



# CORNERSTONE Device Dimensions for 220 nm SOI Platform

Rib waveguide etch depth = 120 nm

Grating etch depth = 70 nm



# Changes from previous version

- TE mode grating coupler for  $\lambda = 1.31 \mu\text{m}$  modified.
- TE mode 1x2 strip waveguide MMI design added for  $\lambda = 1.55 \mu\text{m}$ .
- TE mode 2x2 strip waveguide MMI design added for  $\lambda = 1.55 \mu\text{m}$ .
- TE mode 1x2 strip waveguide MMI design added for  $\lambda = 1.31 \mu\text{m}$ .
- TE mode 2x2 strip waveguide MMI design added for  $\lambda = 1.31 \mu\text{m}$ .





TE mode  
 $\lambda = 1550 \text{ nm}$

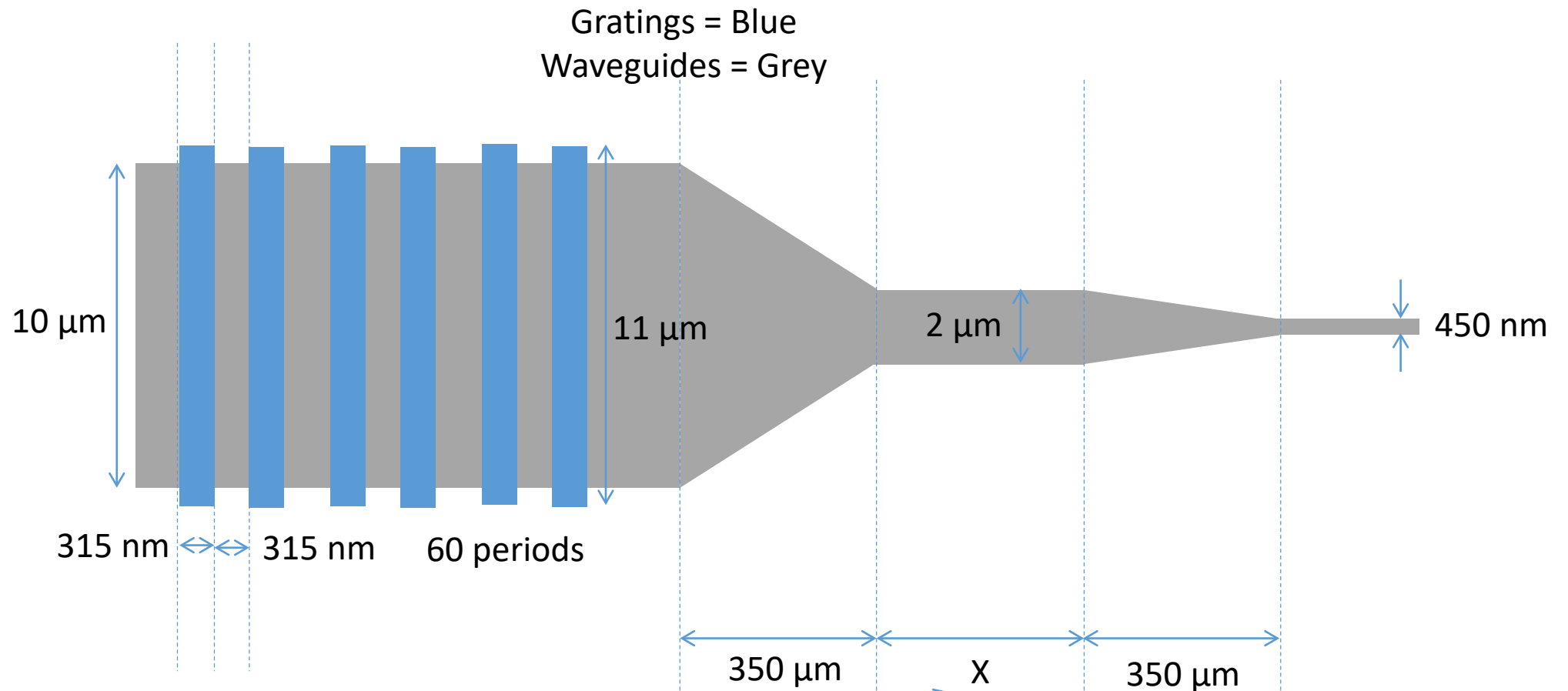
Rib waveguide etch depth = 120 nm  
Grating etch depth = 70 nm



