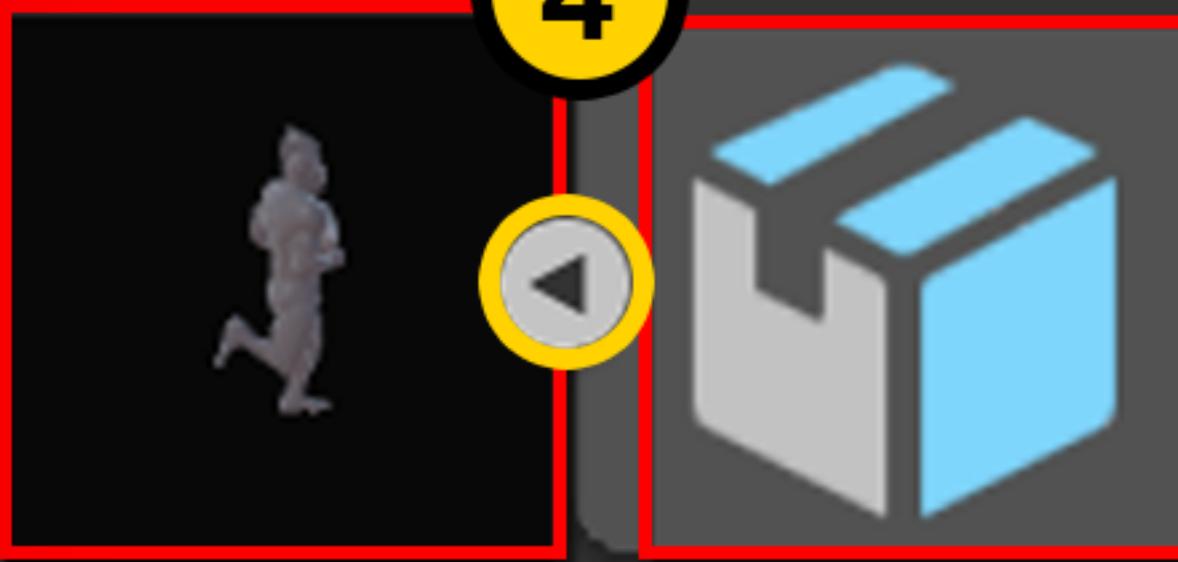


ANIMATION IMPORT [PART 1]

1 DRAG YOUR .FBX INTO THE PROJECT SECTION

EXPAND YOUR FBX CONTAINER

4



mocap_run_export

6

THIS IS THE SKELETON

7

THIS IS THE SKINNED MESH

8

THIS IS THE MATERIAL THAT WAS ASSIGNED IN MAYA

9

THIS IS THE MESH

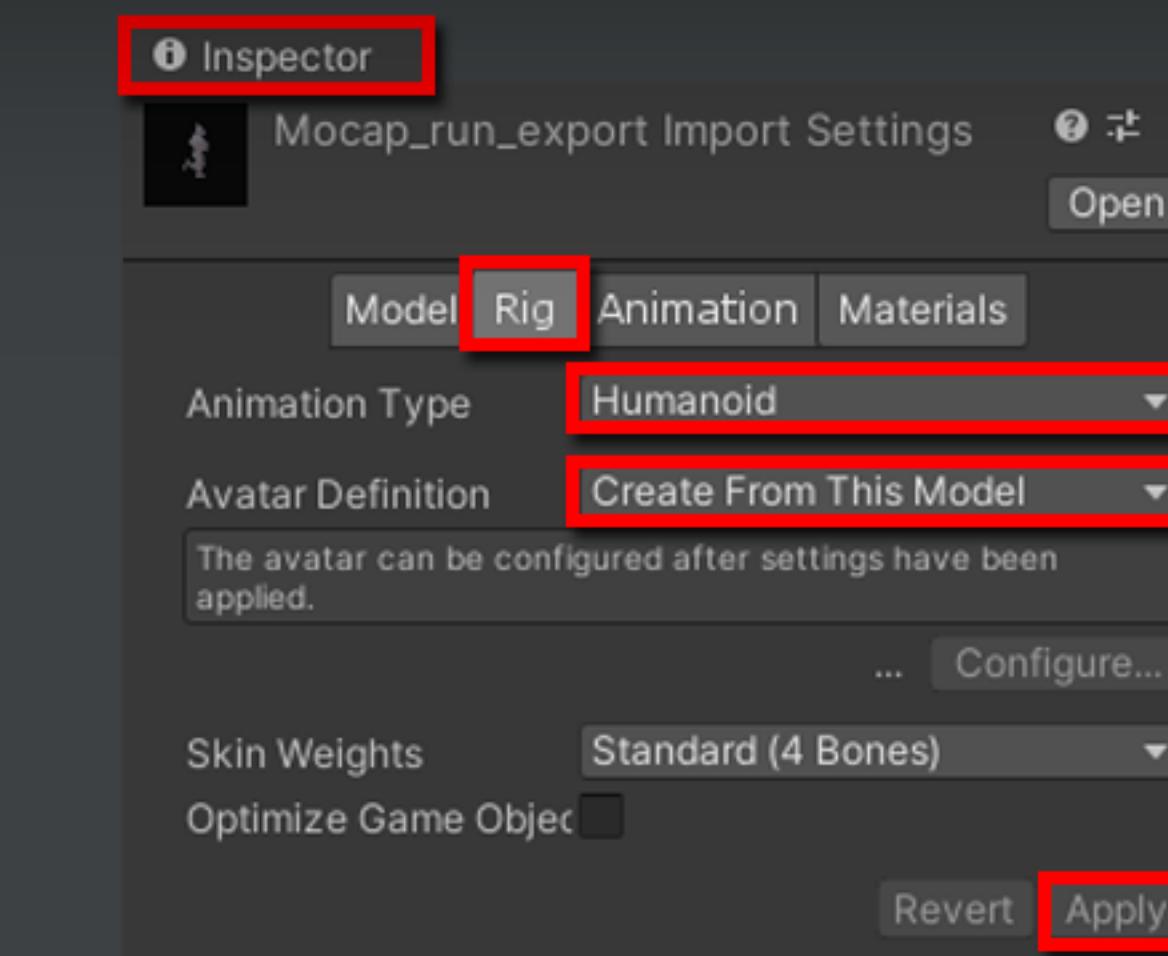
10

THIS IS THE ANIMATION CLIP

11

THIS IS THE AVATAR

USE THIS AVATAR FOR ALL THE ANIMATION CLIPS FOR THIS CHARACTER



2 SELECT HUMANOID FOR A HUMAN OR LEAVE IT ON GENERIC FOR EVERYTHING ELSE

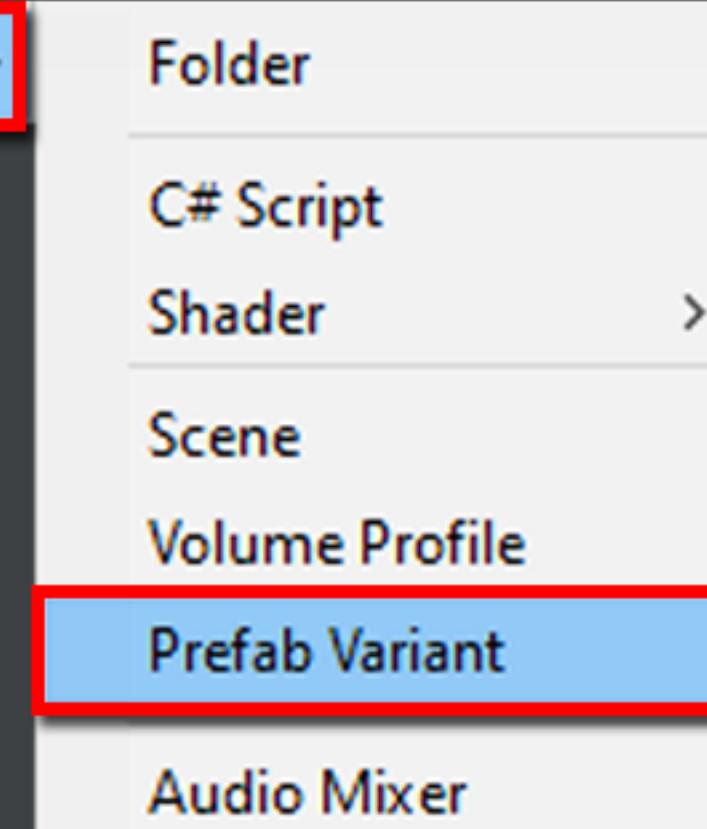
3 HIT APPLY

ANIMATION IMPORT [PART 2]

1

Create >

RIGHT CLICK ON THE FBX CONTAINER & CREATE A PREFAB VARIANT



2

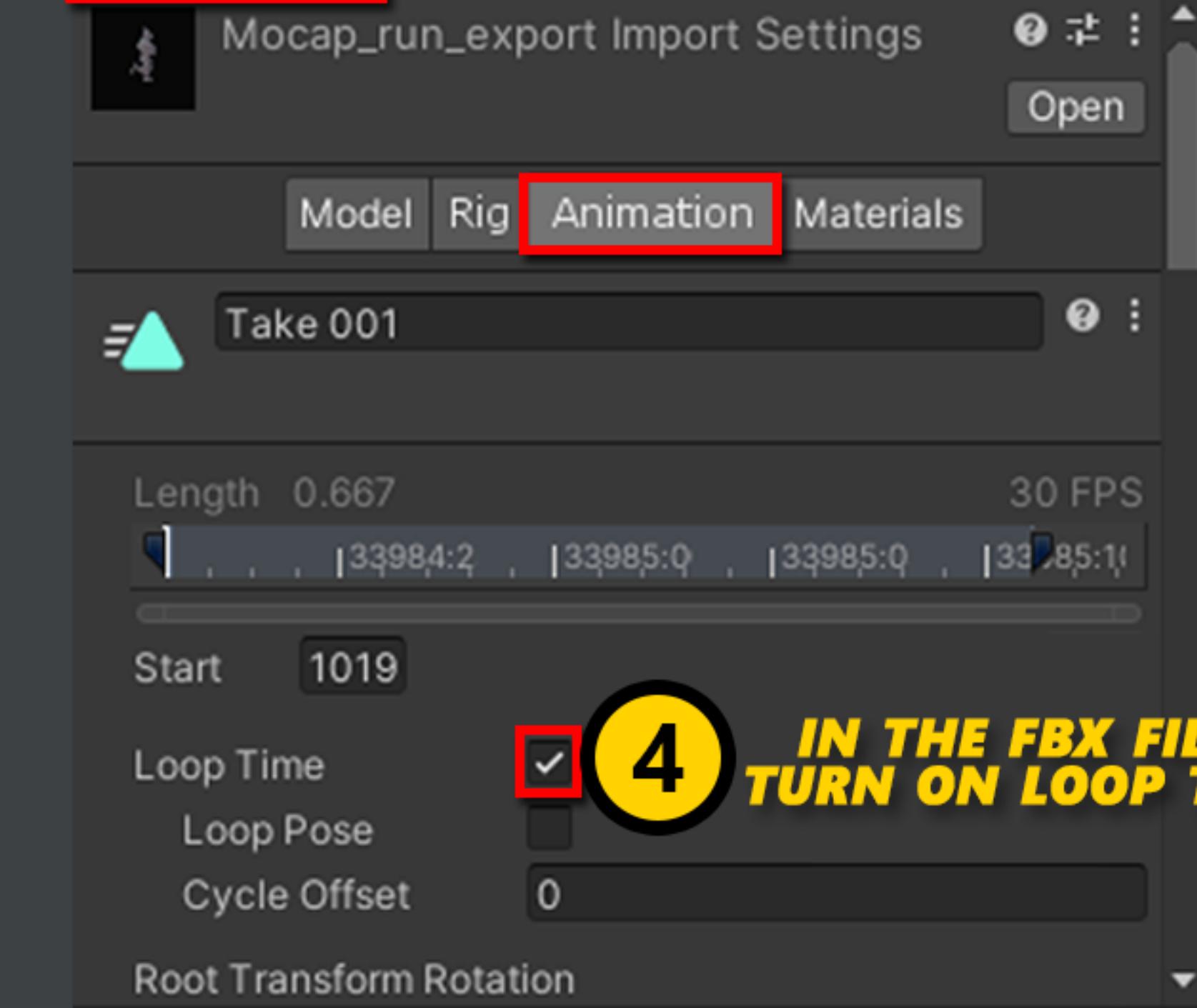
NOTE THE DIFFERENCE BETWEEN THE ICONS IN THE HIERARCHY



3

ONLY PREFABS CAN HAVE CODE ASSOCIATED AT RUNTIME & WE NEED THIS TO PLAY ANIMATION

Inspector

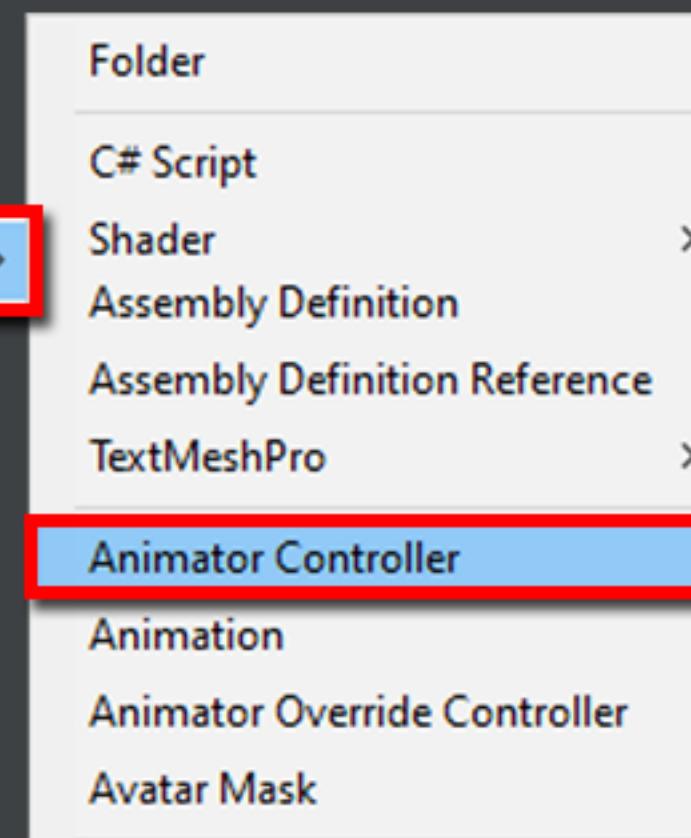


4

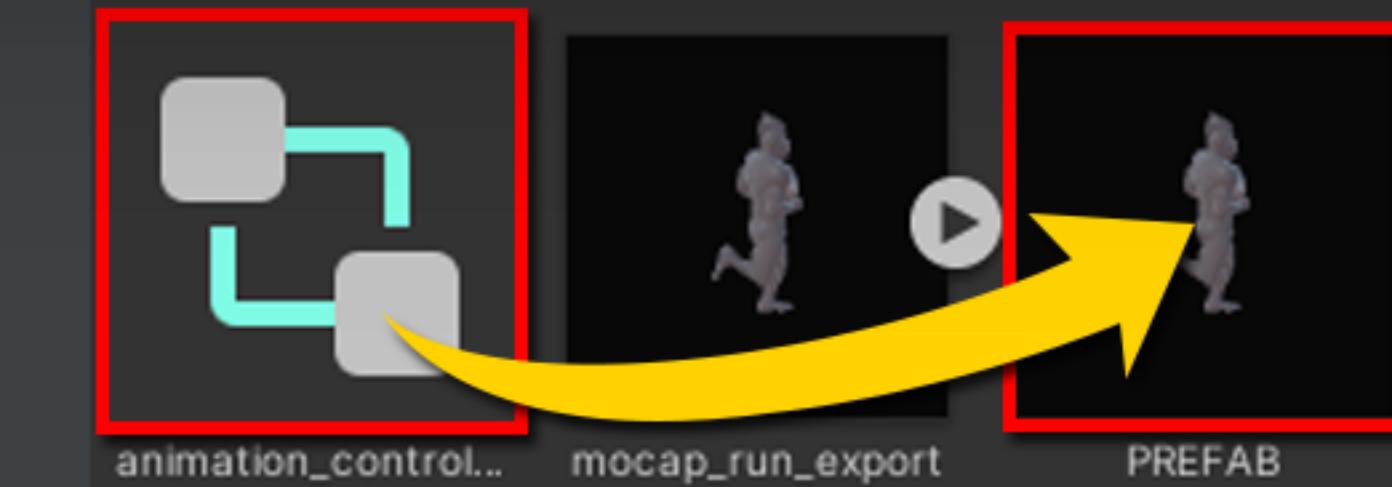
IN THE FBX FILE, TURN ON LOOP TIME

ANIMATION IMPORT [PART 3]

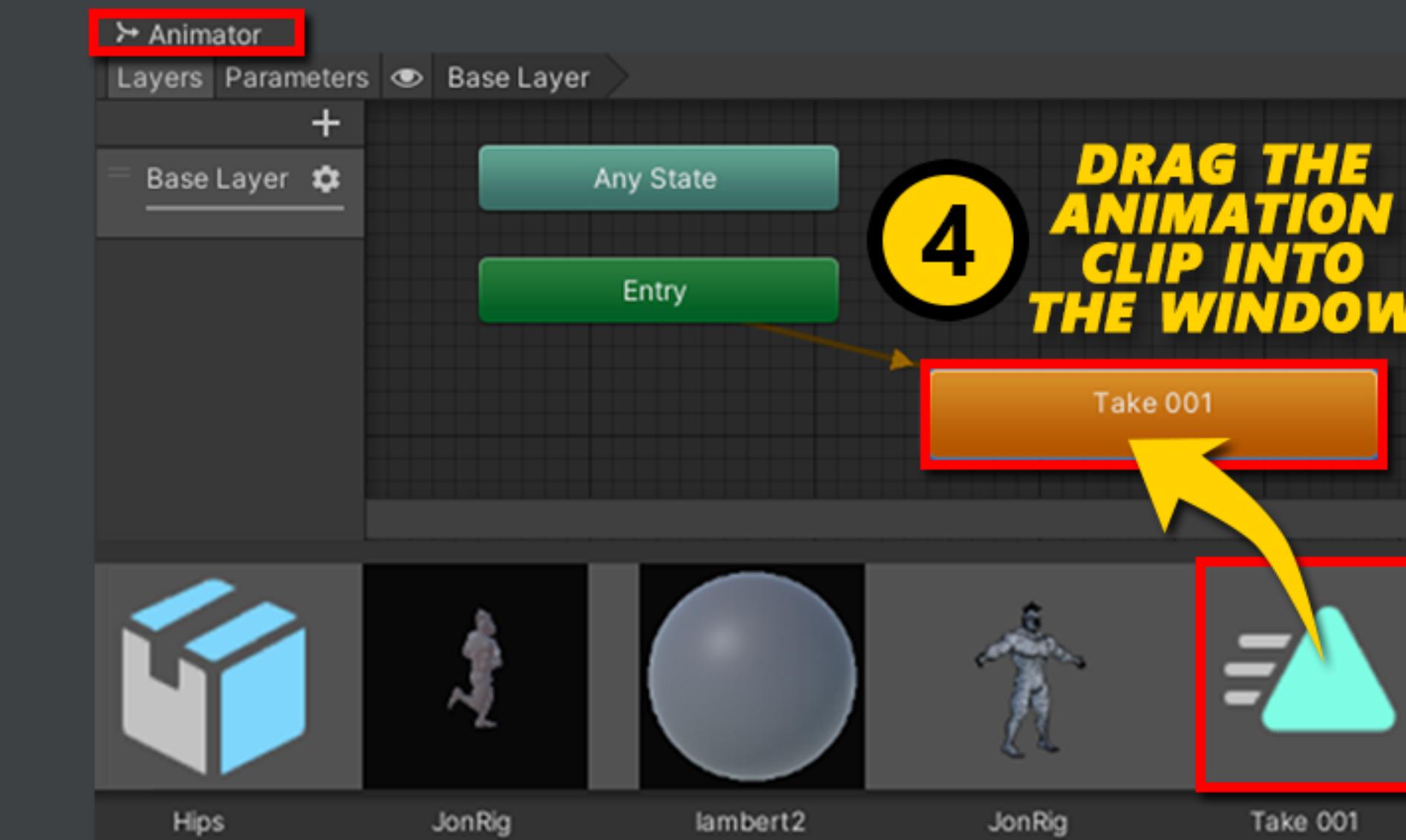
1
RIGHT CLICK
IN THE PROJECT
SECTION & CREATE
AN ANIMATION
CONTROLLER



2
OPEN THE
ANIMATION
CONTROLLER



3
DRAG THE
ANIMATION
CONTROLLER ON
TO YOUR PREFAB

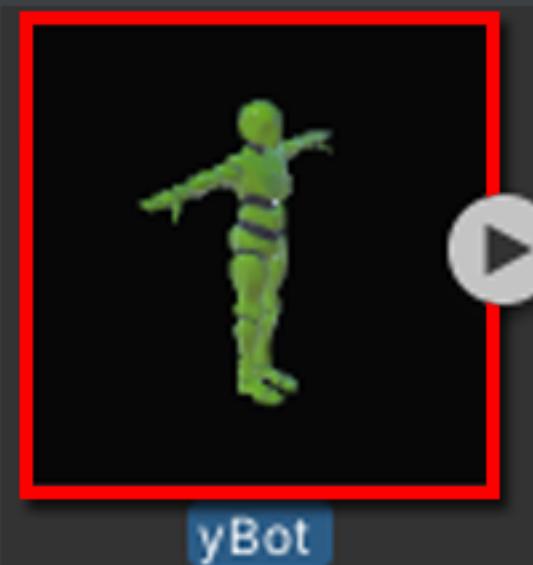


5
YOUR ANIMATION
SHOULD PLAY
IN GAME NOW!

ANIMATION IMPORT [PART 4]

1

LETS LOOK AT THE
SETTINGS FOR A
RIGGED CHARACTER



Inspector

**TURN THIS
VERY IMPORTANT
SETTING ON**

Skin Weights

Optimize Game Objects

Extra Transforms to Expose

Use | Node Name

mixamorig:Hips

Alpha_Surface

Alpha_Joints

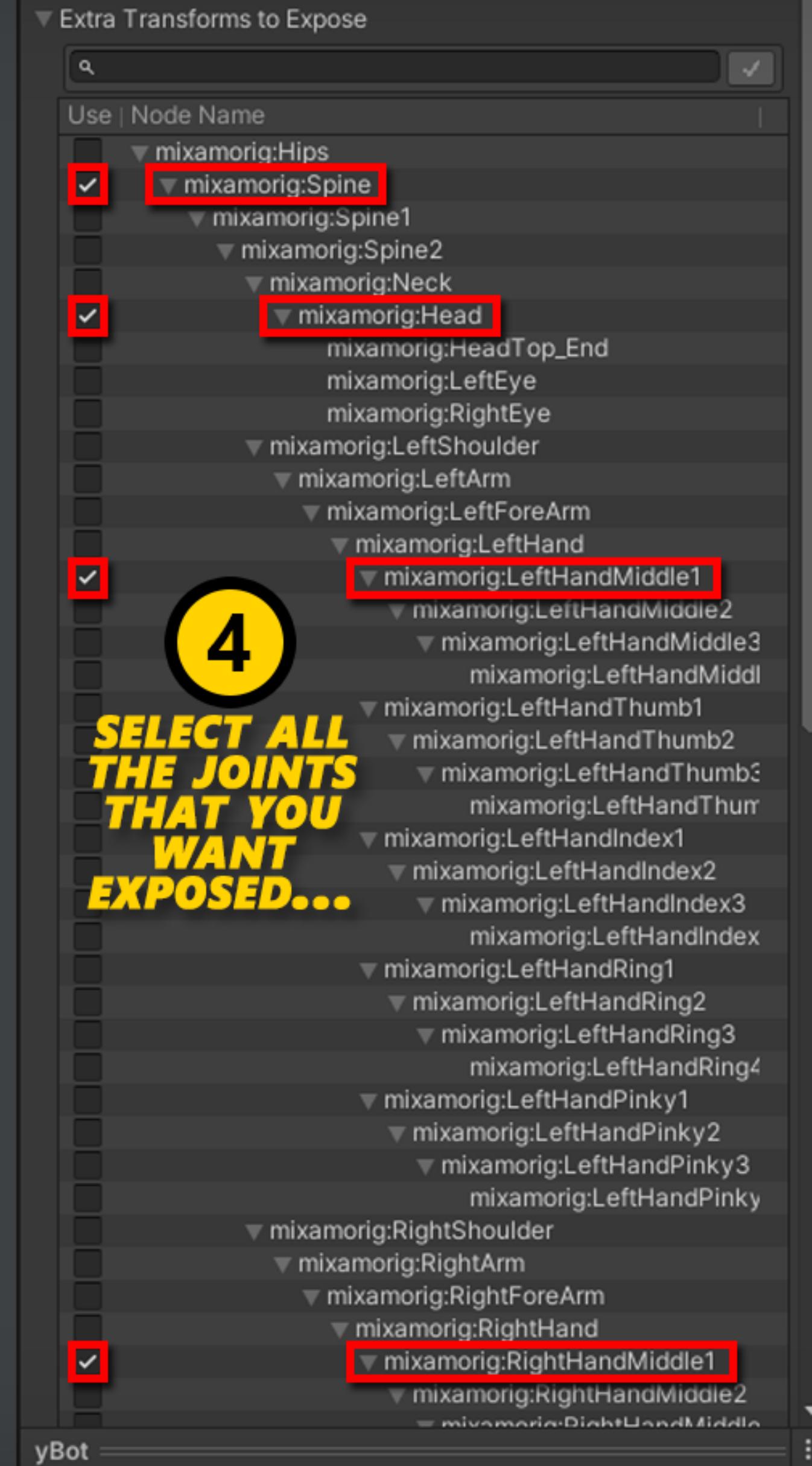
Toggle All

Collapse All

Expand All

3

EXPAND ALL...

