

August 31, 2011

Via EDGAR Submission and Overnight Delivery.

Securities and Exchange Commission
100 F Street, N.E.
Washington, D.C. 20549

Attn: Pamela A. Long, Assistant Director

Re: Proto Labs, Inc.
Amendment No. 1 to Registration Statement on Form S-1
Filed July 25, 2011
File No. 333-175745

Ladies and Gentlemen:

Proto Labs, Inc., a Minnesota corporation (the "Company"), has today filed with the Securities and Exchange Commission, pursuant to the requirements of the Securities Act of 1933, as amended, an Amendment No. 1 to its Registration Statement on Form S-1 ("Amendment No. 1").

On behalf of the Company, we are writing to respond to the comments raised in the letter to the Company, dated August 19, 2011, from the staff of the Securities and Exchange Commission (the "Staff"). The Company's responses below correspond to the captions and numbers of those comments (which are reproduced below in italics). For your convenience, copies of the amended Registration Statement are enclosed, and have been marked to show changes from the initial Registration Statement on Form S-1 filed on July 22, 2011. Where applicable, we have referenced in the Company's responses the appropriate page number of the amended Registration Statement. Capitalized terms used in this letter, but not otherwise defined, have the meanings assigned to them in the amended Registration Statement.

General

1. *Please add to the prospectus as soon as possible all currently omitted information that is not subject to Rule 430A, including, for example, a bona fide estimate of the range of the maximum offering price for the shares, the maximum number of shares offered, and the amount of additional shares that the underwriters may purchase in connection with the over-allotment option. This information must be included on the prospectus cover page, as well as in the body of the prospectus. We will need adequate time to review this information once it is provided.*

Response: The Company acknowledges the Staff's comment and hereby confirms that, to the extent not provided in Amendment No. 1, it will provide the omitted information in a subsequent amendment to the Registration Statement, or otherwise address any open disclosure issues, with sufficient time to review in advance of any distribution of preliminary prospectuses.

2. *Absent a bona fide estimate of your expected offering price, we cannot complete a review of your disclosures regarding stock compensation and convertible securities. In order to avoid a delay in the effectiveness of your registration statement, please supplementally provide us with an estimated range for your IPO price. If the IPO price materially differs from your corresponding equity fair value accounting estimates, then an expanded disclosure may be required for investors to assess the reasonableness of your critical accounting estimates.*

Response: The Company acknowledges the Staff's comment and hereby confirms that it will provide a bona fide estimate of the expected offering price in a subsequent amendment to the Registration Statement, or supplementally by correspondence to the Staff, with sufficient time to review in advance of any distribution of preliminary prospectuses.

3. *In addition, please confirm that you will not circulate copies of the preliminary prospectus until you include an estimated price range, maximum number of shares, dollar amounts dependent upon the offering price that are based on the mid-point of the offering price range, and all other information except information you may exclude in reliance upon Rule 430A.*

Response: The Company acknowledges the Staff's comment and hereby confirms that it will not circulate copies of the preliminary prospectus until it includes the noted information.

4. *Prior to the effectiveness of your registration statement, please arrange to have FINRA call us or provide us with a letter indicating that FINRA has no objection to the underwriter compensation discussed in the prospectus.*

Response: The Company acknowledges the Staff's comment and hereby confirms that, prior to the effectiveness of the Registration Statement, the Company will arrange to have FINRA call the Staff or provide the Staff with a letter indicating that FINRA has no objection to the underwriter compensation discussed in the prospectus.

5. *Please provide us with copies of any artwork you intend to use as soon as possible for our review and comment. Please keep in mind that we may have comments on these materials and you should consider waiting for further comments before printing and circulating any artwork.*

Response: The Company currently does not anticipate using any additional artwork, but if that changes, the Company will submit the additional artwork to the Staff as soon as possible.

6. *We encourage you to file all exhibits with your next amendment or otherwise furnish us drafts of your legal opinion and underwriting agreement. Please understand that we will need adequate time to review these materials before effectiveness.*

Response: The Company acknowledges the Staff's comment and hereby confirms that, to the extent not filed as an exhibit to Amendment No. 1, it will file all required exhibits in a subsequent amendment to the Registration Statement sufficiently in advance of its request for effectiveness. Certain exhibits remain subject to obtaining corporate approvals and will be filed in a subsequent amendment once approved.