# TE single mode waveguides and bends

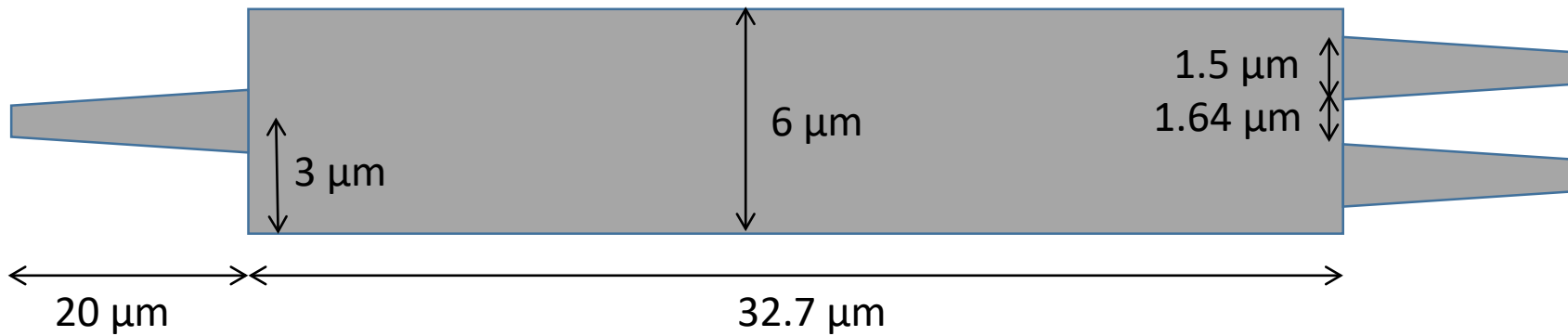
Property	Wavelength = 1550 nm
<u>Rib waveguides</u>	
Maximum single mode waveguide width (nm)	450
Minimum bend radius (width = 450 nm) ( $\mu\text{m}$ )	25
<u>Strip waveguides</u>	
Maximum single mode waveguide width (nm)	450
Minimum bend radius (width = 450 nm) ( $\mu\text{m}$ )	5