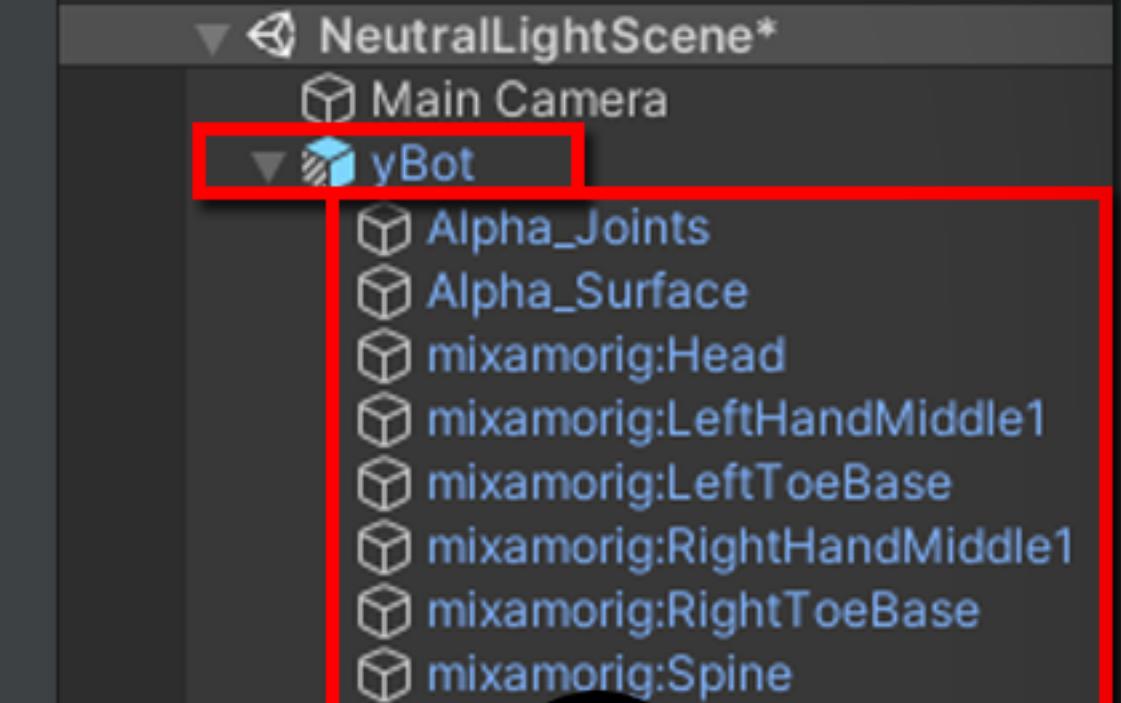


4

**SELECT ALL
THE JOINTS
THAT YOU
WANT
EXPOSED...**

Hierarchy

+



5

**NOW WHEN YOU
OPEN THE HIERARCHY
FOR THE CHARACTER
YOU ONLY SEE THE
EXPOSED JOINTS**

**THIS IS ALSO A
WAY TO GAIN
PERFORMANCE
WITH LESS
TO CALCULATE**

BACK



AUTHORING PIPELINES



MAYA

SCALE MAN & GRID

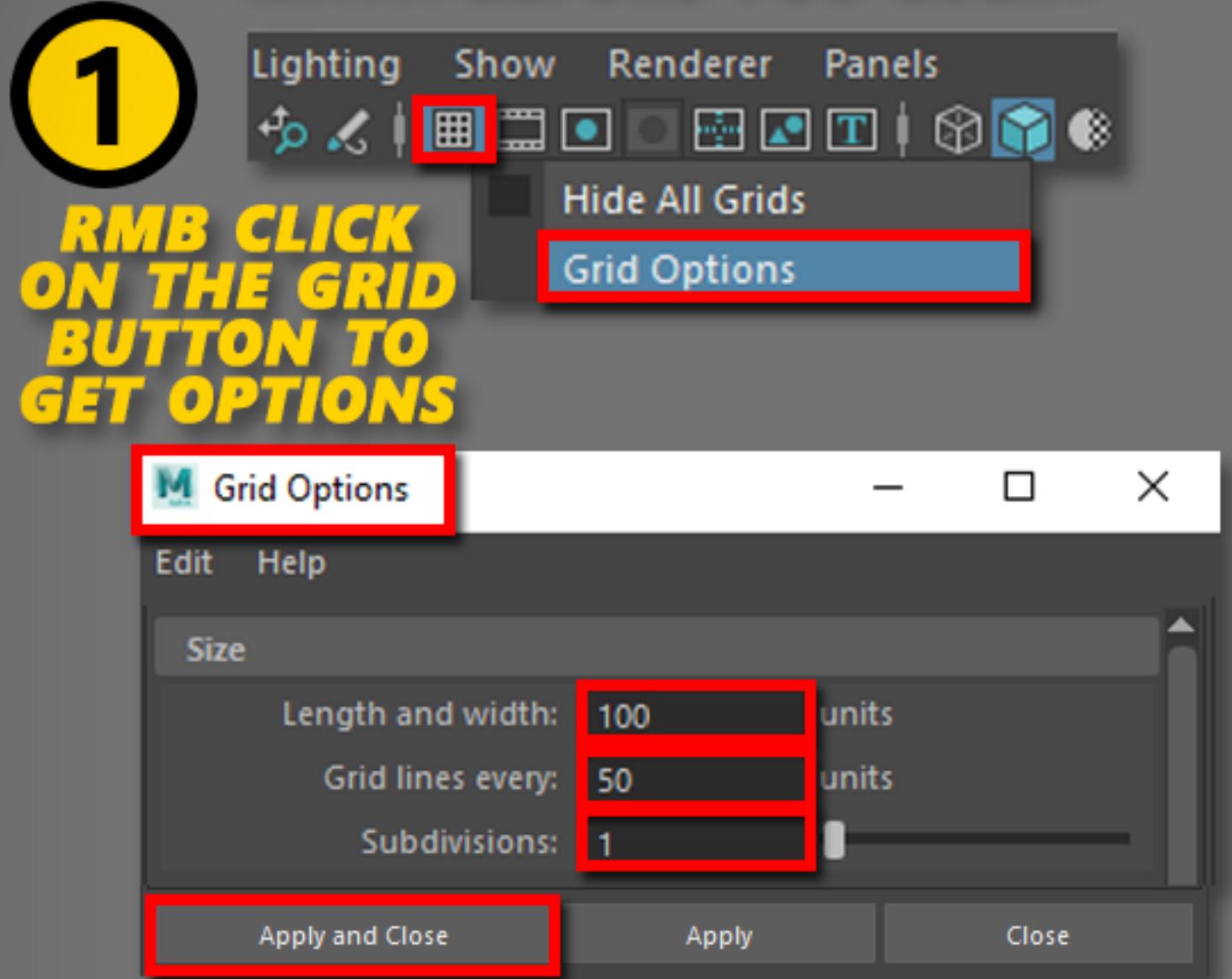
FBX EXPORT

MOCAP CLEANUP

VACCINE VIRUS

SCALE MAN & GRID

SCALE IS KEY SO REMEMBER
TO SETUP UP YOUR GRID IN
MAYA BEFORE YOU BEGIN



THESE SETTINGS GIVE
YOU A GRID OF 50 CM
FOR EACH SEGMENT

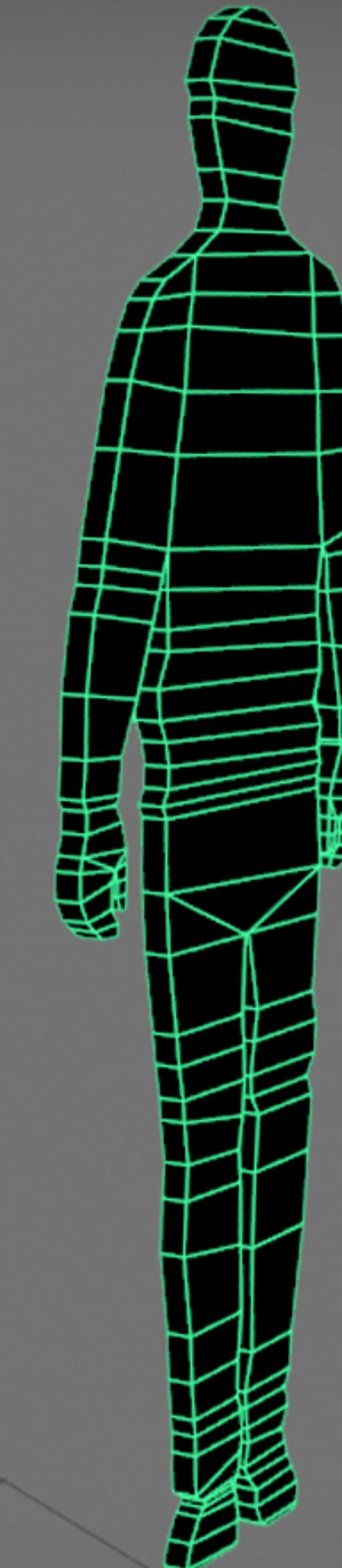
2 Unity-Project-Base → VFS_DOCUMENTATION → VFS_AUTHORING_PIPELINE → [01]_MAYA

FIND THE SCALE MAN FROM
THE VFS_DOCUMENTATION

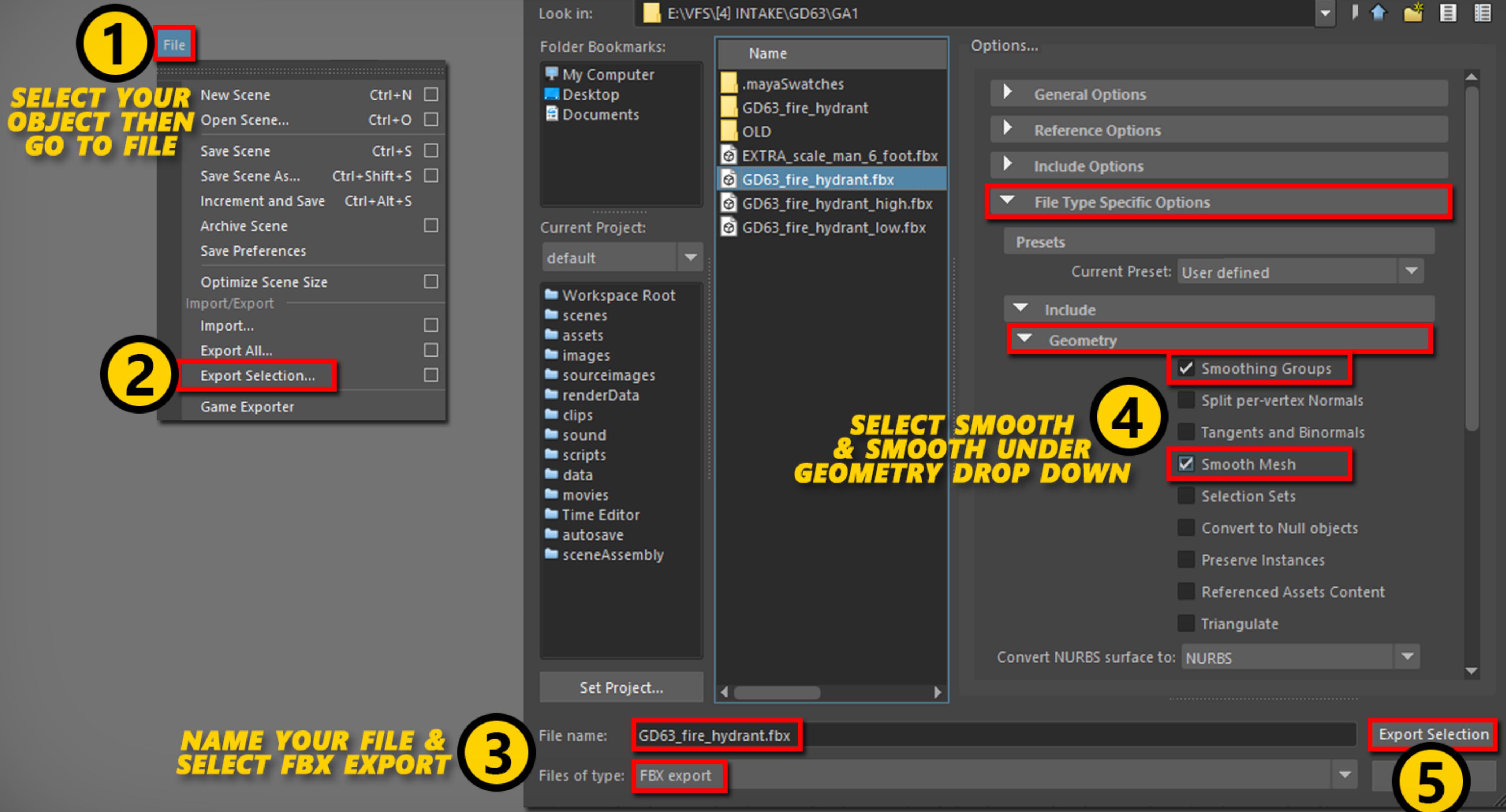
scale_man_6_foot.ma

3 USE THIS IN
EVERY SCENE
TO SCALE YOUR
MODELS PROPERLY

4 EXPORT INTO
FBX FORMAT TO
USE IN OTHER
PROGRAMS
LIKE ZBRUSH



FBX EXPORT

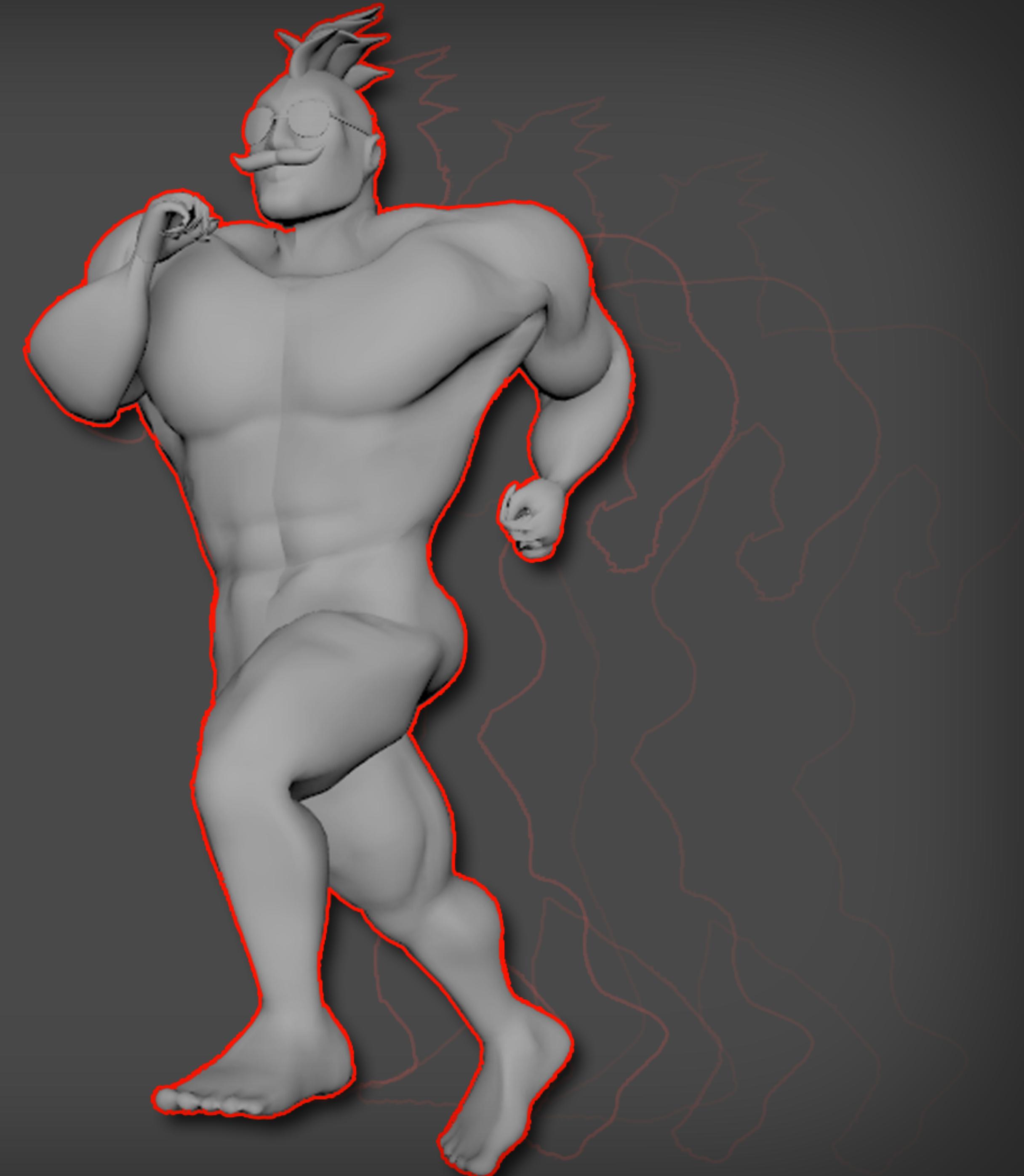


BACK

MOCAP CLEANUP

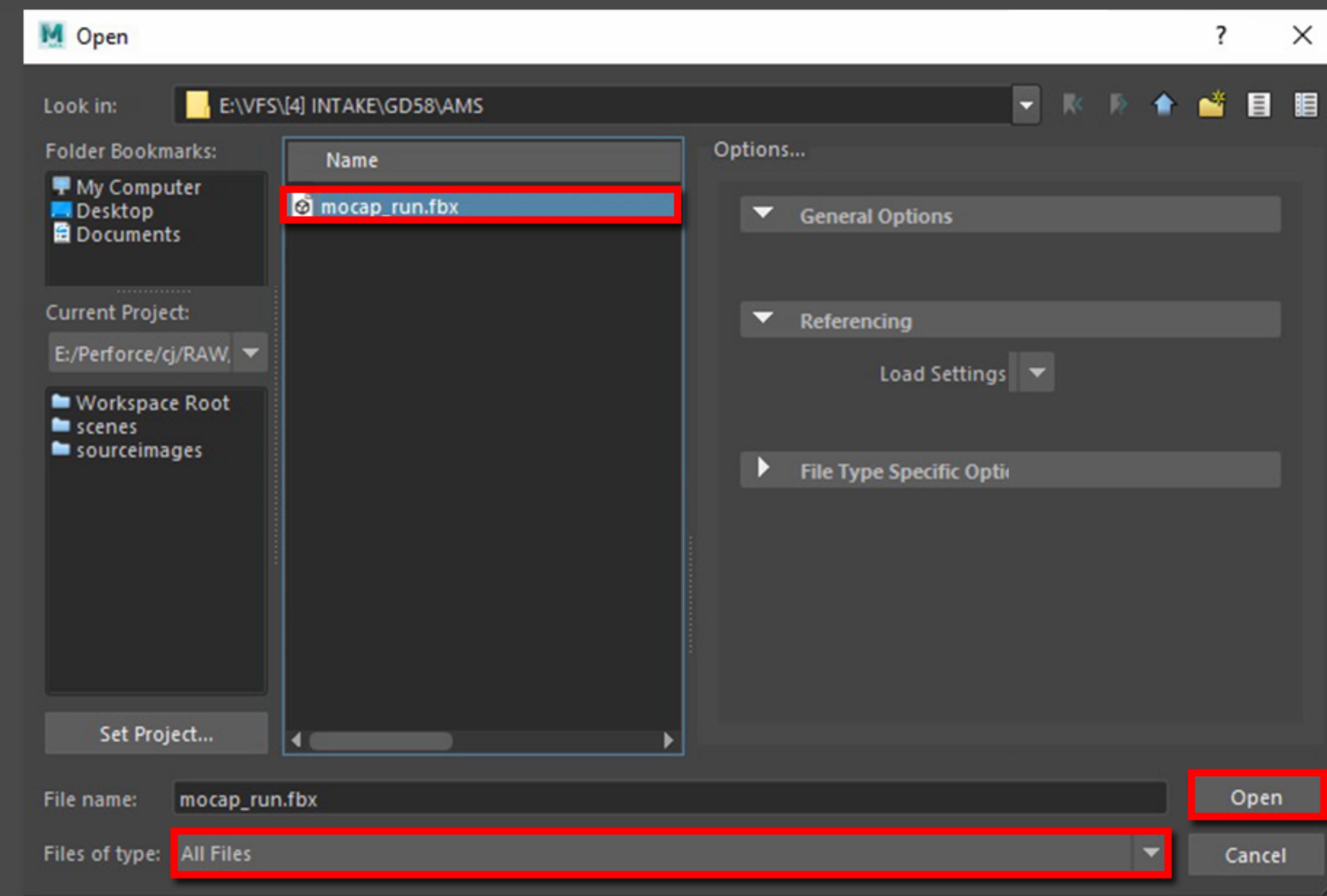
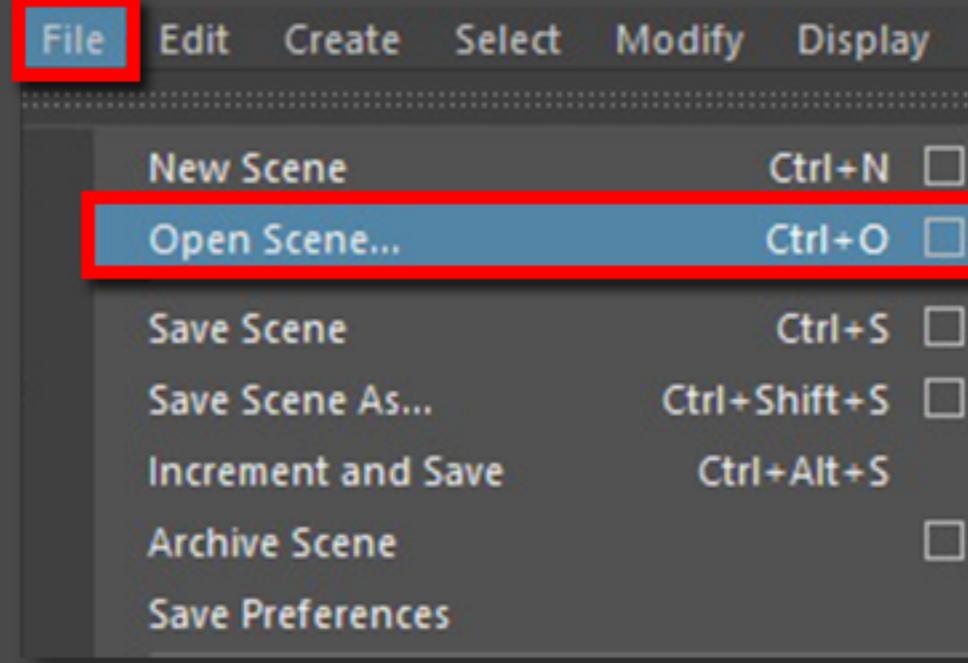
- **IMPORT SETTINGS**
- **ISOLATE LOOP**
- **DELETE EXCESS KEYS**
- **BAKE SIMULATION**
- **CYCLE ANIMATION**
- **UNDETECTABLE LOOP**
- **RESAMPLE KEYS**
- **RENUMBER KEYS**
- **EXPORT SETTINGS**

BACK



IMPORT SETTINGS

1



2

**CHANGE FILE TYPES TO ALL
FILES TO SEE .FBX FILES & OPEN**

BACK

ISOLATE LOOP

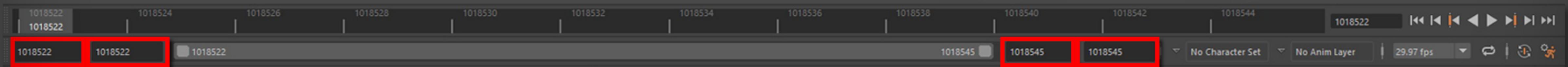
4

**SCRUB THE
TIMELINE & FIND
THE END FRAME**



3

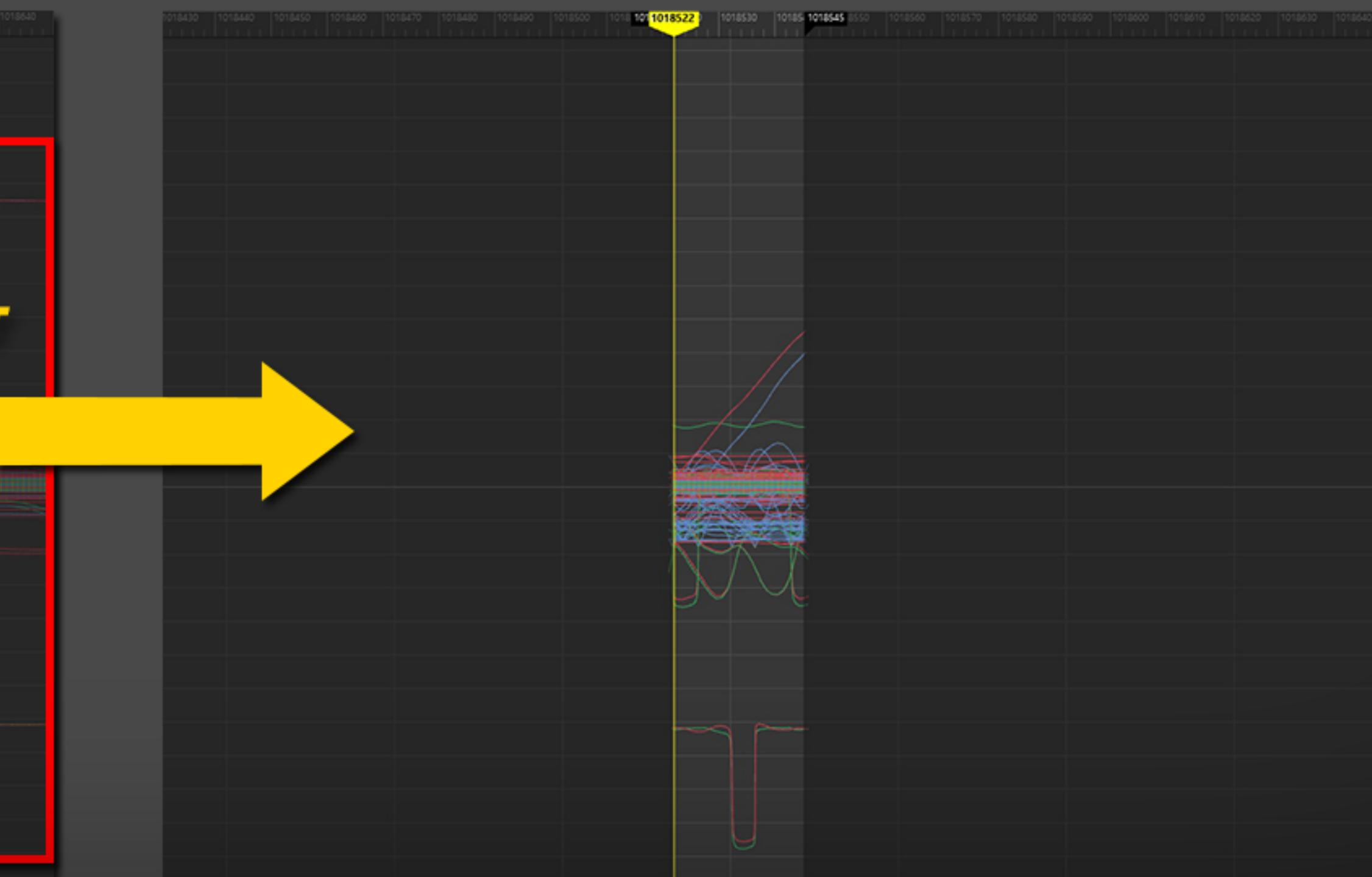
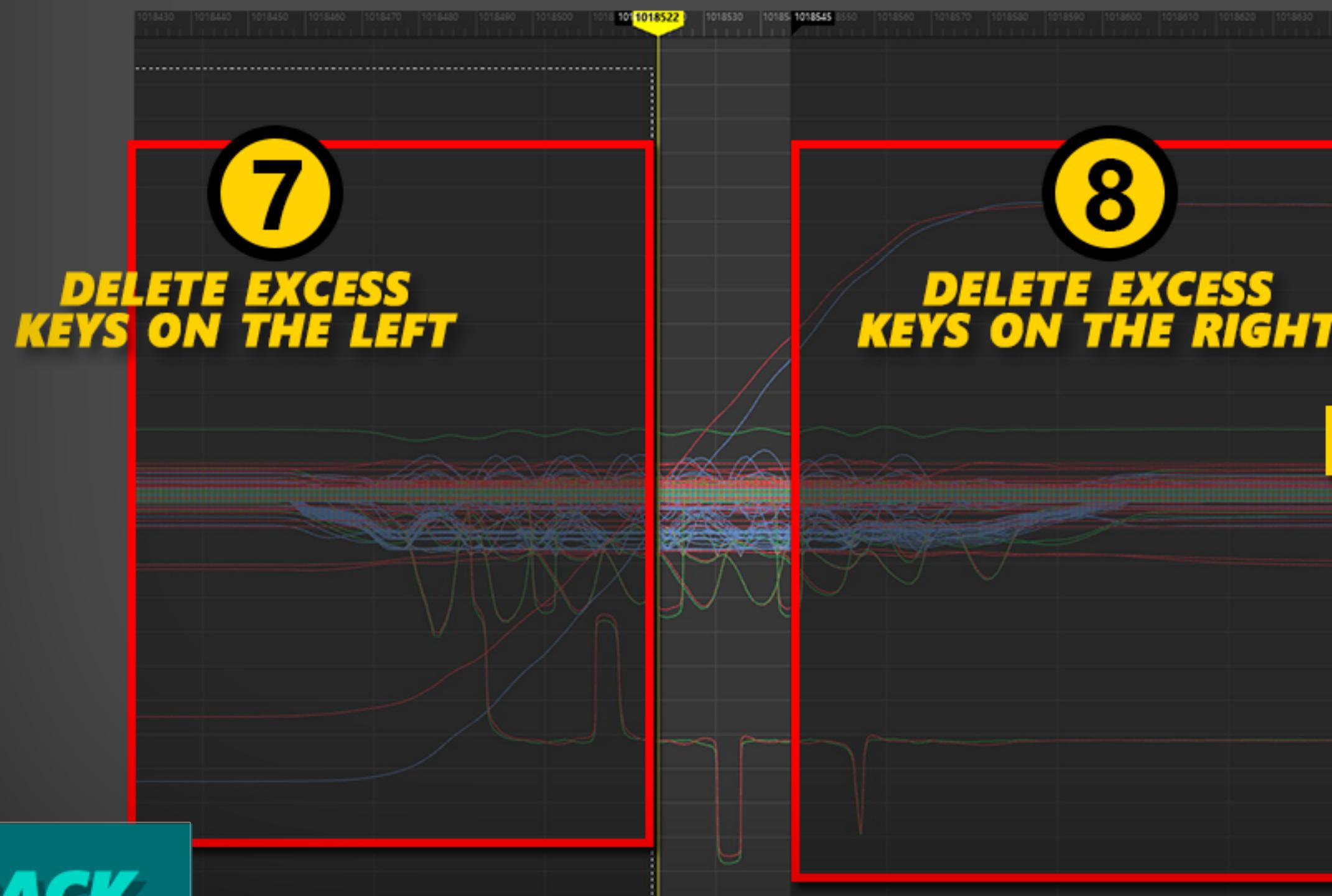
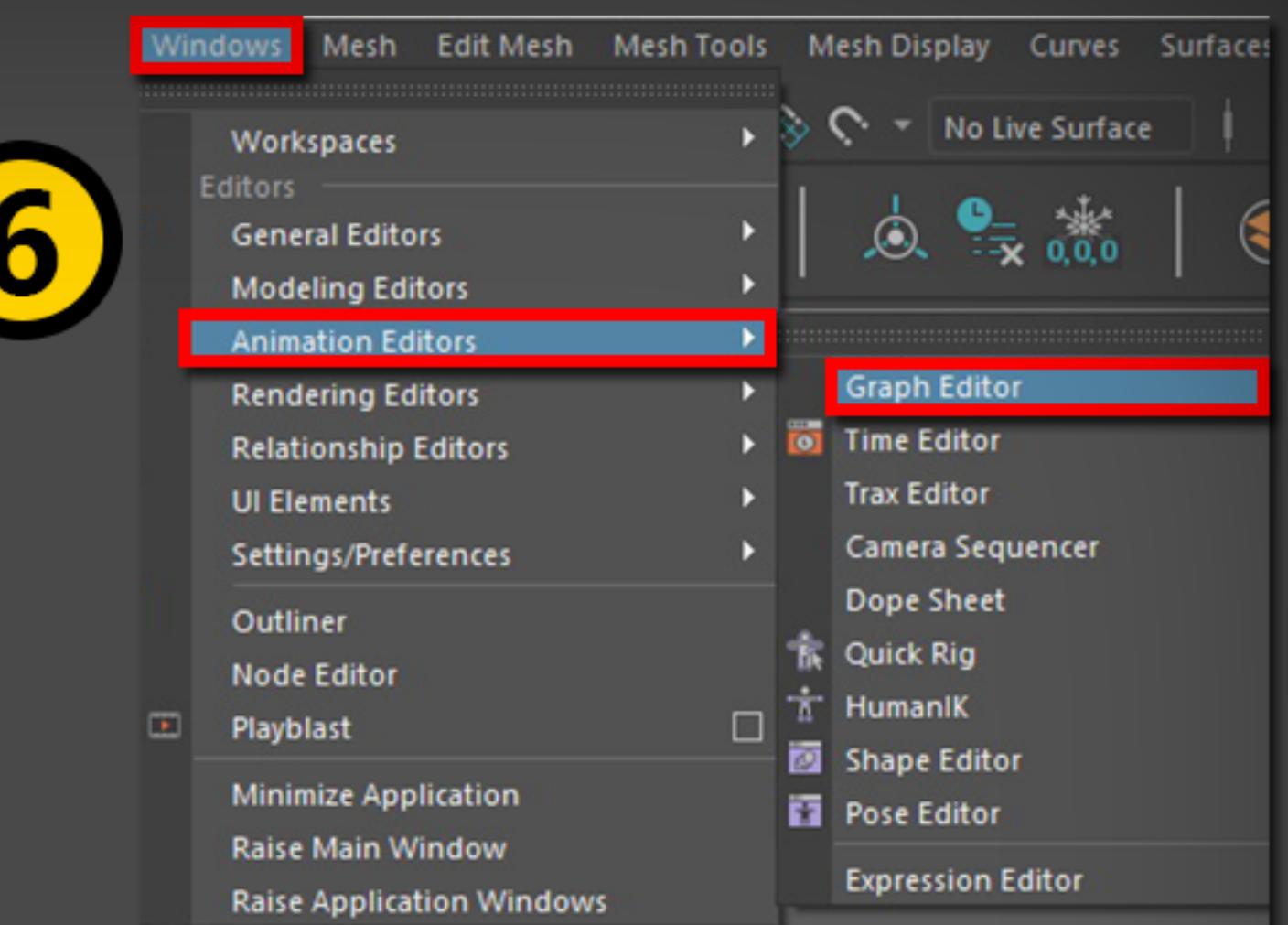
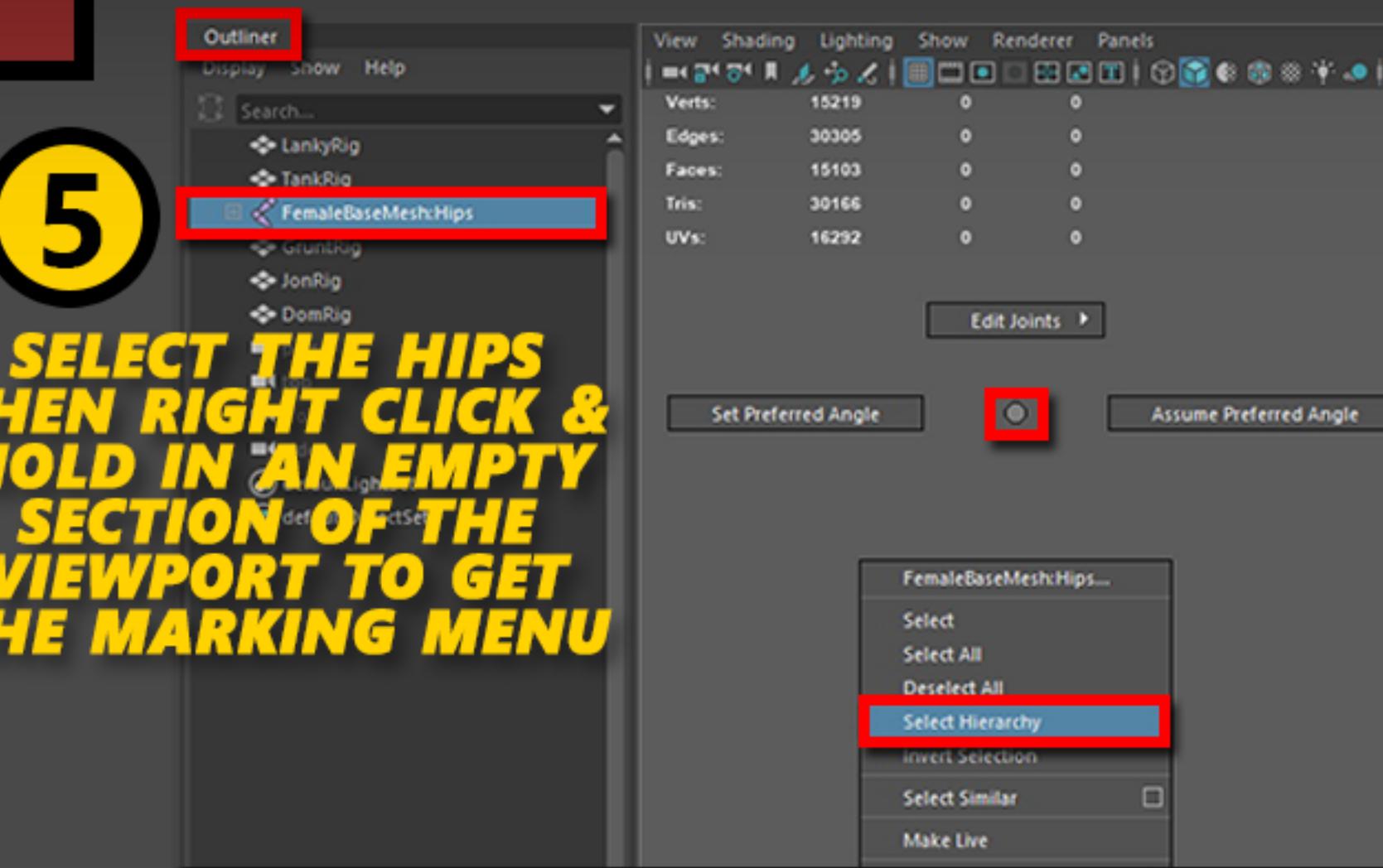
**SCRUB THE
TIMELINE & FIND
THE START FRAME**