7. *Please revise your filing to disclose the date through which subsequent events have been evaluated, which we assume to approximate the consent date. Refer to ASC 855-10-50-1 for guidance.*

Response: In response to the Staff's comment, the Company has revised page F-12 to disclose the date through which subsequent events have been evaluated.

Front Cover Page of the Registration Statement

8. *Based on the information in our EDGAR system, it does not appear that the primary standard industrial classification code 3544 that you have on your registration statement cover page exists. Please revise accordingly.*

Response: In response to the Staff's comment, the Company has revised the cover page of the Registration Statement to list a different primary standard industrial classification code.

9. *Please indicate by a checkmark the company's current reporting status.*

Response: In response to the Staff's comment, the Company has revised the cover page of the Registration Statement to indicate its current reporting status.

Prospectus Cover Page

10. Please relocate the prospectus delivery obligation to the outside back cover page of the prospectus. Refer to Item 502(b) of Regulation S-K.

Response: The Company has revised the outside back cover page of the prospectus as requested by the Staff's comment.

Prospectus Summary

Overview, page 1

11. Throughout the prospectus summary and the other sections of the prospectus you make statements that you are "a leading online and technology-enabled quick-turn manufacturer" and a leading supplier of low-volume custom products (see, e.g., pages 1, 34 and 56). Please revise these statements to disclose the measure by which you have determined that you are a leader (e.g., revenues, number of customers, or volume of products sold).

Response: The Company is in an unusual situation in that it believes it has no organized direct competitors of any notable size and only has direct competitors that are relatively small, in terms of revenue, number of customers and volumes of products sold. As a result, the Company's revenue, number of customers and volumes of products sold support the Company's claim of a leadership position. Thus, the Company believes it is appropriate to state its leadership position in a broad manner as currently included in the Registration Statement.

12. Please balance the information regarding the "significant growth" in total revenue that you have experienced since inception with a brief discussion of any factors that would impact continued growth such as any increase in competitors or any corresponding increases in operating expenses.

Response: The Company believes that it has provided balance to the information regarding "significant growth" with a disclosure in the same paragraph of historical income from operations, which include operating expenses and thereby provide a counter-balance to the top-line revenue numbers disclosed earlier in the paragraph. In addition, the Company lists its most material risk factors in the Prospectus Summary on page 4 and has an extensive Risk Factors section starting on page 8.

Our Industry and Market Opportunity, page 1

13. If true, please confirm that all market and industry data (including but not limited to the Plastics Custom Research report, the IBISWorld report and the Jon Peddie Research report, all referenced on page two), represents information that is generally available to the public and was not prepared for you for a fee or for use in this registration statement. If you funded or were otherwise affiliated with any of the sources that you cite, please

disclose this. If any sources are not publicly available for no or a nominal fee, or were prepared for use in this registration statement, either file consents or explain to us why you are not required to do so under Rule 436 of Regulation C and Section 7 of the Securities Act of 1933. Please also provide us with copies of these reports marked to highlight the information you are using to support your disclosures in the filing. We may have additional comments after we review your response.

Response: The Company confirms that all market and industry data (including but not limited to the Plastics Custom Research report, the IBISWorld report and the Jon Peddie Research report, all referenced on page two), represents information that is generally available to the public and was not prepared for it for a fee or for use in the Registration Statement. Enclosed with the hard copy of this letter delivered to the Staff are copies of these reports marked to highlight the information that the Company is using to support its disclosures in the filing.

Risk Factors, page 8

14. *We note your disclosure at the end of the introductory paragraph about unknown or currently immaterial risks which in the future may be deemed to represent risks material to your business. Please note that your risk factor disclosure should discuss only known material risks. Please revise.*

Response: In response to the Staff's comment, the Company has revised page 8 of the Registration Statement to delete the reference to unknown or currently immaterial risks.

15. *In order to make your various risk factors more currently material, please review your disclosure and provide examples, as applicable, of instances where you have been impacted by what would otherwise appear to be a generic risk factor.*

Response: In its initial filing, the Company had endeavored to include disclosure of relevant instances where the Company has been impacted by what would otherwise appear to be a generic risk factor. In addition, in response to the Staff's comment, the Company reviewed the Risk Factors section and enhanced its disclosure as appropriate.