# TE grating coupler (etch depth = 70 nm)

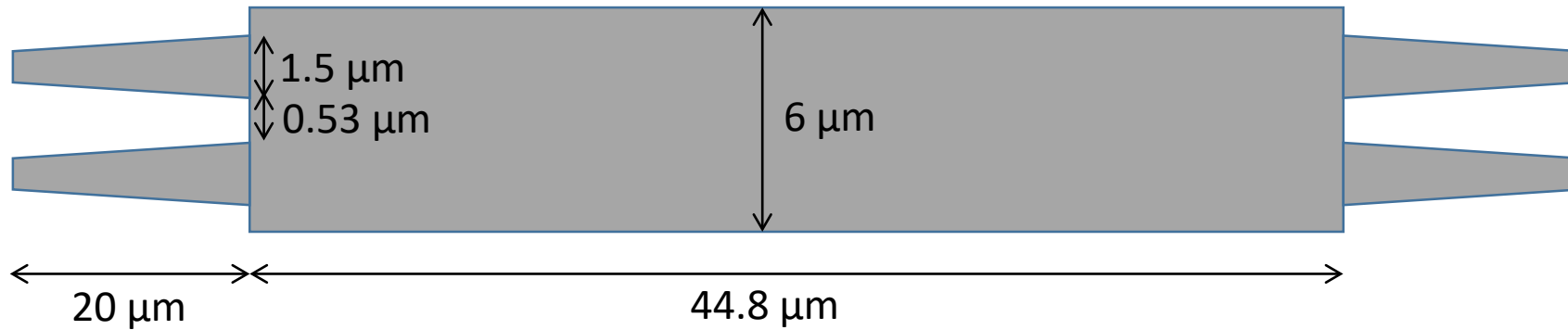


Use waveguide of width X for low loss routing to devices if required

# TE 1x2 RIB MMI dimensions

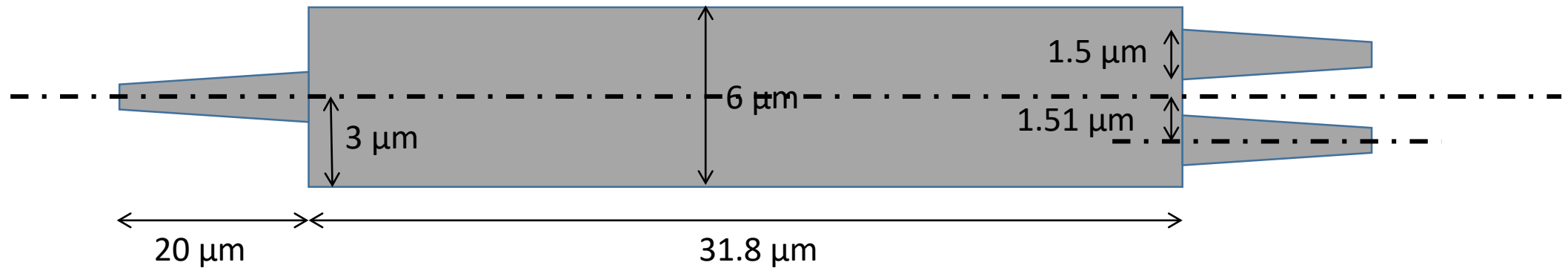


# TE 2x2 RIB MMI dimensions



# TE 1x2 MMI STRIP dimensions

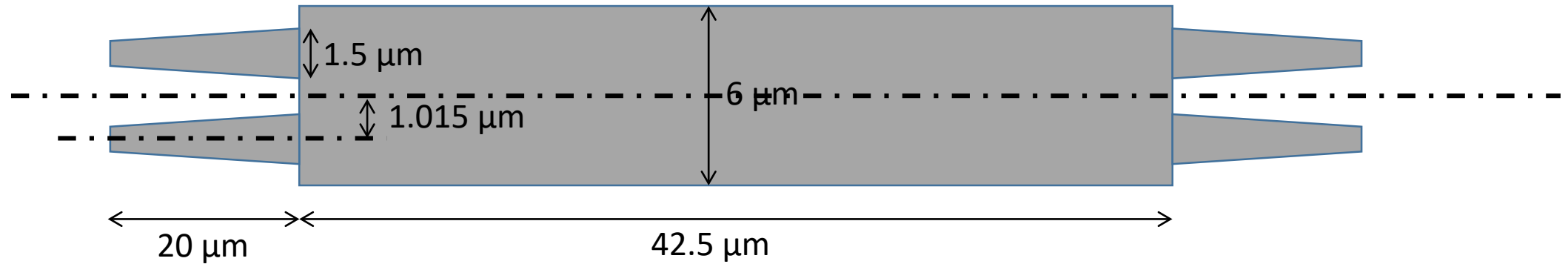
\*Prototype design that has not yet been tested