3 **SET THE START OF THE
RANGE SLIDER TO THE
START FRAME, 1018522**

4 **SET THE END OF THE
RANGE SLIDER TO THE
END FRAME, 1018545.**

DELETE EXCESS KEYS



BACK

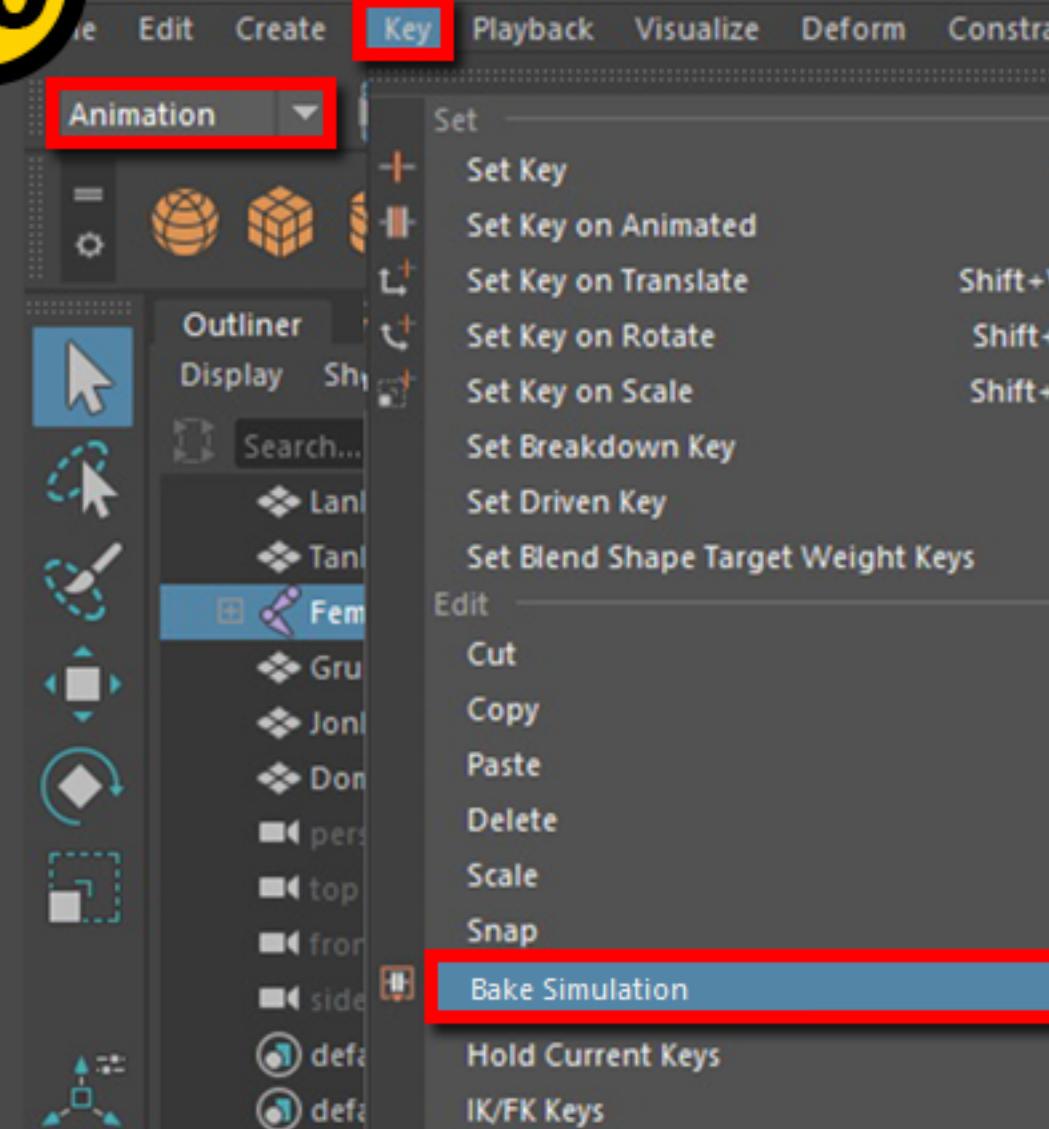
BAKE SIMULATION

9

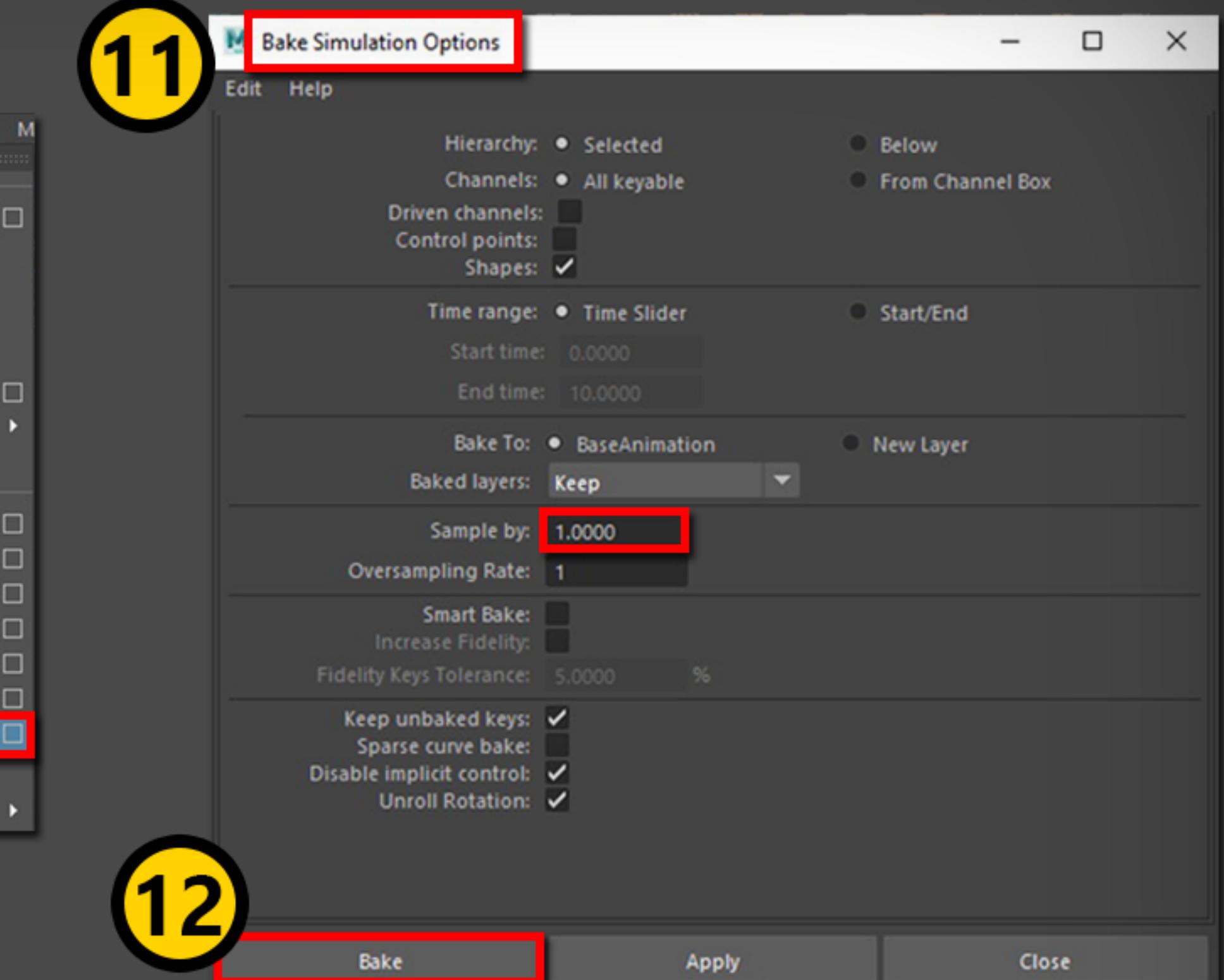
SELECT ALL KEYS



10



11



12



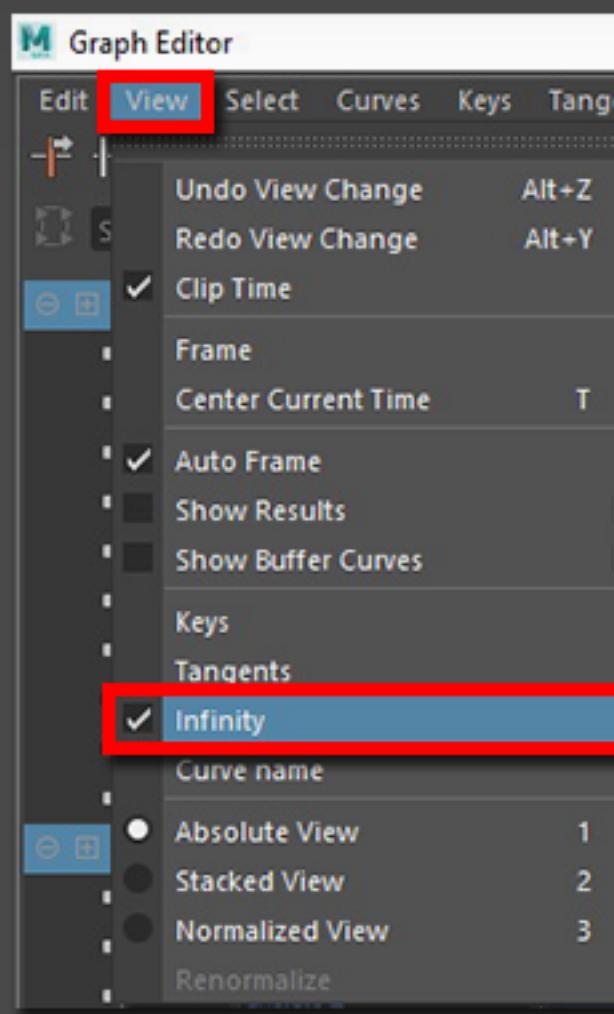
**NOW WE HAVE
CLEAN KEYS
EVERY FRAME**



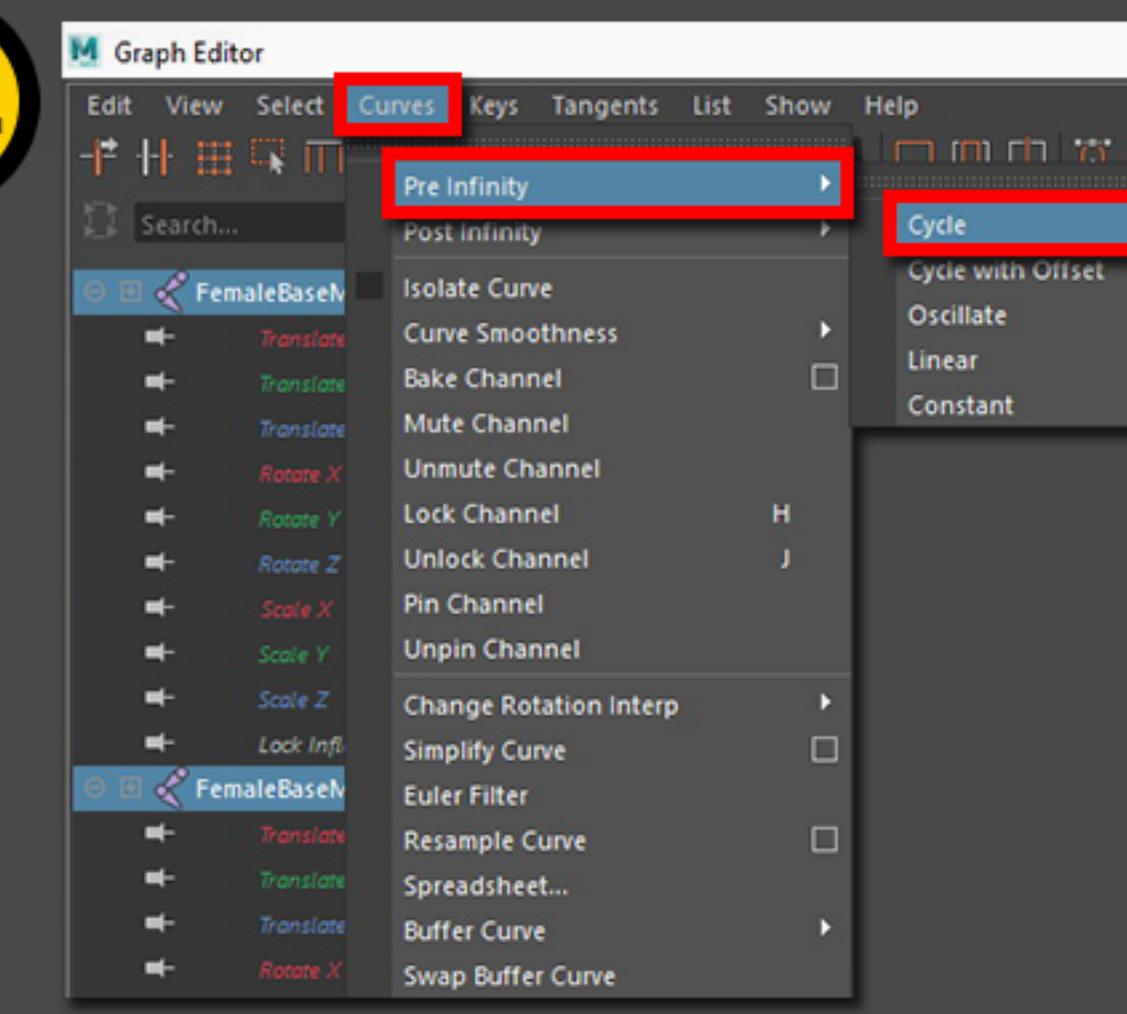
BACK

CYCLE ANIMATION

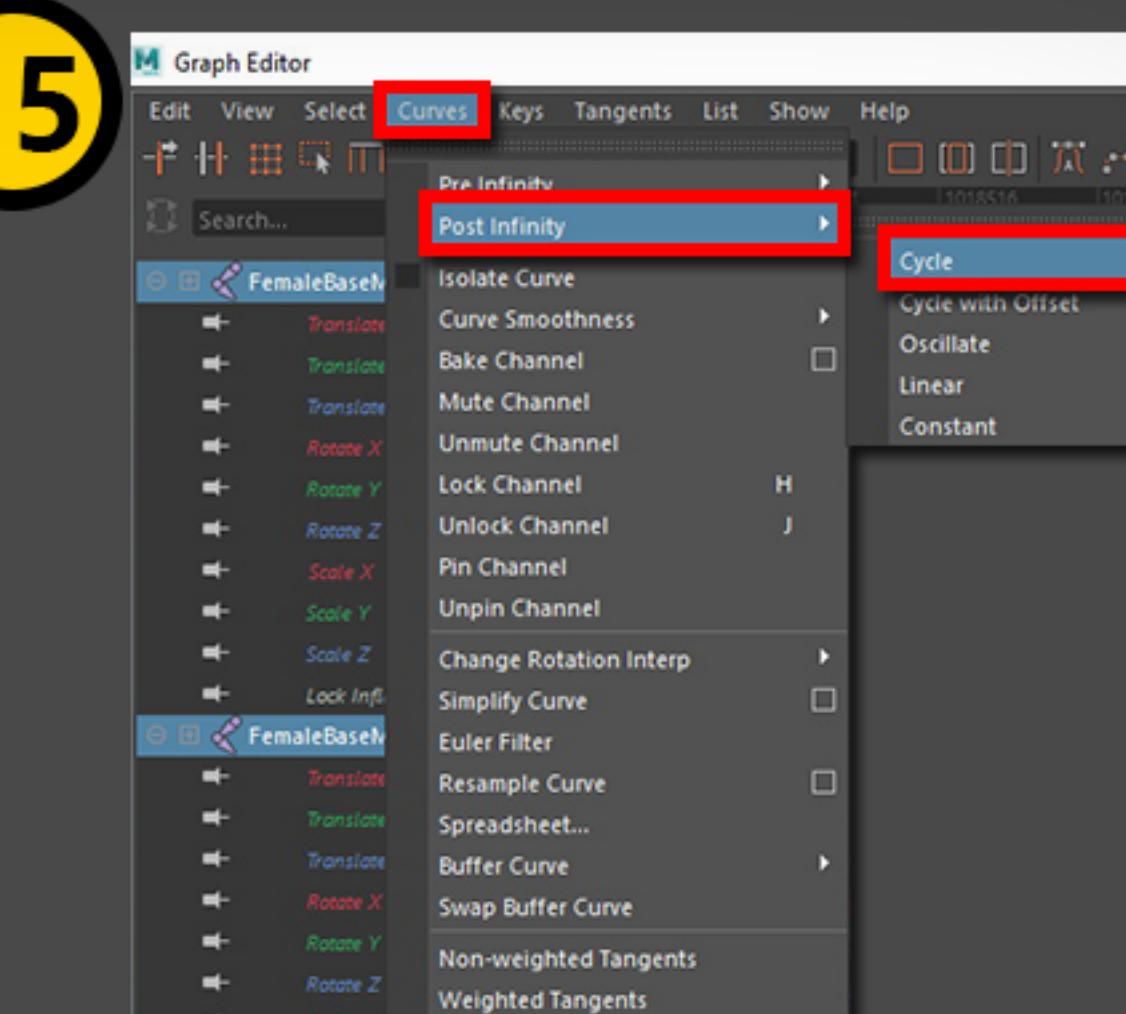
13



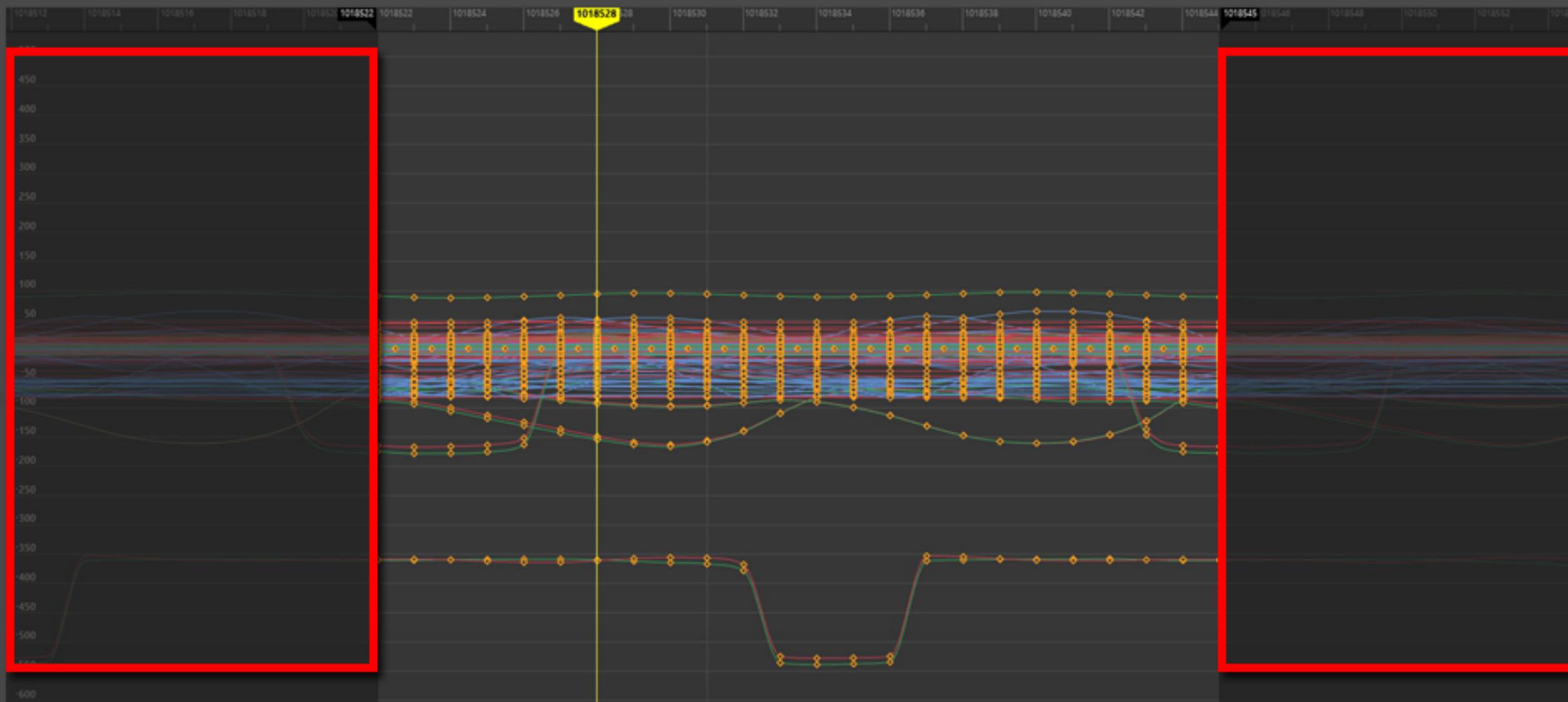
14



15



**ANIMATION
NOW CYCLES
ON THE LEFT**

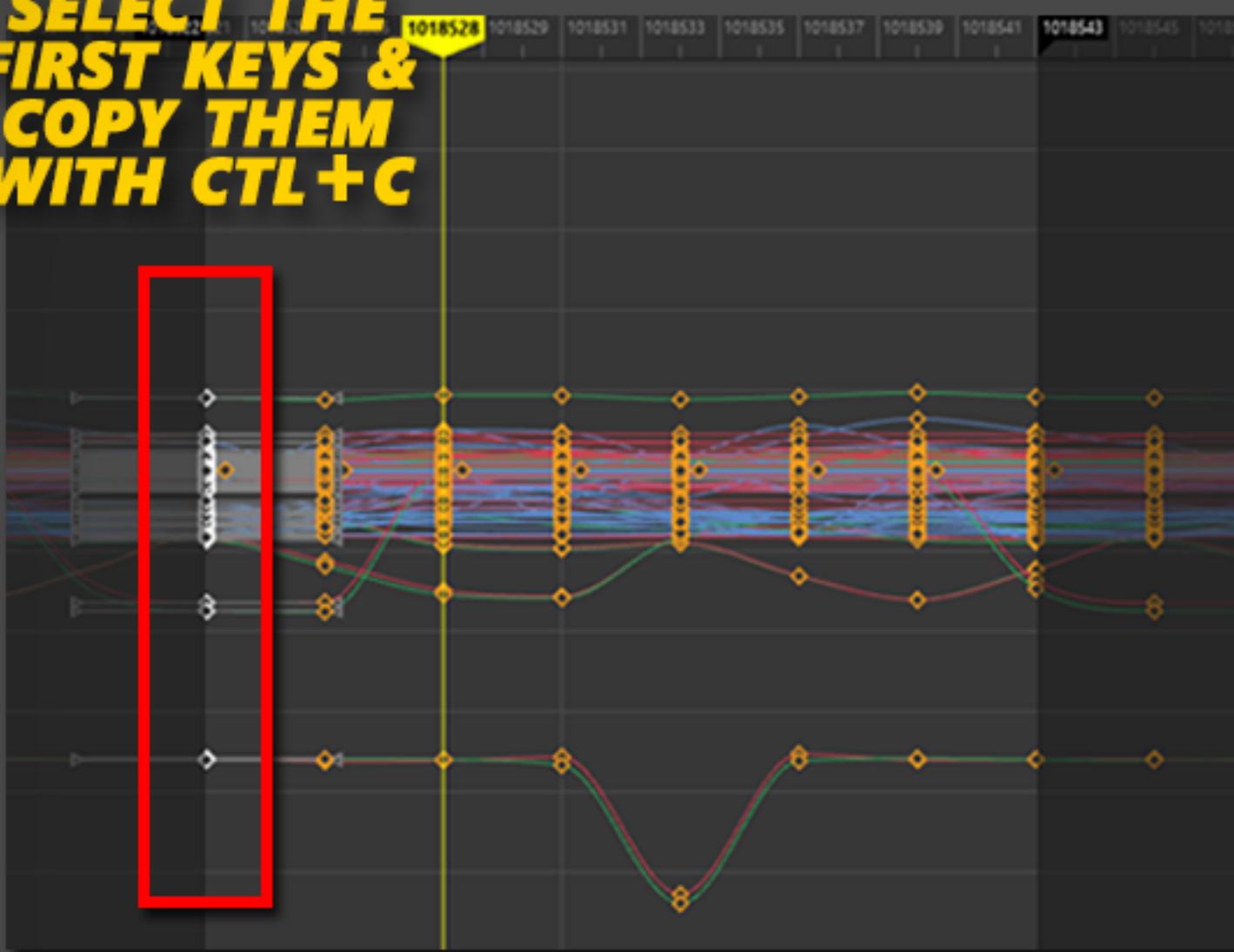


**ANIMATION
CYCLES ON THE
RIGHT AS WELL**

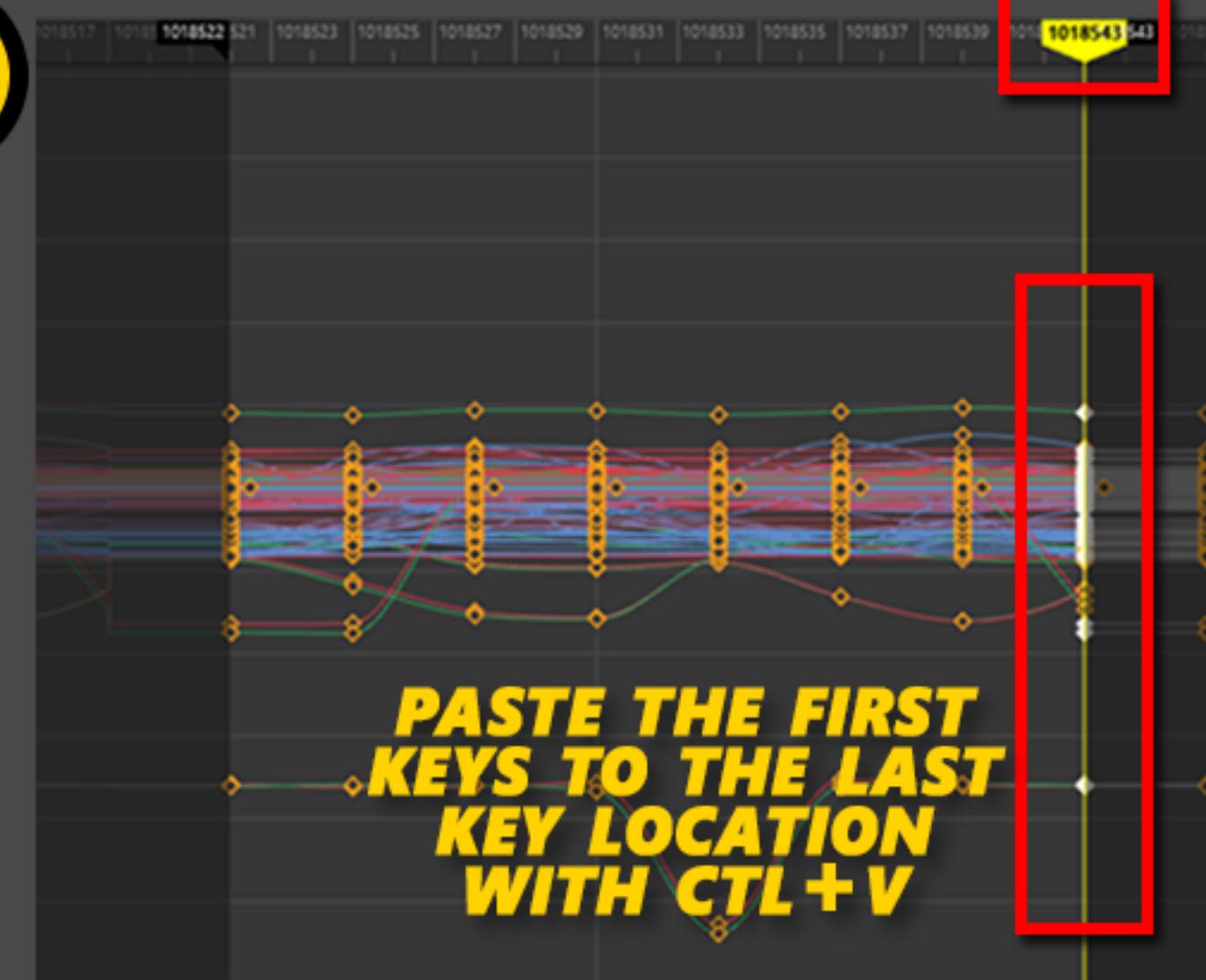
UNDETECTABLE LOOP

CHANGE YOUR