The loss of one or more key members of our management team or personnel, or our failure to attract, integrate and retain additional personnel in the future, could harm our business..., page 10

16. *Because this risk factor appears generic and applicable to any company in any industry, please revise to describe the particular risks you face.*

Response: In response to the Staff's comment, the Company has revised page 10 of the Registration Statement to specify the principal class of positions for which the Company intends to hire additional personnel. Further, the Company respectfully notes to the Staff

that the risk factor describes particular risks applicable to the Company, including that some members of the management team are new, and that the location of our U.S. operations makes finding and attracting qualified personnel more challenging.

Our operating results and financial condition may fluctuate on a quarterly and annual basis, page 12

17. *With a view towards disclosure, please tell us whether historically your operating results have fluctuated either on a quarterly or annual basis.*

Response: Historically, the Company's operating results have not had major fluctuations either on a quarterly or annual basis. There is also no history of seasonality in the Company's operating results. However, there have been fluctuations and trends in the Company's operating results over the last five years, principally due to the global recession and the Company's high growth, as evidenced by the tables on pages 31 and 45 and as discussed by the new disclosure on page 13.

Management's Discussion and Analysis of Financial Condition and Results of Operations, page 34

Overview, page 34

18. *Please revise your disclosure in the third paragraph to indicate that it is your belief that the United States, Europe and Japan are "three of the largest geographical markets where product developers are located."*

Response: In response to the Staff's comment, the Company has revised pages 34, 57 and F-7 of the Registration Statement to indicate that in the Company's belief, the United States, Europe and Japan are "three of the largest geographical markets where product developers are located."

Key Financial Measures and Trends, page 35

Revenue, page 35

19. *If material, please disclose the percentage of revenue that the shipping revenue comprises. In an appropriate section of the filing, also disclose the methods you use for the shipping of your products and any arrangements you may have with a third party provider.*

Response: In response to the Staff's comment, the Company has deleted the reference to shipping revenue on page 35 of the Registration Statement because the percentage of revenue that the shipping revenue comprises is immaterial—approximately 1%. The Company has added disclosure regarding its shipping method on page 63, and hereby

advises the Staff that it has no significant arrangement with any third party provider regarding shipping.

Results of Operations, page 36

20. *You disclose on page 35 that you expect your revenue to increase due, in part, to greater penetration of your existing customer base. Please revise your disclosure to discuss your plan to increase sales related to your existing customers and whether sales in the periods presented were positively impacted by your efforts to increase sales to existing customers. Please also disclose the percentage increase of new customers period over period.*

Response: The Company respectfully notes to the Staff that it discusses its plan to increase sales related to its existing customers in the “Our Growth Strategy” sections on pages 3-4 and 61-62. The Company believes that inclusion of this discussion on page 35 would be unnecessarily repetitive. Given the steady increase in revenue over the past five years reflected in the table on page 31 and given that, as disclosed on page 39, over 60% of the increased revenue in the six months ended June 30, 2011 relative to the six months ended June 30, 2010 was attributable to sales to existing customers, the Company believes that its growth and sales strategy related to its existing customers has been successful and has positively impacted its operational results. In response to the Staff’s comment, the Company has revised its discussion of revenue growth on page 35 to further detail the drivers of historical and future growth and to disclose the percentage increase of new customers period over period.

21. *Please amend your filing to disclose whether any of the material risk factors related to your operating results and financial condition, as disclosed on page 12, actually impacted your results of operations for the periods presented. There is a concern that the existing disclosures on pages 38 and 40 do not identify any specific factors (other than new customers) that materially impacted revenue during the period presented. Given the 69% and 48% revenue growth in 2011 and 2010, respectively, an expanded and informative disclosure about the causal changes in circumstances is necessary for readers to understand these material variances. The page 34 “Overview” disclosure does not fully explain these variances. Please read Section 501.12.b.4 of the Financial Reporting Codification.*

Response: The Company believes that none of the material risk factors related to its operating results and financial condition, as disclosed on page 12 (other than sales to new and existing customers), has historically impacted its operations to a sufficient degree to warrant being specifically identified on pages 39 and 41. The Company has, however, revised page 13 to discuss the specific impact of the global recession on operating results. In addition, in response to Staff comments #20-23, the Company has revised its period over period comparisons to provide additional information on the drivers of its revenue growth.