# TE 2x2 MMI STRIP dimensions

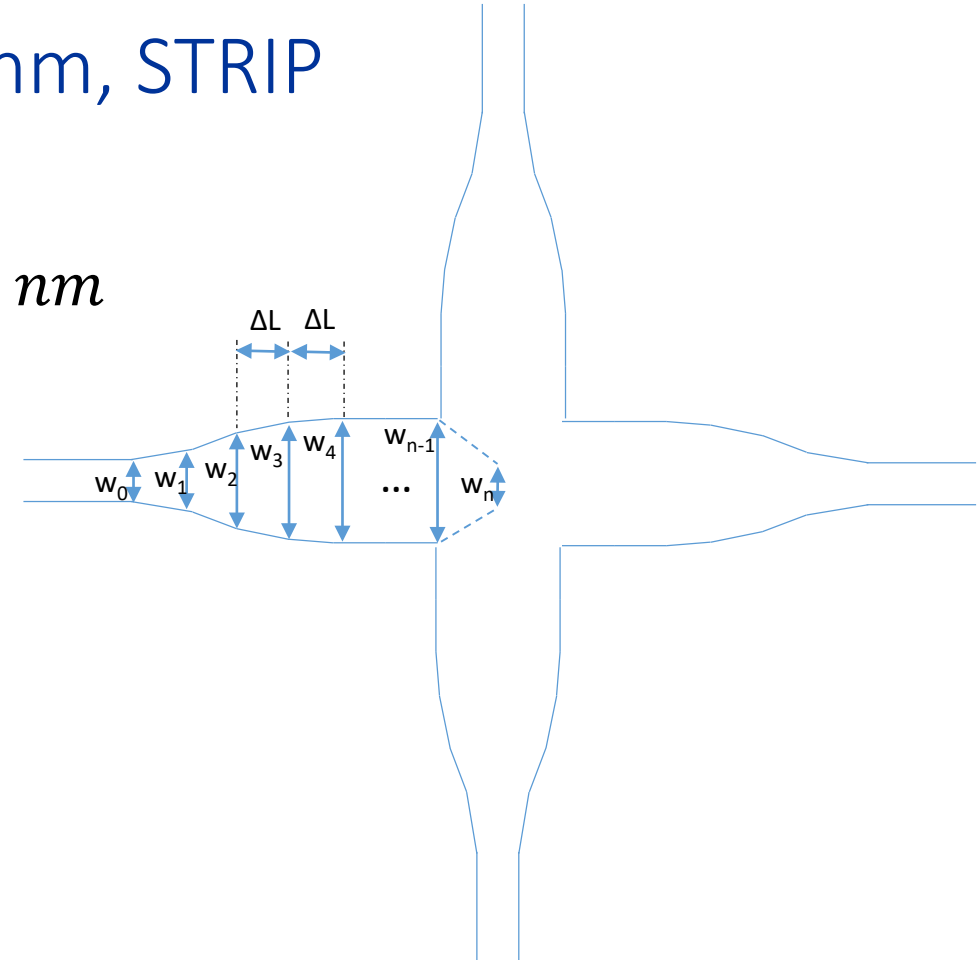
\*Prototype design that has not yet been tested



Width point	Width (um)
w0	Waveguide width
w1	0.439
w2	0.6
w3	1.20
w4	1.334
w5	1.370
w6	1.418
W7	1.6
W8	1.589
W9	1.848
W10	1.855
W11	1.85
W12	Waveguide width (doesn't affect)