TIME SLIDER TO THE
END OF THE LOOP

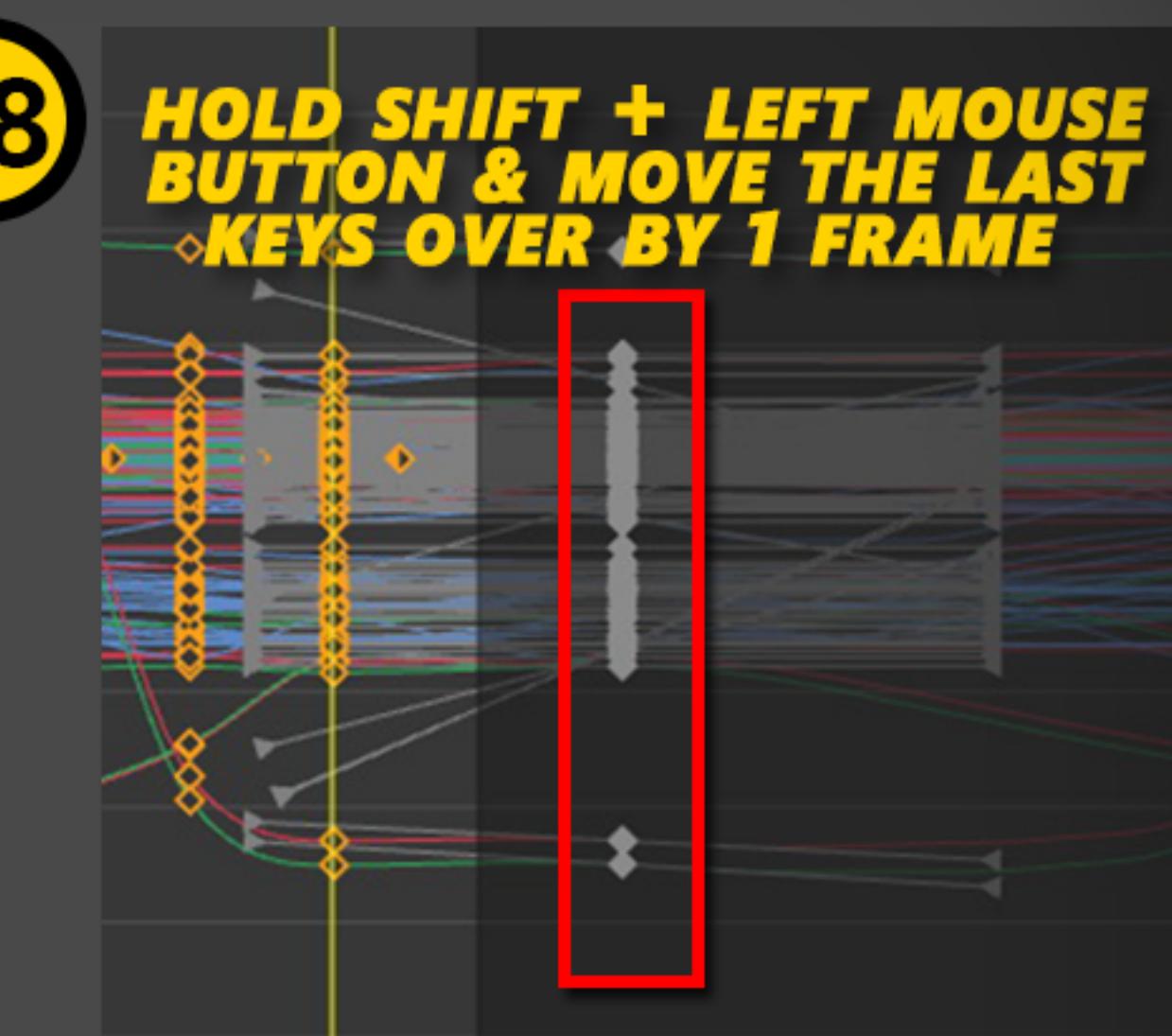
16 SELECT THE
FIRST KEYS &
COPY THEM
WITH CTL+C



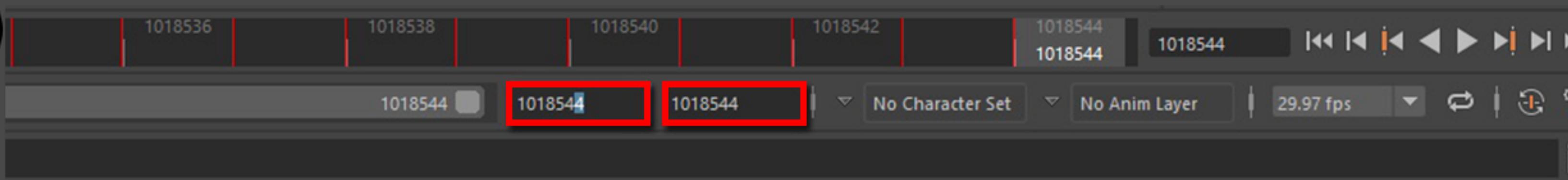
17



18



19



CHANGE THE LAST KEY
OF THE RANGE SLIDER
DOWN BY 1 FRAME

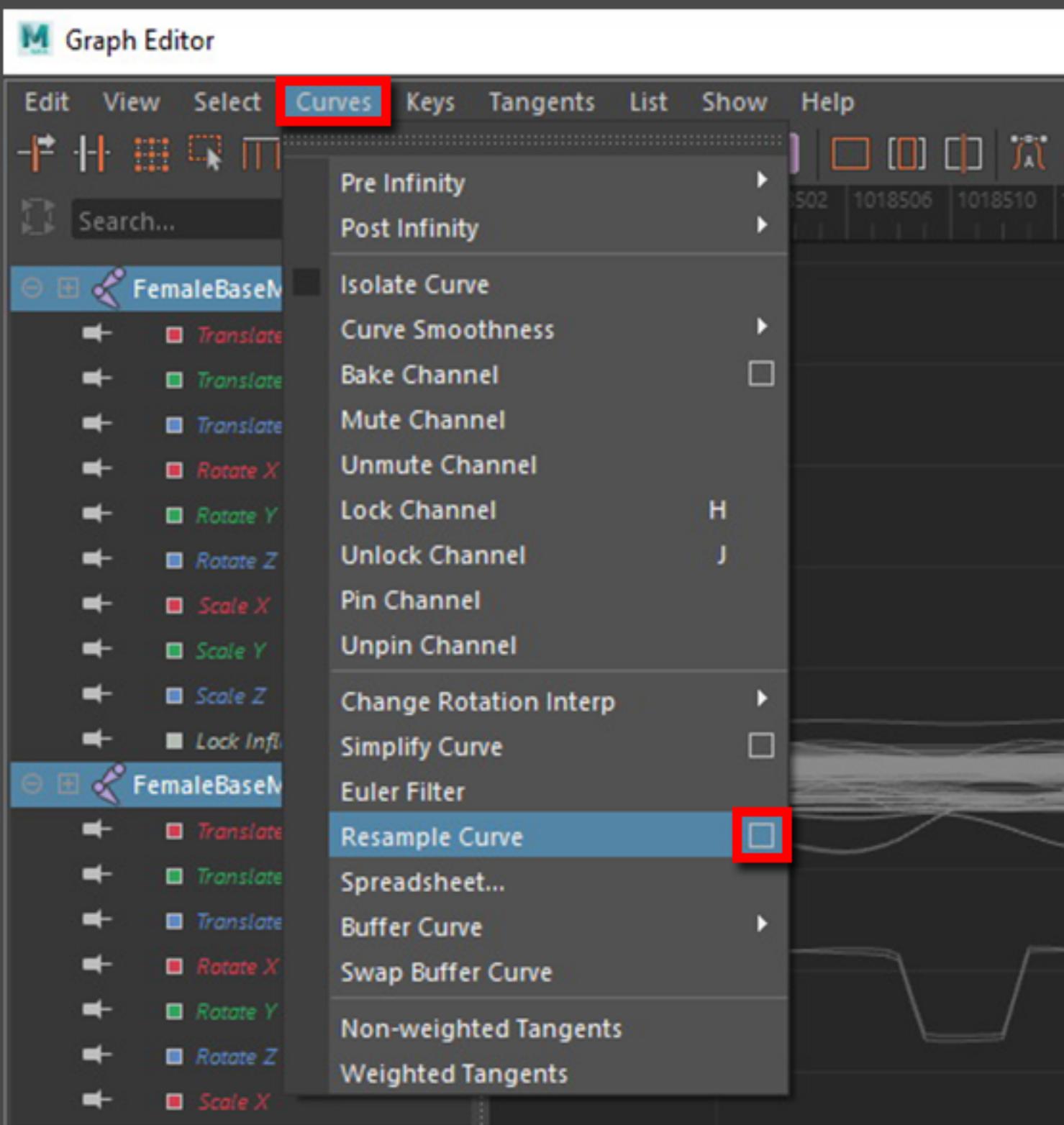
THIS USUALLY MAKES
THE LOOP UNDETECTABLE
WITH NO HITCHING

BACK

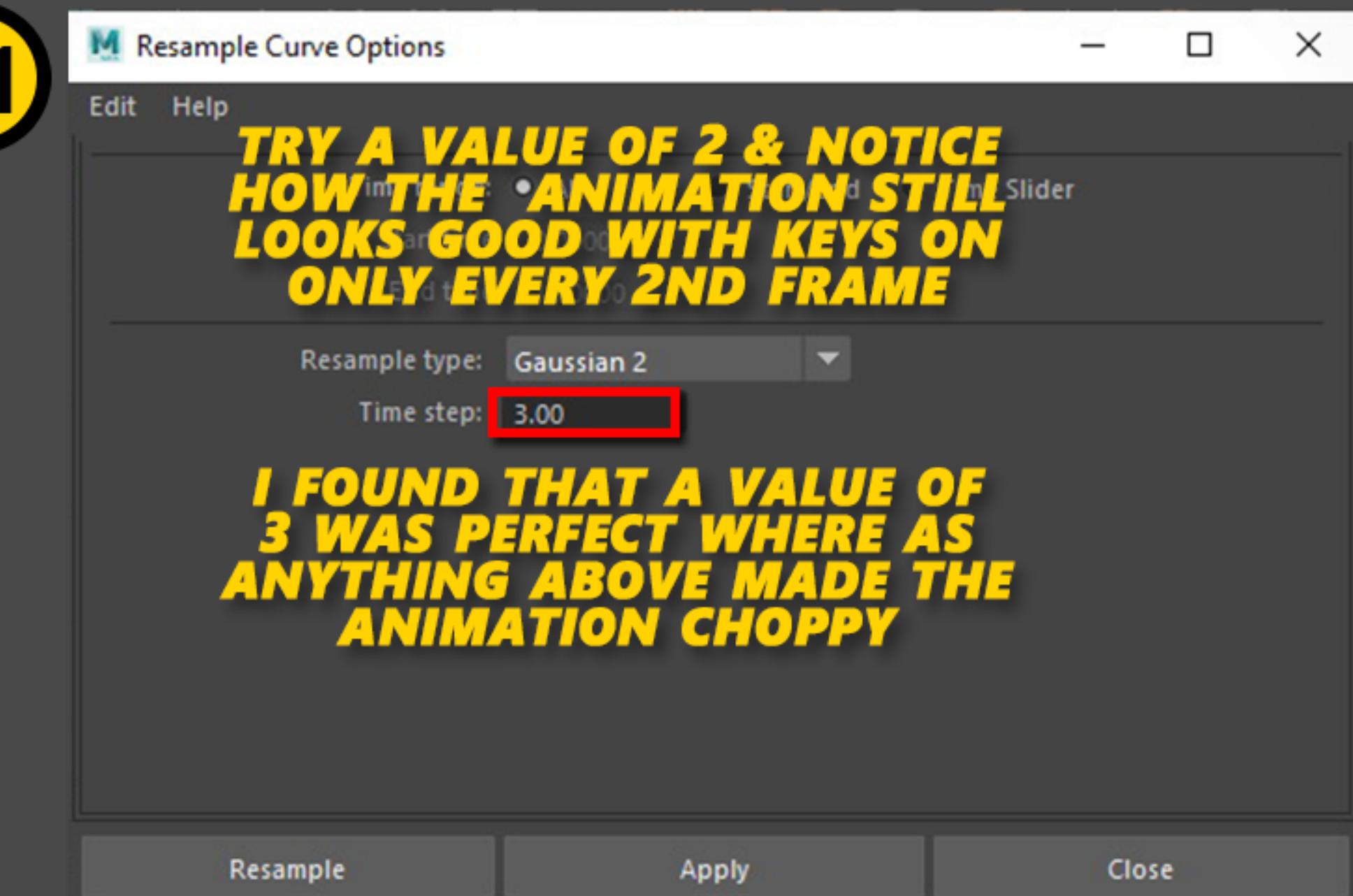
RESAMPLE KEYS

20

**MAKE SURE
TO SELECT ALL
KEYS BEFORE
YOU RESAMPLE**

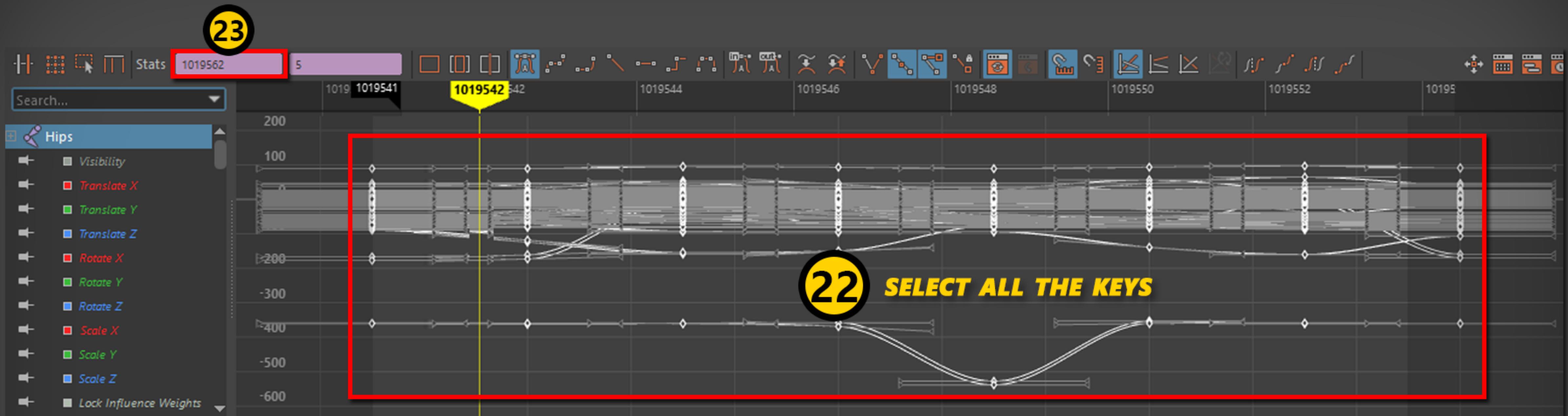


21



BACK

RENUMBER KEYS



Stats 1019562

23

TAKE THIS NUMBER & ...

Stats -=1019561

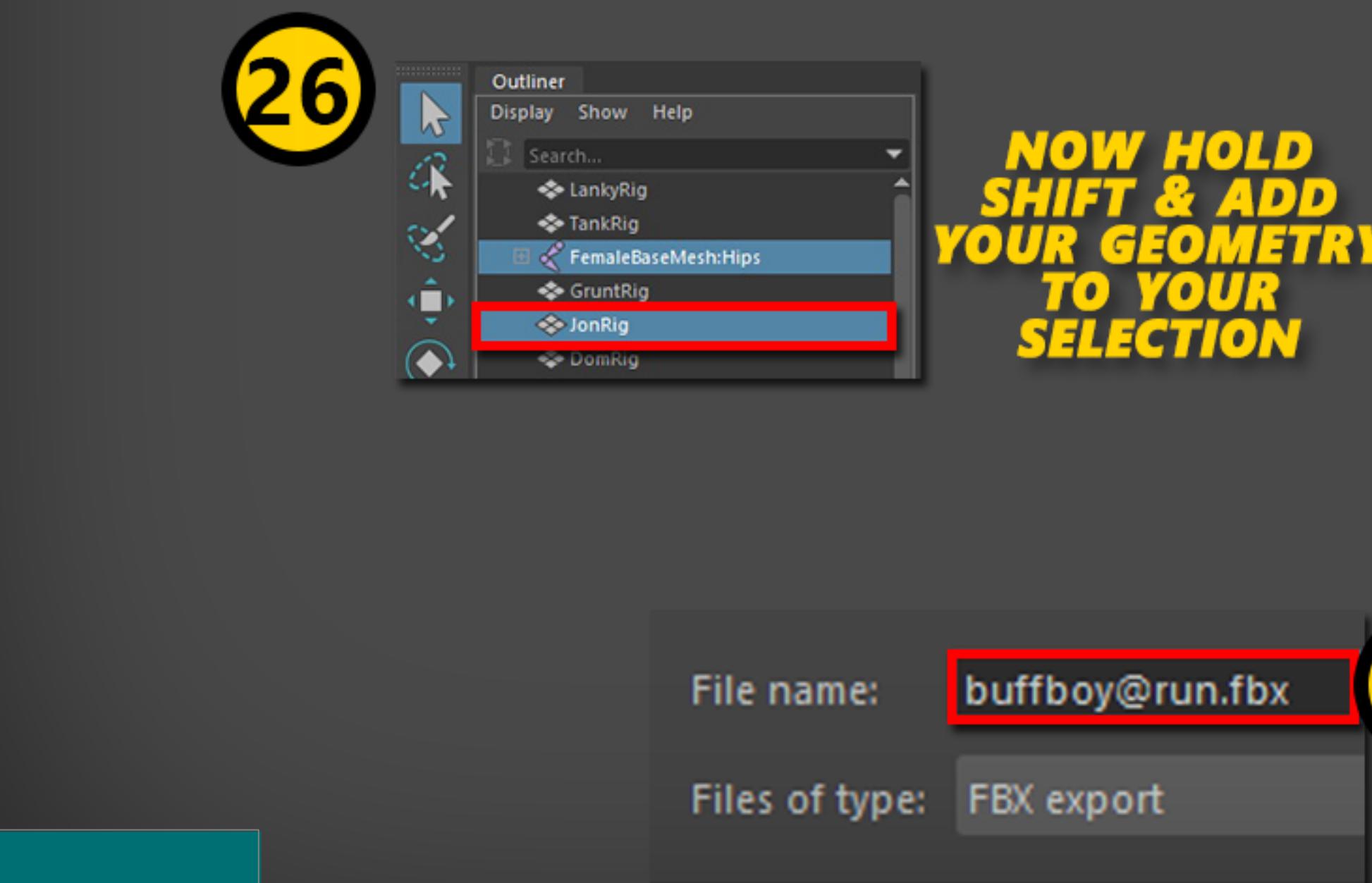
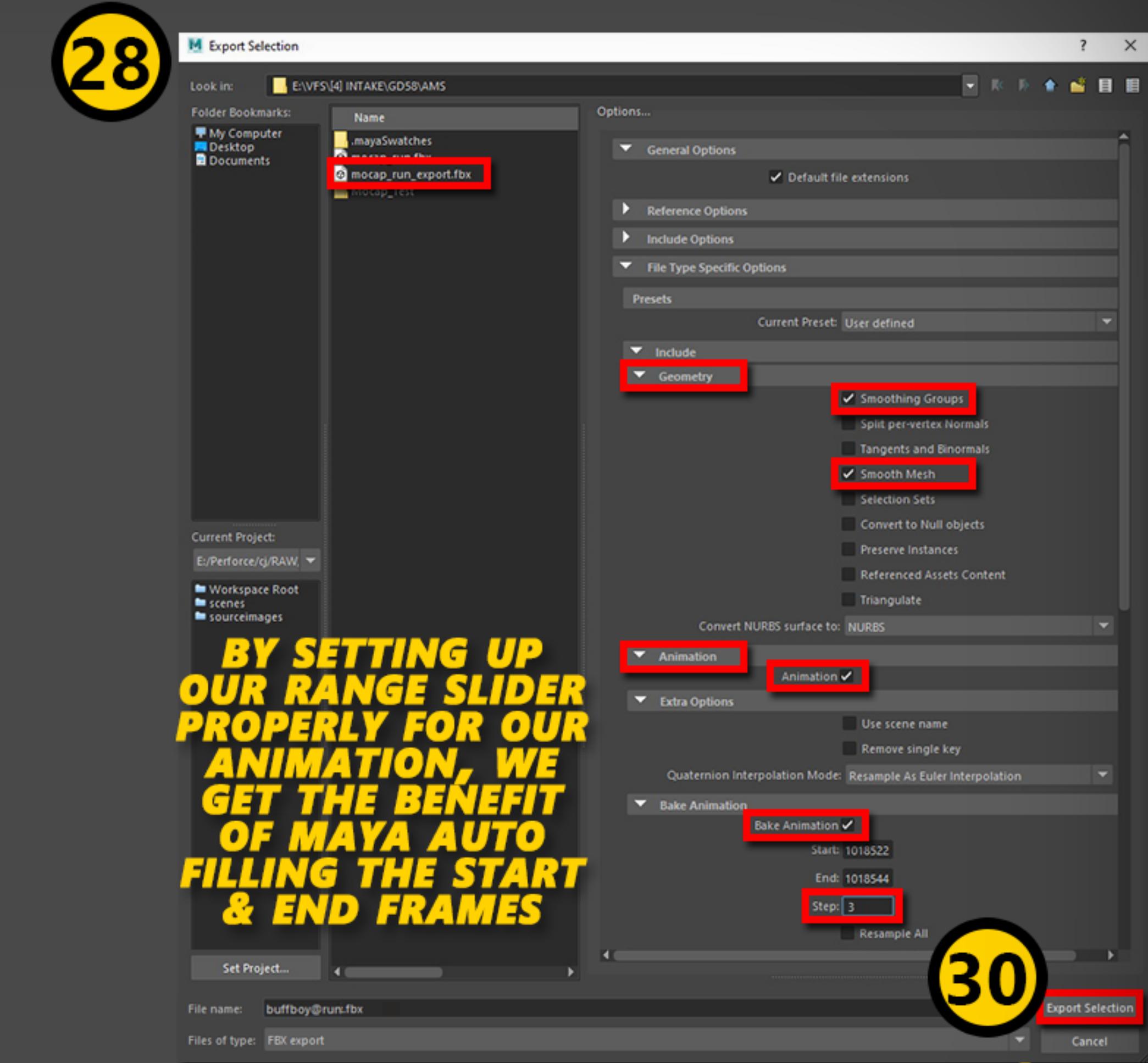
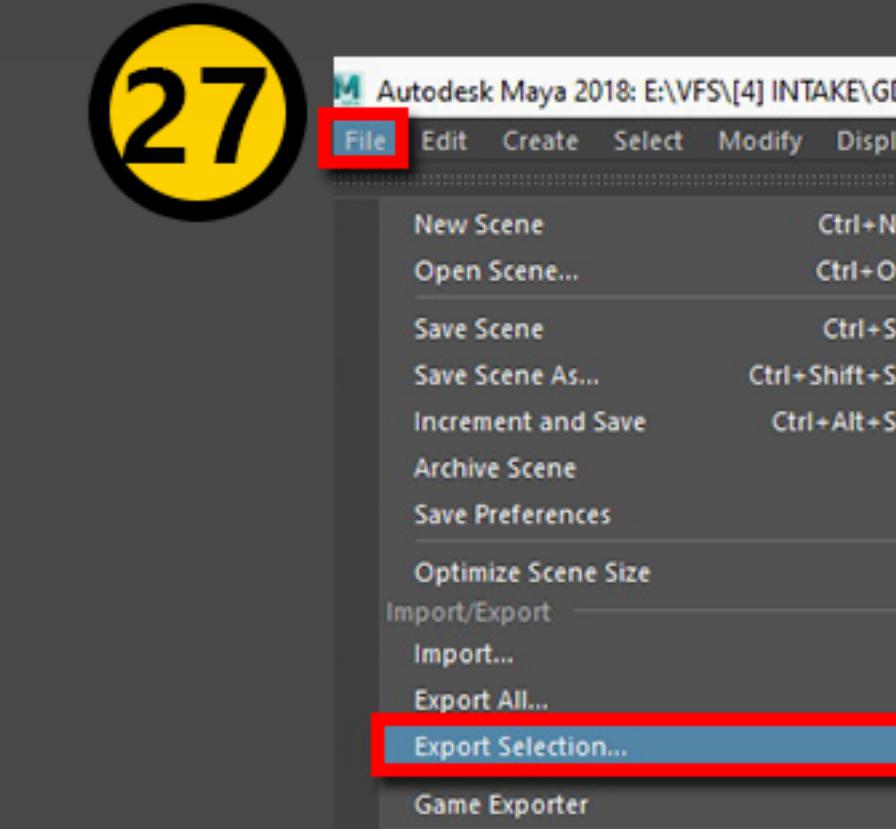
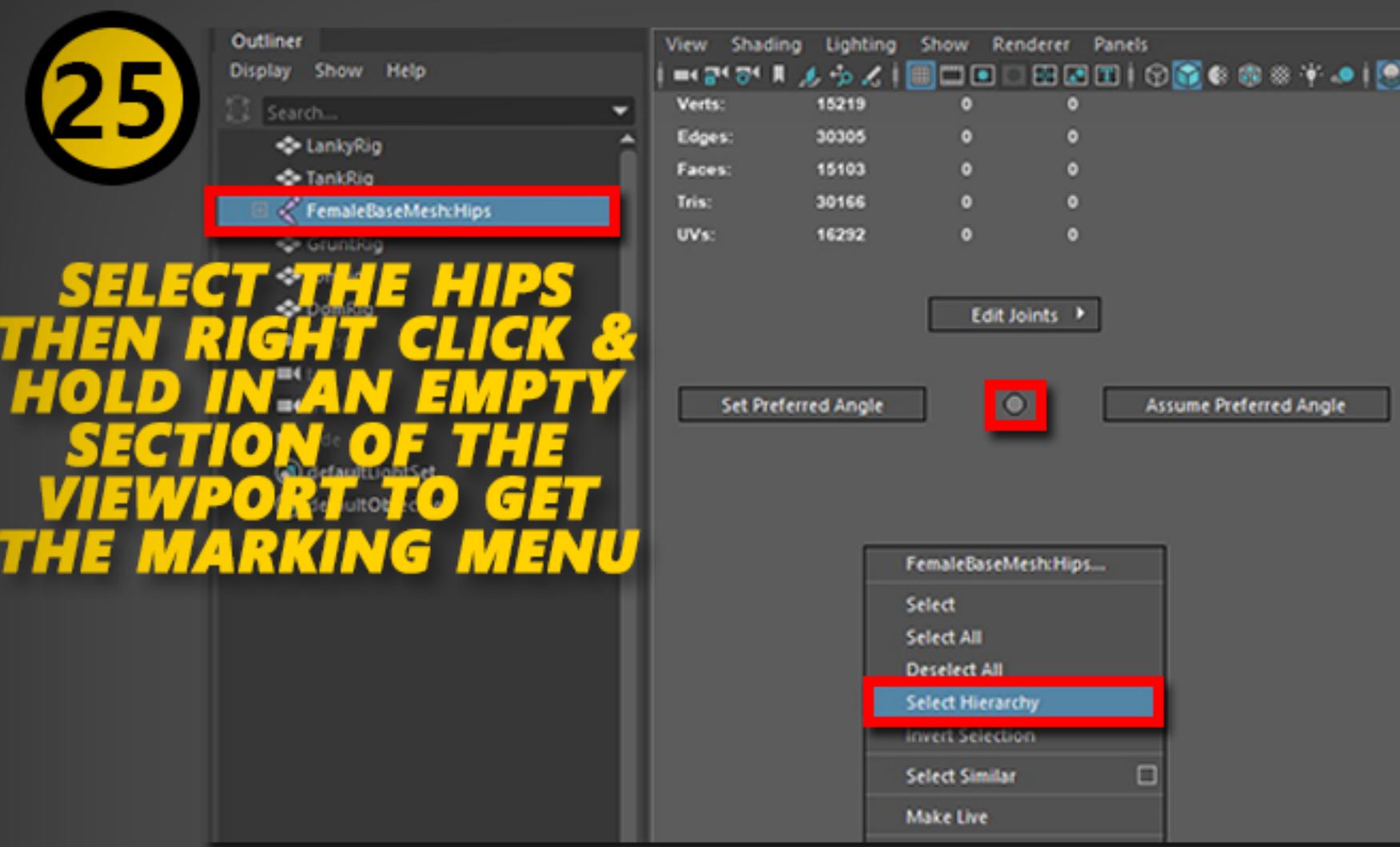
24

