CLASS II
(pp 658-664, 696-708)
Seven Steps of Cavity Preparation

1) Establish the outline form
2) Establish resistance form
3) Establish retention form
4) Provide convenience form
5) Removal of remaining caries
6) Finish the cavity walls and margins
7) Toilet of the cavity preparation
Step 1

Outline Form

◆ Considerations
  – Visualize outline pre-operatively
  – Gentle sweeping curves - “fluidity”
  – Remove undermined enamel
  – Extend for prevention
    ◆ Margins on smooth surfaces and self cleansing accessible areas
Step 1

Outline Form

- Preparation shape
- Encompasses carious lesion and caries susceptible areas
Ideal Preparation

Outline follows fissures

Dovetails parallel ridges

Fishtail versus dovetail
Step 1
Outline Form

- Considerations
  - Visualize outline pre-operatively
Step 1
Outline Form

- **Considerations**
  - Gentle sweeping curves - “fluidity”
Step 1
Outline Form

- **Considerations**
  - Gentle sweeping curves - “fluidity”
Step 1
Outline Form

- Considerations
  - Remove undermined enamel
Step 1
Outline Form

◆ Considerations
  - Extend for prevention
    ✤ Margins on smooth surfaces and self-cleansing accessible areas
Step 1
Outline Form

- Considerations
  - Extend for prevention
  - Margins on smooth surfaces and self cleansing accessible areas
Class II Outline Form

- Smooth flowing outline (occlusal view)
- Include carious pits/fissures and non-coalesced areas (extension for prevention)
- Include all of the proximal contact area
- 90° “exit angles” (occlusal view of box)
- Follow tooth contours (proximal view)
BUCCOPROXIMAL WALL and LINGUOPROXIMAL WALL

- are straight and flat to the axial wall
- exits 90° at cavosurface
- blend into the isthmus, preserving the cusps
- may or may not use an “s-curve”
S-curve: Transition from proximal wall to buccal or lingual walls; used only as needed

Rounded proximal

Flat proximal contour
Include all enamel caries and extend for prevention to caries-susceptible areas

- Remove proximal contact area and extend the gingival wall to provide 0.5 mm from the adjacent tooth
Class II Outline Form
Proximal Extensions

- **Buccal** and **lingual** walls are extended, following adjacent tooth contours, to provide 0.3 - 0.5 mm clearance

RGS 1
10-7-14 Hatchet
Class II Outline Form
Proximal Extensions

Extensions follow proximal contours and allow access for:

- **finishing and polishing to refine margins**
- **brushing & flossing to reduce caries recurrence**
Step 2

**Resistance Form**

- Flat walls (pulpal, gingival)
- Restricted extension
  (conserve tooth structure)
- Adequate bulk (of restorative material)
- Failure of resistance form
  - Fractured restoration
  - Fractured tooth
Step 2

**Resistance Form**

- Flat walls (pulpal, axial, gingival, etc.)
Step 2

Resistance Form

- Restricted extension = conserve tooth structure
Step 2

Resistance Form

- Restricted extension = conserve tooth structure
Step 2

**Resistance Form**

- Restricted extension = conserve tooth structure
Step 2

**Resistance Form**

- **Restricted extension**

Preserve bulk of marginal ridge
Step 2

Resistance Form

- Adequate bulk (of restorative material)
Step 2

Resistance Form

- Failure of resistance form
  - Fractured restoration
  - Fractured tooth
Class II Resistance Form

1. Flat pulpal wall
2. 1.5 mm minimum pulpal depth (RGS 1)
3. Flat gingival wall (B-L)
4. Axial depth 1.0 mm min. (0.5 mm into dentin)
5. Rounded axiopulpal line angle
6. Gingival “bevel” follows enamel rods
Avoid sharps corners, flared, and beveled walls
- maintain proximal box at 1.0 mm axial depth
  with 90-degree cavosurface margins
Class II Resistance Form

90-degree to tangent at cavosurface, "s-curve," and smooth flowing outline
Preparing the proximal box

1. Envision box with ideal 0.4 mm clearance at proximal extensions (0.3 - 0.5 mm)

2. Use bur to establish box form, undermining enamel rods near ideal proximal extensions
Refining the proximal walls

3. Use hatchet or GMT to remove undermined enamel rods to ideal extension to buccoproximal, linguoproximal, and gingival (0.5 mm) walls

Note that undermined enamel rods are subject to failure!
Step 3

Retention Form

- Mechanical undercuts and locks
- Accessory forms
  - Grooves, coves
  - Slots, potholes
  - Pins
Step 3

Retention Form

- Mechanical undercuts and locks
Step 3

Retention Form

- Accessory forms
  - Grooves, coves
Class II Retention Form

To prevent occlusal displacement
  - Convergence of buccal and lingual walls of occlusal
  - Convergence of buccoproximal and linguoproximal walls
To prevent proximal displacement
  – Dovetail and buccal and lingual extensions
Step 3
Retention Form

- Accessory forms
  - Grooves, coves
Class II Retention Form

♦ To prevent proximal displacement
  - Retention grooves at axiobuccal and axiolingual line angles
Retention Grooves

✦ must be in dentin
✦ are extensions of the axial wall
✦ follow curvature of axial wall & DEJ
Step 4

Convenience Form

- Adequate observation
- Accessibility
- Ease of operation
Step 4

Convenience Form

- Adequate observation
Step 4

Convenience Form

- Accessibility
Step 4

Convenience Form

- Ease of operation
Class II Convenience Form

Axial wall diverges from proximal surface

Adequate isthmus width for condensation
Class II Inconvenience Form

Axial wall converges with proximal surface
Does not allow for proper condensation
Axiogingival line angle approaches pulp
Step 5

Removing Caries

- Caries Removal
- Removal of decalcified enamel and dentin
- Considerations
  - Arrest caries process
  - Solid foundation
  - May modify outline, resistance and retention
Step 5: Removal of Caries

Proper outline, resistance, retention, and convenience forms will result in providing proper access for revealing and removal of all remaining caries.
Step 6

* Finishing Enamel Walls and Margins
  - Create the best marginal seal
  - Enhance all preparation principles
Finishing the Cavity
Walls and Margins

Plane proximal and axial walls
Place gingival bevel with gingival margin trimmer
Step 7

Perform Toilet of the Cavity

Clean all walls and margins
Remove all debris
Wash and dry, but *DO NOT DESICCATE!*
Final inspection