$\lambda = 1550 \text{ nm}$ , STRIP

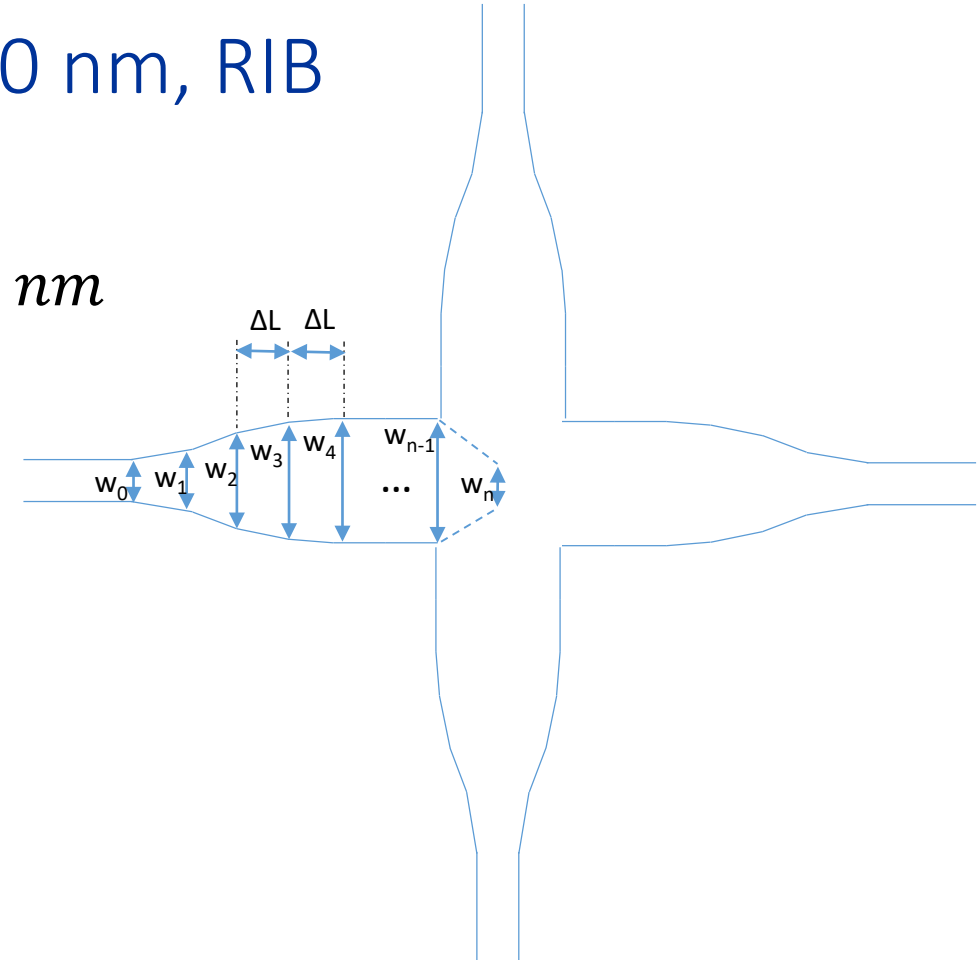
$\Delta L = 0.385 \text{ nm}$



Width point	Width (um)
w0	Waveguide width
w1	0.8
w2	0.905
w3	1.4
w4	1.345
w5	1.316
w6	1.308
W7	1.4
W8	1.45
W9	1.65
W10	1.7
W11	1.8
W12	Waveguide width (doesn't affect)

$\lambda = 1550 \text{ nm}$ , RIB

$\Delta L = 0.385 \text{ nm}$





TE mode  
 $\lambda = 1310 \text{ nm}$

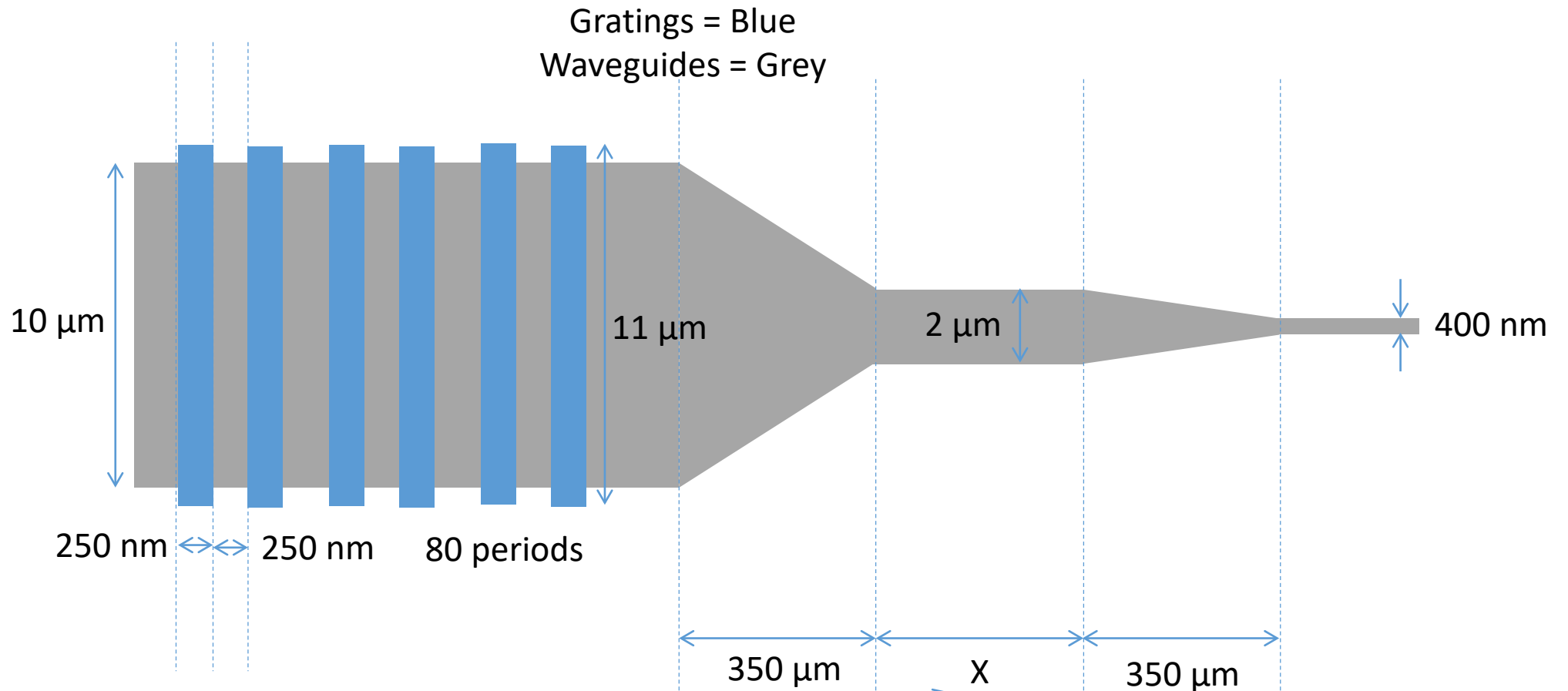
Rib waveguide etch depth = 120 nm  
Grating etch depth = 70 nm