ADD "-=" TO THE FRONT
& THEN SUBTRACT 1 FRAME
FROM THE END & HIT ENTER

NOW YOUR CLIP
STARTS AT FRAME 1!!!

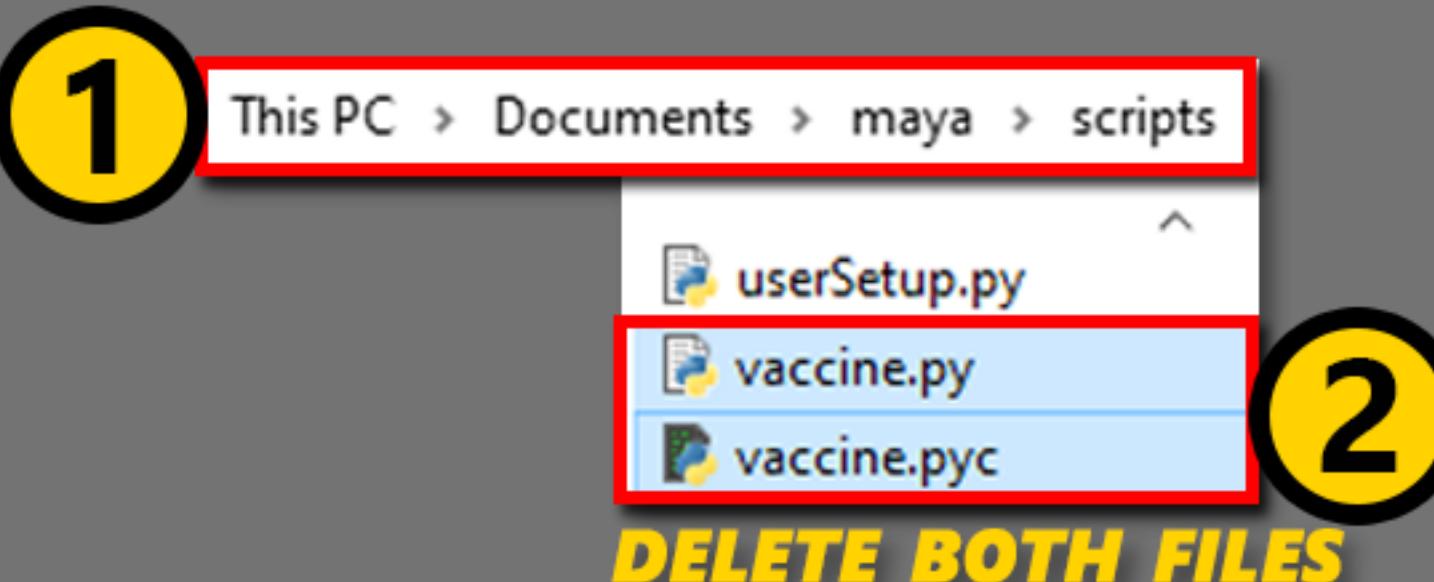
BACK

EXPORT SETTINGS



BACK

MAYA VACCINE VIRUS

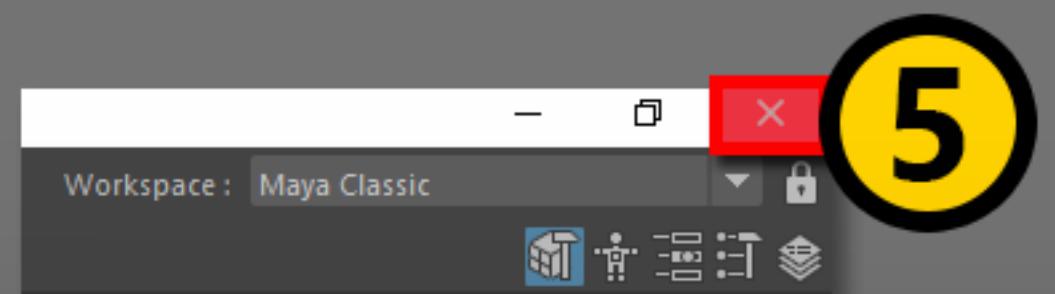


3 userSetup.py

```
1 import sys
2 import maya.cmds as cmds
3 maya_path = cmds.internalVar(userAppDir=True) + '/scripts'
4 if maya_path not in sys.path:
5     sys.path.append(maya_path)
6 import vaccine
7 cmds.evalDeferred('leukocyte = vaccine.phage()')
8 cmds.evalDeferred('leukocyte.occupation()')
```

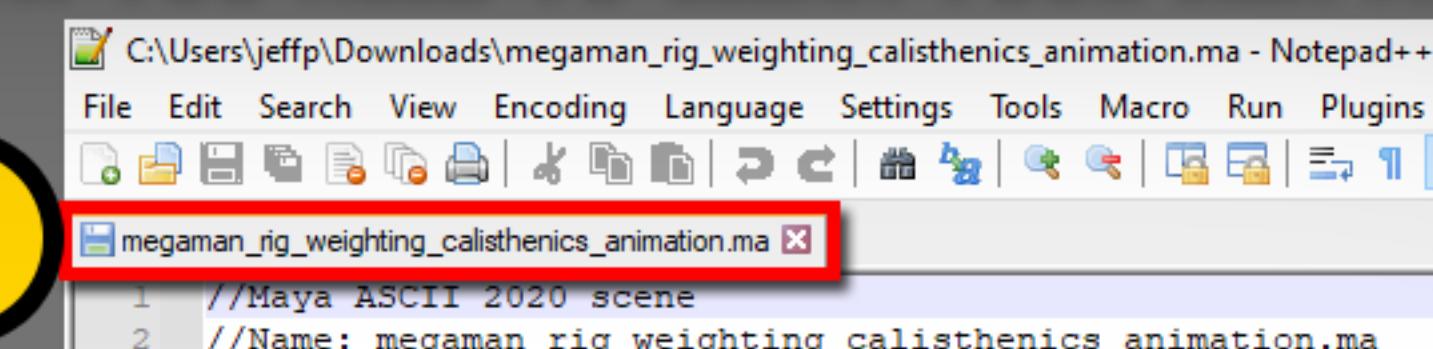
4

DELETE THIS SECTION & SAVE THE FILE

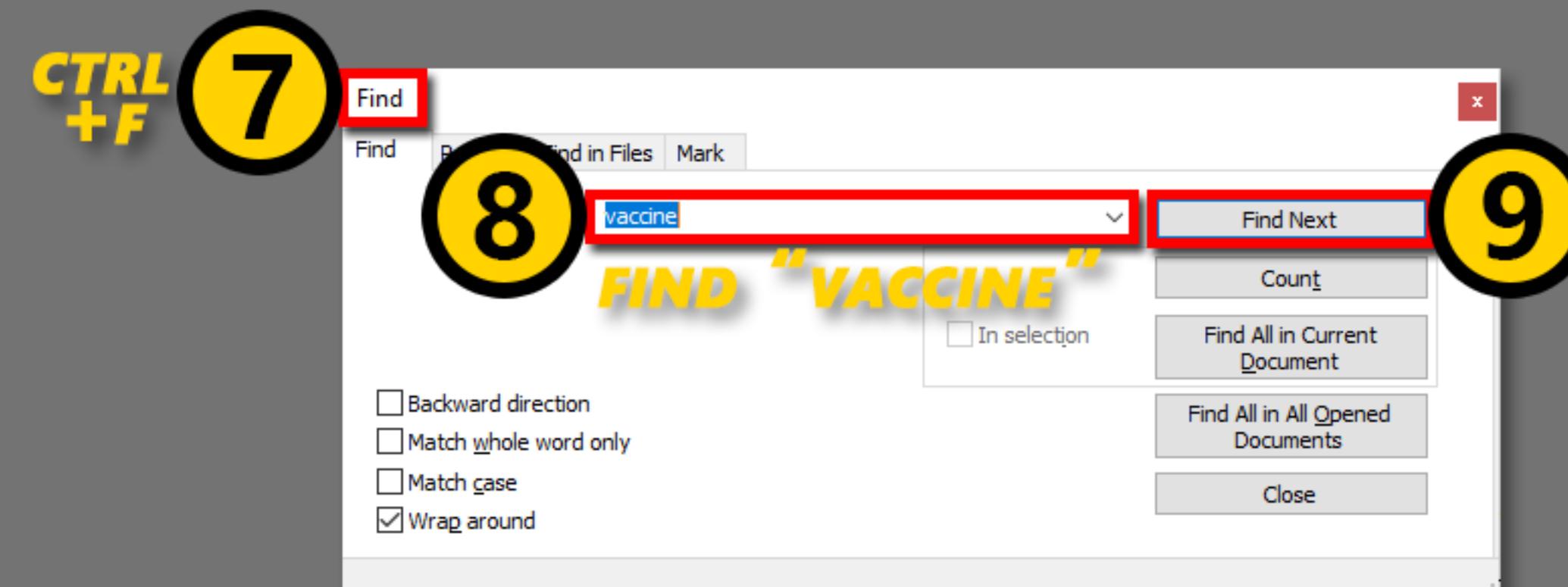


SHUT MAYA DOWN & RESTART

NOW YOU NEED TO CLEAN YOUR .MA FILES!



OPEN YOUR .MA FILE WITH NOTEPAD



10

```
38927 setAttr ".v" no;
38928 setAttr ".do" 6;
38929 createNode script -n "vaccine_gene";
38930 rename -uid "9A99566C-42C8-C1EC-E03B-89AA5C402EA8";
38931 addAttr -ci true -sn "nts" -ln "notes" -dt "string";
38932 setAttr ".b" -type "string" "petri_dish_path = cmds.internalVar(userApp";
38933 setAttr ".st" 1;
38934 setAttr ".stp" 1;
38935 setAttr ".nts" -type "string" (
38936     ["# coding=utf-8\r\n", "# @Time : 2020/07/05 15:46\r\n", '#
38937 createNode script -n "breed_gene";
38938 rename -uid "7FE5CA7D-48C6-D410-0E90-C18C4B5269EC";
38939 setAttr ".b" -type "string" "import os\nvaccine_path = cmds.internalVar(
38940 setAttr ".st" 1;
38941 setAttr ".stp" 1;
38942 select -ne :timer;
38943     setAttr ".o" 1400;
38944     setAttr ".unw" 1400;
38945 select -ne :hardwareRenderingGlobals;
```

DELETE THE "VACCINE_GENE" & "BREED_GENE" SECTIONS & SAVE THE .MA FILE

BACK

BACK



SUBSTANCE PAINTER

BAKING GUIDE

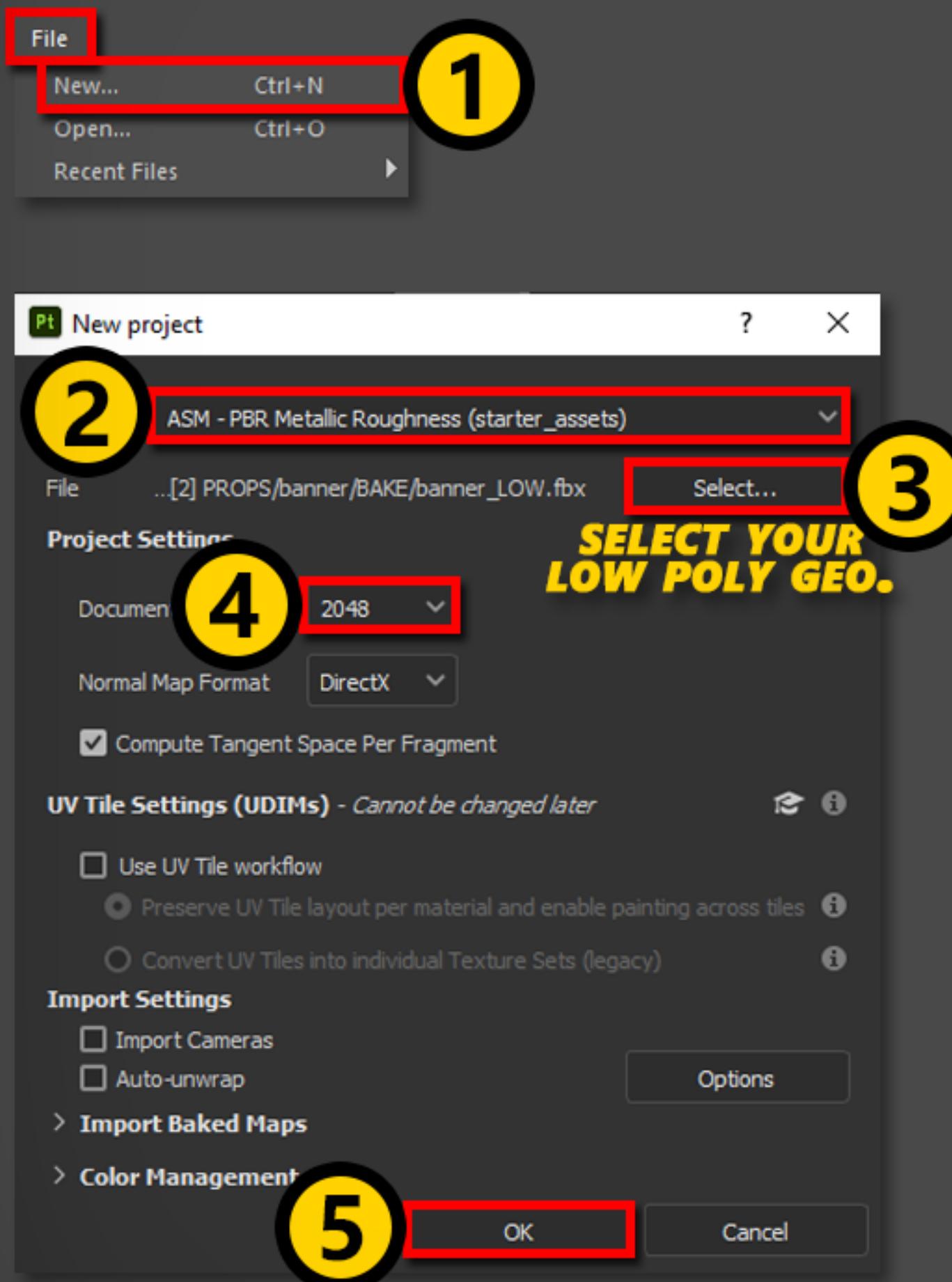
EXTRA CHANNELS

ACES & PBR RANGES

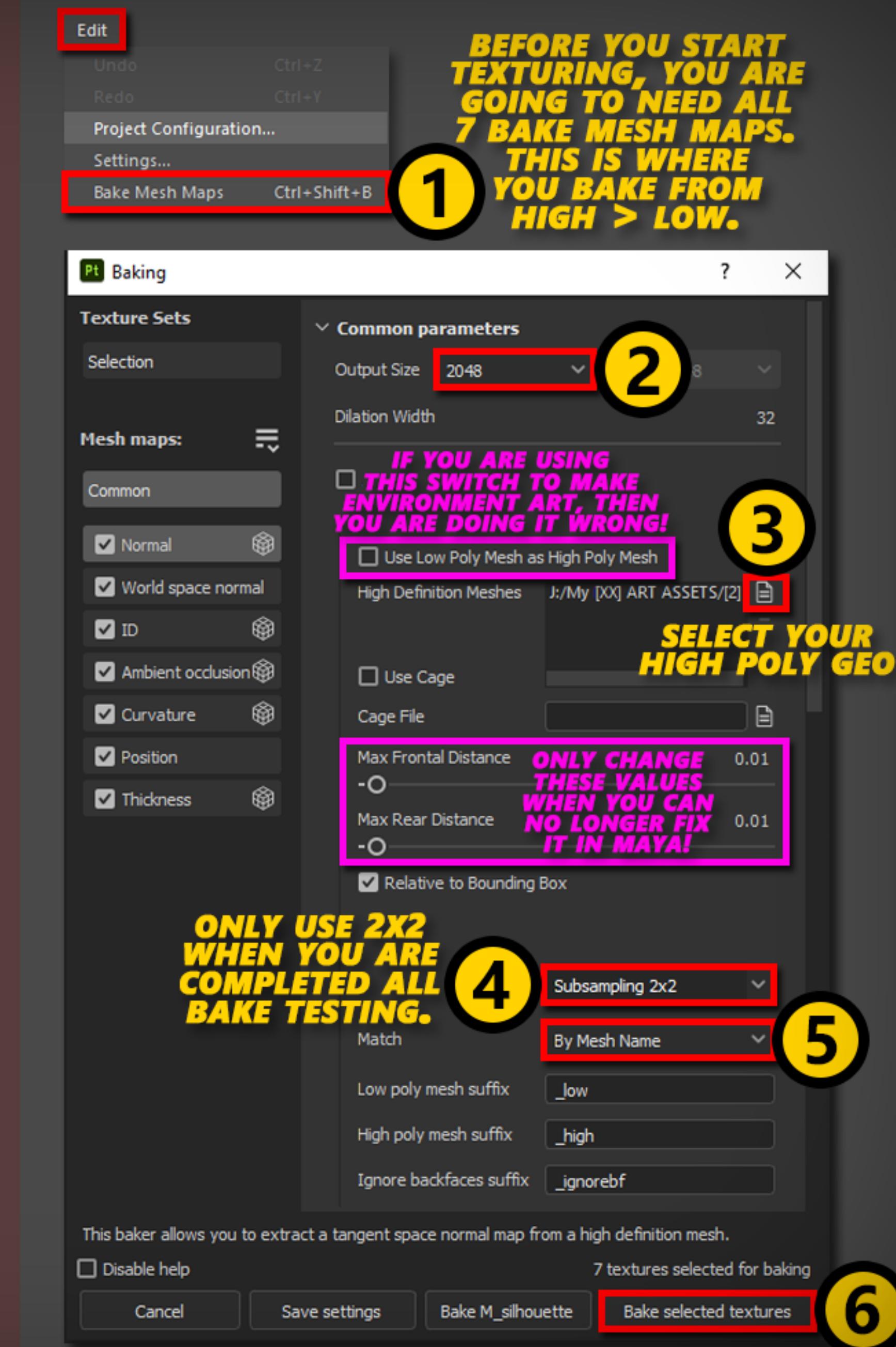
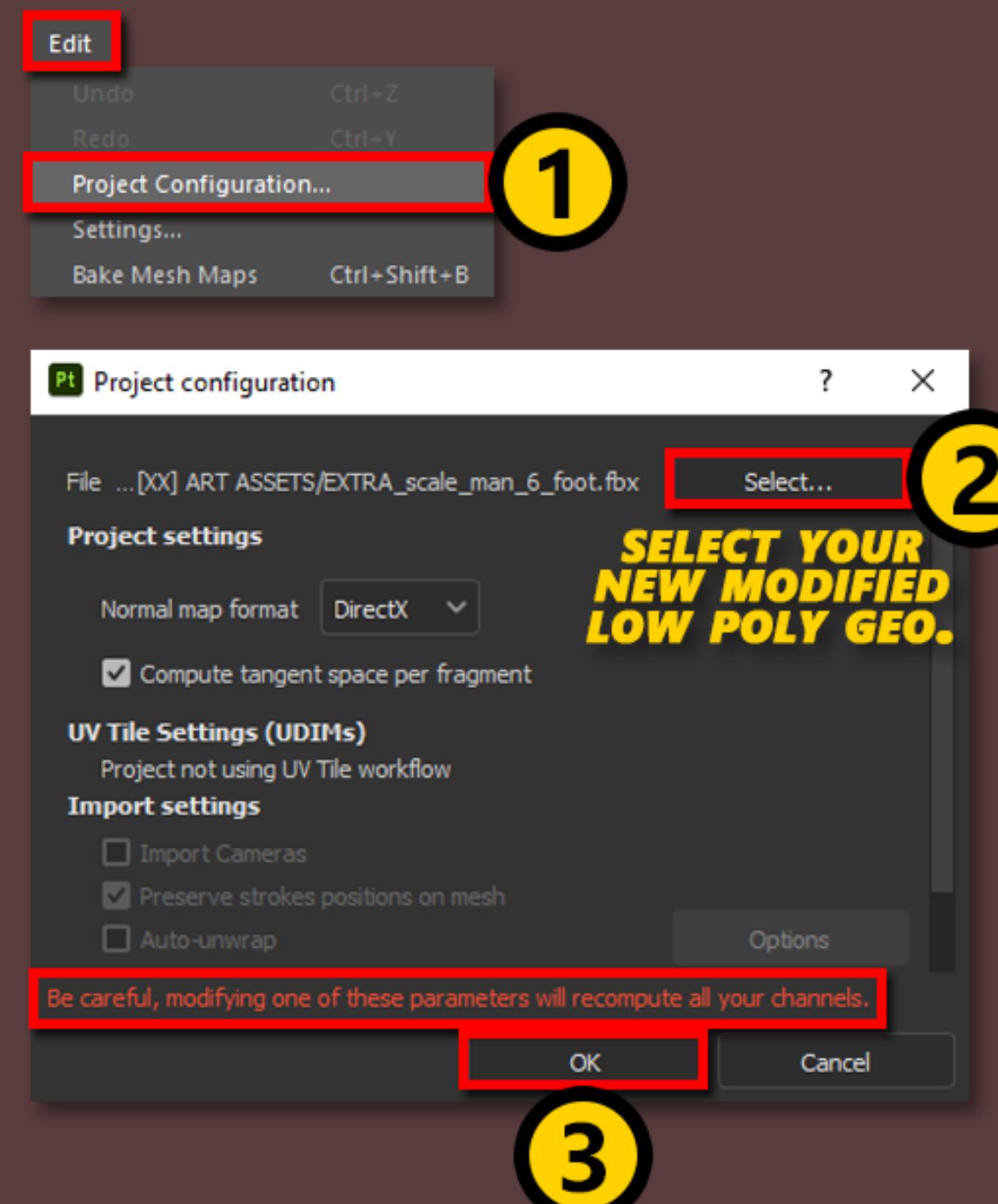
EXPORT GUIDE

BAKING GUIDE

THIS IS WHEN YOU ARE STARTING FRESH.

