EviSmart™

ANTERIOR CAD DESIGN GUIDE

5 Anterior Teeth Design Checkpoints You Shouldn't Skip

A practical CAD design guide for cosmetic dentists and digital dentistry professionals



01 Tooth axis 02 Interdental contacts 03 Gingival zenith 04 Tooth proportions 05 Facial line angles

INTRODUCTION

A beautiful anterior restoration isn't just about getting the tooth shape right.

You can have the perfect shade and a well-polished surface, but if **the tooth axis is off, the contacts aren't positioned correctly, or the gingival contours don't follow the patient's anatomy**, the final result can still look unnatural.

And some design issues go beyond esthetics. They can affect the fit, cleanability, and overall outcome of the restoration.

That's why reviewing an anterior CAD design means looking at more than individual tooth anatomy.

WHAT'S INSIDE

What should you check when designing anterior teeth?

Five important checkpoints are tooth axis, interdental contacts, gingival zenith, tooth proportions, and facial line angles.

01 **Tooth Axis**
Are the teeth angled naturally?

02 **Interdental Contacts**
Are they properly positioned?

03 **Gingival Zenith**
Does the crown follow the gumline?

04 **Tooth Proportions**
Are the anteriors too wide or too long?

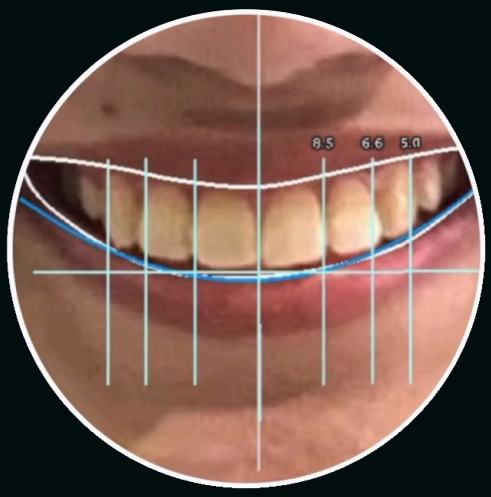
05 **Facial Line Angles**
Does the tooth look natural from the front?

Here's how to evaluate each one before approving your next anterior restoration.

CHECKPOINT #1

Tooth Axis

Are the teeth angled naturally?



The long axis of each anterior tooth plays an important role in how balanced the smile looks.

When designing maxillary anterior teeth, start by checking their axial inclination relative to the facial midline and neighboring teeth.

Central incisors generally have a more upright appearance, while lateral incisors and canines often show progressively greater distal crown inclination relative to their roots.

Even a small difference in angulation can affect the perceived symmetry of the anterior teeth, particularly when the central incisors don't complement each other.

What to check in CAD

- Compare the long axes of the central and lateral incisors.
- Look for abrupt changes in angulation between adjacent teeth.
- Check the relationship between the dental midline and facial midline when facial records are available.
- Review the entire anterior segment from a frontal view, not just one tooth at a time.

DESIGN TIP

Don't force every anterior tooth into perfect parallel alignment. Natural axial variation helps create a smile that looks like teeth, rather than identical copies.

CHECKPOINT #2

Interdental Contacts

Are they properly positioned?



Interdental contacts affect more than how tightly adjacent restorations fit together.

Their length, location, and contour influence the appearance of interdental papillae and the spaces between the teeth.

When the contact area sits too far incisally, the gingival embrasure may appear larger, contributing to visible black triangles.

A commonly used anterior design reference is the **50:40:30 rule**, which describes the approximate contact-area lengths relative to central incisor crown height:

50%	40%	30%
Between the two central incisors	Between the central and lateral incisors	Between the lateral incisor and canine

These are esthetic guidelines, not fixed measurements for every patient.

What to check in CAD

- Review the vertical length and position of each contact area.
- Check whether the proximal contours support a natural interdental appearance.
- Avoid excessively broad or tight contacts that could compromise seating or cleanability.
- Evaluate contact areas in relation to the patient's existing gingival architecture.

DESIGN TIP

Contact design alone cannot guarantee the elimination of black triangles. Papilla fill also depends on periodontal anatomy, including the distance between the contact area and the underlying bone crest.

CHECKPOINT #3

Gingival Zenith

Does the crown follow the gumline?

The gingival zenith is the most apical point of the gingival margin around a tooth.



It's a small detail, but it strongly influences the perceived position, angulation, and overall shape of anterior teeth.

In maxillary central incisors, the gingival zenith is commonly located slightly distal to the tooth's vertical axis.

This subtle offset helps establish a natural gingival contour and influences how the crown emerges from the gumline.

However, zenith position varies depending on tooth type, gingival anatomy, and individual patient characteristics.