22. *Please amend your filing to provide a more robust MD&A discussion throughout your filing that allows an investor to gain a better understanding into your business. For example, although you quantify the increase in sales the underlying drivers of the increase is not apparent. Please amend your disclosure to identify and quantify the underlying factors driving changes in your operating results. Additionally, on page 38 you state that revenues for the three months ended March 31, 2011 increased 69% as compared to the same period in 2010. Based on your disclosure it appears that new customer companies accounted for approximately 33% of this increase in revenues however, your disclosure doesn't appear to identify or quantify the other contributing factors. Please amend your disclosures throughout your filing accordingly.*

Response: In response to the Staff's comment, the Company has revised the discussion of the drivers of revenue growth on pages 39, 41 and 43 of the Registration Statement.

23. *Please revise your disclosure to quantify the impact of foreign exchange rate variances on sales. Furthermore, on pages 38, 40 and 42 you state that pricing for your services remained relatively constant for certain periods. The phrase "relatively constant" is not clear. Please revise your disclosure to quantify price changes period over period and the contributing factors driving the changes. Your discussion should also address how the market for your products has changed, including your market share, for each period presented and the impact to your operating results. See Item 303(a)(3) of Regulation S-K.*

Response: In response to the Staff's comment, the Company has disclosed the impact of foreign exchange rate variances on sales on pages 39, 41 and 43 of the Registration Statement.

Upon further consideration in light of the Staff's comment, the Company has deleted the phrase "relatively constant" on pages 39, 41 and 43 of the Registration Statement and added a disclosure on those pages that for the relevant period over period comparison, the effect of pricing changes on revenue was immaterial.

The Company is not aware of any published third-party estimates of the Company's specific addressable markets or the Company's market share. One way the Company approximates its market is based on the number of product developers who use 3D CAD software to design products. This market continues to grow with the increasing adoption of 3D CAD software by product developers. One market research firm has stated that as of December 2009, there were approximately 13 million users of CAD software worldwide, of which approximately 5.3 million were users of 3D CAD software. The Company has filled orders for approximately 17,000 product developers. Given the dearth of data, the Company is unable to determine precisely the size of its market and its market share. The Company discusses its market and position in the market in further detail on pages 1-2 and in the "Business" section of the Registration Statement.

24. *On page 11 you disclose that your gross margin may be negatively impacted if your international sales grow as a percentage of your total revenue. We note from your segment footnote on page F-22 that international sales have increased by 61% from 2009*

to 2010 and you state on page 35 you expect continued growth of your international business. Please revise your filing to fully discuss the negative impact to gross margin that you expect in future periods due to increased international sales.

Response: Upon further consideration in light of the Staff's comment, the Company has deleted the referenced sentence on page 11 of the Registration Statement. While international sales increased by 61% from 2009 to 2010, the Company notes that total sales increased by 48% during that period. Given that the growth in international sales only modestly outpaced the growth in total sales from 2009 to 2010 and that the Company believes that over time and with growth and maturity of its international business, the gross margin on its international sales will increase, the Company does not believe that discussion of the negative impact to gross margin due to increased international sales is warranted.

Provision for Income Taxes, page 42

25. *Please amend your filing to discuss the qualified subsidiary election of \$11 million for FY 2010 presented on the face of your reconciliation of your federal statutory income tax rate to the effective tax rate on page F-20. Your disclosure should address whether this item will have a recurring impact on your effective tax rate. Refer to Section 501.04 of the Financial Reporting Codification for guidance.*

Response: In response to the Staff's comment, the Company has revised page 42 of the Registration Statement to discuss further the qualified-sub subsidiary election in 2010, including the non-recurring impact on the Company's effective tax rate.

Liquidity and Capital Resources, page 45

26. *We note your disclosure that for year 2010 you had a \$0.8 million asset impairment charge. With a view towards disclosure, please explain to us whether this impairment charge represents the \$773,000 loss on impairment of foreign subsidiary assets disclosed on page 33 of the filing, or whether it represents a charge in addition to the loss on impairment of foreign assets. In addition, if material to your business, please discuss whether management anticipates the occurrence of future impairment charges which may have an unfavorable impact on your net revenues.*

Response: The Company confirms that the \$0.8 million asset impairment charge for 2010 represents the \$773,000 loss on impairment of foreign subsidiary assets disclosed on page 33 of the filing. In response to the Staff's comment, the Company has revised page 36 of the Registration Statement to discuss the possibility of future impairment charges.

Contractual Obligations, page 47

27. *You disclose on page F-16 that you sponsor a defined contribution retirement plan that covers the employees of Proto Labs Limited and you made employer contributions of*

approximately \$32,000 for the year ended December 31, 2010. If material, please amend your table of contractual obligations to reflect future cash payments related to the defined contribution retirement plan or disclose such amounts. Refer to Financial Reporting Release No. 33-8350 for guidance.