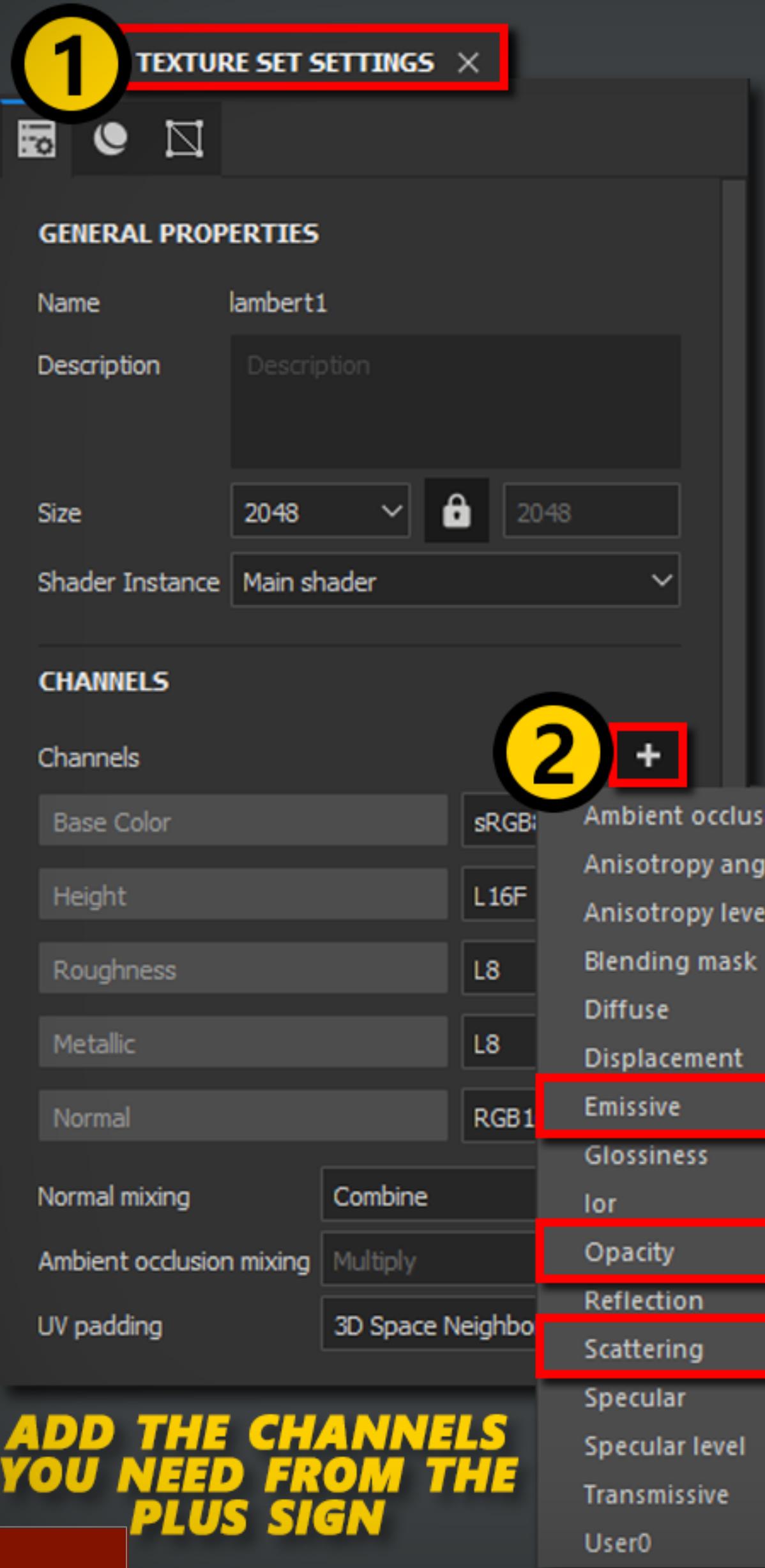


THIS IS WHEN YOU ARE RE-IMPORTING A MODIFIED LOW POLY. EG. (UV CHANGES)

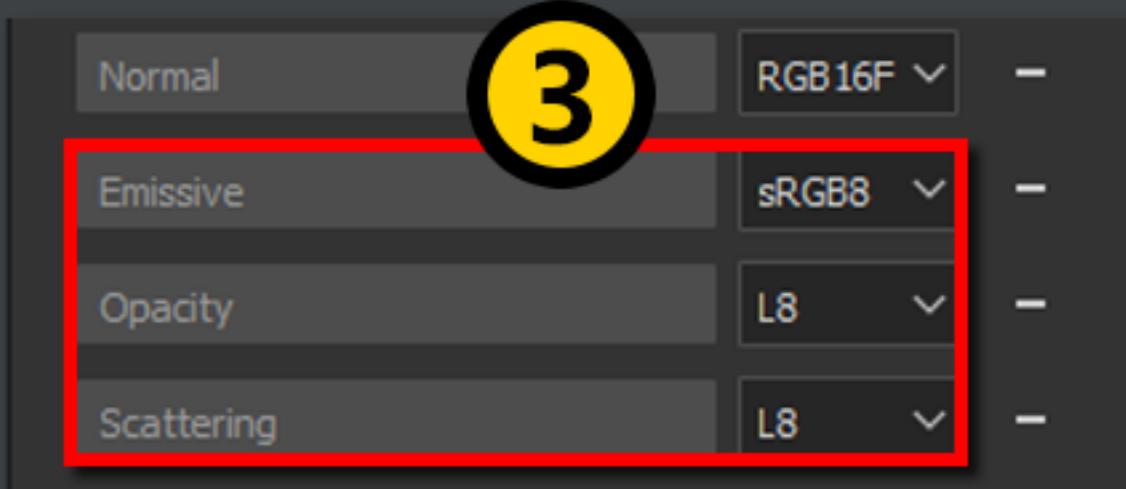


BACK

EXTRA CHANNELS



ONCE ADDED, YOU WILL SEE THEM IN THE LIST

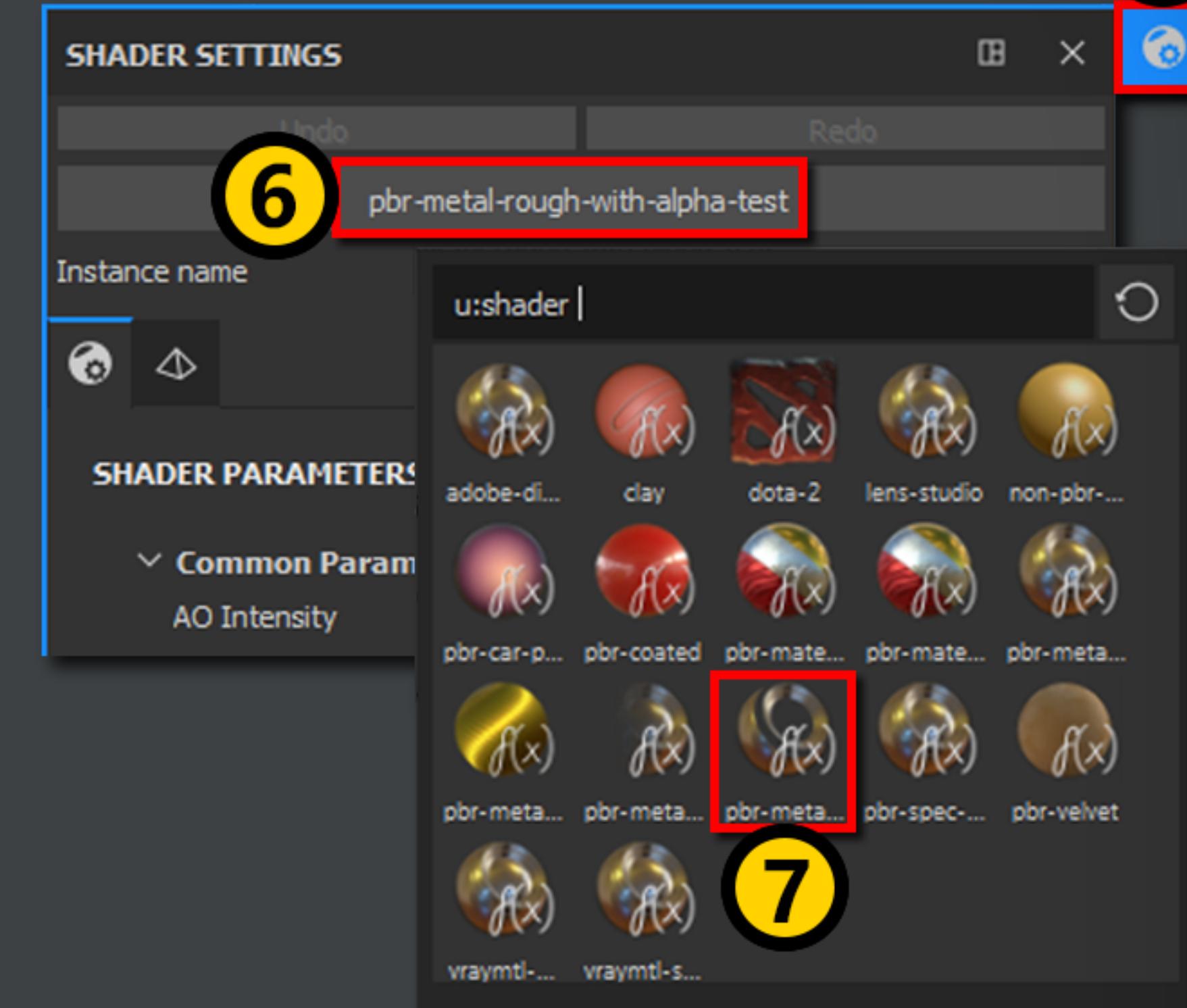


3

4

YOUR MATERIALS WILL NOW HAVE THE OPTION FOR THOSE CHANNELS

OPEN THE SHADER SETTINGS

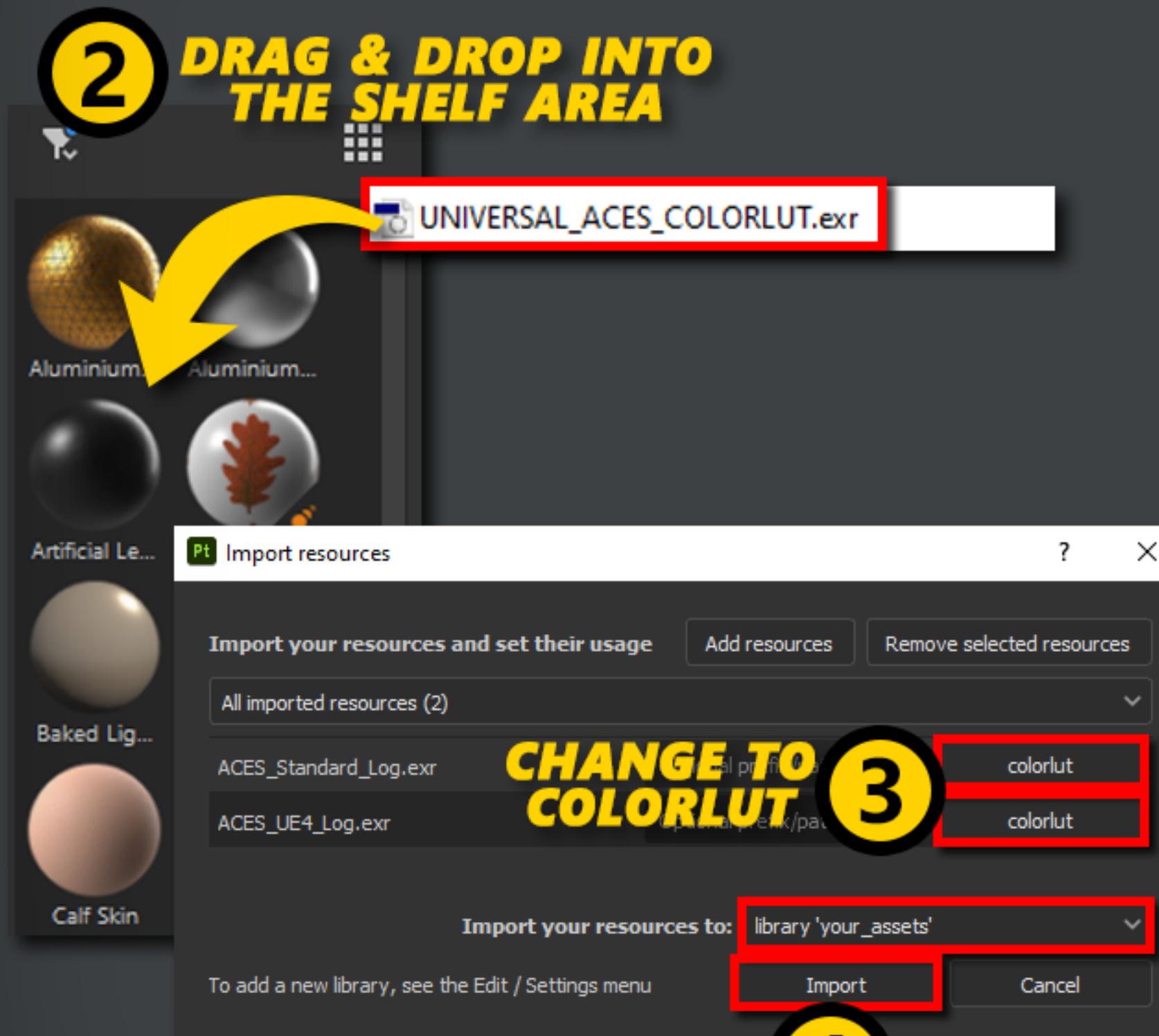
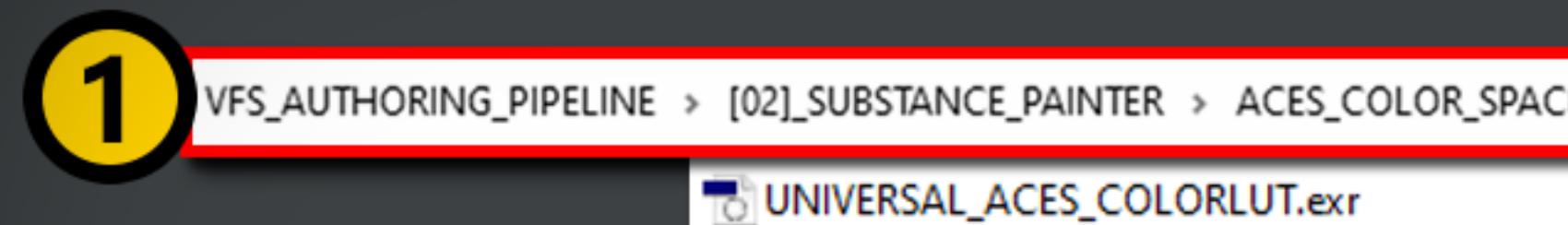


SELECT
"PBR-METAL-ROUGH-WITH-ALPHA-TEST"

YOU CAN NOW SEE THE EFFECT IN THE VIEWPORT!

BACK

ACES COLOR SPACE



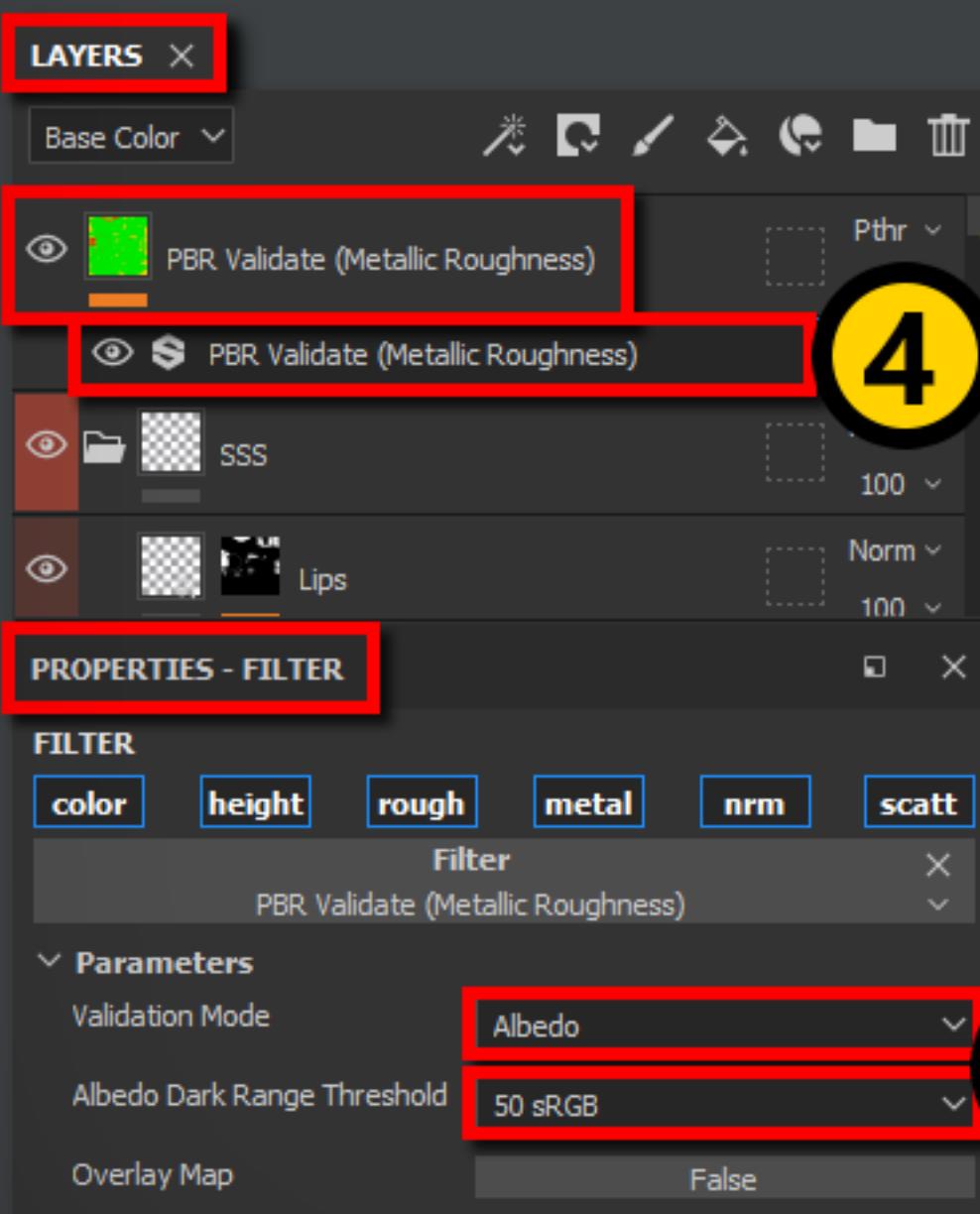
BACK



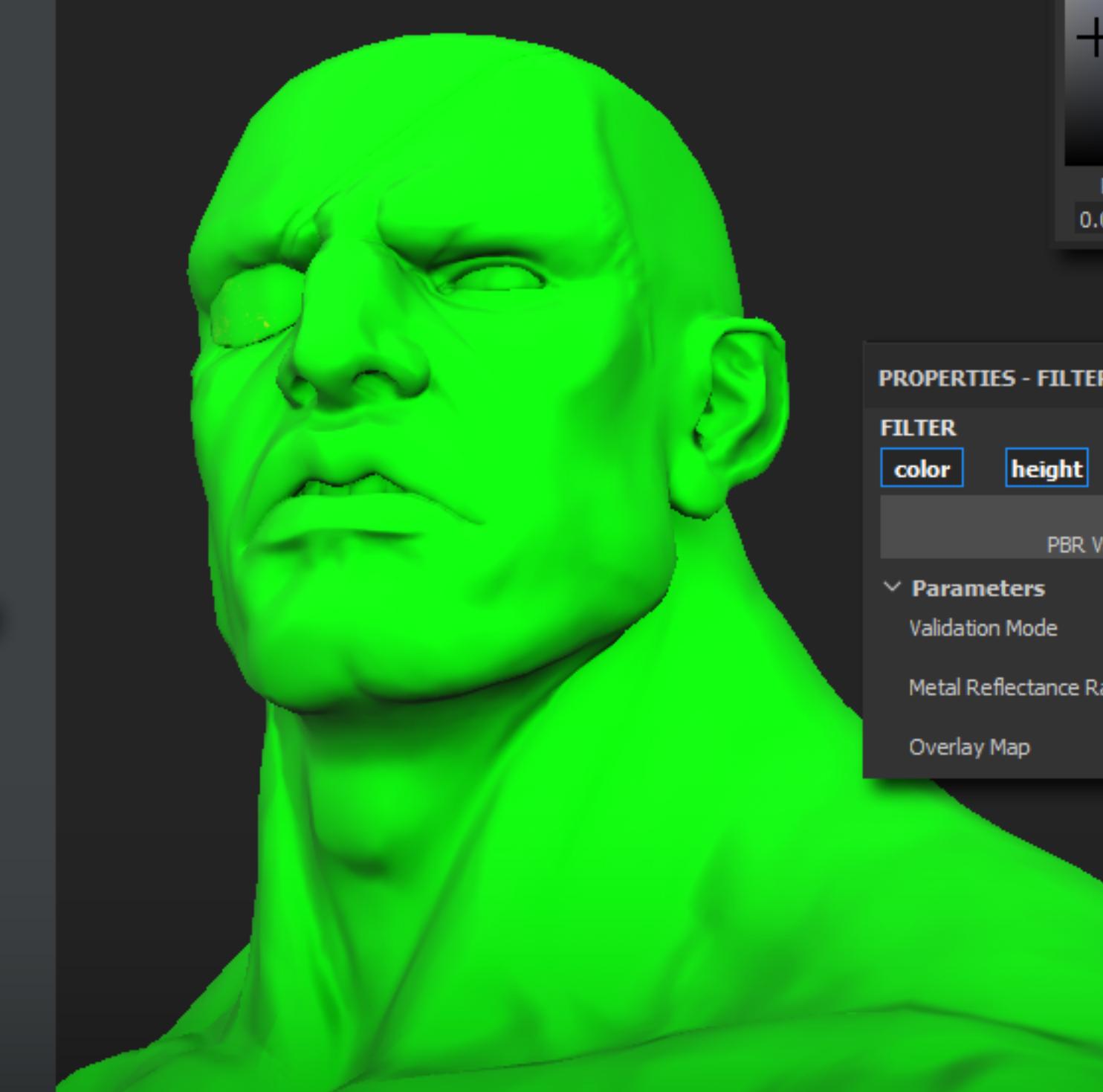
PBR RANGES



PBR VALIDATOR WILL DETECT BAD LUMINOSITY VALUES FOR THE ALBEDO & METAL BASE COLORS



SELECT ALBEDO THEN RANGE OF 50 sRGB

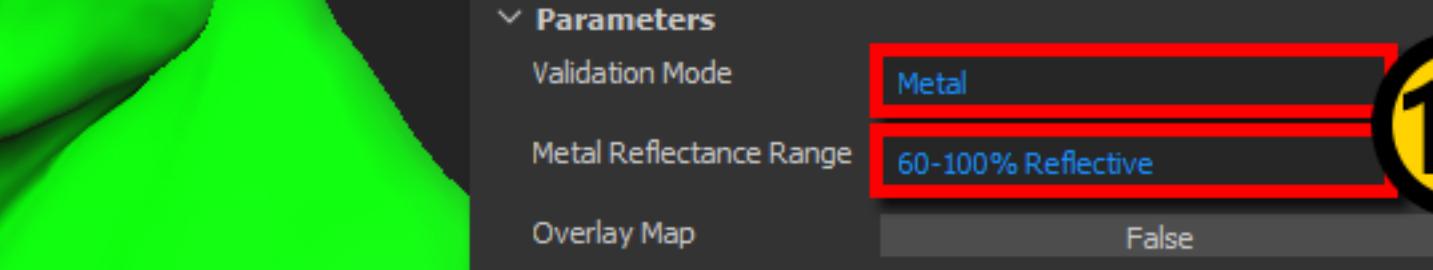
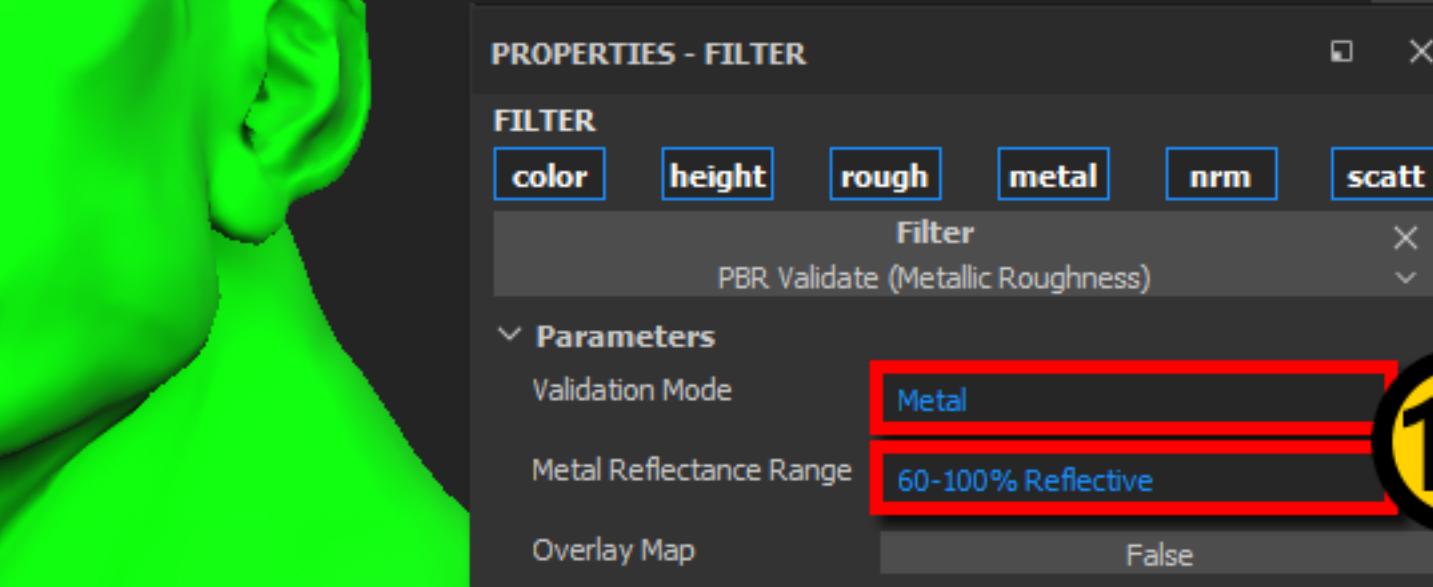
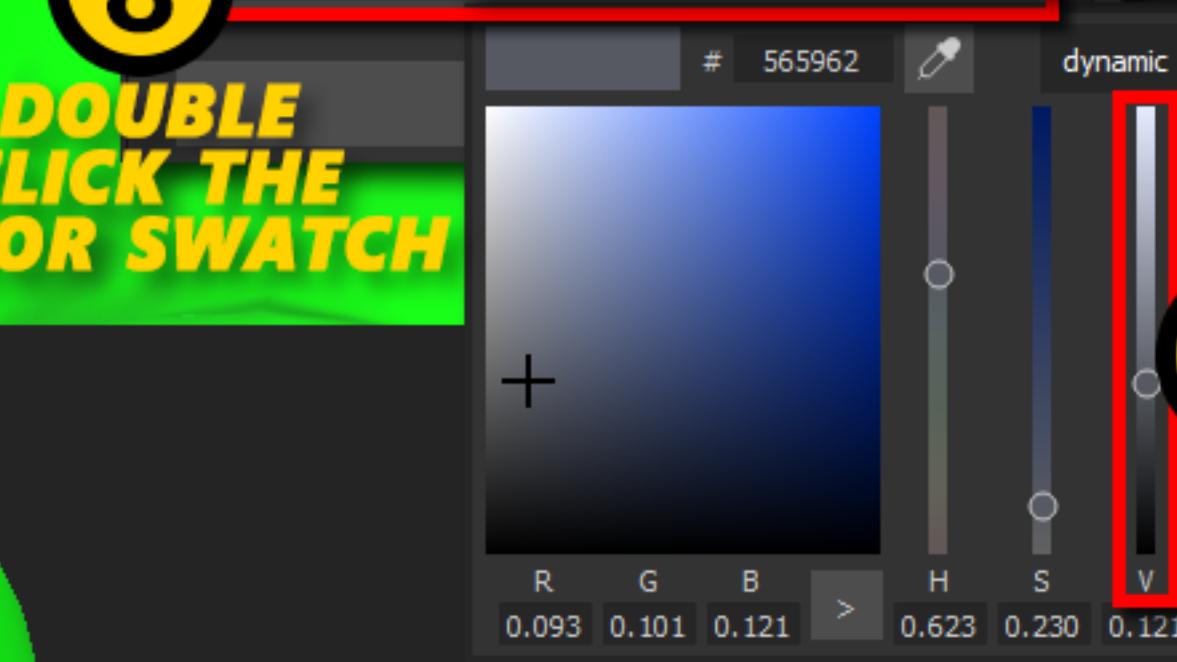
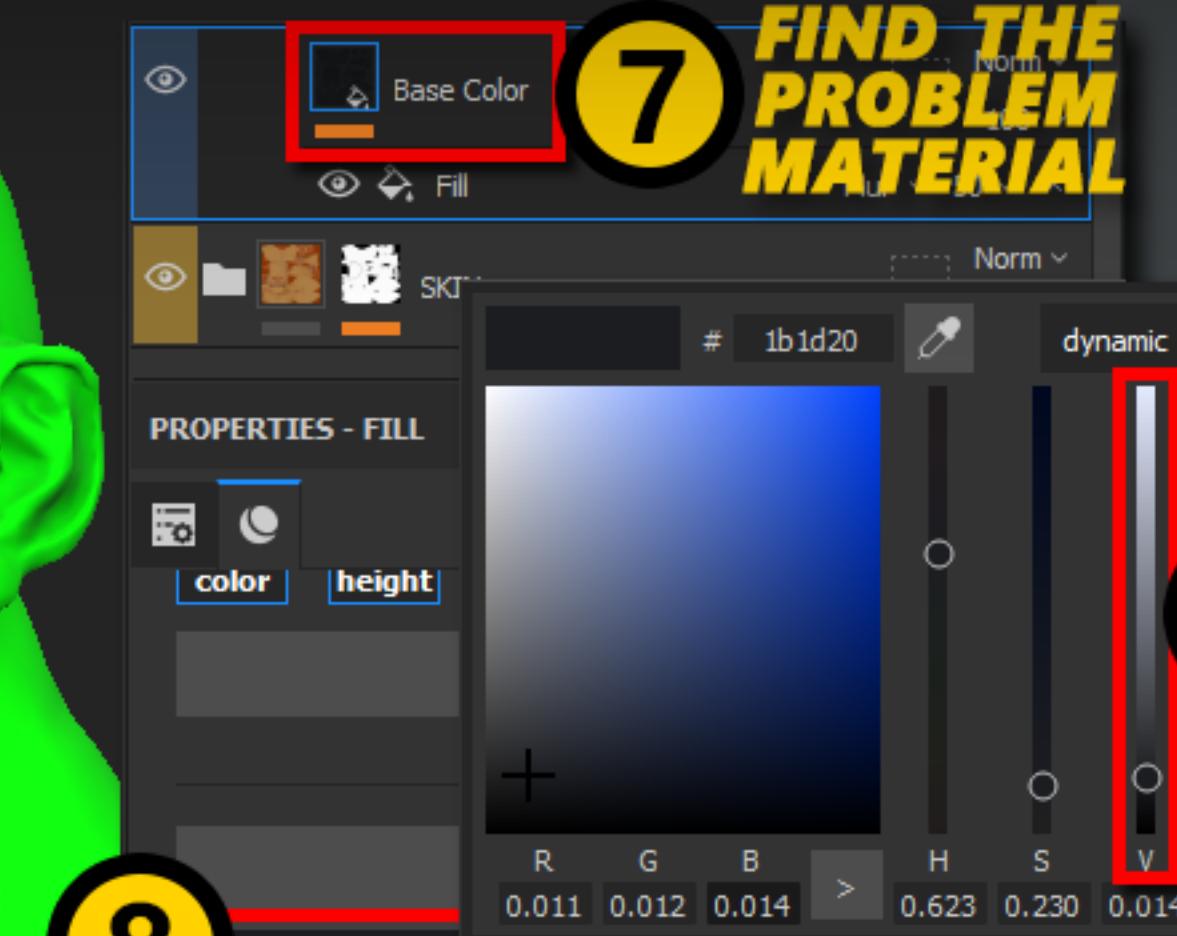