# TE single mode waveguides and bends

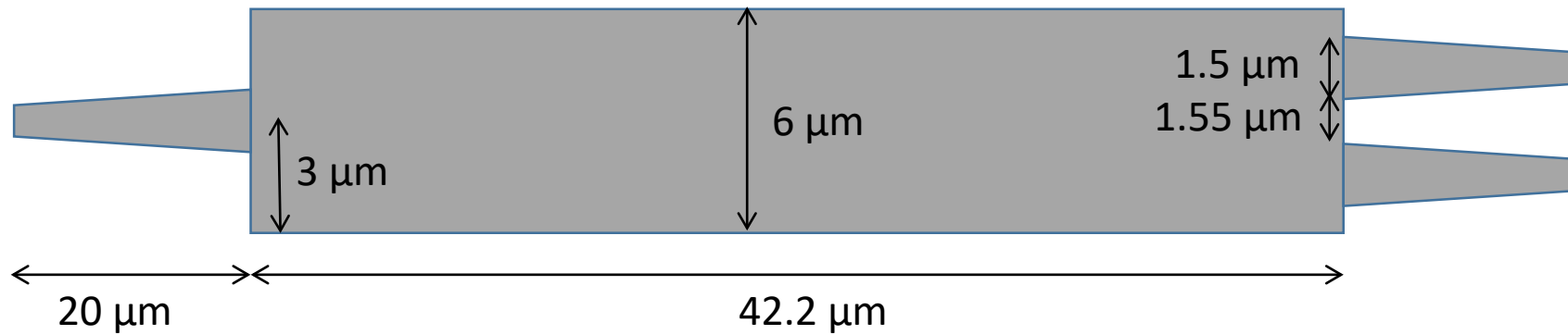
Property	Wavelength = 1310 nm
<u>Rib waveguides</u>	
Maximum single mode waveguide width (nm)	400
Minimum bend radius (width = 400 nm) ( $\mu\text{m}$ )	25
<u>Strip waveguides</u>	
Maximum single mode waveguide width (nm)	400
Minimum bend radius (width = 400 nm) ( $\mu\text{m}$ )	5