Response: The Company confirms that the future contractual obligations related to the defined contribution retirement plan are immaterial.

Financing Arrangements, page 48

28. *You disclose on page F-15 that you were in violation of a covenant relating to capital expenditures for the year ended December 31, 2010, which was waived subsequent to year-end. Although you state there were no advances outstanding on the revolving note as of December 31, 2008, 2009, and 2010 and for the three months ended March 31, 2011, please revise your filing to disclose the length of the waiver, whether the covenant violation impacted your ability to draw down funds under the line of credit and consequences you would be subject to in the absence of a waiver. Refer to Financial Reporting Release No. 33-8350 for guidance.*

Response: In response to the Staff's comment, the Company has revised page 49 of the Registration Statement to discuss the waiver of the violation of a covenant relating to capital expenditures for the year ended December 31, 2010 and the impact of the violation on the Company. The Company received the waiver on February 25, 2011.

29. *Please revise your disclosure regarding your credit agreement with Wells Fargo to discuss any financial ratios or covenants you must comply with. We note your disclosure on page F-15 to your financial statements stating that you were in violation of a covenant relating to capital expenditures for the year ended December 31, 2010. In addition, please file a complete copy of the line of credit agreement as an exhibit to the registration statement.*

Response: In response to the Staff's comment, the Company has revised page 49 of the Registration Statement to discuss certain covenants under the Company's credit agreement. The Company respectfully advises the Staff that it does not believe it is necessary to file a copy of the line of credit agreement as an exhibit to the Registration Statement because no debt is currently outstanding under the line of credit, and the Company does not consider it to be a material agreement.

Allowance for Doubtful Accounts, page 49

30. *Please amend your disclosure to address why your allowance for doubtful accounts has decreased each year in light of the increase in your accounts receivable balance. We note the consistent increase in your accounts receivable balance. Your revised disclosure should identify specific reasons for the decrease in your allowance account (i.e. material improvements in aging). Furthermore, please amend your filing to provide a roll-forward of your of allowance account. Refer to Rule 5-04 of Regulation S-X for guidance.*

Response: In response to the Staff's comment, the Company has revised page 50 of the Registration Statement to address the decreases in the allowance for doubtful accounts and to detail the changes in the allowance for doubtful accounts for the periods presented.

Business, page 56

General

31. *Please ensure that your disclosure in this section addresses all relevant Item 101(c)(1) requirements. For example, we note that Item 101(c)(1)(iii), (vi), (xi) and (xii) disclosures related to (1) the sourced and availability of raw materials, (2) working capital practices, (3) estimated amount spent during each of the last three fiscal years on company-sponsored research and development activities (we note the tabular financial disclosure elsewhere in the prospectus), and (4) material effects that compliance with rules and regulations relating to the protection of the environment may have upon your capital expenditures, earnings and competitive position, appear to be missing. If material to an understanding of your business, please discuss these items or cross-reference other sections of the filing where you address these items. We note, for example, your "If our present single or limited source suppliers become unavailable..." risk factor on page 15 and "Our business involves the use of hazardous materials..." risk factor on page 19.*

Response: The Company advises the Staff that it has reviewed the Item 101 requirements. In response to the Staff's comment, the Company has revised pages 57 and 61 of the Registration Statement to reference discussions of the sourcing and availability of materials and its historical investments in research and development, respectively. The Company believes that its working capital practices are immaterial and that compliance with rules and regulations relating to the protection of the environment has no material effect upon its capital expenditures, earnings and competitive position.

Industry Overview, page 57

Our Market Opportunity, page 57

32. *In the second paragraph, please disclose the range of the end-markets which you serve.*

Response: In response to the Staff's comment, the Company has revised page 58 of the Registration Statement to list the Company's top five end-markets.

Our Services, page 61

Firstcut, page 61

33. *Please identify the type of material used with the Firstcut technology.*

Response: In response to the Staff's comment, the Company has revised page 62 of the Registration Statement to provide that the Firstcut service uses plastics and metals.