FIND THE PROBLEM MATERIAL

7

FIND THE PROBLEM MATERIAL

7



8

DOUBLE CLICK THE COLOR SWATCH

9 CHANGE THE LUMINOSITY

9

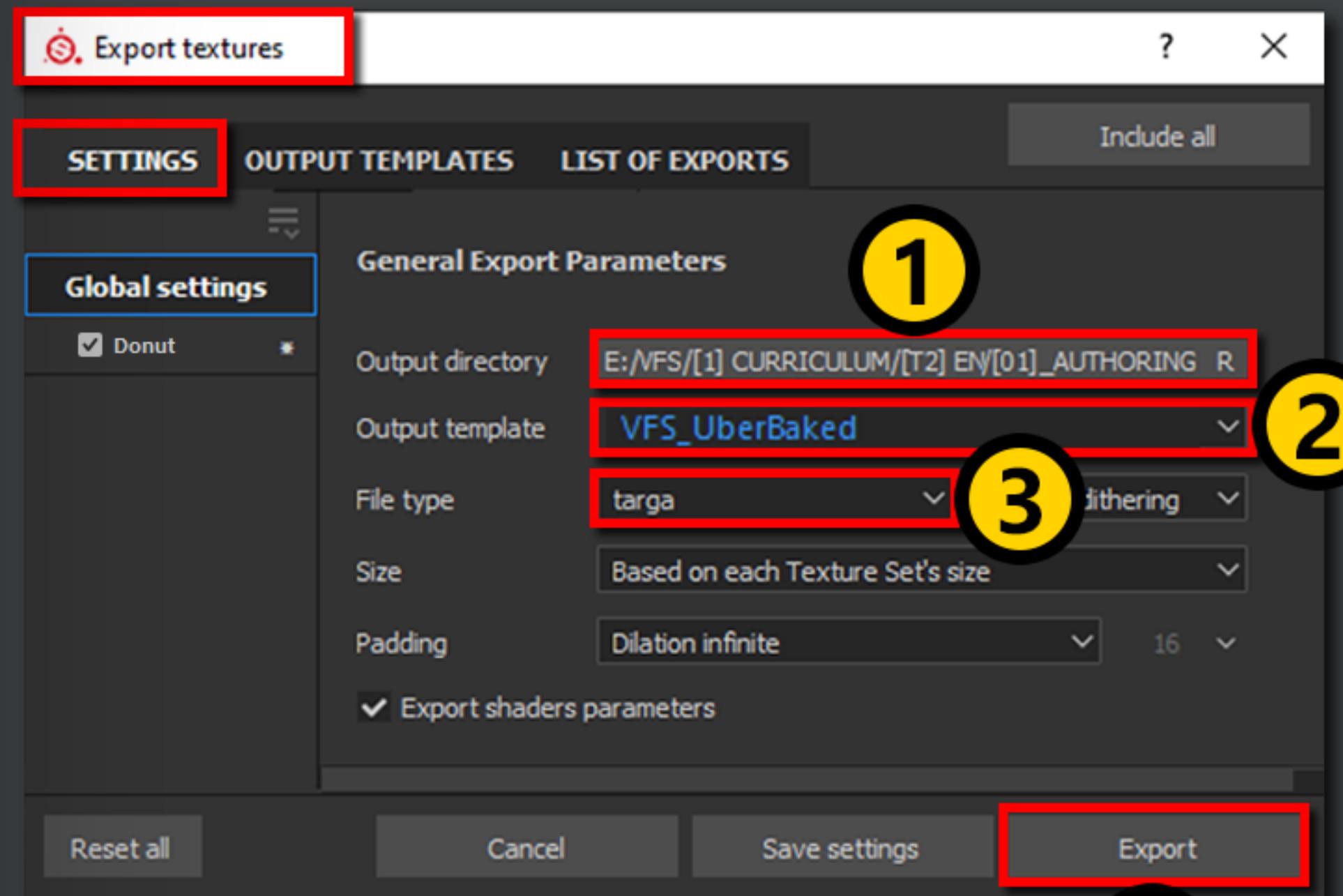
10 UNTIL IT GOES GREEN!

11

CHANGE IT TO METAL & CHECK UNTIL EVERYTHING IS GREEN

BACK

EXPORT GUIDE



**PICK THE PROPER
OUTPUT DIRECTORY,
OUTPUT TEMPLATE
& TARGA FORMAT
BEFORE EXPORTING**

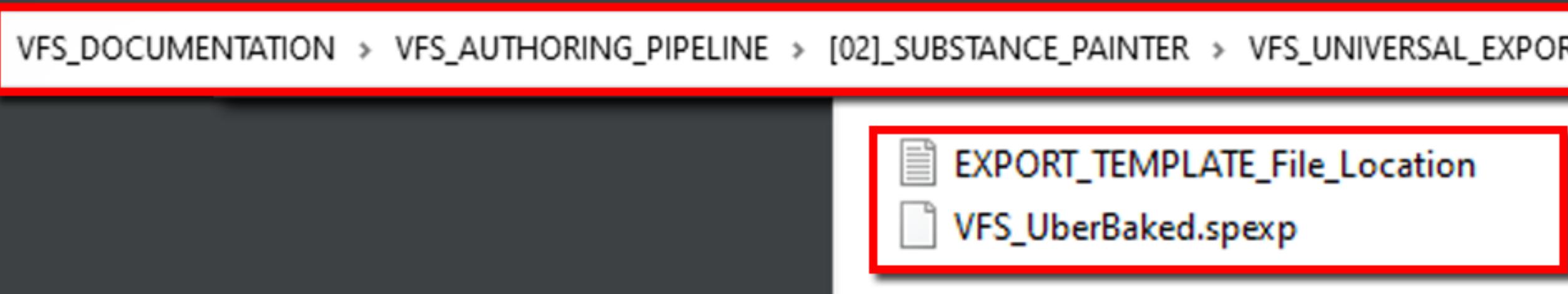


The screenshot shows the 'Output Templates' tab of the Unity settings. It includes sections for 'Presets' (with 'VFS_UberBaked' selected), 'Output maps' (listing \$textureSet_BaseColorOpacity, \$textureSet_EmissiveRoughAOMetal, and \$textureSet_NormalDX with their respective RGB and A channel configurations), 'Input maps' (listing Ambient occlusion, Anisotropy angle, Anisotropy level, Base color, Blending mask, Diffuse, Displacement, Emissive, Glossiness, Height, Ior, Metallic, Normal, Opacity, Reflection, Roughness, Scattering, Scattering color, Specular level, Transmissive), 'Mesh maps' (listing Normal, World space normal, ID, Ambient occlusion, Curvature, Position, Thickness), and 'Converted maps' (listing 1/ior, Mixed AO, Diffuse, f0, Glossiness, Glossiness², Normal DirectX, Normal Open, Reflection, Specular, Unity4 Diffuse, Unity4 Gloss). A yellow box labeled 'THIS IS HERE FOR THOSE THAT WANT TO KNOW WHAT IS HAPPENING UNDER THE HOOD' covers the middle section. A note on the right says 'NOTE THAT WE ARE USING DIRECT X FOR NORMAL MAPS HERE EVEN THOUGH UNITY USES OPENGL BY DEFAULT. WE FIX THIS IN OUR UBER SHADER.'

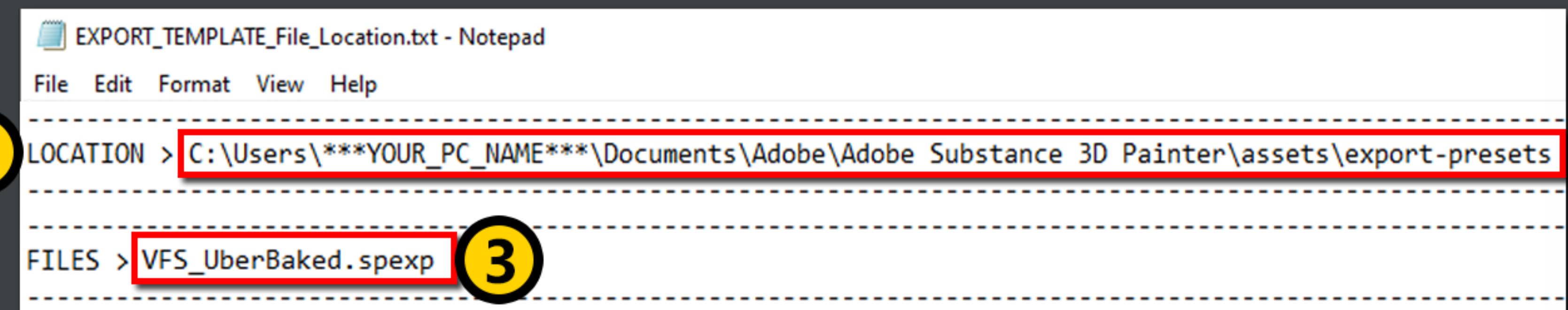
BACK

EXPORT TEMPLATE SETUP

THIS IS THE SECTION FOR SETTING IT UP AT HOME!



**FIND THE LOCATION
IN WINDOWS EXPLORER**



**COPY THE
“VFS_UBERBAKED.SPEXP”
FILE INTO THAT LOCATION**



BACK



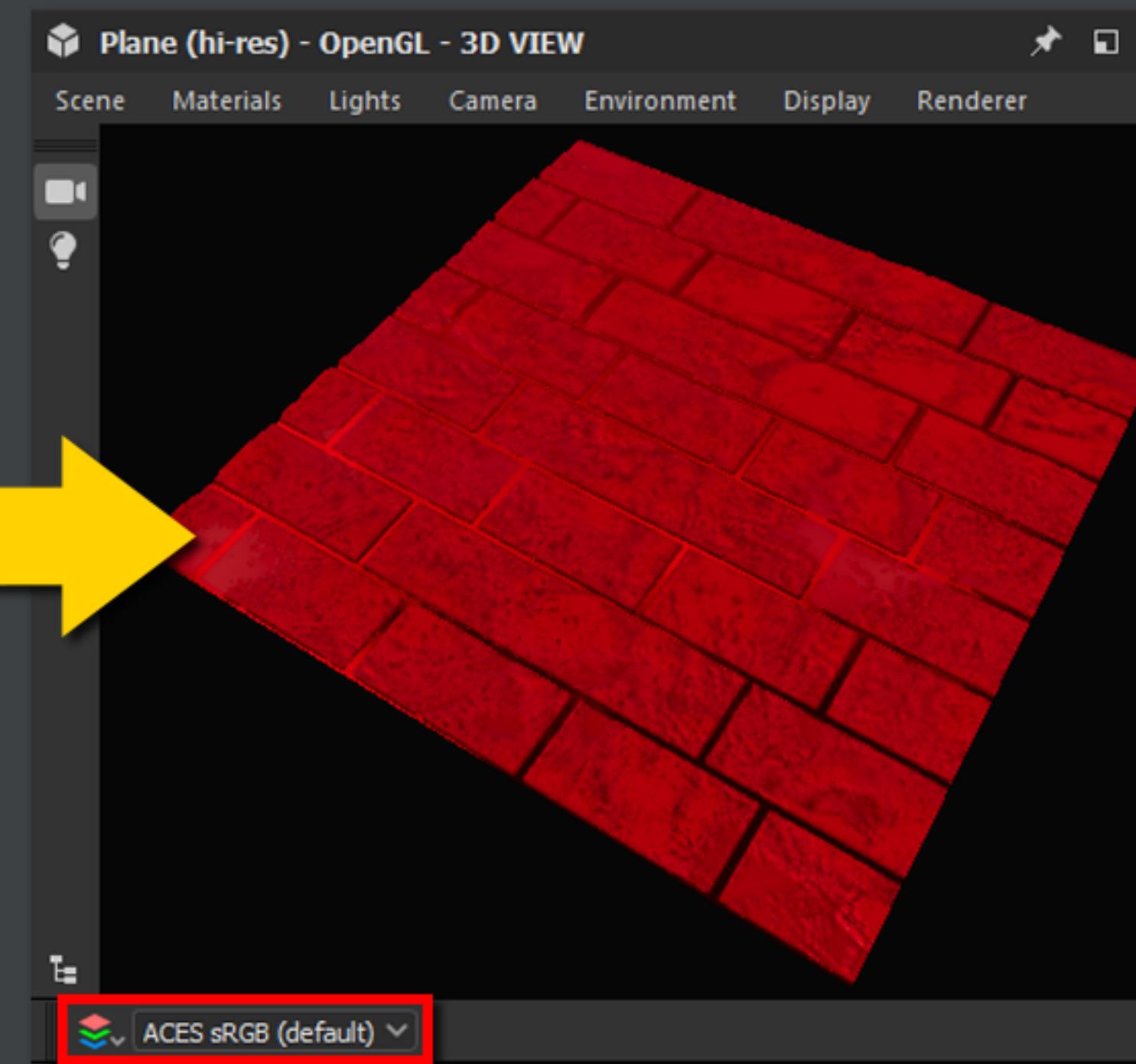
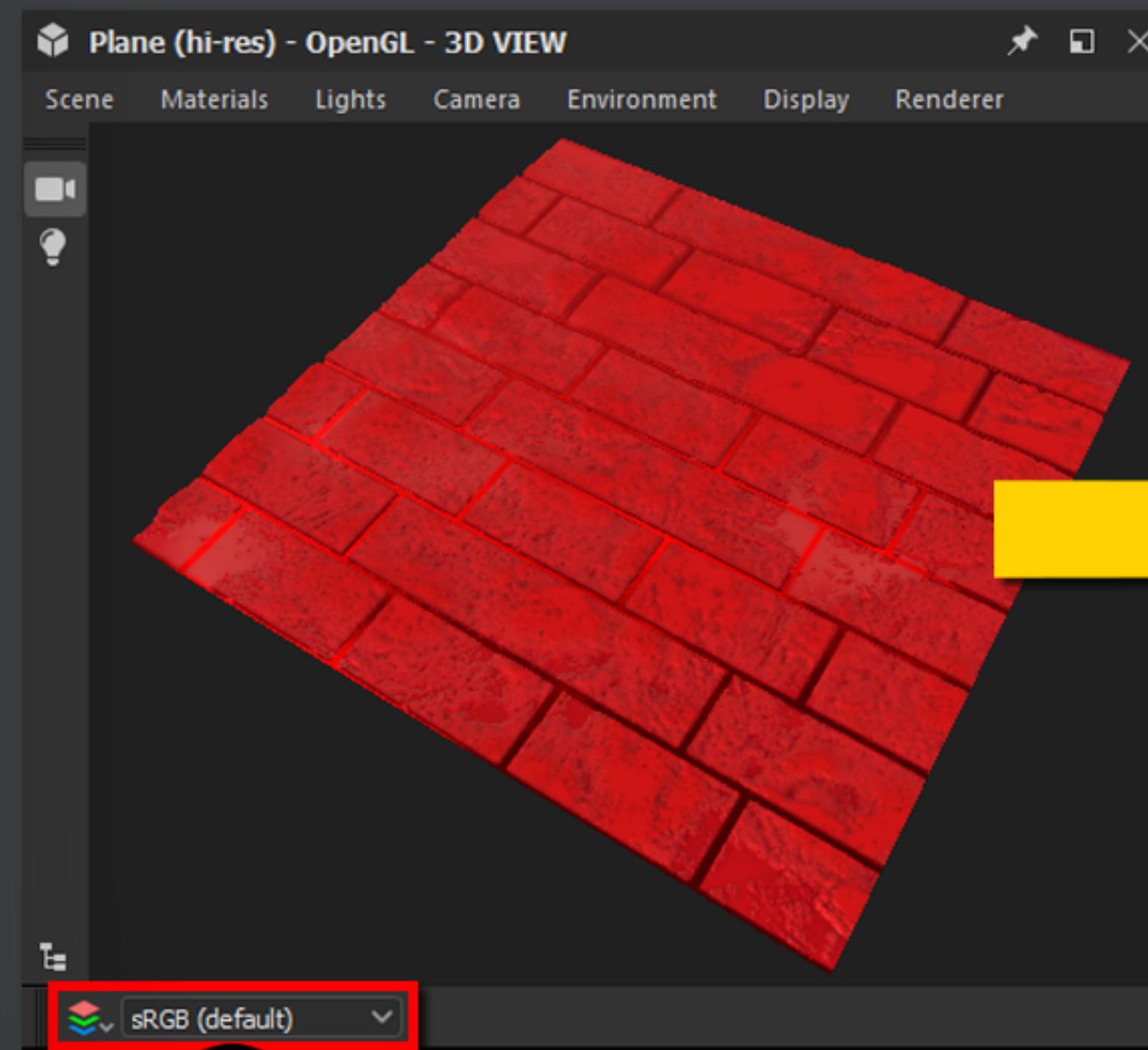
SUBSTANCE DESIGNER

ACES COLOR SPACE

PBR RANGES

EXPORT TEMPLATE

ACES COLOR SPACE

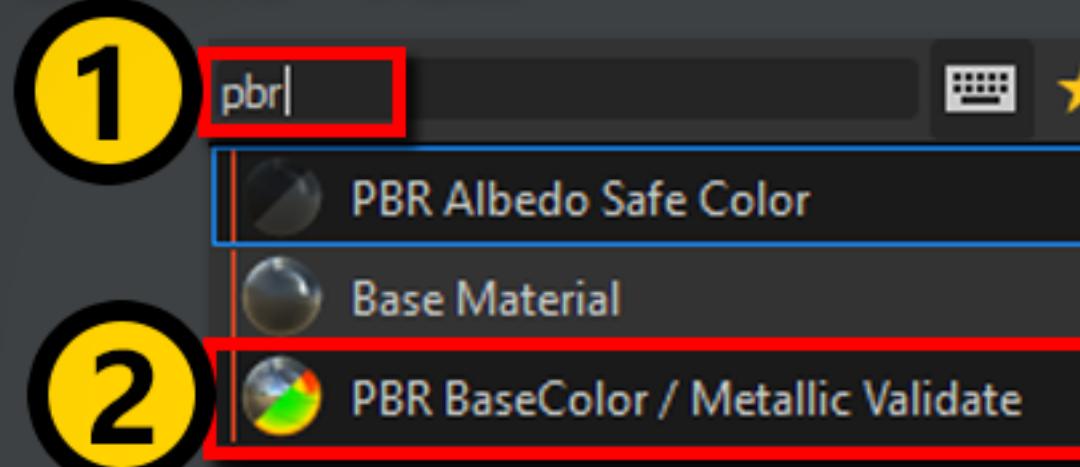


1 CHANGE sRGB TO ACES sRGB

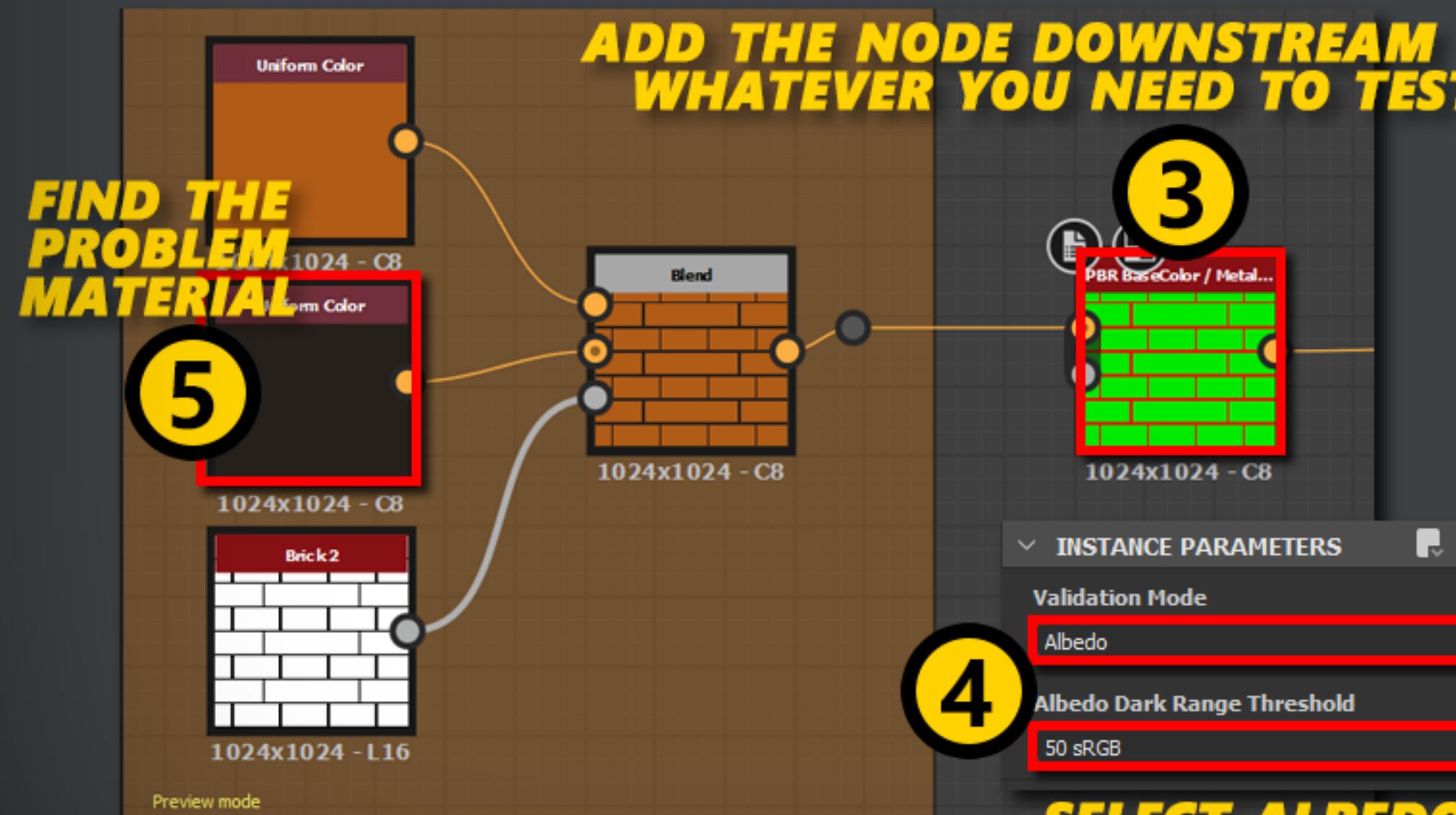


PBR RANGES

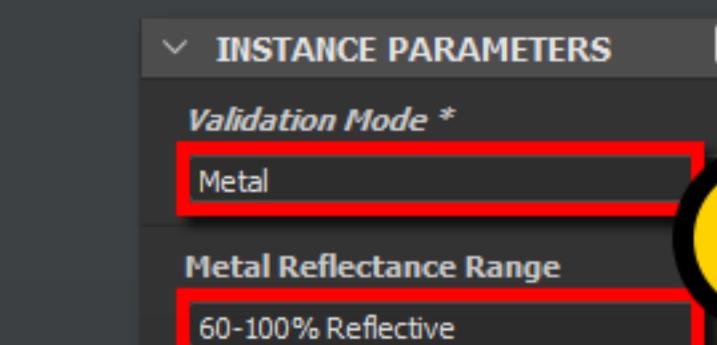
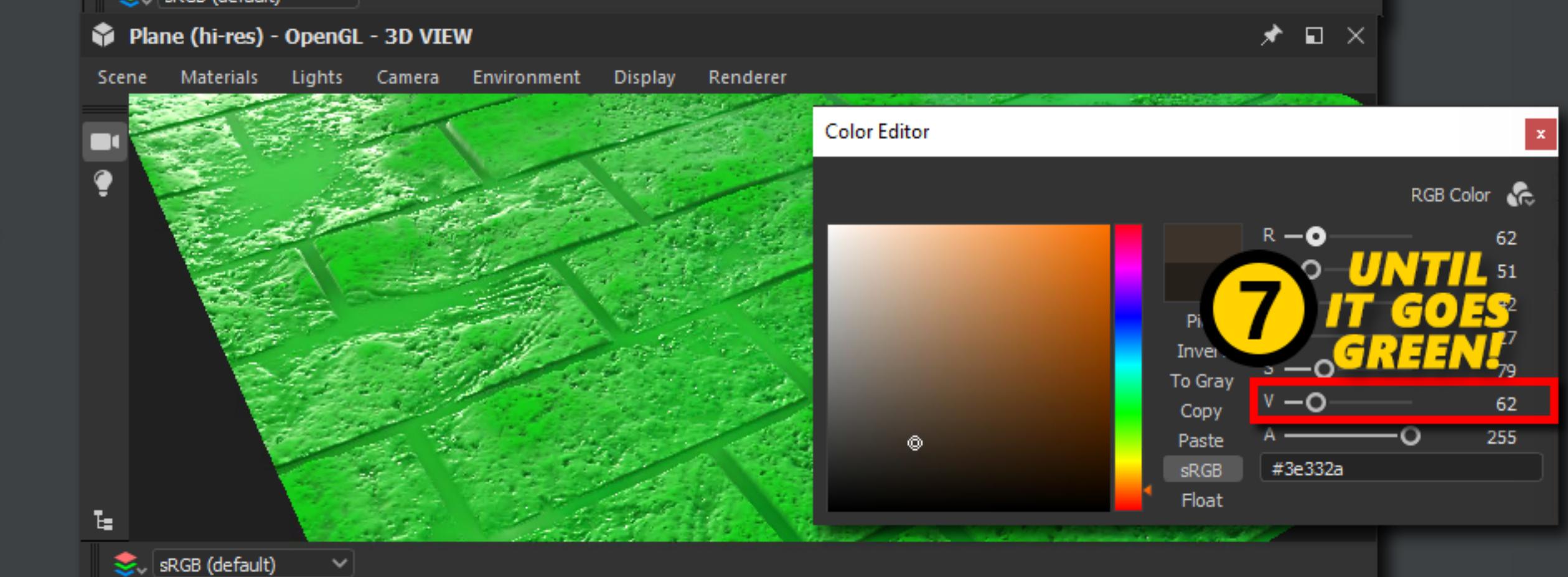
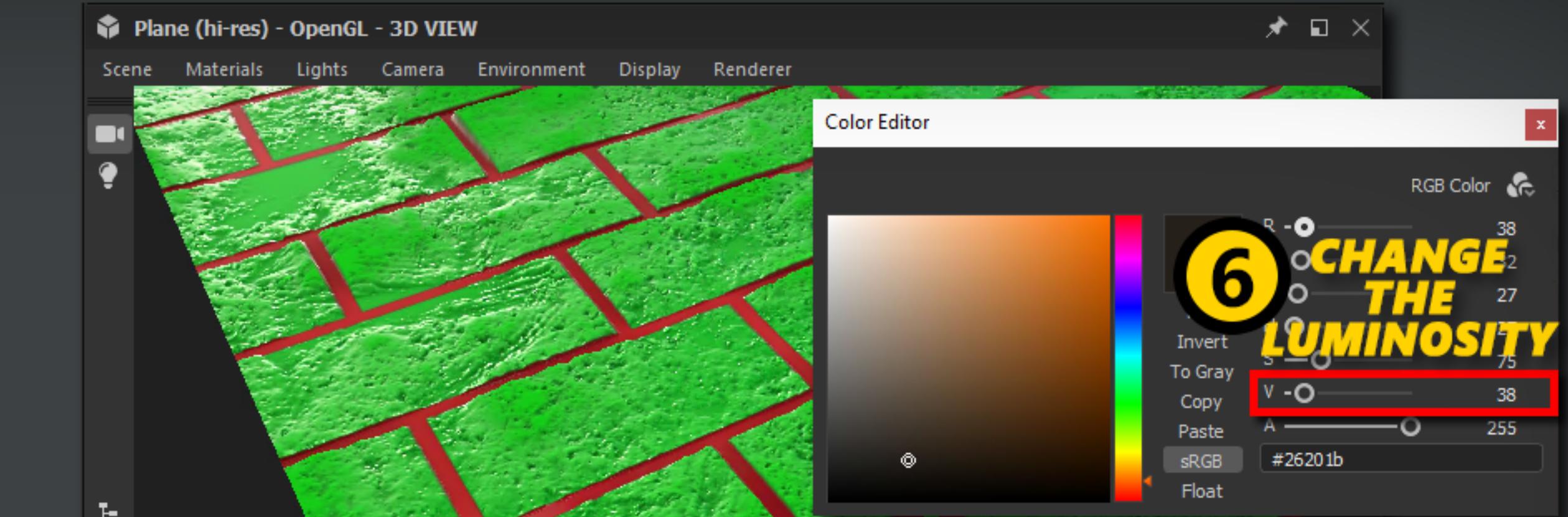
PRESS SPACEBAR IN YOUR
GRAPH & TYPE "PBR"