# TE grating coupler (etch depth = 70 nm)

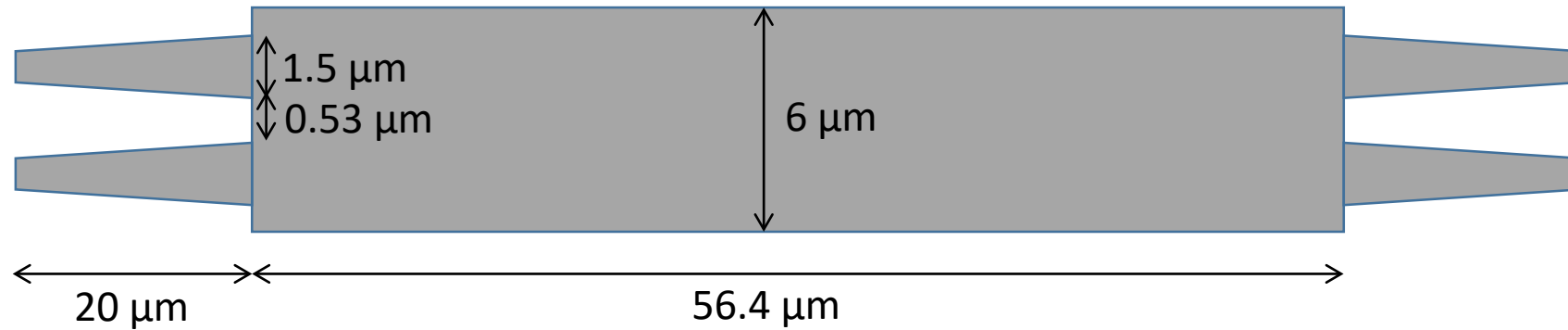


Use waveguide of width X for low loss routing to devices if required

# TE 1x2 RIB MMI dimensions



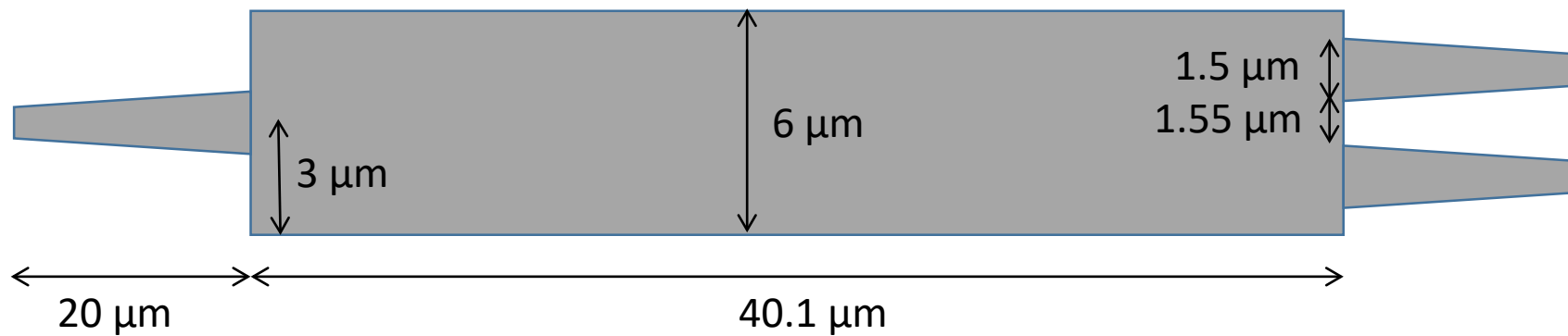
# TE 2x2 RIB MMI dimensions





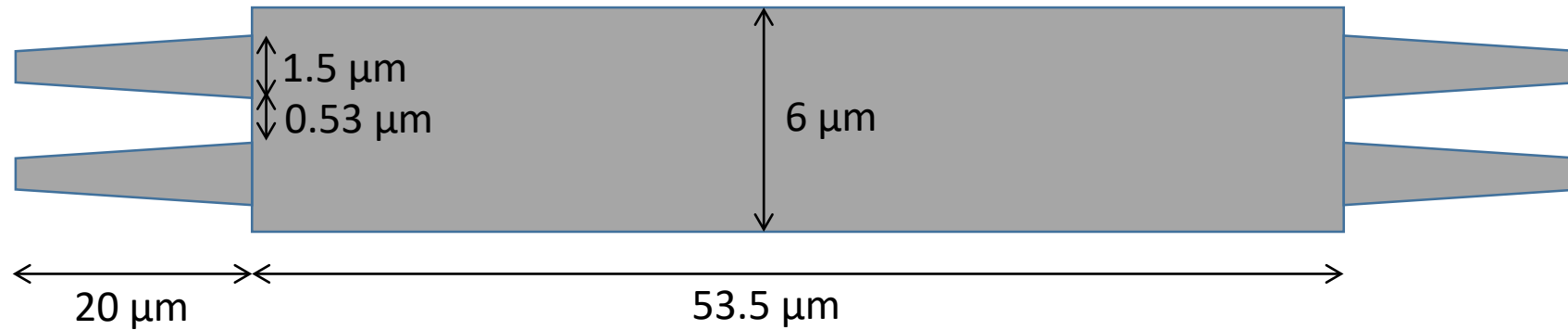
# TE 1x2 STRIP MMI dimensions

\*Prototype design that has not yet been tested



# TE 2x2 STRIP MMI dimensions

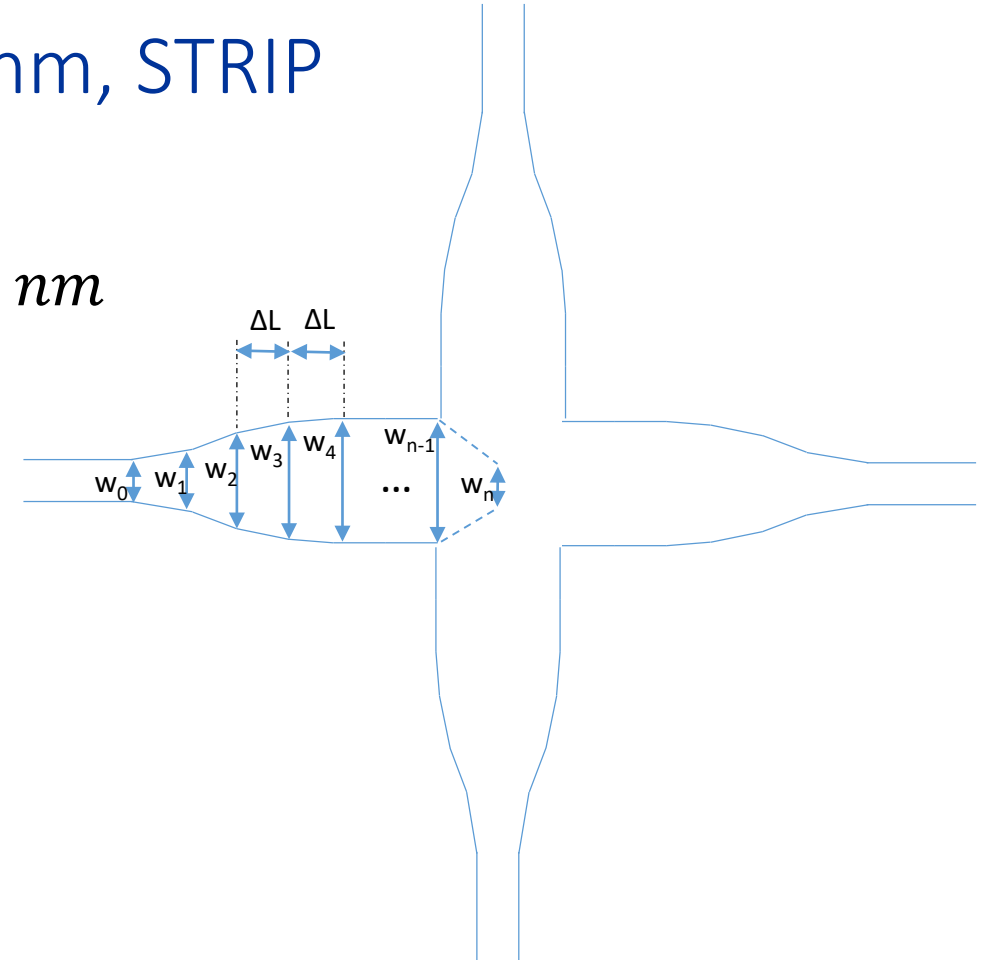
\*Prototype design that has not yet been tested



Width point	Width (um)
w0	Waveguide width
w1	0.6
w2	1.2
w3	1.168
w4	1.168
w5	1.307
w6	1.428
w7	1.7
w8	1.85
w9	2.0
w10	1.85
w11	Waveguide width (doesn't affect)

$\lambda = 1310 \text{ nm}$ , STRIP

$\Delta L = 0.385 \text{ nm}$



Width point	Width (um)
w0	Waveguide width
w1	0.720
w2	1
w3	1.19
w4	1.206
w5	1.20
w6	1.378
W7	1.457
W8	1.45
W9	1.65
W10	1.7
W11	1.8
W12	Waveguide width (doesn't affect)

$\lambda = 1310 \text{ nm}$ , RIB

$\Delta L = 0.385 \text{ nm}$