Director Compensation, page 72

34. *Please disclose whether any of the fees paid to the non-employee directors during 2010 represented compensation for time spent with management outside of board or committee meetings. To the extent necessary, please include relevant footnotes to the "Non-Employee Director Compensation for 2010" tabular disclosure on page 73. Please refer to Items 402(k)(3) and 402(r)(3) of Regulation S-K, as applicable.*

Response: In response to the Staff's comment, the Company has revised pages 73 and 74 of the Registration Statement to disclose that one director received such payments in 2010, identifying the director and the amount of the payments.

Non-Employee Director Compensation for 2010, page 73

35. *We note your footnote (1) disclosure; however, supplementally please tell us how you determined that Mr. Lukis as the company's Chairman and Chief Technology Officer is not a named executive officer whose compensation would be required to be disclosed in accordance with Item 402 of Regulation S-K.*

Response: The Company respectfully advises the Staff that Mr. Lukis is not a named executive officer because he did not serve as the Company's principal executive officer (PEO) or principal financial officer (PFO) during 2010, and he was not one of the Company's three most highly compensated executive officers other than the PEO and PFO serving in an executive officer capacity at the end of 2010. In large measure this reflects the fact that Mr. Lukis does not receive equity-based compensation from the Company.

Executive Compensation, page 74

Executive Compensation Philosophy and Objectives, page 74

36. *In the middle of page 75 you disclose, among other things, that you do not benchmark total compensation or individual elements of compensation against specific comparable companies. However, the process described in the second paragraph of your "Base Salaries" discussion on page 76 appears to constitute benchmarking for purposes of Item 402(b)(2)(xiv) of Regulation S-K. As such, your disclosure must provide a materially complete description of all of the elements considered by the compensation committee in*

setting executive compensation, including among other things, whether the compensation decisions were derived from, or based upon, a comparison to peer companies (which should be identified by name). To the extent that any specific elements of compensation are tied to a benchmark, please identify the benchmark and discuss where your actual payments and awards fall with respect to the benchmark. For additional guidance, see Question 118.05 of the Compliance and Disclosure Interpretations concerning Item 402 of Regulation S-K, which can be found on our website at <http://www.sec.gov/divisions/corpfin/guidance/regs-kinterp.htm>.

Response: In response to the Staff's comment, the Company has revised pages 77-79 of the Registration Statement. The Company respectfully advises the Staff that it does not benchmark, in any sense of the word, its executive compensation against any identifiable peer group of companies. The Company does, however, use compensation market data derived from a number of national and regional surveys to calculate market median levels of salary and total cash compensation (salary plus annual bonus), and then uses that information as a reference point when determining salary and target total cash compensation. In doing so, the Company starts with what might be called a "rebuttable presumption" that such compensation is reasonable and competitive if it is within an 80% to 120% bandwidth of the market median. Disclosure to this effect has been added on page 77, and disclosure of the salaries and target total cash compensation of the named executive officers as a percentage of the market median has been added to pages 78 and 79.

37. *If you believe that the steps undertaken by the compensation committee do not constitute benchmarking for purposes of Item 402(b)(2)(xiv), please revise your disclosure to better describe the nature of the market data used by the compensation committee in making executive compensation decisions, and what salary ranges or overall compensation packages the committee considers to be competitive.*

Response: Please refer to the Company's response to Staff Comment 36, above.

Base Salaries, page 76

38. *Please disclose the factors considered by the compensation committee in awarding the 4% increase in base salary to each executive officer. In this regard, we note that your disclosure on page 74 indicates that the compensation committee takes into consideration the executives' "individual performance goals" in making compensation decisions (see third bullet point of the "Executive Compensation Philosophy and Objectives"). To the extent that the compensation committee's decisions regarding a named executive officer's individual performance were based upon a subjective evaluation, please ensure that you disclose each executive officer's individual performance goals by also identifying the specific contributions made by each executive and contextualize those achievements for purposes of demonstrating how they resulted in specific compensation decisions. Refer to Item 402(b)(2)(vii) of Regulation S-K. Although quantitative targets for subjective or qualitative assessments may not be required, you should provide insight of how qualitative inputs are translated into objective pay determinations. To the extent relevant,*

please also address this comment with respect to the compensation committee's determination of the annual bonus amounts.

Response: In response to the Staff's comment, the Company has revised pages 76 and 78 of the Registration Statement to clarify that while individual performances are subjectively considered, there are no performance goals involved in making compensation decisions. The Company does not establish individualized performance goals for its named executive officers. Instead, the individual performance of each named executive officer is evaluated on a subjective basis at the end of each year, and this evaluation is factored into decisions regarding salary adjustments.