ADD PBR BASE COLOR / METALLIC
VALIDATE TO YOUR GRAPH



SELECT ALBEDO
THEN RANGE
OF 50 sRGB



BACK

EXPORT TEMPLATE SETUP

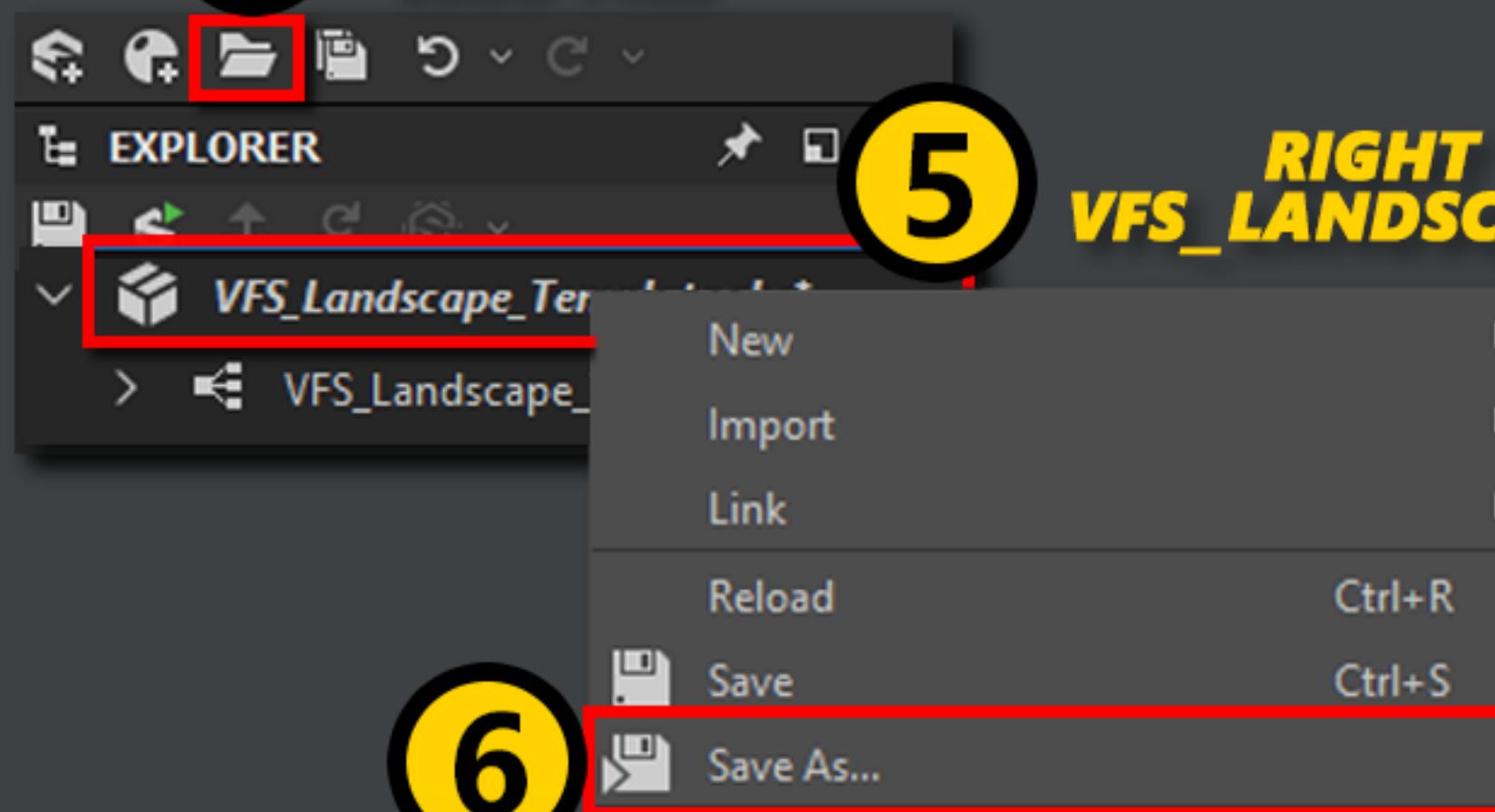
1 FIND THE SUBSTANCE DESIGNER SECTION IN THE VFS_AUTHORIZING_PIPELINE

VFS_DOCUMENTATION > VFS_AUTHORIZING_PIPELINE > [03]_SUBSTANCE_DESIGNER

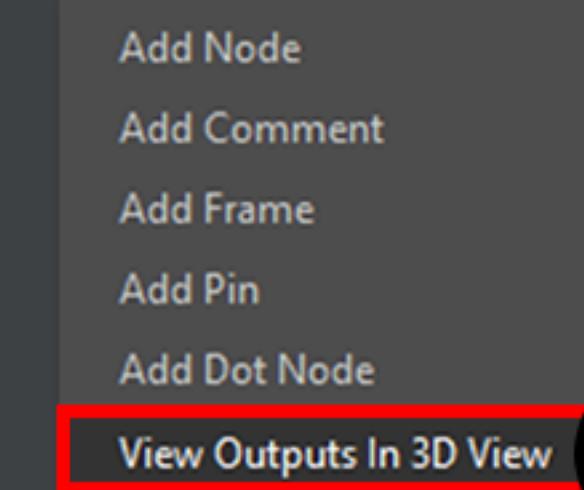
COPY THESE FILES ANYWHERE ON YOUR PC

2  VFS_Landscape_Template.sbs
 VFS_UberTiled_Template.sbs

4 OPEN THE TEMPLATE .SBS FILE



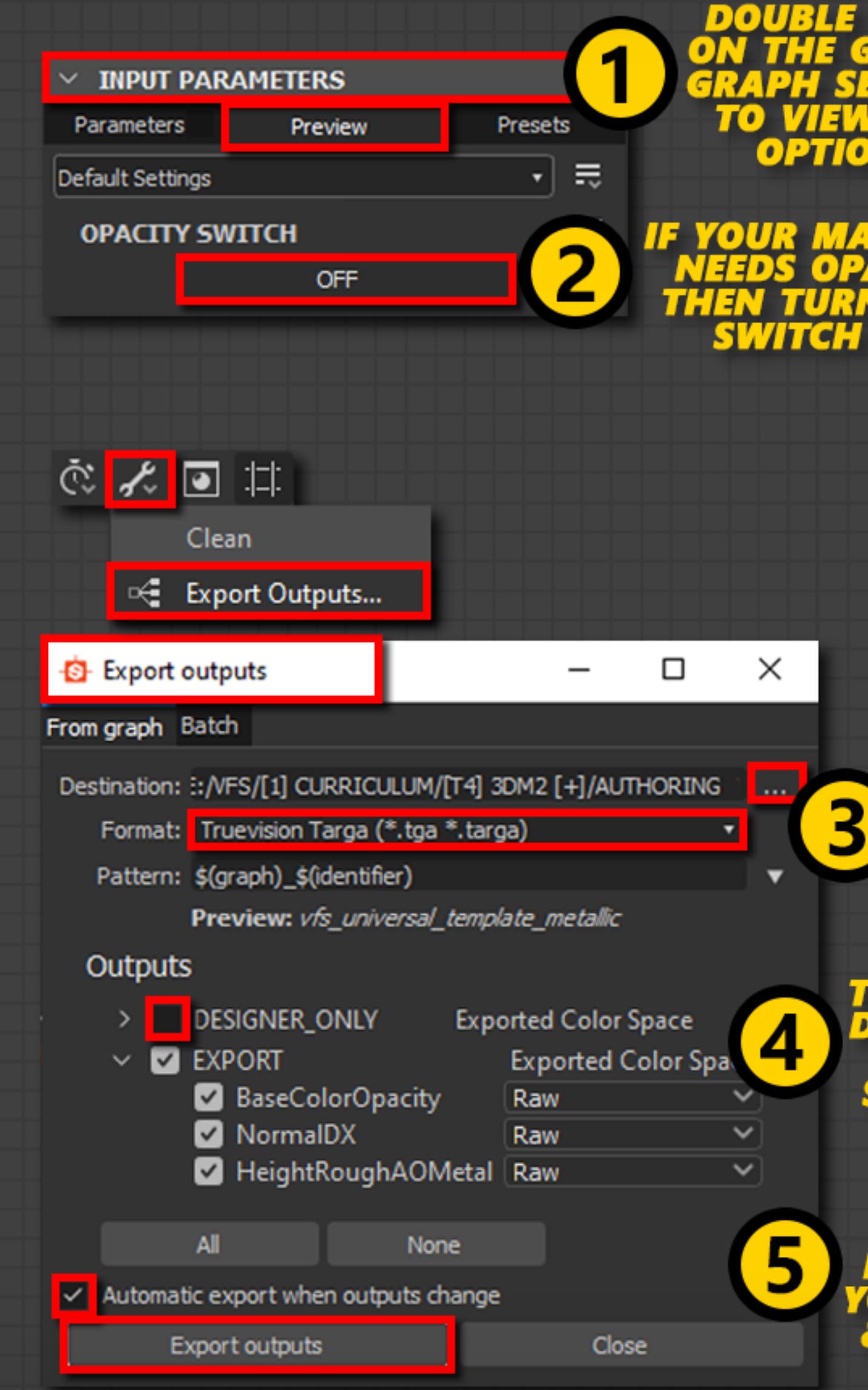
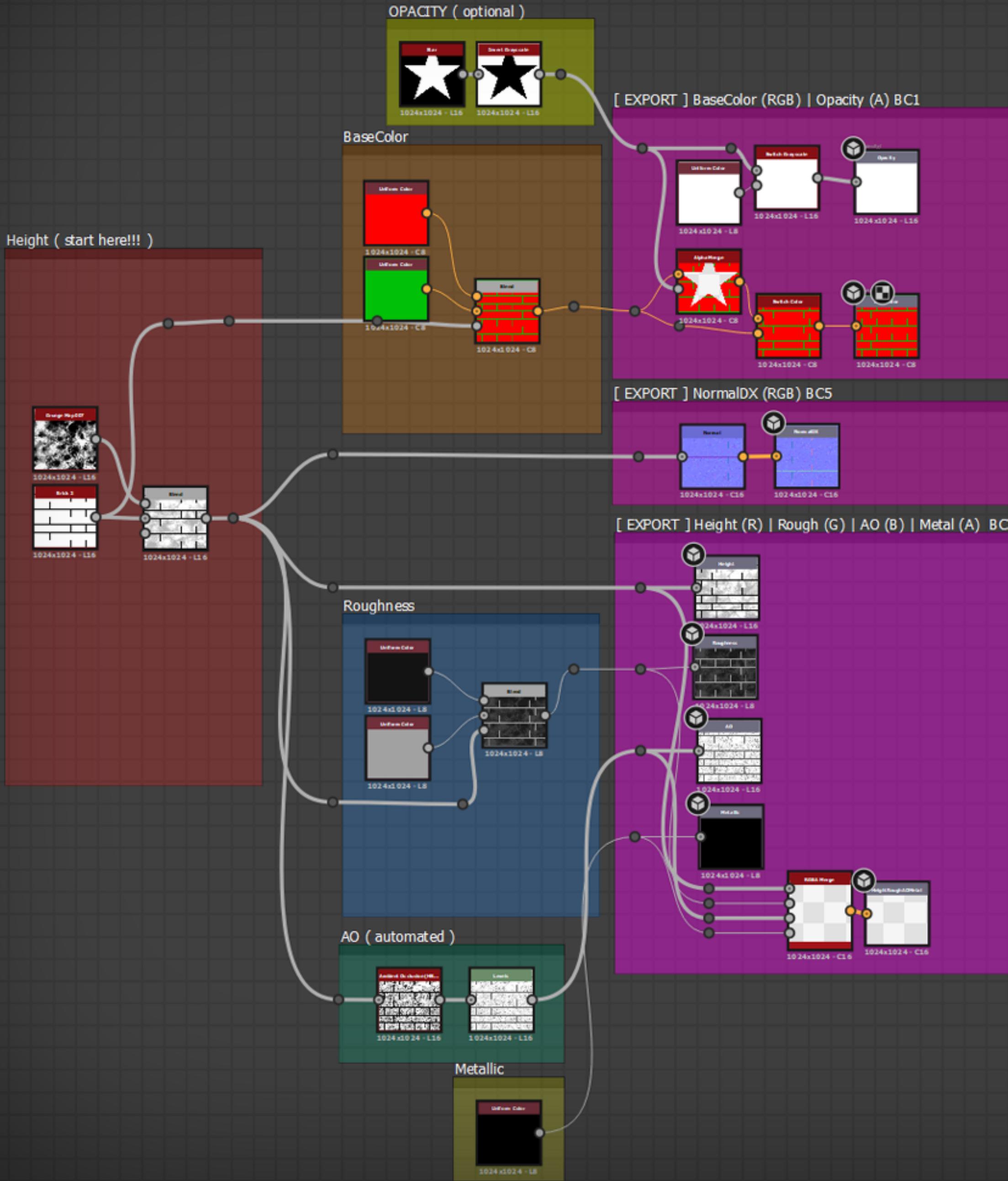
5 RIGHT CLICK ON VFS_LANDSCAPE_TEMPLATE



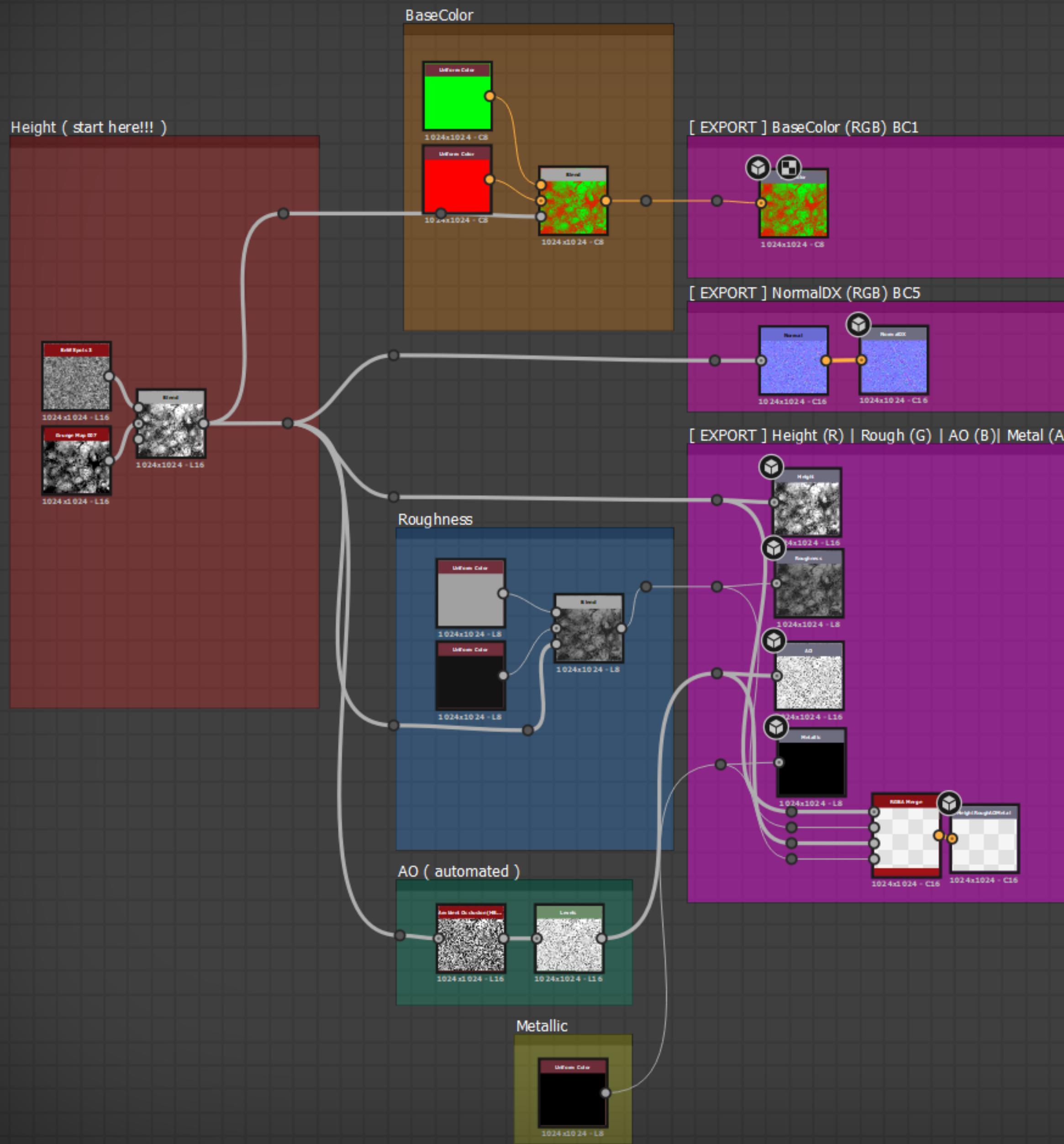
7

RIGHT CLICK ON THE GRIDED GRAPH SECTION & SELECT "VIEW OUTPUTS IN 3D VIEW" TO REFRESH YOUR GRAPH & THE 3D VIEWPORT

UBERTILED TEMPLATE USAGE



LANDSCAPE TEMPLATE USAGE



BACK



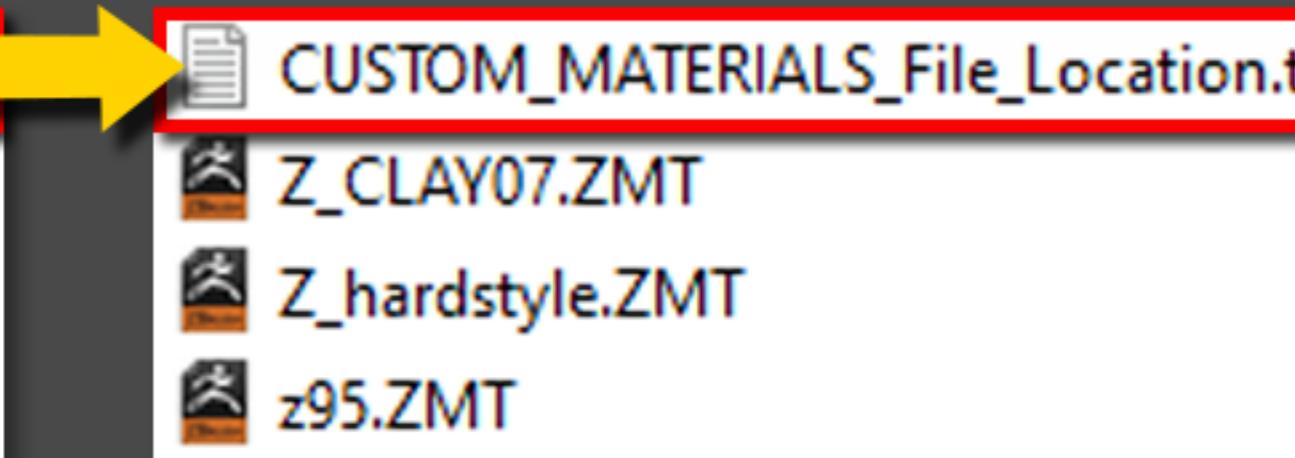
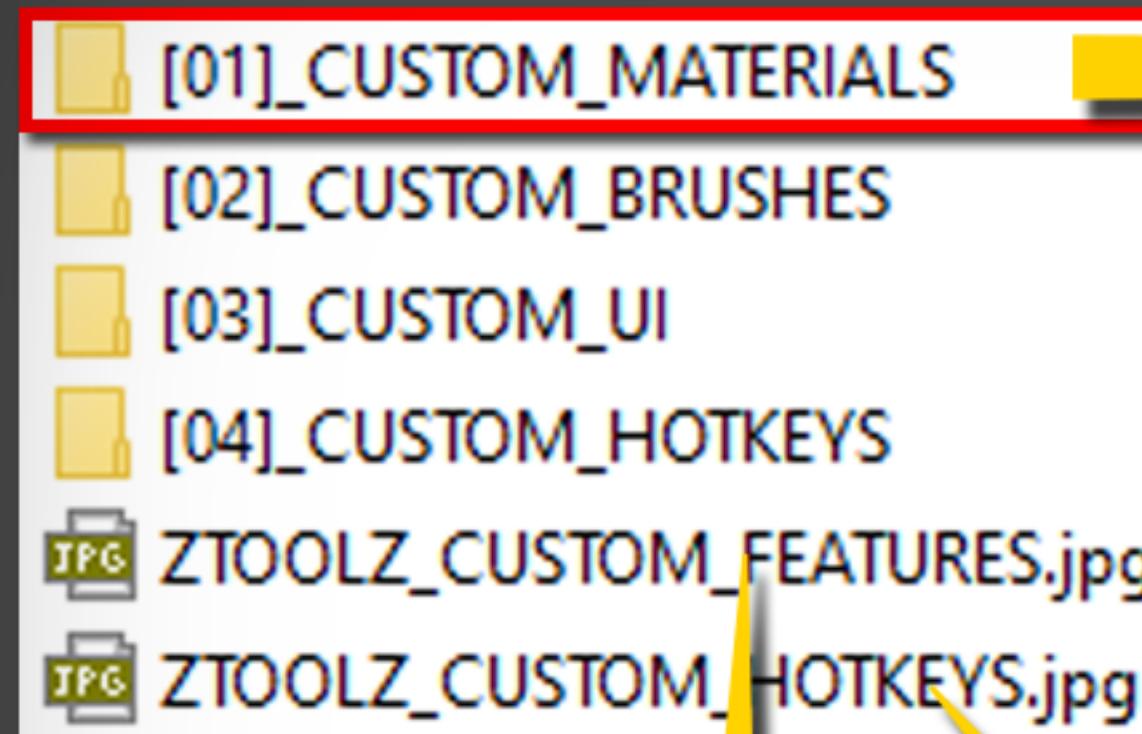
ZTOOLZ SETUP

SCALE TEMPLATE PROJECT

ZTOOLZ SETUP

1

Unity-Project-Base > VFS_DOCUMENTATION > VFS_AUTHORING_PIPELINE > [04]_ZBRUSH >



LOCATION > C:\Program Files\Pixologic**YOUR_VERSION**\ZData\Materials\MatCap

FILES > Z_CLAY07.ZMT / Z_hardstyle.ZMT / z95.ZMT

2 IN EACH FOLDER
LOOK FOR THE TEXT
FILE & FOLLOW THE
INSTRUCTIONS



3

THERE ARE 2 PICTURES
DETAILING WHAT ZTOOLZ
SHOULD LOOKS LIKE &
DETAILS THE HOTKEYS

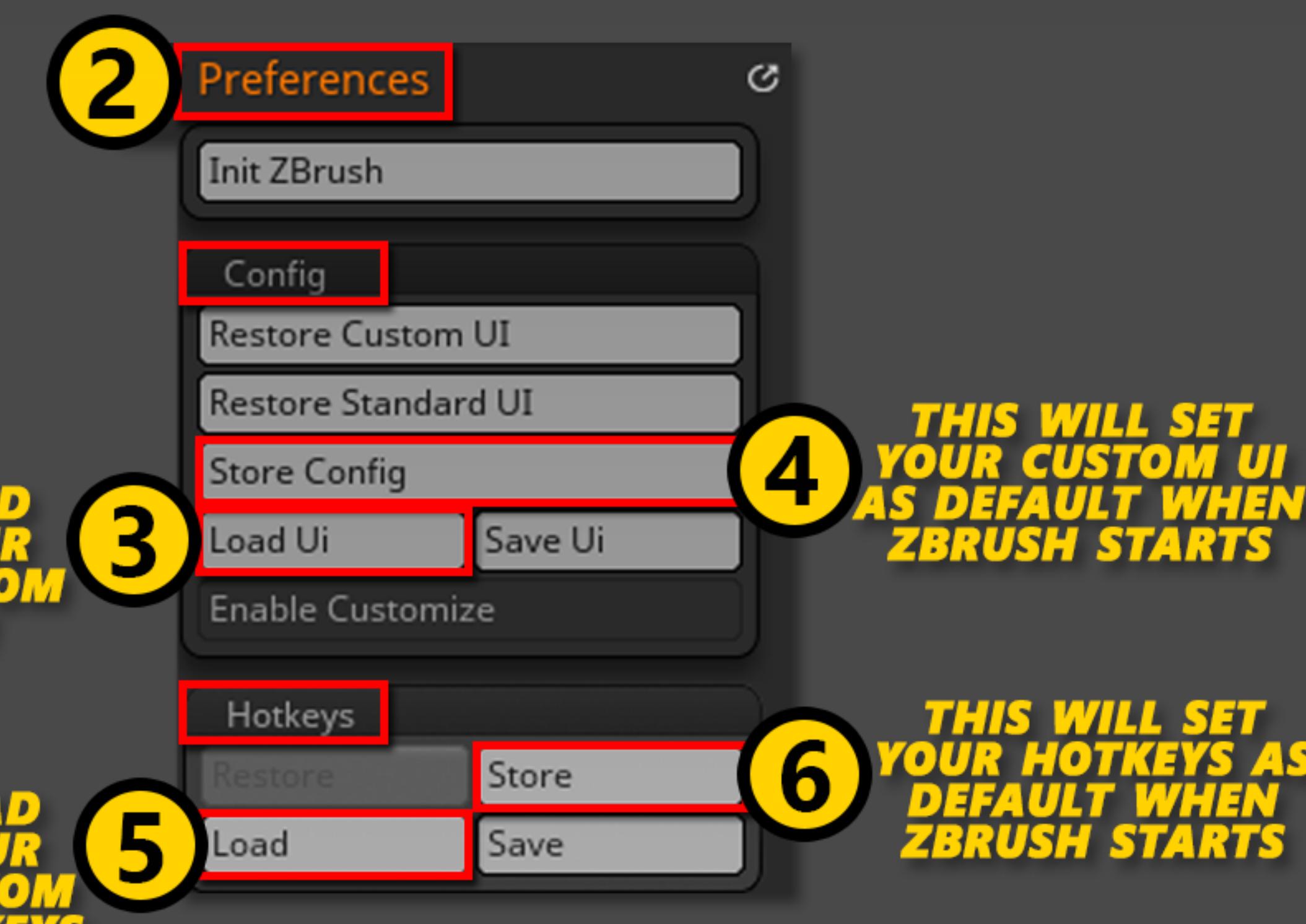
BACK

ZTOOLZ INSTALL

1
**IN ZBRUSH
LOAD THE UI &
HOTKEYS FILES**

**LOAD
YOUR
CUSTOM
UI**

**LOAD
YOUR
CUSTOM
HOTKEYS**



**THIS WILL SET
YOUR CUSTOM UI
AS DEFAULT WHEN
ZBRUSH STARTS**

**THIS WILL SET
YOUR HOTKEYS AS
DEFAULT WHEN
ZBRUSH STARTS**

SCALE TEMPLATE PROJECT

S

Draw Size

64

Dynamic

D

TotalPoints:

422

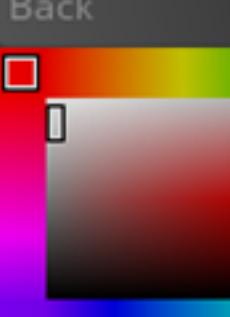
18

35

Colorize

SPix 3

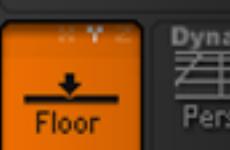
Standard

FreeHar Alpha
Back

SwitchColor



Double



Line Fill



GXYZ



PolySkin Bump



BumpVi SkinS



Selwy_P

**SCALE IS KEY SO USE
THIS SCALE TEMPLATE
BEFORE YOU START**

1

[01]_AUTHORING_PIPELINE > [04]_ZBRUSH >



zbrush_scale_template.ZPR

**WHEN YOU EXPORT YOUR
FINAL SCULPT BACK INTO MAYA
YOUR SCALE WILL BE CORRECT**



BACK



BACK



**JEFF PLAMONDON
VFS 2023**