What to check in CAD

- Compare the gingival contours of the central incisors.
- Assess zenith position relative to each crown's long axis.
- Check whether the cervical contour creates a natural transition from restoration to gingiva.
- Look for unintended asymmetry between adjacent anterior restorations.

DESIGN TIP

Use the patient's existing gingival architecture as your reference. A textbook zenith position may not be appropriate for every patient, especially when gingival asymmetry or recession is present.

CHECKPOINT #4

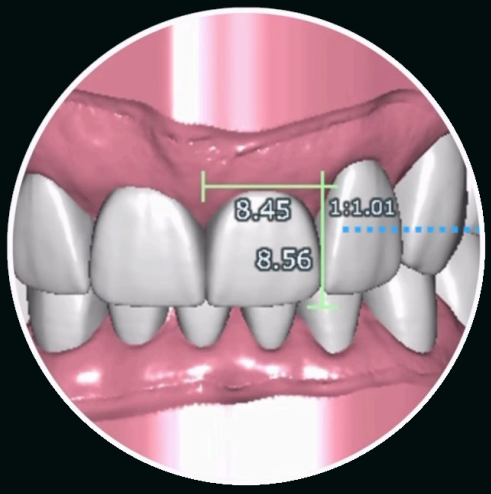
Tooth Proportions

Are the anteriors too wide or too long?

Tooth proportions can change how an entire smile is perceived.

A central incisor that's too wide can look square and bulky. One that's too narrow may appear unusually long or out of balance with its neighbors.

A commonly used starting point for maxillary central incisors is a **width-to-length ratio of approximately 75–80%**.



For example, a central incisor measuring 10 mm in clinical crown length would have a width of approximately 7.5–8 mm at that ratio.

But this is a reference, not a universal target.

Patient-specific anatomy, facial proportions, and the intended esthetic outcome should guide the final design.

What to check in CAD

- Measure the width and clinical crown length of the central incisors.
- Compare their proportions with the adjacent lateral incisors and canines.
- Look for overly square, narrow, or elongated crown shapes.
- Review the proportions in the context of the patient's smile and existing dentition.

DESIGN TIP

Don't rely on the width-to-length ratio alone. Consider the planned incisal edge position and gingival margins before finalizing the proportions, especially in comprehensive smile makeover cases.

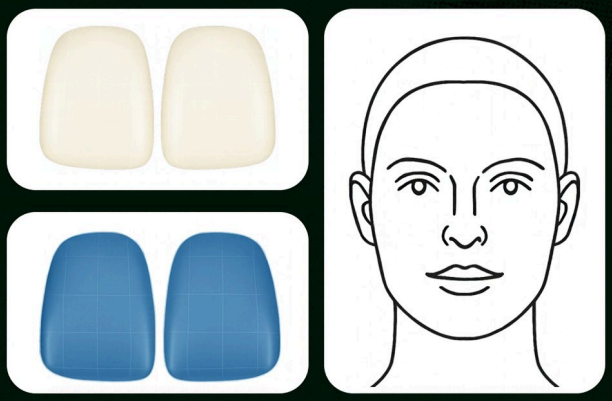
CHECKPOINT #4 · VISUAL REFERENCE

Matching Tooth Form to Face Shape

Facial proportions are one of the inputs for tooth proportions.

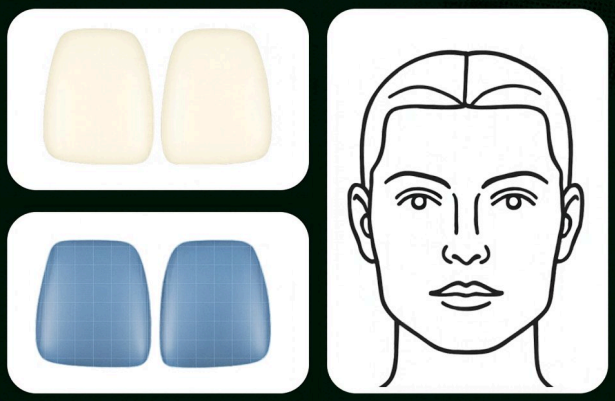
Oval Face

Rounded incisors with softened angles for a youthful, gentle appearance.



Square Face

Broader, more rectangular incisors to complement a strong jawline.



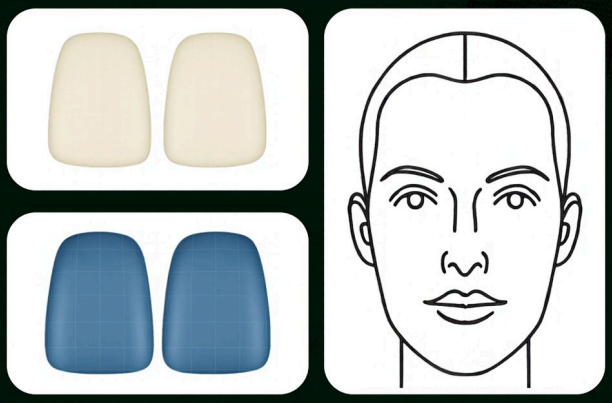
Heart-Shaped Face

Slightly tapered incisors for a soft, contour.