Annual Bonuses, page 76

39. *Please expand your disclosure to discuss Mr. Langton's contributions related to the special project for which he was granted an additional \$5,000 bonus.*

Response: In response to the Staff's comment, the Company has revised page 81 of the Registration Statement.

Market and Industry Data, page 111

40. *You state that you "have not independently verified market and industry data from third-party sources" used as basis of some of your disclosures in the registration statement. Please note that you are responsible for the entire content of the registration statement and that you may not use language that would be interpreted as a disclaimer of the information you have chosen to include in the filing. Please revise accordingly.*

Response: In response to the Staff's comment, the Company has revised page 115 of the Registration Statement to delete language that would be interpreted as a disclaimer of the information it has chosen to include in the filing.

Financial Statements, page F-3

41. *Please revise your filing to update your financial statements pursuant to Rule 3-12 of Regulation S-X.*

Response: In response to the Staff's comment, the Company has updated its financial statements and financial analysis to be as of June 30, 2011 in compliance with Rule 3-12 of Regulation S-X.

Note 15 – Segment and Geographic Information, page F-22

42. *You disclose that you have two operating segments that were aggregated into one reportable segment based upon their similar operational and economic characteristics. 2011. However, we note from your disclosures in MD&A that revenue growth increased*

60.3% for Protomold and 103.6% for Firstcut for the three months ended March 31, 2011 compared with the same period in 2010 and 37.8% for Protomold and 102.1% for Firstcut for 2010 as compared to 2009. Given this it appears your operating segments may not be economically similar. Please provide us your CODM reports for each period presented.

Response: After an analysis of the criteria of Accounting Standards Codification Topic 280, or ASC 280, the Company has determined that the economic characteristics of its two operating segments, Protomold injection molding and Firstcut CNC machining, are similar. Protomold services were initially offered to customers in 1999, and Firstcut services were first offered to customers in 2007. Firstcut revenue growth percentages are consistent with the growth that Protomold experienced in its initial years, and the Company anticipates that the long term-term growth rates for Firstcut and Protomold will be comparable.

The variance in the Protomold and Firstcut operating segments' gross profit percentages in the historical periods of 2008 through 2010 results from the initial investments and costs associated with establishing Firstcut. The Company believes the long-term gross profit percentages will be similar when considering its future long term projected results.

Various financial metrics and analyses are reported to the CODM monthly. The main financial report showing the financial information provided to the CODM is included in Supplement A (Proto Labs has requested confidential treatment of the Supplement A pursuant to the Securities and Exchange Commission's Rule 83). Revenue is the primary measure used by the CODM to allocate resources within and among the operating segments. Although a breakdown between Protomold and Firstcut operating income is provided, it is achieved through significant allocations calculated as a percentage of revenue versus a more precise allocation method. In addition, our long-term forecasts are not prepared with operating income or gross margin delineation between Protomold and Firstcut services as the CODM primarily uses revenue to allocate resources within and among the operating segments in these forecasts.

Based on the above analysis, we believe that our two operating segments meet the requirements for aggregation as outlined in ASC 280 and that separate reporting of segment information would not help users of the Company's financial statements better understand its performance, better assess its prospects for future net cash flows, or make more informed judgments about the Company as a whole.

Undertakings, page II-3

43. *Please remove the undertakings in subparagraph (3) and the undertakings in the last paragraph as inapplicable.*

Response: The Company has revised page II-3 of the Registration Statement in accordance with the Staff’s comment.

* * * * *

Finally, the Company will furnish a letter at the time it requests acceleration of the effective date of the Registration Statement acknowledging the statements set forth in the Staff’s comment letter.

In connection with responding to your comments, we acknowledge that the Company is responsible for the adequacy and accuracy of the disclosure in the filing, that Staff comments or changes to disclosure in response to Staff comments do not foreclose the Commission from taking any action with respect to the filing, and that the Company may not assert Staff comments as a defense in any proceedings initiated by the Commission or any person under the federal securities laws of the United States.

We hope that the foregoing has been responsive to the Staff’s comments. Should you have any questions relating to any of the foregoing, please feel free to contact the undersigned at (612) 766-7079, or my colleague W. Morgan Burns at (612) 766-7136.

Very truly yours,

Erik J. Romslo

Enclosure

cc: Bradley Cleveland
Proto Labs, Inc.
W. Morgan Burns
Faegre & Benson LLP
Kenneth Guernsey
Cooley LLP