Long/ Narrow Face

Wider, shorter incisors to visually balance proportions.



KEEP IN MIND

Face shape is a starting reference for tooth form, not a rule. Confirm the final shape against the patient's smile, existing dentition and treatment goals.

CHECKPOINT #5

Facial Line Angles

Does the tooth look natural from the front?

Two anterior teeth can have nearly identical overall dimensions and still look completely different.

One reason is the position of their facial line angles.

These are the transitions between the facial surface and the mesial or distal surfaces of a tooth.

They influence how light reflects off the restoration and how wide or narrow the tooth appears from the front.

Moving the line angles toward the center can make a tooth appear narrower without changing its overall mesiodistal width.



That's why line angles are particularly important in anterior CAD design, where small contour adjustments can noticeably change the appearance of a smile.

What to check in CAD

- Review the mesial and distal facial line angles from frontal and oblique views.
- Check whether the line angles complement the morphology of neighboring teeth.
- Look for overly flat facial surfaces or unnatural transitions.
- Compare the perceived width of the central and lateral incisors.

DESIGN TIP

Before making a central incisor physically narrower, check whether refining the line angles could achieve the intended visual proportion.

AT A GLANCE

Your 5-Point Anterior CAD Design Checklist

Before approving your next anterior restoration, review these five questions:

- [ ] **Tooth axis:** Do the anterior teeth have natural, balanced axial inclinations?
- [ ] **Interdental contacts:** Are the contact lengths and positions appropriate for the patient's anatomy?
- [ ] **Gingival zenith:** Do the cervical contours follow the patient's gingival architecture?
- [ ] **Tooth proportions:** Are the crown dimensions balanced with the adjacent teeth and facial context?
- [ ] **Facial line angles:** Do they create the intended visual tooth width and shape?

REMEMBER

A checklist won't replace clinical judgment, but it can make anterior CAD reviews more consistent and help teams identify design concerns before fabrication.

FAQ

Frequently Asked Questions About Anterior Teeth Design

What are the most important checkpoints in anterior CAD design?

Five important checkpoints are tooth axis, interdental contacts, gingival zenith, tooth proportions, and facial line angles. Together, they influence the alignment, shape, contours, and perceived symmetry of anterior restorations.

What is the ideal width-to-length ratio for anterior teeth?

For maxillary central incisors, a width-to-length ratio of approximately 75–80% is a commonly referenced esthetic guideline. However, suitable proportions vary depending on tooth type, facial characteristics, existing dentition, and the intended treatment outcome.

What causes black triangles between anterior teeth?

Black triangles occur when the interdental papilla does not completely fill the gingival embrasure. Contributing factors may include periodontal bone levels, tooth shape, root positioning, and the position of the interproximal contact area. Adjusting the restorative contours can help in selected cases, but contact design alone does not guarantee papilla fill.

Why are facial line angles important in anterior CAD design?

Facial line angles influence how light reflects from the restoration and affect the perceived width and shape of the tooth. Their placement can make a tooth appear wider or narrower without changing its overall dimensions.

FINAL CHECK

Before You Approve Your Next Anterior Design

The difference between an acceptable anterior restoration and a natural-looking one often comes down to the details.

A slightly misplaced line angle, an overly broad contact, or a crown proportion that doesn't complement the patient's smile can change the appearance of the final restoration.

Reviewing these five checkpoints gives you a more consistent way to evaluate your anterior CAD designs and communicate adjustments with your design team.

But you don't have to handle every part of the CAD design process yourself.

For cosmetic dentists managing comprehensive smile cases, having reliable CAD design support can mean less time spent designing and revising files, and more time for treatment planning, smile consultations, and caring for patients.

More Time With Your Patients. Less Time Managing CAD Designs.

Our CAD designers follow your clinical preferences, with same-day turnaround. You stay in control of the final design.

Send Your Next Case for CAD Design →

CLINICAL REFERENCES

1. Bhuvaneswaran M. Principles of smile design. *Journal of Conservative Dentistry*. 2010.
2. 10 commandments of smile esthetics. *Dental Press Journal of Orthodontics*. 2014.
3. Gingival zenith level, position, and symmetry: A systematic review and meta-analysis. *Journal of Prosthetic Dentistry*.
4. The use of radiographs to assess the impact of the distance between the contact area and the crest of the bone. *British Dental Journal*. 2023.

Clinical note: These checkpoints are educational design references, not universal treatment specifications. Final restorative decisions should be individualized and clinically verified by the treating dental professional.